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HEALTH RISK ASSESSMENT FOR PARCELS C, D, AND G, REVISION 1

NEVADA ENVIRONMENTAL RESPONSE TRUST SITE

HENDERSON, NEVADA

RAMBOLL ENVIRON

Health Risk Assessment for Parcels C, D, and G, Revision 1

Nevada Environmental Response Trust
(Former Tronox LLC Site)
Henderson, Nevada

Nevada Environmental Response Trust (Trust) Representative Certification

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Health Risk Assessment for Parcels C, D, and G, Revision 1

Nevada Environmental Response Trust
(Former Tronox LLC Site)
Henderson, Nevada

Responsible Certified Environmental Manager (CEM) for this project

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and, to the best of my knowledge, comply with all applicable federal, state and local statutes, regulations and ordinances.

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Date	**November 3, 2017**
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ACRONYMS AND ABBREVIATIONS

ABS	soil absorption factor
ADD	average daily dose
AECOM	AECOM, Inc.
AP&CC	American Potash and Chemical Company
API	American Petroleum Institute
atm	atmosphere
ATSDR	Agency for Toxic Substances & Disease Registry
BaP	benzo(a)pyrene
BaPEq	benzo(a)pyrene equivalent
BCA	bias-corrected accelerated
BCL	basic comparison level
bgs	below ground surface
BEC	Basic Environmental Company
BMI	Black Mountain Industrial
BRC	Basic Remediation Company
BTEX	benzene, toluene, ethyl benzene, and total xylenes
Cal/EPA	California Environmental Protection Agency
CAS	Chemical Abstract Service
CFR	Code of Federal Regulations
CLP	Contact Laboratory Program
cm^2	square centimeter
cm^3	cubic centimeter
COC	chain-of-custody
COPC	chemical of potential concern
Converse	Converse Consultants
CRQL	contract required quantitation limit
CSF	cancer slope factor
CSM	conceptual site model
CTE	central tendency exposure
cy	cubic yard
DCA	dichloroethane

DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DNAPL	dense non-aqueous phase liquid
DQI	data quality indicator
DUE	data usability evaluation
DVSR	data validation summary report
ECA	Environmental Conditions Assessment
EDA	exploratory data analysis
EDD	electronic data deliverable
ENSR	ENSR Corporation
ENVIRON	Environ International Corporation
EPC	exposure point concentration
ERM-West	ERM-West, Inc.
ESA	Environmental Site Assessment
ETBE	ethyl tert-butyl ether
Exponent	Exponent, Inc.
f	fiber
ft	feet
g	gram
GC/MS	gas chromatography/mass spectroscopy
GISdT®	Guided Interactive Statistical Decision Tool
GRAS	Generally Recognized as Safe
HEAST	Health Effects Assessment
HI	hazard index
HQ	hazard quotient
HRA	health risk assessment
IF	intake factor
ILCR	incremental lifetime cancer risk
IQR	interquartile range
IRIS	Integrated Risk Information System
ITRC	Interstate Technology Regulatory Council
IUR	inhalation unit risk

IWF	interceptor well field
Kerr-McGee	Kerr-McGee Chemical Corporation
kg	kilogram
Kleinfelder	Kleinfelder, Inc.
L	liter
LADD	lifetime average daily dose
LC	laboratory control
LCD	laboratory control duplicate
LCS	laboratory control spike
LCSD	laboratory control spike duplicate
LDC	Laboratory Data Consultants, Inc.
LOAEL	lowest-observed-adverse-effect level
LOU	Letter of Understanding
LVP	Las Vegas Paving
m3	cubic meter
MDL	method detection limit
mg	milligram
mm Hg	millimeter of mercury
mol	mole
mph	mile per hour
MRL	minimal risk level
MS	matrix spike
MSD	matrix spike duplicate
MTBE	methyl tert-butyl ether
NCP	National Contingency Plan
NDEP	Nevada Division of Environmental Protection
Neptune	Neptune and Company, Inc.
NERT	Nevada Environmental Response Trust
NFA	no further action
Northgate	Northgate Environmental Management, Inc.
NRC	National Research Council
NSF	Risk coefficient for population of non-smoking females
NSM	Risk coefficient for population of non-smoking males

OCH	organic carbon by hydrogen
OCP	organochlorine pesticide
Operations Area	the area comprising the Site, excluding Parcels C, D, E, F, G, and H
OPP	organophosphorus pesticide
OSSM	Olin Chlor-Alkali/Stauffer/Syngenta/Montrose
OSWER	Office of Solid Waste and Emergency Response
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachloroethylene
PEF	particulate emission factor
pg	picogram
ppbv	parts per billion in volume
PPRTV	Provisional Peer Reviewed Toxicity Values
PQL	practical quantitation limit
Q-Q	quantile to quantile
QA/QC	quality assurance/quality control
Qal	quaternary alluvial deposit
QAPP	Quality Assurance Project Plan
Ra	radium
Ramboll Environ	Ramboll Environ US Corporation
RAW	Removal Action Workplan
RBC	risk-based concentration
RfC	reference concentration
RfD	reference dose
RI/FS	remedial investigation/feasibility study
RME	reasonable maximum exposure
RPD	relative percent difference
RSL	regional screening level
RZ-A	Remediation Zone A
SAP	sampling and analysis plan
SDG	sample delivery group
SF	risk coefficient for population of smoking females
SIM	selective ion monitoring

Site	Nevada Environmental Response Trust Site
SM	risk coefficient for population of smoking males
SOP	standard operating procedure
SQL	sample quantitation limit
SRC	site-related chemical
SVOC	semi-volatile organic compound
TAME	tert-amyl methyl ether
TCE	trichloroethylene
TEF	toxicity equivalency factor
TEQ	toxicity equivalent
Th	thorium
TIMET	Titanium Metals Corporation
TPH	total petroleum hydrocarbon
Tronox	Tronox, LLC
Trust	Nevada Environmental Response Trust
U	uranium
UCL	upper confidence limit
µg	microgram
µm	micron or micrometer
UMCf	Upper Muddy Creek Formation
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
WBZ	Water Bearing Zone
WECCO	Western Electrochemical Company
WHO	World Health Organization

EXECUTIVE SUMMARY

This report presents the post-remediation Health Risk Assessment (HRA or post-remediation HRA) for Parcels C, D, and G (collectively referred to in this report as the Study Area) at the Nevada Environmental Response Trust (NERT or the Trust) site in Henderson, Nevada ("Site"). The post-remediation HRA was conducted to evaluate potential risks to future onsite workers from exposures to residual levels of chemicals, radionuclides, and asbestos in soils and volatile organic compounds (VOCs) released from soil gas and groundwater to indoor, outdoor, and trench air.

Prior to 2017, a soil HRA report and a soil gas HRA report for Parcels C, D, F, G, and H were submitted separately to the Nevada Division of Environmental Protection (NDEP). In order to streamline the No Further Action (NFA) decisions for these parcels, the Trust decided to implement a new execution strategy by combining the soil and soil gas HRAs into the following reports: HRA for Parcels C, D, and G, HRA for Parcel F, and HRA for Parcel H. A previous version of the HRA for Parcels C, D, and G was submitted to NDEP on July 31, 2017, which was prepared to address NDEP comments on the June 19, 2014 soil HRA report (Revision 3) and the September 23, 2016 soil gas HRA report (Revision 1). In addition, it incorporated additional soil analytical results collected in Parcel C Area 5 in 2014 and 2016 and recently identified soil gas samples collected in Parcels C and D in 2007, and the HRA methodology was revised for consistency with recent updates to NDEP guidance. NDEP comments on the July 31, 2017 HRA for Parcels C, D and G were received on September 18, 2017. This revised HRA for Parcel C, D and G has been prepared to address these NDEP comments.

The Site comprises approximately 346 acres located within the Black Mountain Industrial (BMI) Complex in unincorporated Clark County, Nevada; it is surrounded by the City of Henderson. Parcels C, D, and G are generally located to the perimeter of the Site, to the north and west, and were identified for possible sale early in the environmental investigation process at the Site. Although former activities within the parcels were not expected to have resulted in significant chemical impacts, NDEP identified five Letter of Understandings (LOUs) for investigation within Parcels D and G, no LOU was identified in Parcel C. The primary field investigation work for soils at Parcels C, D, and G was completed in 2007 and 2008, and soil removal actions and asbestos abatement were completed in 2010. Additional field investigation work and a removal action to address elevated arsenic concentrations in soils in Parcel C were completed in 2014 and 2016, respectively. Soil gas samples were collected within Parcels C and D in 2007 and in Parcels C, D, and G in 2008 and 2013. Shallow groundwater monitoring is ongoing.

The soil removal action completed for Parcels C, D, and G, which included the excavation and disposal of approximately 1,500 tons of soil, was completed in accordance with the 2008 Remedial Action Workplan (RAW) (Basic Environmental Company [BEC] 2008a) and 2016 RAW (Ramboll Environ US Corporation [Ramboll Environ] 2016a). Analytical results for confirmation samples collected following the soil removal action were all below the NDEP Basic Comparison Level (BCL) for commercial/industrial workers (or other NDEP-approved risk-based criteria). However, small areas of un-remediated soil (above commercial/industrial BCLs) remain in Parcels C and G. In Parcel C, an un-remediated area of approximately 8,345 square feet (ft) south of the South Haul Road Fence line will be

removed by BMI in conjunction with BMI's planned removal of the Haul Road 1. In Parcel G, an area of approximately 135 square ft in the northeast corner was not remediated because the soils were covered by asphalt. For this area, qualitative considerations suggest that associated risk would be insignificant because individuals would not spend a significant amount of time there.

Soil analytical data collected as part of initial and confirmation sampling efforts were evaluated and data representative of current conditions were selected for purposes of the HRA. The soil conceptual site model (CSM) and chemicals of potential concern (COPCs) are summarized as follows:

Based on the CSM for Parcels C, D, and G, potential exposure to soil was evaluated for future onsite indoor and outdoor commercial/industrial workers and construction workers via direct contact with soil (i.e., incidental ingestion and dermal contact) and inhalation of airborne particulates. Soil COPCs were selected according to a multi-step process, including concentration/ toxicity screen, background evaluation for metals and radionuclides, and chemical-specific consideration. Based on this process, seven chemicals were identified as soil COPCs for Parcel C, four chemicals were identified as soil COPCs for Parcel D, and seven chemicals were identified as soil COPCs for Parcel G. The soil COPCs included chloride, dioxin/furans, hexachorobenzene, octachlorostyrene, perchlorate, metals (palladium and zirconium) and asbestos (long amphibole fibers and long chrysotile fibers).

Non-cancer hazard indices (HIs) and excess lifetime cancer risks associated with direct contact with soil and inhalation of airborne particulates were estimated for all the soil COPCs except asbestos based on the 95% upper confidence limit (UCL) on the mean soil concentration at 0-2 ft depth interval and at 0-10 ft depth interval within each parcel. The estimated HIs and excess lifetime cancer risks were below the NDEP significant threshold of greater than one for non-cancer effects (the maximum HI was one) and below or within the NDEP acceptable cancer risk range of 10^{-6} to 10^{-4} for future onsite indoor and outdoor commercial/industrial workers and construction workers under the conditions evaluated. Only in Parcel C did the estimated excess lifetime cancer risk exceed 10^{-6}. The major chemical contributor for soil risk was dioxin.

With regard to asbestos (long amphibole and long chrysotile fibers), a best estimate and an upper-bound estimate of potential cancer risk via inhalation of airborne particulates for indoor commercial/industrial workers, outdoor commercial/industrial workers, and construction workers were calculated for each parcel. The estimated combined risks for death from lung cancer and mesothelioma associated with asbestos exposures were all less than 1×10^{-6}, except for upper-bound risk estimates for exposure to amphibole fibers by future construction workers, which were all less than 1×10^{-5}. However these upper-bound estimates were based on an observed count of zero long amphibole[2] fiber in the post-abatement soil samples, considered representative of current conditions within Parcels C, D, and G. Following completion of the asbestos abatement, zero fiber for long amphibole was

[1] The statement was obtained from the Soil HRA Report Revision 3 (Northgate 2014). A figure showing the un-remediated area is included in Appendix D-1 of this report.

[2] Although amphibole fiber counts were zero (0), upper-bound fiber concentrations in soil are estimated assuming a Poisson distribution, which yields an upper-bound risk estimate that is greater than 0.

less than the RAW specified level[3] of one (1) or more fibers. Similarly, for long chrysotile fibers, fiber counts were less than the level presented in the RAW (four or more long fibers per sample).

The soil gas and groundwater CSM and COPCs are summarized as follows:

2007 soil gas data (10 ft below ground surface [bgs]), 2008 and 2013 soil gas data (5 ft bgs) collected within or near Parcels C, D, and G were evaluated in the HRA. Potential exposure to soil gas was evaluated for future onsite indoor and outdoor commercial/industrial workers and construction workers via inhalation of vapors migrating from soil gas to indoor air, outdoor air, and trench air. All VOCs detected in at least one soil gas sample were selected as soil gas COPCs. A total of 60 VOCs were identified as soil gas COPCs for Parcels C, D, and G.

Non-cancer HIs and excess lifetime cancer risks associated with inhalation of vapors migrating from soil gas to indoor air, outdoor air, and trench air were estimated for all identified soil gas COPCs. The estimated HIs and excess lifetime cancer risks were below the NDEP significant threshold of greater than one for non-cancer effects (the maximum HI was 0.1) and below or within the NDEP acceptable cancer risk range of 10^{-6} to 10^{-4} for future onsite indoor and outdoor commercial/industrial workers and construction workers under the conditions evaluated. Only Parcel C had estimated cancer risks greater than 1×10^{-6} (the maximum estimated excess lifetime cancer risk was 4×10^{-5} for Parcel C). The Parcel C locations with estimated excess lifetime cancer risks greater than 1×10^{-6} are located at the southern boundary near the Operations Area[4] and in the western portion of the parcel, downgradient of the Olin Chlor Alkali/Stauffer/Syngenta/ Montrose (OSSM) Parcel E groundwater extraction and treatment system. In all parcels, chloroform is the primary contributor to the total estimated cancer risk for soil gas.

Shallow groundwater data was evaluated for the vapor intrusion pathway as a second line of evidence for the soil gas evaluation. Shallow groundwater data collected after January 2006 within or near Parcels C, D, and G were evaluated in the HRA. Potential exposure to groundwater was evaluated for future onsite indoor and outdoor commercial/industrial workers and construction workers via inhalation of vapors migrating from soil gas to indoor air, outdoor air, and trench air. All VOCs detected in at least one shallow groundwater sample were selected as groundwater COPCs. A total of 76 VOCs were identified as groundwater COPCs for Parcels C, D, and G.

Non-cancer HIs and excess lifetime cancer risks associated with inhalation of vapors migrating from soil gas to indoor air, outdoor air, and trench air were estimated for identified shallow groundwater COPCs using the most recent two years of shallow groundwater data collected at each well. The estimated HIs were below the NDEP significant threshold of

[3] The RAW does not specifically use the term “trigger level” or identify remediation goals. However, areas identified for asbestos abatement were those in which amphibole counts in soil samples were one (1) or more fibers and chrysotile counts were four (4) or more fibers (BEC 2008a).

[4] The Operations Area is defined as the Site, excluding Parcels C, D, E, F, G, and H. The Operations Area is equivalent to the area referred to as the “Facility Area” in previous reports (with the exception of Parcel E, previously considered as part of the Facility Area for risk assessment purposes). These reports include, e.g., the Remedial Investigation and Feasibility Study Work Plan (ENVIRON International Corporation [ENVIRON] 2014a) and the associated risk assessment work plan and report (ENVIRON 2014b, Ramboll Environ 2015a).

greater than one for non-cancer effects, except that the estimated HI for the indoor commercial/industrial worker in Parcel C is slightly over the NDEP significant threshold of greater than one for non-cancer effects (the maximum HI was 2 for Parcel C based on maximum parcel concentrations and 1 based on individual wells). The major chemical contributor to the HI is chlorobenzene.

The estimated excess lifetime cancer risks were below and/or within the NDEP acceptable cancer risk range of 10^{-6} to 10^{-4} for future onsite indoor and outdoor commercial/industrial workers and construction workers under the conditions evaluated. The maximum estimated excess lifetime cancer risk was 1×10^{-5} based on maximum detected concentrations for Parcel C and 6×10^{-6} based on maximum detected concentrations at individual wells. In all parcels, chloroform is the primary contributor to the total estimated cancer risk. In Parcel C, 1,4-dichlorobenzene and 1,2-dichloroethane (DCA) also contribute to the total cancer risk estimate.

The cumulative cancer risk and non-cancer HI for each receptor population were estimated by summing cancer risk and non-cancer HI for direct contact with soil and cancer risk and non-cancer HI for VOCs for inhalation of soil gas migrating to air (5 and 10 ft bgs, respectively), and are presented in Table ES-1. Only soil gas samples were collected to support evaluation of the vapor intrusion pathway. The objectives of groundwater sampling at the Site have been primarily to characterize site-related chemicals (SRCs) in groundwater near suspected source areas and plume delineation; that is, no groundwater investigation was conducted to specifically provide data to evaluate the vapor intrusion pathway. Shallow groundwater data was evaluated for the vapor intrusion pathway as a second line of evidence

The cumulative cancer risks are below or within the acceptable cancer risk range of 1×10^{-6} to 1×10^{-4} for future indoor commercial/industrial workers, outdoor commercial/industrial workers, and construction workers for Parcels C, D, and G. The cumulative HIs are below the threshold of greater than one for Parcels C, D, and G.

Only the cumulative cancer risks in Parcel C exceeded 1×10^{-6}, and the maximum cumulative cancer risk was 4×10^{-5} for future indoor commercial/industrial workers. Both the soil direct contact pathway (due to dioxin toxicity equivalent [TEQ]) and the vapor intrusion pathway (due to chloroform) were major cancer risk contributors for future indoor commercial/industrial workers, while the soil direct contact pathway (due to dioxin TEQ) was the major cancer risk contributor for future outdoor commercial/industrial workers and construction workers. It should be noted that the site-specific action level for dioxin TEQ (0.0027 mg/kg) would correspond to a cancer risk of 6×10^{-5} for an outdoor commercial/industrial worker (Northgate Environmental Management, Inc. [Northgate] 2010a), which is higher than the maximum cancer risk which the Parcel C dioxin TEQ would contribute to (1×10^{-5}). Plots of total vapor intrusion cancer risk and chloroform cancer risk for future indoor commercial/industrial workers in Parcel C show the locations with a total estimated vapor intrusion cancer risk greater than 1×10^{-6} are located at its southern boundary with the Operations Area and on the west side of Parcel C, downgradient of Parcel E, which contains the OSSM groundwater treatment system.

1. INTRODUCTION

This report has been prepared by Ramboll Environ US Corporation (Ramboll Environ) on behalf of the Nevada Environmental Response Trust (NERT or the Trust) and presents the post-remediation health risk assessment (HRA) for Parcels C, D, and G (collectively referred to as the Study Area) at NERT site in Henderson, Nevada ("Site"). Soil removal and asbestos abatement activities completed at Parcels C, D, and G are described, and the post-remediation HRA evaluating potential risks to future onsite workers from exposures to residual levels of chemicals, asbestos, and radionuclides5 in soils is presented. The potential risks to future onsite workers associated with inhalation of volatile organic compounds (VOCs) released from soil gas and groundwater to indoor, outdoor, and trench air were evaluated. The cumulative risks associated with potential exposures to chemicals in soil and to VOCs in air are also presented.

The Site comprises approximately 346 acres located within the Black Mountain Industrial (BMI) Complex in unincorporated Clark County, Nevada; it is surrounded by the City of Henderson (Figure 1-1). Parcels C, D, and G are generally located to the perimeter of the Site, to the north and west (Figure 1-2). Post-remediation HRAs for two additional parcels at the Site, Parcel F and Parcel H, are currently underway and are expected to be completed later this year. Parcel E contains a portion of the currently operating Olin Chlor Alkali/Stauffer/Syngenta/Montrose (OSSM) groundwater treatment system. No investigation or remediation on Parcel E has been performed or is planned for the foreseeable future due to the continued operation of the OSSM groundwater treatment system (Nevada Division of Environmental Protection [NDEP] 2010a). The area surrounding the Site is shown in Figure 1-3.

Environmental investigations at Parcels C, D, and G have generally been conducted separately from investigations at the main area of the Site, referred to in this report as the "Operations Area". 6 The primary field investigation work for soils at Parcels C, D, and G was completed in 2007 and 2008, and soil removal actions and asbestos abatement were completed in 2010. Additional field investigation work and a removal action to address elevated arsenic concentrations in soils in Parcel C were completed in 2014 and 2016, respectively. Soil gas samples were collected within Parcels C and D in 2007 and in Parcels C, D, and G in 2008 and 2013. Shallow groundwater monitoring is ongoing.

1.1 Major Revisions

Prior to this report, a soil HRA report and a soil gas HRA report for Parcels C, D, F, G, and H were submitted separately to the NDEP. Four versions of the soil HRA report have been submitted: (1) December 10, 2010 (Northgate Environmental Management, Inc. [Northgate] and Exponent, Inc. [Exponent] 2010a); (2) May 18, 2012 (Northgate 2012); (3) June 27, 2013 (Northgate 2013); and (4) June 19, 2014 (Northgate 2014). Two versions of the soil

[5] Chemicals, asbestos, and radionuclides are referred to as "chemicals" in this report unless it is important to distinguish among the three classes.

[6] The Operations Area is defined as the Site, excluding Parcels C, D, E, F, G, and H. The Operations Area is equivalent to the area referred to as the "Facility Area" in previous reports (with the exception of Parcel E, previously considered as part of the Facility Area for risk assessment purposes). These reports include, e.g., the *Remedial Investigation and Feasibility Study Work Plan* (ENVIRON International Corporation [ENVIRON] 2014a) and the associated risk assessment work plan and report (ENVIRON 2014b, Ramboll Environ 2015a).

gas HRA report have been submitted: (1) July 25, 2013 (Environ International Corporation [ENVIRON] 2013a); and 2) September 23, 2016 (Ramboll Environ 2016b). NDEP commented on each submittal and each subsequent report was revised to address NDEP comments.

In order to streamline the No Further Action (NFA) decisions for these parcels, the Trust decided to implement a new execution strategy by combining the soil and soil gas HRAs into the following reports: HRA for Parcels C, D, and G, HRA for Parcel F, and HRA for Parcel H. This report focuses on the HRA for Parcels C, D, and G . A previous version of the HRA for Parcels C, D, and G was submitted to NDEP on July 31, 2017, which was prepared to address NDEP comments on the June 19, 2014 soil HRA report (Revision 3) and the September 23, 2016 soil gas HRA report (Revision 1) (Appendix A). In addition to combining the soil and soil gas HRAs for Parcels C, D, and G as well as the revisions made to address NDEP comments, it incorporated additional soil analytical results collected in Parcel C Area 5 in 2014 and 2016 and recently identified soil gas samples collected in Parcels C and D in 2007. The HRA methodology was also revised for consistency with recent updates to NDEP guidance. The primary revisions made to this report, as compared with the previously submitted June 19, 2014 soil HRA report (Revision 3) and the September 23, 2016 soil gas HRA report (Revision 1), are summarized below:

- **Parcel C boundary:** In all previous versions of the soil HRA, Parcel C was identified as a 20.4-acre parcel. However, in May 2015, the Trust noted that the eastern boundary of Parcel C (as defined by the legal description associated with closing documents on a sale of property that included Parcel C) differed from the boundary historically used by Tronox, LLC (Tronox) and in previous reports prepared by ENVIRON and Ramboll Environ. Specifically, an approximately five-acre trapezoidal area in the north-eastern corner of the Site near Warm Springs Road was identified as Area 5, and the boundary of Parcel C has been expanded to include the significant portion of Area 5 north of Warm Springs Road (Figure 1-2). The soil samples collected in Area 5 within Parcel C in 2014 and 2016 have been added to the HRA data set.
- **Changes in the soil HRA data set**: In addition to the Parcel C Area 5 soil samples discussed above, minor changes to the parcel boundaries based on current information resulted in a few soil samples that were incorrectly located within a parcel (these samples have been moved into the risk assessment data set for the Operations Area) and a few soil samples incorrectly located in the Operations Area that should have been considered within a parcel. These samples are identified in Section 3.2.
- **Radionuclide background evaluation:** In previous versions of the soil HRA, the regional Basic Remediation Company (BRC)/Titanium Metals Corporation (TIMET) data set was used to evaluate background conditions for radionuclides. As requested by NDEP (2015a), in this evaluation the Remediation Zone A (RZ-A) background data set was used for the background evaluation for radionuclides as well as for metals. In addition, the comparison of the radionuclide data with the BRC/TIMET data set was discussed to provide perspective in the interpretation of the results relative to regional background concentrations.
- **Updated list of soil COPCs:** The approach for identifying chemicals of potential concern (COPCs) was updated and is now consistent with the NDEP-approved approach used to identify soil COPCs for the Operations Area (Ramboll Environ 2016c). Specifically, the concentration/toxicity screen was conducted first, followed by the background evaluation and chemical-specific evaluations. In addition, the screening values used for the

concentration/toxicity screen were revised for consistency with the NDEP-approved screening values used in the risk assessment for the Operations Area (i.e., for most chemicals, the screening value used was 0.1 x Basic Comparison Level [BCL]). Finally, the BCLs (and toxicity values) used in the HRA have been updated to be consistent with the 2015 NDEP revision (NDEP 2015b)[7].

- **Addition of inhalation of airborne soil particulates pathway:** For consistency with the equations used to derive BCLs, risks were evaluated for the inhalation of airborne particulates pathway for all soil COPCs and all receptors.
- **Evaluation of risks for each individual parcel:** In previous versions of the soil and soil gas HRAs, the risk results were estimated for all parcels as a whole and not for each individual parcel. To help support risk management decisions, this report presents risks for each individual parcel.
- **Asbestos:** The asbestos evaluation has been updated for consistency with current NDEP guidance (Neptune and Company, Inc. [Neptune] 2015).
- **Changes in the soil gas HRA data set:** Subsequent to the submittal of the September 23, 2016 soil gas HRA, additional soil gas samples collected in 2007 from 10 feet (ft) below ground surface (bgs) were identified for Parcels C and D (ERM-West, Inc. [ERM-West] 2008). Although the samples are older, these data provide additional information regarding vapor migration in these parcels as all other soil gas samples were collected at five ft bgs. The soil gas samples collected in 2007 have been added to the HRA data set.
- **Incorporation of groundwater data in the HRA:** As presented in the 2010 HRA work plan (Northgate and Exponent 2010b), complete direct contact pathways have not been identified for groundwater, which is not used as a source of drinking water at the Site. However, inhalation of VOC vapors migrating from shallow groundwater are potentially complete pathways. Shallow groundwater monitoring data that were previously included in the appendices have been moved into the main text of this report for further evaluation.
- **Addition of a trench scenario for construction workers:** Inhalation of volatile compounds in vapors migrating from soil gas or shallow groundwater to trench air could occur for construction workers while conducting excavation activities. Therefore a trench scenario for the construction workers was added.
- **Cumulative risks:** This report presents cumulative risks for each individual parcel.

NDEP comments on the July 31, 2017 HRA for Parcels C, D and G were received on September 18, 2017. This revised report has been prepared to address NDEP comments on the July 31, 2017 HRA for Parcels C, D, and G. The September 18, 2017 NDEP comments and the Trust's response to comment letter addressing NDEP's comments are submitted as Attachment 1 to the cover letter of this revised report.

1.2 Report Organization

The remainder of this report is organized as follows:

- Section 2 provides background information on the Site.

[7] A discussion of risk results using the most recent 2017 NDEP BCLs and toxicity values is presented in Sections 6.2.1 and 6.2.3. Changing from 2015 BCLs to 2017 BCLs would not change the overall risk conclusions.

- Section 3 describes former uses at Parcels C, D, and G, and summarizes the results of soil, soil gas, and groundwater investigations conducted at these parcels. The soil removal actions and confirmation sampling program are also described.
- Section 4 presents the data usability evaluation (DUE), including the data analysis step of the DUE.
- Section 5 presents the methodology and results from each of the four steps of the risk assessment, i.e., 1) identification of COPCs, 2) exposure assessment, 3) toxicity assessment, and 4) risk characterization.
- Section 6 presents the uncertainty analysis, which discusses the relative impact of data uncertainties and the primary assumptions used in the HRA on the risk results.
- Section 7 provides the data quality assessment.
- Section 8 presents the cumulative cancer risks and non-cancer hazards.
- Section 9 summarizes the HRA and presents conclusions regarding current conditions within Parcels C, D, and G.
- Section 10 lists the references cited in this report.

Supporting tables, figures, and appendices follow the text of the report.

2. SITE BACKGROUND

2.1 Site Description

The 346-acre Site is located approximately 13 miles southeast of the city of Las Vegas in an unincorporated area of Clark County, Nevada, within Sections 1, 12, and 13 of Township 22 S, Range 62 E (Figure 1-1). The Site is located within the BMI complex, which consists of several facilities that are owned and/or operated by various chemical companies. The City of Henderson surrounds the BMI complex. Tronox currently leases a portion of the Site from the Trust, on which it operates a chemical manufacturing facility.

The BMI complex was first developed by the U.S. government in 1942 as a magnesium plant for World War II operations. Later, a part of the BMI complex was leased by Western Electrochemical Company (WECCO). WECCO produced manganese dioxide, sodium chlorate and sodium perchlorate, and other perchlorates. WECCO also produced ammonium perchlorate for the Navy during the early 1950s, using a plant that was constructed on the Site by the Navy. WECCO merged with American Potash and Chemical Company (AP&CC) in 1956 and continued production of ammonium perchlorate for the Navy. In 1967, AP&CC merged with Kerr-McGee Chemical Corporation (Kerr-McGee) and in the early 1970s, began producing boron chemicals (including elemental boron, boron trichloride, and boron tribromide). The production of boron tribromide was discontinued in 1994, and the production of sodium chlorate and ammonium perchlorate was discontinued in 1997 and 1998, respectively. Perchlorate was reclaimed at the Site using existing equipment until early 2002.

In 2005, Kerr-McGee Chemical LLC was renamed Tronox LLC. Tronox's Henderson facility continues to produce electrolytic manganese dioxide, used in the manufacture of alkaline batteries; elemental boron, a component of automotive airbag igniters; and boron trichloride, used in the pharmaceutical and semiconductor industries and in the manufacture of high-strength boron fibers.

During the 1970s, the United States Environmental Protection Agency (USEPA), the State of Nevada, and Clark County investigated potential environmental impacts from BMI company operations, including atmospheric emissions, groundwater and surface-water discharges, and soil impacts (Ecology and Environment 1982). From 1971 to 1976, Kerr-McGee modified its manufacturing processes and constructed lined surface impoundments to recycle and evaporate industrial wastewater. In 1976, the facility achieved zero discharge status for industrial wastewater management. In 1980, the USEPA issued Section 308 letters requesting specific information from the BMI companies regarding their manufacturing and waste management practices. In 1993, a Phase 1 Environmental Conditions Assessment (ECA) was completed for the Site and approved by NDEP (Kleinfelder, Inc. [Kleinfelder] 1993).

In 1994, NDEP issued a Letter of Understanding (LOU) to Kerr-McGee that identified 69 specific areas or items of interest at the Site and identified the level of environmental investigation required for each LOU (NDEP 1994). The LOUs for the Site are shown in Figure 2-1. In 2005, a Conceptual Site Model (CSM) Report was prepared for the Site that integrated information from the soil and groundwater investigations conducted to date in order to document information on site-specific sources, release mechanisms, transport pathways, exposure routes, and potential receptors (ENSR Corporation [ENSR] 2005). Historical site investigations conducted since completion of the 2005 CSM Report include

primarily the Phase A and Phase B Source Area Investigations, which were designed to further characterize soil, groundwater, and soil gas across the Site, as described in the Remedial Investigation and Feasibility Study Work Plan (RI/FS Work Plan) (ENVIRON 2014a). Tronox continued field investigation and remediation efforts at the Site until February 14, 2011, on which date the Trust took title to the Site and assumed responsibility for all investigation and removal activities pursuant to an Interim Consent Agreement.

2.2 Climate

The climate of Las Vegas Valley is arid, consisting of mild winters and dry, hot summers. Average annual precipitation as measured in Las Vegas from 1971 to 2000 was 4.49 inches. Precipitation generally occurs during two periods, December through March and July through September. Winter storms generally produce low intensity rainfall over a large area. Summer storms generally produce high intensity rainfall over a smaller area for a short duration. The violent summer thunderstorms account for most of the documented floods in the Las Vegas area. Winds frequently blow from the south or northwest at a mean velocity of approximately nine miles per hour (mph); however, velocities in excess of 50 mph are not atypical when weather fronts move through the area. During these windy events, dust, sand, and soil at the ground surface can become airborne and may travel several miles. Temperatures can rise to 120°F in the summer, and the average relative humidity is approximately 20%. The estimated annual mean evaporation rate from lake and reservoir surfaces at the Site is 97 inches per year.[8]

2.3 Geologic and Hydrogeological Setting

The Site is located within Las Vegas Valley, which occupies a topographic and structural basin trending northwest-southeast and extending approximately 55 miles from near Indian Springs on the north to Railroad Pass on the south. The valley is bounded by the Las Vegas Range, Sheep Range, and Desert Range to the north, by the Frenchman and Sunrise Mountains to the east, by the McCullough Range and River Mountains to the south and southeast, and the Spring Mountains to the west. The mountain ranges bounding the east, north, and west sides of the valley consist primarily of Paleozoic and Mesozoic sedimentary rocks (limestones, sandstones, siltstones, and fanglomerates), whereas the mountains on the south and southeast consist primarily of Tertiary volcanic rocks (basalts, rhyolites, andesites, and related rocks) that overlie Precambrian metamorphic and granitic rocks (ENSR 2007). The Site is located on Quaternary alluvial deposits (Qal) that slope north toward Las Vegas Wash. The thickness of the alluvial deposits ranges from less than one foot to more than 50 ft beneath the Site. Soil types identified in onsite soil borings include poorly sorted gravel, silty gravel, poorly sorted sand, well sorted sand, and silty sand (ENSR 2005). The Upper Muddy Creek Formation (UMCf) of Pleistocene age occurs in Las Vegas Valley as valley-fill deposits that are coarse-grained near mountain fronts and become progressively finer-grained toward the center of the valley. Where encountered beneath the Site, the UMCf is composed of at least two thicker units of fine-grained sediments of clay and silt (the first and second fine-grained facies, respectively) interbedded with at least two thinner units of

[8] Ramboll Environ calculated the mean annual evaporation rate using the linear regression for Nevada Region 1 shown in Table 3 of Shevenell (1996) and a mean elevation for the Site of 1,772 ft (540 meters). The mean elevation was calculated from elevations reported in Kerr-McGee (1985) ranging from 1,675 ft (northwest) to 1,870 ft (southwest).

coarse-grained sediments of sand, silt, and gravel (the first and second coarse-grained facies, respectively) (ENSR 2005).

Depth to groundwater ranges from about 27 to 80 ft bgs across the Site and is generally deepest in the southernmost portion of the Site, becoming shallower as it approaches the Las Vegas Wash to the north. For the Study Area, groundwater depth is approximately 30 ft bgs in Parcel C, 25 ft bgs in Parcel D, and 40 ft bgs in Parcel G. The groundwater flow direction at the Site is generally north to north-northwesterly, whereas north of the Site, the direction changes slightly to the north-northeast (ENVIRON 2014a).

A major feature of the alluvial deposits is the stream-deposited sands and gravels that were laid down within paleochannels that were eroded into the surface of the UMCf during infrequent flood runoff periods. These deposits are thickest within the paleochannel boundaries, which are narrow and linear and trend northeastward. The paleochannels act as preferential pathways for groundwater flow, which may significantly influence the chemical distribution in the alluvium (ENSR 2005). Additional details on the regional and local geology and hydrogeology, including information on the water-bearing zones, are provided in the RI/FS Work Plan (ENVIRON 2014a).

As shown on Figure 1-2, an extraction well field, referred to as the interceptor well field (IWF), and groundwater barrier wall are present at the Site. The groundwater barrier wall was constructed in 2001 as a physical barrier across the higher concentration portion of an existing perchlorate/chromium plume. The IWF generally captures groundwater with higher contaminant concentrations and is located downgradient of on-site source areas. The interceptor wells and barrier wall have significantly decreased chemical concentrations in the Qal downgradient of the IWF (Ramboll Environ 2016d).

3. HISTORICAL INVESTIGATIONS AND REMOVAL ACTIONS

3.1 Overview of Environmental Investigations

Parcels C, D, and G were identified for possible sale early in the environmental investigation process at the Site. Although former activities within the parcels were not expected to have resulted in significant chemical impacts, NDEP identified the following LOUs for investigation within Parcels D and G:

- Parcel D: LOU 6 (the Unnamed Drainage Ditch, also referred to as the Northwest Ditch), which extends across the northern boundary of Parcel D; and LOU 68 (Southern Nevada Auto Parts), the southern tip of which extends into Parcel D (the main portion of LOU 68 is located in former Parcel B, which has been sold); and
- Parcel G: LOUs 59 (Storm Sewer System), 60 (Acid Drain System), and 65d (Green Ventures International).

No LOUs were identified in Parcel C. The LOUs are shown on Figure 2-1, and brief descriptions of the LOUs are provided below in the descriptions of Parcels D and G.

The primary soil investigations conducted within the parcels are summarized below:

- **Phase 1 ECA and Environmental Site Assessments (ESAs):** In 1993, Kleinfelder completed a comprehensive ECA (Kleinfelder 1993), which included Parcels C, D, and G, in compliance with a consent agreement with NDEP. In March 2007, Converse Consultants (Converse) completed a Phase 1 ESA (the "2007 Phase I ESA") that included the areas occupied by Parcels C and D (Converse 2007); a Phase 1 addendum that included the area occupied by Parcel G was completed in May 2007 (as reported by Tronox 2007). As part of the 2007 Phase 1 ESA, Converse conducted a site visit and reviewed historical aerial photographs dating from 1950 through 2006.
- **Phase 2 soil investigation:** Phase 2 sampling and analysis plans (SAPs) were prepared to identify and characterize the distribution of site-related chemicals (SRCs) in soil for Parcels C and D (Basic Environmental Company [BEC] 2007a) and Parcel G (BEC 2007b). NDEP reviewed and approved the SAPs (approval dates are provided in Section 10, References). The Phase 2 soil sampling was conducted between November 2007 and March 2008. The results were reported in the associated data validation summary reports (DVSRs) (ERM-West 2008) and discussed with NDEP on May 15, 2008 (NDEP 2008a).
- **Phase 2 supplemental soil investigation**: Based on the results of the Phase 2 soil investigation and discussions with NDEP, a supplemental SAP was prepared (BEC 2008b). Additional samples were collected in Parcels D and G in June and July 2008 to delineate areas for asbestos remediation. At that time, BEC also proposed additional soil borings to depths greater than 10 ft "as part of the site-wide soil investigation" (BEC 2008b). The results of the supplemental investigation were reported in the associated DVSR (ERM-West 2009).
- **Phase 1 remedial investigation**: During sampling conducted in 2014-2015 as part of the Phase 1 RI, soil samples were collected at each of six borings in Area 5 within

Parcel C where certain chemicals (primarily dioxins and furans) had previously been detected in surface soils (ENVIRON 2014c). Area 5 is an approximately five-acre trapezoidal area that falls mostly within the eastern portion of Parcel C (Figure 1-2).[9,10]

The primary soil gas and groundwater investigations conducted within the parcels are summarized below:

- **Phase 2 soil gas investigation:** A Phase 2 soil SAP was prepared to identify and characterize the distribution of SRCs for Parcels C and D (BEC 2007a). The Phase 2 soil vapor sampling was conducted during November 2007. Twenty-three soil vapor samples (including two field duplicates) were collected from a depth of 10 ft bgs. The results were reported in the associated DVSRs (ERM-West 2008).
- **Phase B soil gas investigation**: The Phase B soil gas investigation was conducted in 2008. Eight soil gas samples were collected within Parcels C, D and G. Details of the soil gas sampling are provided in the *Phase B Source Area Investigation Soil Gas Survey Work Plan* (the "2008 Site-Wide Soil Gas Work Plan"; ENSR 2008a). Sampling locations were based on the following: (1) results of the Phase A investigation (ENSR 2007), which identified the presence of several VOCs in soil and/or groundwater samples collected at the Site; (2) historic soil and groundwater data collected during prior investigations; and (3) an assessment of former chemical usage at the individual LOUs. All samples were collected at approximately five ft bgs. Analytical results for samples collected during the soil gas survey were presented in a DVSR (ENSR 2008b) that was submitted to NDEP on October 13, 2008, and approved by NDEP on October 20, 2008.
- **ENVIRON 2013 soil gas investigation:** The October 2012 Parcels Soil Gas Work Plan (ENVIRON 2012) identified additional locations for collection of soil gas samples (from five ft bgs), as follows: two locations in Parcel C, one location in Parcel D, and two locations in Parcel G. Factors considered in identifying the sampling locations included: (1) the 2008 soil gas sampling locations within and downgradient of the parcels; (2) available analytical results for chloroform concentrations in shallow groundwater beneath and upgradient of the Study Area; (3) direction of groundwater flow; (4) LOUs at which VOCs may have been used; and (5) VOC results for soil samples collected within the Study Area. The locations of paleochannels, the OSSM extraction well field, and the IWF were also considered. Additionally, samples were located near groundwater wells that had been analyzed for VOCs during the Phase B investigation or as part of investigations conducted by BMI facilities to the west of the Site.

  On January 29, 2013, NDEP approved the field work and sampling portions of the work plan and recommended collection of one additional sample near M-23 located in

[9] At the time Area 5 was identified for sampling, the area was thought to be within the Operations Area and not within Parcel C (see discussion of revised Parcel C boundaries in Section 1 and Section 3.2.1).

[10] A DVSR for the Parcel C Area 5 soil data collected in 2014 and 2016, was submitted to NDEP for review on July 26, 2017 (Ramboll Environ 2017a). NDEP provided comments on the DVSR on July 31, 2017 (NDEP 2017a) and Ramboll Environ submitted responses to these comments on August 30 , 2017. The DVSR and responses to comments are currently under NDEP review.

Parcel D (NDEP 2013, Comment #4). This location (E-SG-9) was added to the sampling program and the approved field work plan was implemented the week of March 4, 2013.

Analytical results for samples collected during the soil gas survey were presented in a DVSR (Ramboll Environ 2016e) submitted to NDEP on September 22, 2016[11]. A summary of the 2013 soil gas investigation can be found in Appendix B.

- **Groundwater Monitoring Wells:** For groundwater monitoring well sampling results, all shallow groundwater monitoring wells entered either into the BMI or Ramboll Environ project database and sampled for VOCs were included if they were within or adjacent to a parcel of concern. Shallow groundwater was evaluated for the vapor intrusion pathway and as a second line of evidence for the soil gas evaluation. Data were extracted for the years 2006-2015 to determine the concentration trends, but only the last two years of data for each well were used in the risk evaluation.

  All soil, soil gas, and groundwater monitoring well locations within or adjacent to Parcels C and D are shown on Figure 3-1 and on Figure 3-2 for Parcel G. Table 3-1 lists the soil gas samples by parcel and Table 3-2 summarizes the shallow groundwater monitoring wells by parcel. Figure 3-3 shows the 2007, 2008 and 2013 soil gas sampling locations over the chloroform groundwater plume as depicted in 2015 (Ramboll Environ 2015b).

3.2 Historical Uses and Investigations of Parcels C, D, and G

The following sections describe features and historical uses of Parcels C, D, and G, and summarize the results of the soil, soil gas, and groundwater investigations.

3.2.1 Parcel C

Parcel C is a 24.8-acre parcel located immediately north of the former Trade Effluent Settling Ponds (LOU 1) (Figure 2-1). In all previous versions of the soil HRA, Parcel C was identified as a 20.4-acre parcel. However, in May 2015 the Trust noted that the eastern boundary of the parcel (as defined by the legal description associated with closing documents on a sale of property that included Parcel C) differed from the boundary historically used by Tronox and in subsequent work completed by ENVIRON and Ramboll Environ. Specifically, an approximately five-acre trapezoidal area in the north-eastern corner of the Site near Warm Springs Road was identified as Area 5, and the boundary of Parcel C has been expanded to include the significant portion of Area 5 north of Warm Springs Road (Figure 1-2).

With the exception of power lines that cross the parcel, the land is vacant. The 2007 Phase 1 ESA reported that sometime prior to 1950, multiple ditches (oriented north-south and lined with French drains) were installed across Parcel C, perpendicular to and leading from a main French drain that traversed east-west along the northern berm of the former Trade Effluent Ponds. According to Converse (2007), the drains were constructed because infiltration from the former, unlined Trade Effluent Ponds was resurfacing in Parcel C. At some point, these ditches were disturbed and possibly graded over. Stained soil and gravel as well as a number of debris piles (reportedly not

[11] This DVSR was submitted to NDEP as an appendix of the Soil Gas HRA Report, Revison 1 (Ramboll Environ 2016b), and has not been approved by NDEP.

associated with industrial waste or disposal) were identified based on the review of historical aerial photographs (Converse 2007). No LOUs are located within Parcel C.

Soil Investigations

During the Phase 2 soil investigation (ERM-West 2008), soil samples were collected from 15 locations[12] within the current boundaries of Parcel C, at the surface and at a depth of 10 ft bgs (Figure 3-1). Both random (TSB-CR-01 to TSB-CR-07) and judgmental (TSB-CJ-01 to TSB-CJ-08) locations were sampled, with judgmental samples specifically targeting the historic French drains and other drainage features, and debris piles (BEC 2007a). During the Phase 2 supplemental soil investigation, two surface samples (TSB-CJ-10 and TSB-CJ-11) were collected to delineate areas for asbestos removal. In addition, one location (TSB-CJ-09) to the east of Parcel C was sampled at 0 and 10 ft bgs. During the 2014-2015 RI sampling, an additional six locations (RISB-38 and RISB-42 to RISB-46) were sampled in the eastern portion of Parcel C (most of Area 5) at depths of 0.5 and five ft bgs (one location [RISB-46] was also sampled at 10 ft bgs). Furthermore, changes to the Parcel C boundary based on current information resulted in one sampling location (SA22) previously believed to be in the Operations Area, now considered to be within Parcel C.

As described in the 2008 Remedial Action Workplan (RAW) (BEC 2008a, also included as Appendix C of this report), removal polygons were identified for asbestos at three locations: TSB-CR-02, TSB-CR-03, and TSB-CJ-03. In addition, as shown on Figure 3-1, at one location (TSB-CR-07), dioxins exceeded the action level of 1,000 picograms per gram (pg/g)[13] established by the Agency for Toxic Substances and Disease Control and used to guide remediation in the RAW.

As reported in the 2016 Work Plan for Soil Removal Action – Parcel C (Ramboll Environ 2016a), arsenic exceeded the site-specific remediation goal of 7.2 milligram per kilogram (mg/kg) (NDEP 2010b) in only one surface sample (0.5 ft bgs) at RISB-44 (Figure 3-1) in Parcel C Area 5.[14]

Soil Gas Investigations

During the Phase 2 soil investigation (ERM-West 2008), soil vapor samples were collected from 15 locations within the current boundaries of Parcel C at a depth of approximately 10 ft bgs[15] (Figure 3-1). Over 25 VOCs were detected in one or more samples, generally at low concentrations. The detections (and maximum detected

[12] In Soil HRA Report Revision 3 (Northgate 2014), TSB-CJ-06 was located in Parcel D and included in the sample counts and risk assessment data set for Parcel D. However, as shown on Figure 3-1, this location is in Parcel C based on the current boundaries, and is therefore included in the sample counts and risk assessment data set for Parcel C.

[13] More recently, NDEP approved a site-specific action level for dioxin toxicity equivalents (TEQs) of 2,700 pg/g based on a bioavailability study (Northgate 2010a; NDEP 2010b).

[14] Two additional locations (RISB-46 and TSB-CJ-09) in Parcel C Area 5 exceeded the site-specific remediation goal of 7.2 mg/kg at 10 ft bgs.

[15] Sampled depth of approximately 10 ft bgs was verified by email from Ranajit Sahu/BRC dated May 26, 2017.

concentrations) included chloroform (119,000 microgram per cubic meter [µg/m^3]), 1,1-dichloroethane (DCA) (1,360 µg/m^3), and tetrachloroethylene (PCE) (1,590 µg/m^3).

During the 2008 Phase B soil gas investigation (ENSR 2008a), six soil gas samples were collected within or adjacent to the current boundaries of Parcel C at a depth of five ft bgs (Figure 3-1, samples SG-17, SG-18, SG-19, SG24, SG90, and SG91). Over 65 VOCs were detected in one or more samples, generally at low concentrations. The detections (and maximum detected concentration) included chloroform (3,900 µg/m^3), carbon tetrachloride (260 µg/m^3), and PCE (70 µg/m^3).

During the 2013 ENVIRON soil gas investigation (Appendix B), three additional soil gas samples were collected at five ft bgs (E-SG-1 through E-SG-3). Forty VOCs were detected in one or more samples, generally at low concentrations. The maximum chloroform concentration was 2,900 µg/m^3 (J-qualified).

Groundwater Investigations

As listed in Table 3-2, eleven shallow groundwater monitoring wells are located within or adjacent to Parcel C. Three of those wells (MW-98, MW-100, and MW-7B) were sampled in November or December 2006 as part of the Phase A groundwater investigation. All samples were analysed for inorganic compounds (metals and cyanide), fuel alcohols, organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs), radionuclides, organophosphorus pesticides (OPPs), organic carbon by hydrogens (OCHs), VOCs, and semi-volatile organic compounds (SVOCs). In 2008-2009, five wells (H-28A, M-6A, M-7B, MC-3, and MC-97) were sampled as part of the Phase B investigation with the objective to characterize the presence of SRCs in specific areas around the Site. Samples were analyzed for metals, VOCs, PCBs, OCPs, OPPs, organic acids, perchlorate, hexavalent chromium, and total cyanide. Additional samples were collected from wells throughout Parcel C as parts of other investigations from 2007 through 2015. In early 2015, four wells (H-28, M-6A, M-7B, MC-97) were sampled as part of the Phase 1 portion of the remedial investigation. Other wells sampled in 2015 include AA-BW-04A, AA-BW-05A, and MC-111.

Three of the wells have gone dry and were last sampled as follows: M-98 (2006), M-99 (2010), and M-100 (2006). MC-03, which was only sampled in 2009, is not included in any of the regular monitoring programs.

Over 80 VOCs were detected at least once in these wells. Chemicals detected, along with their maximum concentrations, include benzene (120,000 microgram per liter [µg/L]), chlorobenzene (160,000 µg/L), chloroform (4000 µg/L, J+ qualified), 1,4-dichlorobenzene (3,600 µg/L), and 1,2-dichlorobenzene (1900 µg/L).

3.2.2 Parcel D

Parcel D is a 21.3-acre parcel located immediately north of Parcel C (Figure 3-1). With the exception of scattered debris and items remaining from a former homeless encampment near Warm Springs Road, the land is vacant. Debris piles (reportedly not associated with industrial waste or disposal) identified in the Phase 1 ESA are no longer present. Southern Nevada Auto Parts (a former Kerr-McGee tenant) operated an auto impound yard where wrecked, police-impounded, and repossessed vehicles were stored. In 1993, the southern portion of Parcel D was reported to have minor soil staining (Kleinfelder 1993) and NDEP identified this area as LOU 68. The ditches (French drains) described above for Parcel C extended into and terminated in the eastern two-thirds of

Parcel D. LOU 6 (the Unnamed Drainage Ditch Segment, also referred to as the Northwest Ditch) extends across the northern boundary of Parcel D (Figure 2-1). The Northwest Ditch, which originated near the Beta Ditch (LOU 5), conveyed storm water and process wastes from the BMI Complex facilities to the Lower BMI Ponds (Ramboll Environ 2016f). A review of historical information indicates that Stauffer, Montrose, and the US Government discharged wastewater to the Northwest Ditch and that on occasion, Kerr-McGee discharges may have been diverted to the Northwest Ditch (Geraghty & Miller, Inc. 1993; Weston 1993). The Northwest Ditch was identified under the Phase I and II BMI Common Area Consent Agreement as a BMI Common Areas issue (ENSR 2005; Broadbent & Associates, Inc. 2011).

Soil Investigations

Surface and 10 ft bgs samples were collected from seven locations[16,17]within Parcel D during the Phase 2 soil investigations. Both random locations (TSB-DR-01 to TSB-DR-06) and one judgmental location (TSB-DJ-01) were sampled, with the judgmental sample specifically targeting the drainage features and debris piles (BEC 2007a; ERM-West 2008). During the Phase 2 supplemental soil investigation, two surface samples (TSB-DR-04E and TSB-DR-04W) were collected to delineate the extent of the polygon for asbestos removal. Sampling locations for Parcel D are shown on Figure 3-1.

As reported in the RAW (BEC 2008a), a removal polygon was identified for asbestos at location TSB-DR-04.

Soil Gas Investigations

During the Phase 2 soil investigation (ERM-West 2008), soil vapor samples were collected from seven locations within the current boundaries of parcel D and one location adjacent to the parcel (TSB-CJ-06), all at a depth of 10 ft bgs. Sixteen VOCs were detected in one or more samples, generally at low concentrations. The detections (and maximum detected concentrations) included chloroform (3,230 µg/m^3) and PCE (311 µg/m^3).

During the 2008 Phase B soil gas investigation (ENSR 2008a), one soil gas sample (SG16) was collected within the current boundaries of Parcel D and two samples were collected outside of, but adjacent to the boundary (SG17 and SG18), all at a depth of five ft bgs. Over 50 VOCs were detected in one or more samples, generally at low concentrations. The detections (and maximum detected concentrations) included chloroform (1,800 µg/m^3) and PCE (87 µg/m^3).

During the 2013 ENVIRON soil gas investigation (Appendix B), one additional soil gas sample was collected at five ft bgs within Parcel D (E-SG-9) and one sample was collected outside of, but adjacent to the parcel boundary (E-SG-1). Over 25 VOCs were

[16] In Soil HRA Report Revision 3 (Northgate 2014), TSB-CJ-06 was located in Parcel D and included in the sample counts and risk assessment data set for Parcel D. However, as shown on Figure 3-1, this location is in Parcel C based on the current boundaries, and is therefore included in the sample counts and risk assessment data set for Parcel C.

[17] In addition, a single location (NW DITCH01) within or near the Northwest Ditch was sampled at 0 and 10 ft bgs. This location was listed in the Parcels C, D, F, and G DVSR (ERM-West 2008); however, x, y coordinates of this location cannot be identified in any sampling plans or other documentation reviewed by Ramboll Environ.

detected, generally at low concentrations. The maximum detected chloroform concentration was 98 µg/m^3.

Groundwater Investigations

As listed in Table 3-2, eleven shallow groundwater monitoring wells are located within or adjacent to Parcel D. One of those wells (MC-45) was sampled in December 2006 as part of the Phase A groundwater investigation. This sample was analysed for inorganic compounds (metals and cyanide), fuel alcohols, OCPs, PCBs, radionuclides, OPPs, OCHs, VOCs, and SVOCs. In 2008-2009, five wells (M-23, MC-45, MC-53, MC-94, and MC-97) were sampled as part of the Phase B investigation with the objective to characterize the presence of SRCs in specific areas around the Site. Samples were analyzed for metals, VOCs, PCBs, OCPs, OPPs, organic acids, perchlorate, hexavalent chromium, and total cyanide. Additional samples were collected from wells throughout Parcel C as parts of other investigations from 2007 through 2015. In early 2015, six wells (M-23, MC-45, MC-50, MC-51, MC-53, and MC-97) were sampled as part of the Phase 1 portion of the remedial investigation. MC-40, MC-113 and MC-114 were also sampled in 2015.

Over 60 VOCs were detected, generally at low concentrations. Sampling schedules varied by well. With the exception of MC94 and MC-09R, all wells were last sampled for chloroform in 2015. Chemicals detected, along with their maximum concentrations, include benzene (2,000 µg/L), chlorobenzene (1,800 µg/L) and chloroform (460 µg/L).

3.2.3 Parcel G

Parcel G is a 2.7-acre parcel on the western side of the Site (Figure 1-2). Most of the parcel is vacant land, although a building is located on the northern portion, and a utility vault and segments of a rail line are also present. A storm water retention basin is located in the southern portion of the parcel. The Phase 1 ESA addendum (as reported in Tronox 2007) reported staining, indicative of stormwater evaporative residue, and some debris.

Segments of LOUs 59 (the Storm Sewer System) and 60 (the Acid Drain System) cross Parcel G. LOU 65d (Green Ventures International) is also located within the parcel. Green Ventures leased a building (the “S3 Changehouse”) from August 1980 to September 1981 for use as a marketing office for a green farming operation; Kleinfelder (1993) reported that Green Ventures conducted only office activities at this location.

Soil Investigations

Surface and five ft bgs samples were collected from five locations within the current boundary of Parcel G during the Phase 2 soil investigation.[18] According to the Parcel G Phase 2 SAP (BEC 2007b), “The rationale for sampling for the upper five ft (as opposed to the upper 10 ft) is that imported fill of roughly five ft depth will be required to meet final grading requirements. This fill will be clean.” One random location (TSB-GR-01) and

[18] Following the change to the Parcel G boundaries, three locations (TSB-GJ-03, TSB-GJ-04, and TSB-GR-02) that were in Parcel G during the Phase 2 soil investigation are no longer within Parcel G; these locations have been moved into the risk assessment data set for the Operations Area. In Soil HRA Report Revision 3 (Northgate 2014), TSB-GJ-02 and TSB-GJ-07 were not located in Parcel G and were excluded from the sample counts and risk assessment data set for Parcel G. However, as shown on Figure 3-2, these locations are in Parcel G based on the current boundaries, and are therefore included in the sample counts and risk assessment data set for Parcel G.

four judgmental locations (TSB-GJ-01, TSB-GJ-02, TSB-GJ-06, and TSB-GJ-07) were sampled, with the judgmental samples targeting a drain outlet and utility vault. During the 2008 Phase 2 supplemental investigation, two locations (TSB-GJ-08 and TSB-GJ-09) were collected at the surface and at approximately 10, 20, 30, and 40 ft bgs to characterize conditions on either side of a building in the northern area of the parcel and to characterize deep soil conditions as part of the broader investigation of the Site. Sampling locations for Parcel G are shown on Figure 3-2.

Within the current Parcel G boundary, a removal polygon was identified for asbestos at location TSB-GJ-09 and a removal polygon was identified for benzo(a)pyrene (BaP) detected in one surface sample (TSB-GJ-06) at a concentration exceeding its BCL (Figure 3-2)[19], as reported in the RAW (BEC 2008a).

Soil Gas Investigations

During the 2008 Phase B soil gas investigation (ENSR 2008a), one soil gas sample (SG45) was collected to the south of the current Parcel G boundary at a depth of five ft bgs. Over 30 VOCs were detected in the sample, generally at low concentrations. The maximum chloroform concentration was 36 µg/m^3.

During the 2013 ENVIRON soil gas investigation (Appendix B), two additional soil gas samples were collected at a depth of five ft bgs within Parcel G (E-SG-7 and E-SG-8). Over 25 VOCs were detected in at least one sample, generally at low concentrations. The maximum chloroform concentration was 140 µg/m^3 (J-qualified).

Groundwater Investigations

There is one shallow groundwater monitoring well (TR-8) located within Parcel G and one shallow groundwater monitoring well (AA-MW-23) located outside of, but adjacent to the northern boundary of Parcel G. Both wells are used in the evaluation of Parcel G. TR-8 was sampled once in March 2006, July 2009 (as part of the Phase B investigation) and January 2015 (as part of phase 1 of the remedial investigation). AA-MW-23 was sampled twice in 2008, in July and October. Only seven VOCs were detected in Parcel G groundwater; and maximum concentrations detected were as follows: acetone (3.7 µg/L [J qualified]), carbon tetrachloride (1 µg/L), bis(2-ethylhexyl)phthalate (10 µg/L), chlorobenzene (0.91 µg/L), chloroform (28 µg/L), 1,1-dichloroethylene (DCE) (0.97 µg/L), and trichloroethylene (TCE) (2.2 µg/L).

3.3 Soil Removal and Confirmation Sampling

In July 2008, a RAW (BEC 2008a, also included as Appendix C of this report) was prepared to address impacted soils identified in the parcel Phase 2 investigations described in Section 3.2; NDEP approved the RAW on July 2, 2008 (NDEP 2008b). The RAW identified a target cancer risk of one in a million (1×10^{-6}) as a guide for remediation and for most chemicals, the NDEP commercial/industrial worker BCL (based on an incremental lifetime cancer risk [ILCR] of 1×10^{-6}) was used to target soils for removal. For dioxin/furans, soils with concentrations greater than 1,000 pg/g were identified for removal. For asbestos abatement, removal polygons were identified in the RAW for soils with the presence of amphibole (one or more long fibers) and/or chrysotile (four or more long fibers). The RAW did not include a definition of long fibers; however,

[19] A count of long amphibole fibers exceeding the level specified in the RAW (one or more long fibers) was also found at TSB-GJ-04; this location is no longer within the current Parcel G boundary.

current NDEP guidance (Neptune 2015) identifies fibers that should be counted for risk assessment purposes as those longer than 10 microns (µm) in length and less than 0.4 µm in width.

In June 2016, a soil RAW (Ramboll Environ 2016a) was prepared to address the surface soil at one location (RISB-44) in Parcel C Area 5 identified during the Phase 1 RI as exceeding the site-specific remediation goal of 7.2 mg/kg for arsenic.

3.3.1 Parcels C, D, and G: 2010 Soil Removal Action and Confirmation Sampling

3.3.1.1 Removal Action

Northgate implemented the soil removal action in Parcels C, D, and G in March and April 2010 under the oversight of NDEP. Work was performed in accordance with the approved RAW (BEC 2008a). The polygon size and shape were determined based on the Phase 2 soil sampling results and locations where chemicals were detected above concentrations specified in the RAW. The removal included the excavation of one foot of soil in each of the identified polygons and collection of confirmation samples (described below).

The remediation polygons for Parcels C, D, and G are show on Figures 3-1 and 3-2. Additional figures prepared by Las Vegas Paving (LVP) are provided in Appendix D-1 and the soil disposal manifests are provided in Appendix D-2. A total of 4,480 tons of soil were excavated from the soil surface and transported in covered trucks to Apex Landfill, approximately 37 miles from the Site. Descriptions of the excavated areas are provided below.

- **Parcel C**. Four excavated areas were located in Parcel C (Figure 3-1 and Appendix D-1) from which a total of 1,807 cubic yards (cy) of soil were removed. The total excavation depths ranged from 0.4 to 1.0 ft below original grade (Table 3-3). An area of approximately 8,345 square feet south of the existing South Haul Road fence line remains to be excavated by BMI following removal of the BMI haul road (shown in Appendix D-1).
- **Parcel D**. One excavated area was located in Parcel D (Figure 3-1 and Appendix D-1) from which a total of 87 cy of soil were removed. The total excavatation depth was 0.4 ft below original grade (Table 3-3).
- **Parcel G.** Two excavated areas were located within the current boundary of Parcel G, with a third excavated area no longer included within the boundary of Parcel G[20] (Figure 3-2 and Appendix D-1). A total of 1,094 cy of soil was removed (this soil volume includes soil removed from the portion that is no longer within in Parcel G). The total excavatation depths ranged from 0.3 to 0.4 ft below original grade (Table 3-3). An area of approximately 135 square feet in the northeast corner of Parcel G that was included in the remediation polygon was not excavated because it is covered with asphalt (shown in Appendix D-1)[21]; excavation was conducted to the

[20] The boundary of Parcel G was revised subsequent to the Parcel G removal action. Specifically, the southern portion of the parcel is no longer included in Parcel G, reducing the area of Parcel G identified in earlier reports from 5.2 acres to 2.7 acres.

[21] Two additional portions of the remediation area located in the former portion of Parcel G were not scraped because of impediments: 1) an approximately 1,880 square feet of a section of the southern third of Fourth

edge of this area. Because this area is small and covered with asphalt, qualitative considerations suggest that associated risks would be insignificant.

3.3.1.2 Confirmation Sampling

Northgate collected confirmation samples in April 2010, following the excavation of impacted soils. Field activities and sampling procedures were performed under the supervision of a Certified Environmental Manager and in accordance with the BRC Health and Safety Plan, BMI Common Areas, Clark County, Nevada (BRC and MWH 2005); the BRC Field Sampling and Standard Operating Procedures (SOP), BMI Common Areas (BRC, ERM, and MWH 2007a); and the BRC SOP-12 Surface Soil Sampling for Asbestos (BRC, ERM, and MWH 2008).

Confirmation samples were collected in a manner consistent with the approved RAW. Specifically, LVP surveyed the location of the original samples prior to the removal action and then collected the confirmation samples at the same locations; confirmation samples were then analyzed for the chemical(s) that had triggered the removal (i.e., analyses were conducted for those chemicals exceeding the RAW specified concentrations). A total of seven primary samples and one field duplicate sample were collected from the seven remediation polygons in Parcels C, D, and G.[22]

The analytical data were validated by Laboratory Data Consultants, Inc. (LDC) in accordance with procedures described in NDEP guidance Data Verification and Validation Requirements – Supplement, April 13, 2009 established for the BMI Plant Sites and Common Areas Projects (NDEP 2009a). A complete listing of the soil confirmation samples is presented in Table 1-2 of the DVSR (Northgate 2010b, see Appendix E). Final confirmation sampling results indicated that concentrations of the trigger chemicals were below the levels identified in the RAW as elevated (BEC 2008a).

Table 3-3 identifies the samples and chemicals detected above the levels specified in the RAW, and the post-removal concentrations for these chemicals; the locations of the confirmation samples are shown on Figures 3-1 and 3-2.

3.3.2 Parcel C: 2016 Arsenic Delineation Sampling and Soil Removal Action

Ramboll Environ implemented the arsenic delineation sampling and soil removal action in Parcel C Area 5 in September 2016 under the oversight of NDEP. Work was performed in accordance with the approved RAW (Ramboll Environ 2016a). Based on the results of historical sampling in Area 5, the only location within the upper 10 ft bgs in Parcel C where the arsenic concentration exceeded the site-specific remediation goal of 7.2 mg/kg was RISB-44 (11 mg/kg at 0.5 ft bgs). The size and depth of the excavation area surrounding RISB-44 were determined based on the previous soil sampling data within Area 5 and the sampling results of additional lateral and vertical delineation. The soil removal activities included excavation as well as soil backfill and compaction (Ramboll Environ 2017b).

Street that was covered by asphalt, and 2) an approximately 1,955 square feet of railroad track along the southern boundary (see Appendix D-1).

[22] The southern boundary of Parcel G was redefined subsequent to the 2010 removal action. There were one additional polygon and one confirmation sample on the southern portion of Parcel G that are no longer included in Parcel G, as shown in Appendix D-1.

4. DATA USABILITY EVALUATION AND DATA ANALYSIS

This section presents the updated DUE conducted for soil and soil gas (Sections 4.1 and 4.2). These DUEs were previously included in the soil HRA report (revision 3) and the soil gas HRA report (revision 1). This section also presents a DUE conducted for groundwater (Section 4.3). For each medium, the first component of the DUE focuses on the quality of each individual data point to ensure that the quality of the data is sufficient to support the HRA. In contrast, the second component of the DUE, data analysis, focuses on the data set as a whole.

The DUE was conducted in accordance with NDEP's Supplemental Guidance for Assessing Data Usability for Environmental Investigations at the Black Mountain Industrial (BMI) Facility in Henderson, NV (NDEP 2010c), which is based on the USEPA's Guidance for Data Usability in Risk Assessment (Parts A and B) (USEPA 1992a, b). The USEPA DUE framework provides the basis for identifying and evaluating uncertainties in HRAs with regard to site characterization data. USEPA (1992a) states that "data usability is the process of assuring or determining that the quality of data generated meets the intended use," and that when risk assessment is the intended use, USEPA's guidance "provide[s] direction for planning and assessing analytical data collection activities for the HRA." USEPA has established a specific framework to provide risk assessors a consistent basis for making decisions about the minimum quality and quantity of environmental analytical data to support risk assessment decisions (USEPA 1992a, b; NDEP 2010c). The USEPA data usability guidance identifies the following data quality criteria for evaluating the usability of site investigation data in the risk assessment process:

- Criterion I – Reports to Risk Assessor;
- Criterion II – Documentation;
- Criterion III – Data Sources;
- Criterion IV – Analytical Methods and Detection Limits;
- Criterion V – Data Review; and
- Criterion VI – Data Quality Indicators.

Criteria I through VI are discussed in Sections 4.1.1, 4.2.1, and 4.3.1 for soil, soil gas, and groundwater, respectively.

The second component of the DUE (data analysis) is also presented in Sections 4.1.2, 4.2.2, and 4.3.2. As described in NDEP guidance (NDEP 2010c), the purpose of the data analysis step is to "use simple exploratory data analysis to compare data to the expectations of the CSM, to determine if the data adequately represent the source terms and exposure areas or evaluation areas." In particular, through statistical summaries, background evaluation (for soil metals and radionuclides only), spatial plots, and other exploratory analyses, the data are reviewed relative to our current understanding of Parcels C, D, and G (as represented by the CSM) and for possible data gaps or other investigation issues. A discussion of the Study Area CSM is presented in Section 4.4.

4.1 Soil

4.1.1 Data Usability Evaluation

The soil data set evaluated using the data quality criteria is identified in Section 4.1.1.1. Sections 4.1.1.2 through 4.1.1.7 describe the results of the evaluation. In this section, Criteria I through VI are evaluated for Parcels C, D, and G as a whole, and it is noted that the conclusions reached for these criteria also apply to the individual parcels. Criterion VI is evaluated for each individual parcel.

4.1.1.1 Soil Data Set and Data Processing

The post-remediation soil HRA data set comprises the analytical results that are representative of current conditions within Parcels C, D, and G. Specifically, the data set includes soil samples collected at 0-10 ft bgs as part of the following investigations:

- 2007 and 2008 Phase 2 soil investigation;
- 2008 Phase 2 supplemental soil investigation;
- 2010 confirmation sampling following soil removal;
- 2014 Phase 1 RI in Parcel C Area 5; and
- 2016 arsenic delineation sampling in Parcel C Area 5.

For each soil sample collected from the above investigations, sampling locations were verified relative to current parcel and Operations Area boundaries. Samples were excluded from the post-removal soil HRA data set if 1) locations were outside the current boundaries of Parcels C, D, and G; 2) the sampling depths were greater than 10 ft bgs; or 3) location and/or depth information were not available (e.g., Sample NW DITCH01 within or near the Northwest Ditch, see Section 3.2.2).

Compared to the Soil HRA Report Revision 3 (Northgate 2014), in addition to the inclusion of samples collected in Parcel C Area 5 in 2014 and 2016, changes of the parcel boundaries based on current information resulted in:

- Samples collected at one location (SA22) previously believed to be in the Operations Area that now is considered to be within Parcel C; these samples are also included in the Parcel C soil HRA data set.
- Samples collected at one location (TSB-CJ-06) previously believed to be in Parcel D that now is considered to be within Parcel C; these samples are excluded from the Parcel D soil HRA data set, but included in the Parcel C soil HRA data set.
- Samples collected at two locations (TSB-GJ-02 and TSB-GJ-07) previously not considered to be within Parcel G that now are believed to be within Parcel G; these samples are included in the Parcel G soil HRA data set.

Only soil data representative of current conditions within Parcels C, D, and G (i.e., conditions following the soil removal and asbestos abatement activities) are used for the post-remediation HRA. Specifically, the Phase 2 sampling results for surface soils (for the chemicals/chemical groups that had triggered the 2010 soil removal) were replaced by the 2010 soil confirmation sampling results for the same chemicals/chemical groups at the same locations (see Table 3-3) since these earlier data represented soil that has been removed. The Phase 2 sampling results in surface soils for all the other chemicals at the same locations are retained in the post-remediation HRA data set, since soil

removal was only conducted at the top few inches (at most down to one foot) and these data are still representative of the conditions of the rest of the soil column (down to 1.5 ft bgs). For the 2016 soil removal conducted in Parcel C Area 5, soil surrounding RISB-44 was excavated down to 2.5 ft bgs and backfilled with clean soil; therefore, all the soil data down to 2.5 ft bgs (for arsenic and all other analytes) at RISB-44 are removed from the post-remediation soil HRA data set. A summary of soil data not considered in the post-remediation HRA due to soil removal and asbestos abatement activities is presented in Appendix E, Table E-1.

The "NERT project database," maintained by Ramboll Environ on behalf of the Trust, houses the analytical data collected during historical and ongoing investigations at NERT.[23] After identifying the preliminary set of data for the post-remediation HRA, an initial task before the DUE was to 1) identify and correct inconsistencies in data field entries and 2) create additional fields to support data management and interpretation. The following steps of data processing were completed:

- Standardize chemical names and Chemical Abstract Service (CAS) registry numbers;
- Standardize reporting units, e.g., mg/kg for metals and microgram per kilogram (µg/kg) for organic compounds;
- Standardize analytical method names;
- Correct errors in data entry (e.g. typos in sample identification codes);
- Identify a unique result for use in the HRA for sample/analyte pairs for which more than one result was reported. For example, if two results were reported for BaP in the same sample – one by USEPA Method 8270 and the second by USEPA Method 8270 Selective Ion Monitoring (SIM) – the result to be used in the HRA was identified as that from the 8270 SIM analysis because of the greater sensitivity (lower reporting limits) of this method;
- Review chain-of-custodies and laboratory reports for sampling locations at which samples with the same identifier were reported as being collected on different dates and for which two or more results were reported for the same analyte. For example, results for VOC analyses for samples that had exceeded holding times were entered into the NERT project database without appropriate qualifiers. The locations were resampled at a later date and samples were given the same sample ID. In this case, only the results for the latter samples were used;
- Enter BCLs and confirm that BCLs correspond to the chemical form or species reported. For example, the database compared analytical results for phosphorus with the BCL for white phosphorus. There is no evidence to suggest that white phosphorus is present in parcel soils. The most abundant form of phosphorus in soil is orthophosphate. Analytical methods were reviewed to confirm that the analyses were not for white phosphorus; and
- Develop database queries and confirm that queries returned the correct output.

[23] Historically, the database has been managed by different entities responsible for investigations and data collection at the Site. Ramboll Environ assumed responsibility for the database in early 2011.

The above steps were necessary due to the approximately 10-year period over which the soil data was collected and the differences in sampling, analysis, and data entry across investigations. This can be understood in the context of soil samples collected by different entities, analyzed by different analytical laboratories for overlapping suites of chemicals, and the use of different reporting conventions.

No change was made to a datum without first understanding the issue and the steps necessary to correct the issue. As needed, sampling plans, laboratory reports, DVSRs, and other supporting documents were reviewed. Data points were considered unusable for risk assessment if information could not be located to confirm and/or correct an identified issue. Soil data excluded from the post-remediation HRA data set during data processing are summarized in Appendix E, Table E-2.

To ensure calculation consistency, dioxin TEQs were calculated (or recalculated) using the results for dioxins, furans, and dioxin-like PCBs and the World Health Organization (WHO) toxicity equivalency factors (TEFs) scheme (van den Berg et al. 2006). BaP equivalents (BaPEqs) were also calculated (or recalculated) for the seven carcinogenic polynuclear aromatic hydrocarbons (PAHs) (i.e., BaP, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-c,d]pyrene) for which USEPA has derived TEFs (USEPA 2016a). Nondetects were addressed using the Kaplan-Meier approach from USEPA's TEQ calculator.

Total petroleum hydrocarbon (TPH) data were excluded from the post-remediation soil HRA data set, consistent with NDEP guidance (NDEP 2015b). TPH was evaluated through the indicator chemicals, including benzene, toluene, ethyl benzene, and total xylenes (BTEX); methyl tert-butyl ether (MTBE); and PAHs.

For asbestos, several issues were identified in the DVSRs (Neptune 2014). A memorandum responding to the specific issues identified in the DVSRs along with the agreed data set for risk assessment purposes in the electronic data deliverable (EDD) was submitted to NDEP (ENVIRON 2014d). As further discussed in Section 6.1.6, the overall impact of asbestos data issues on the risk estimates is relatively small. Compared to the EDD submitted to NDEP (ENVIRON 2014d), the final asbestos data set used in this post-remediation HRA includes three additional samples due to the boundary change of Parcels C and G (i.e., SA22, TSB-GJ-02, and TSB-GJ-07).

The final post-remediation soil HRA data set is presented in Appendix F (Table F-1 for chemicals and radionuclides, and Table F-2 for asbestos), which includes the following:

- Parcel C: 37 sampling locations, with 104 samples collected at 0, 0.5, 2.5, 5, and 10 ft bgs;
- Parcel D: nine sampling locations, with 27 samples collected at 0 and 10 ft bgs; and
- Parcel G: seven sampling locations, with 22 samples collected at 0, 5, and 10 ft bgs.

4.1.1.2 Criterion I – Reports to Risk Assessor

Criterion I requires confirmation that the reports relied upon are complete and appropriate for use in the HRA. The required information specified under this criterion was verified and is available from the following documentation:

- Parcels C, D, and G are described in Section 3.2 of this report. Information on the regional and local geology and hydrogeology is provided in the RI/FS Work Plan (ENVIRON 2014a).
- The soil investigations and removal actions conducted in Parcels C, D, and G are described in the following work plans:
  - Phase 2 Sampling and Analysis Plan to Conduct Soil Characterization, Tronox Parcels "C" and "D" Site (BEC 2007a, approved by NDEP on October 29, 2007);
  - Phase 2 Sampling and Analysis Plan to Conduct Soil Characterization, Tronox Parcel "G" Site (BEC 2007b, approved by NDEP on October 29, 2007);
  - Sampling and Analysis Plan to Conduct Supplemental Soil Characterization, Tronox Parcels "C", "D", "F", "G", and "H" (BEC 2008b, approved by NDEP on June 5, 2008);
  - Removal Action Workplan for Soil, Tronox Parcels "C", "D", "F", "G" and "H" Sites (BEC 2008a, approved by NDEP on July 2, 2008);
  - Remedial Investigation and Feasibility Study Work Plan, Revision 2 (ENVIRON 2014a, approved by NDEP on July 2, 2014); and
  - Work Plan for Soil Removal Action – Parcel C (Ramboll Environ 2016a, approved by NDEP on July 26, 2016).
- The soil analytical data are presented in the following DVSRs (included in Appendix E of this report):
  - Data Validation Summary Report, Tronox Parcels C, D, F, and G Investigation (ERM-West 2008, approved by NDEP on April 3, 2008);
  - Data Validation Summary Report, Tronox Parcels C, D, F, G and H Supplemental Investigations-June-July 2008 (ERM-West 2009, approved by NDEP on January 12, 2009);
  - Data Validation Summary Report, Parcel "C", "D", "F", "G" and "H" Soil Confirmation (Northgate 2010b, with final response to comments [Northgate 2010c], approved by NDEP on July 28, 2010);
  - Data Validation Summary Report for Asbestos Data Associated with the Post-Remediation Screening Health Risk Assessment Report for Parcels C, D, F, G, and H (Neptune 2014);
  - Response to Issues Identified in: Data Validation Summary Report for Asbestos Data Associated with the Post-Remediation Screening Health Risk Assessment Report for Parcels C, D, F, G and H (ENVIRON 2014d); and
  - Data Validation Summary Report, November through December 2014 and September 2016 Parcel C Soil Remedial Investigation Sampling, Revision 1 (Ramboll Environ 2017a[24]).

[24] A DVSR for the Parcel Area 5 soil data collected in 2014 and 2016 was submitted to NDEP for review and approval on July 26, 2017 (Ramboll Environ 2017a). NDEP provided comments on the DVSR on July 31,

- The laboratories provide a quality assurance/quality control (QA/QC) narrative with each analytical data package, and the data review provides a narrative of qualified analytical results. A description of the analytical methods and detection limits is included. These narratives are included as part of each DVSR.
- Method-specific QC results are provided in each laboratory report, along with the associated raw data. The laboratory reports and QC results are included as part of each DVSR.
- Data flags used by the laboratory are defined adequately and are discussed further below.
- Laboratory reports include the name and address of the laboratory, unique identification of the test report, client and project name, and dates of sample receipt and analysis. Each analytical report describes the analytical method used, the analytical results on a sample-by-sample basis, and the practical quantitation limits (PQLs). The results of the QC samples, including method blanks, laboratory control spike (LCS) samples, surrogate recoveries, internal standard recoveries, matrix spike (MS) samples, matrix spike duplicate (MSD) samples, second column confirmation, interference checks, and serial dilutions are also provided. All laboratory reports contained data equivalent to a Contract Laboratory Program (CLP) deliverable, inclusive of CLP QC summary forms where applicable, and the supporting raw data. Reported sample analysis results for the 2007-2010 data were imported into the NERT project database, which at the time the studies were conducted, was maintained by BEC, and then by Northgate. Similarly, the reported sample analysis results for the 2014 and 2016 data were imported into the NERT project database, currently maintained by Ramboll Environ.

The available reports, and the accompanying laboratory reports and DVSRs, are considered complete for HRA purposes.

4.1.1.3 Criterion II – Documentation

The objective of the documentation review is to ensure that each analytical result can be associated with a specific sampling location, and that the procedures used to collect the samples are appropriate. As part of this DUE step, Ramboll Environ completed a comprehensive review of the soil samples collected and reported in the documents listed under Criterion I and/or in the NERT project database. As discussed in Section 4.1.1.1, the geographic location of each soil sample was confirmed relative to current parcel and Operations Area boundaries. Samples with missing geographic location information (i.e., x, y coordinates and/or depth) were removed from the post-remediation soil HRA data set. Samples located outside Parcels C, D, and G were removed, and samples collected as part of an Operations Area investigation but actually located in Parcel C, D, or G were included and re-assigned to the correct parcel.

Also, as discussed in the work plans listed under Criterion I, all sample collection and handling procedures were consistent with the NDEP-approved Quality Assurance Project Plan (QAPP; AECOM, Inc. [AECOM] and Northgate 2009; ENVIRON 2014e). Northgate and Ramboll Environ reviewed the chain-of-custody (COC) forms prepared in the field

2017 (NDEP 2017a), and Ramboll Environ submitted responses to these comments on August 30, 2017. The DVSR and responses to comments are currently under NDEP review.

and compared them with the analytical data results provided by the laboratories to ensure completeness of the data set.

Figures 3-1 and 3-2 depict the location of all soil samples included in the post-remediation soil HRA data set; the analytical results for each sample are included in Appendix F.

The available information is adequate to relate each analytical result retained in the post-remediation soil HRA data set to a geographic location, depth interval, and sampling procedure.

4.1.1.4 Criterion III – Data Sources

The objective of the data sources review is to ensure that adequate sample coverage of source areas was obtained and the analytical methods used were appropriate to identify chemicals and derive associated exposure point concentrations (EPCs) for the HRA.

The review of sample coverage is based on the distribution of sample locations from soil investigations listed in Section 4.1.1.1. Samples were collected in accordance with the work plans listed under Criterion I, with both judgmental and random sampling collected. As noted in Section 3.2, judgmental samples were collected at locations targeting specific features within a parcel (e.g., LOUs, drains, ditches, and debris piles). Following each investigation, results were reviewed in consultation with NDEP and areas for additional sampling were identified. In Parcels C and D, the vertical coverage of the soil samples ranged from surface down to 10 ft bgs. In Parcel G, most soil samples were collected at surface and five ft bgs; two samples were collected at 10 ft bgs. According to the Parcel G Phase 2 SAP (BEC 2007b), “The rationale for sampling for the upper five ft (as opposed to the upper 10 ft) is that imported fill of roughly five ft depth will be required to meet final grading requirements. This fill will be clean.” Therefore, the soil samples collected in Parcel G are considered adequate to vertically cover the source areas in Parcel G (see further discussion in Section 6.1.1). Based on the review, sample coverage from the soil investigations in Parcels C, D, and G are considered adequate for purposes of the post-remediation HRA.

As part of the SAPs and the QAPPs, the use of standard USEPA analytical methods (listed under Criterion IV) were approved by NDEP. Analyses were conducted by NDEP-certified laboratories for the classes of chemical compounds identified as SRCs in Parcels C, D, and G, including chlorine oxyanions (chlorate and perchlorate), metals and other inorganics, radionuclides, asbestos, dioxins/furans, organic acids, PAHs, PCBs, OCPs, OPPs, SVOCs, TPHs (diesel, gasoline, and oil/grease), and VOCs. The USEPA methods are adequate for characterizing potential contaminants in soils and provide quantitative analytical results that are of adequate quality for deriving EPCs.

4.1.1.5 Criterion IV – Analytical Methods and Detection Limits

Criterion IV requires that the analytical method appropriately identifies the chemical form or species, and that for each chemical, the sample quantitation limit (SQL) is sufficiently low for risk characterization. Standard analytical methods were used for all analytes as listed below:

- USEPA Method 9056, 300, or 300.1 (chlorate)
- USEPA Method 314.0 (perchlorate)

- USEPA Method 6020 or 6010 (metals)
- USEPA Method 7199 or 7196A (chromium VI)
- USEPA Method 7471 (mercury)
- USEPA Method 350.1 or SM 4500 (ammonia)
- USEPA Method 9056 or 300 (bromide, chloride, nitrate, nitrite, ortho-phosphate, and sulfate)
- USEPA Method 300.1 (chlorite)
- USEPA Method 300 (fluoride)
- DOE EML HASL 300 (thorium [Th], uranium [U])
- DOE EML HASL 300, USEPA Method 901.1, or USEPA Method 903.0/903.1 (radium [Ra]-226)
- DOE EML HASL 300, USEPA Method 901.1, or USEPA Method 904.0 (Ra-228)
- USEPA Method 540-R-97-028 (asbestos)
- USEPA Method 8290 (dioxins/furans)
- USEPA Method 8270 (organic acids)
- USEPA Method 8310, 8270 SIM, or 8270 (PAHs)
- USEPA Method 8082 (PCB Aroclors)
- USEPA Method 1668A (PCB congeners)
- USEPA Method 8081 or 8151 (OCPs)
- USEPA Method 8141A (OPPs)
- USEPA Method 8270 (SVOCs)
- USEPA Method 8015 (TPHs)
- USEPA Method 8260 (VOCs)

The above methods are adequate to characterize the corresponding chemical groups in soil.

During Northgate's review of the analytical results reported in the NDEP-approved DVSRs for the initial 2007 and 2008 sampling events, Northgate noted that for some samples, nondetect results were reported to the PQL rather than the SQL. Based on review of the laboratory data packages, and as discussed with the laboratory, the procedure for evaluating these results consisted of the following steps. If a chemical was detected above the PQL, then the value was reported. If the chemical was detected above the SQL, but below the PQL, the value was reported and flagged as a J value. If there was no indication that the chemical was detected, it was reported as a non-detect value at the PQL. These procedures were consistent with the approved DVSRs for the 2007 and 2008 sampling programs. However, after taking the responsibility for maintaining the project database on behalf of the Trust in early 2011, Ramboll Environ reassessed the nondetect data according to the current NDEP guidance on the use of censoring limits (NDEP 2008c). In the soil HRA data set, nondetect results are reported to the SQL whenever it

is available; otherwise, nondetect results are reported to the method detection limit (MDL). Only when either a SQL or a MDL was not available, the nondetect results are reported to the PQL. Based on NDEP (2008c), the uncensored data for radionulcides were used in the soil HRA, which means a detection frequency of 100%.

For analytes where the detection frequency was less than 100%, the SQLs from the soil HRA data set were compared to 0.1 times the BCL (0.1×BCL)[25] (NDEP 2015b) to confirm that they were sufficiently low for risk characterization. For chemicals where a BCL was not available, USEPA regional screening levels (RSLs) (USEPA 2016b) or representative surrogates were identified and used for the comparison. For dioxin TEQs, the SQLs were compared to the site-specific action level of 0.0027 mg/kg, derived based on a study that evaluated the bioaccessibility of dioxins in soils collected from the NERT Site [Northgate 2010a]). Tables 4-1 through 4-3 presents the results of SQL evaluation for Parcels C, D, and G along with the screening levels.

As shown in Table 4-1, maximum SQLs in Parcel C were less than the screening levels, with the following exceptions:

- For dioxin TEQs, the SQLs exceeded the site-specific action level of 0.0027 mg/kg in three out of nine samples reported as non-detected, while the detection frequency was 82% (41 out of 50 samples).
- For BaPEqs, only one out of 50 samples was detected, and the SQLs exceeded 0.1xBCL in 35 out of 49 samples reported as nondetects.
- For hexachlorobenzene, six out of 50 samples were detected, and the SQLs exceeded 0.1xBCL in two out of 44 samples reported as nondetects.
- Benzidine, n-nitroso-di-n-propylamine, and 1,2-dibromo-3-chloropropane were not detected in any samples; the SQLs exceeded 0.1xBCL in 100%, 27%, and 4% of the non-detected samples, respectively.

As shown in Table 4-2, maximum SQLs in Parcel D were less than the screening levels, with the following exception:

- BaPEqs was not detected in any samples with the SQLs slightly exceeding 0.1xBCL in all samples.

As shown in Table 4-3, maximum SQLs in Parcel G were less than the screening levels, with the following exceptions:

- For dioxin TEQs, the SQL exceeded the site-specific action level of 0.0027 mg/kg in one out of five samples reported as non-detected, while the detection frequency was 55% (six out of 11 samples).
- For BaPEqs, three out of 16 samples was detected, and the SQLs slightly exceeded 0.1xBCL in 10 out of 13 samples reported as nondetects.
- Overall, the SQLs are generally low enough for risk characterization. The impacts of the few exceptions on the soil risk estimates are further discussed in Section 6.1.2.

[25] The lower of the indoor and outdoor industrial/commercial worker BCL was used for the comparison.

4.1.1.6 Criterion V – Data Review

The data review included evaluation of completeness, instrument calibration, laboratory precision, laboratory accuracy, blanks, adherence to method specification and QC limits, and method performance in sample matrix. The laboratory results for the parcel soil investigations were subjected to formal data validation consistent with USEPA guidelines (USEPA 1999a; 2001; 2004a; 2005a,b; 2008; 2009a), the BMI Plant Site Specific Supplemental Guidance on Data Validation (NDEP 2009a), and BRC SOP 40 and Data Review/Validation (BRC 2009). The USEPA guidelines, which were prepared for CLP data, were adapted to reflect the analytical methods and measurement quality objectives established for the individual sampling events and NDEP guidance.

The DVSRs listed in Criterion I for soil data included in the HRA data set are provided in Appendix E, in which the names and qualifications of the reviewers, the specific data validation procedures, and the qualification findings are presented. Each DVSR (with the exception of the asbestos DVSR) includes the following tabular summaries of the data qualifications:

- Summary of data qualified due to holding time exceedances
- Summary of data qualified due to detection below quantitation limit
- Summary of data qualified due to laboratory blank contamination
- Summary of data qualified due to field blank contamination
- Summary of data qualified due to MS/MSD recovery exceedances
- Summary of data qualified due to LCS recovery exceedances
- Summary of data qualified due to field/laboratory duplicate
- Summary of data qualified due to surrogate recovery exceedances
- Summary of data qualified due to calibration violations
- Summary of data qualified due to calibration range exceedances
- Summary of data qualified due to internal standard recovery exceedances
- Summary of data qualified due to serial dilutions
- Summary of qualified data results
- Summary of rejected data results

These data qualifications are further discussed below as a component of Criterion VI.

4.1.1.7 Criterion VI – Data Quality Indicators

The project QAPPs (AECOM and Northgate 2009; ENVIRON 2014e) identified five data quality indicators (DQIs) to insure that the overall quality of the data is sufficient to support the risk assessment, as follows: completeness, comparability, representativeness, precision, and accuracy. The DQIs provide quantitative and qualitative measures for evaluating the risk assessment data as they relate to uncertainties in the selection of COPCs, characterization of EPCs, and risk descriptors used in support of the HRA. Specifically, the DQIs address field and analytical data quality aspects as they affect uncertainties in the data collected for site characterization and risk assessment.

Completeness

The completeness criterion includes evaluation of field completeness and laboratory completeness. Field completeness is defined as the percentage of samples collected versus those intended to be collected as specified in the sampling work plans. Laboratory completeness is defined as the percentage of samples reported by the laboratories versus those requested on the COCs. The completeness goal stated in the QAPPs is 90% or greater.

First, completeness was reviewed as reported in the DVSR prepared for each individual investigation contributing to the soil HRA data set. A comparison of samples reported in the NERT project database with the work plans for soil investigations listed under Criterion I indicates an actual field completeness of 100% for all sampling events. In addition, all COC requests were executed by the laboratories, with minor exceptions detailed in the DVSRs. Depending on the specific DVSR, 91.41% to 99.8% laboratory completeness was archived based on validated data, with 0.2% to 8.59% of the data qualified as rejected ("R" qualified).

Rejected ("R" qualified) data associated with post-remediation soil samples at 0-10 ft bgs in Parcels C, D, and G are summarized in Appendix E, Table E-3. Analytes with analytical results rejected were not considered as SRCs. Laboratory completeness was calculated for the post-remediation soil HRA data set (Appendix F) for each parcel as 99.8% for Parcel C, 99.7% for Parcel D, and 99.7% for Parcel G.

In summary, both field and laboratory completeness meet the completeness goals of 90% established in the QAPPs. Rejected data are excluded from the post-remediation soil HRA data set, and a discussion of how these rejected data occurrences potentially affect the HRA is presented in Section 6.1.3.

Comparability

Comparability is a qualitative characteristic expressing the confidence with which one data set can be combined with another for purposes of estimating exposure. More specifically, comparability is a qualitative expression of the measure of confidence that two or more data sets may contribute to a common analysis. In general, comparability of data is maximized by using standard methods for sampling and analysis, reporting data, and data validation.

Soil samples identified for the post-remediation HRA were collected by different entities and analyzed by different analytical laboratories (and in some cases, different analytical methods were used for the same analyte); overall, the investigations from which data are being used span a period of approximately 10 years. As discussed in Section 4.1.1.5, Ramboll Environ repossessed the nondetect data to be reported to the SQL whenever it is available, which maximized the comparability of reporting requirements between the 2007 and 2008 sampling events and the investigations conducted more recently. However, different reporting limits for the same analyte may also impact the comparability of the data sets. The ranges of the SQLs for each analyte for which the detection frequency was less than 100% are presented in Tables 4-1 through 4-3. As discussed in Section 4.1.1.5, for most of the analytes, the SQLs are well below 0.1xBCL (or other screening criteria); therefore, different reporting limits for the same analyte would not affect the COPC selection and risk estimates. In each parcel, there are a few

analytes with SQLs exceeding 0.1xBCL (or other screening criteria), and their impacts on the COPC selection and risk estimates are further discussed in Section 6.1.2.

Of particular concern are possible differences between the parcel data sets and the RZ-A background data set for both metals and radionuclides as a result of different sample preparation methods, modified (or different) analytical methods, and possible systematic differences among the internal laboratory SOPs. For example, the quantile to quantile (Q-Q) plots for cadmium and iron indicate that parcel concentrations are generally less than background (see Section 4.1.2.2). These observations indicate possible differences in the data sets, possibly associated with sample extraction, analytical methods, or other less-identifiable differences across the SOPs used by the different laboratories. For radionuclides, such issues were even more obvious, and may be important factors in explaining some of the radionuclide data anomalies. The Trust submitted a radionuclide data packet prepared by Ramboll Environ to NDEP via email on September 17, 2015, including a comparison of sample preparation and analytical methods between the parcel data sets and the RZ-A background data set. RZ-A background samples were collected and analyzed in 2009, while parcel samples were collected and analyzed between 2006 and 2014, i.e, both before and after NDEP issued guidance for evaluating radionuclide data (NDEP 2009b). Over this time period, samples were submitted for analysis to different analytical laboratories and analyzed using different preparation and analytical methods. During a meeting on October 13, 2015, NDEP, NDEP's consultants, the Trust, and Ramboll Environ discussed the analytical issues of radionuclide data and how they would affect the results of background evaluation. These issues are further discussed in Sections 5.1.1.2 and 6.1.4.

Representativeness

Representativeness is the degree to which data accurately and precisely represent a characteristic of the population at a sampling point or an environmental condition. There is no standard method or formula for evaluating representativeness, which is a qualitative term. Spatial representativeness is achieved through selection of sampling locations that are appropriate relative to the objective of the specific investigation, and by collection of an adequate number of samples from locations identified in relation to the investigation objectives. Concentration representativeness is achieved by obtaining analytical results of sufficient quality, as specified in the QAPPs.

Spatial representativeness was discussed previously under Criterion III. As noted, soil samples were collected in accordance with the NDEP-approved work plans listed under Criterion I. Both judgmental and random sampling approaches were followed, with judgmental samples collected at locations targeting specific features within a parcel (e.g., LOUs, drains, ditches, and debris piles). Following each investigation, results were reviewed in consultation with NDEP and areas for additional sampling were identified. The vertical coverage of the soil samples is adequate for Parcels C and D, while for Parcel G, the effect of limited data at 10 ft bgs is discussed in Section 6.1.1. Overall, the objectives of the investigations were met, and the placement of the sample locations is deemed representative to evaluate the parcel soil conditions in the context of the CSM.

As presented in the DVSRs listed under Criterion I, standard methods for sampling and analysis were used for all the investigations, which confirmed that the analytical data are representative of the soil concentrations at the locations sampled.

Precision

Precision is a measure of the degree of agreement between replicate measurements of the same source (field precision) or sample (analytical precision). Field precision is evaluated by calculating the relative percent difference (RPD) between the primary field sample and its field duplicate. Laboratory precision is quantitated for each laboratory data batch by calculating the RPD using data for the LCS/laboratory control spike duplicate (LCSD) and/or data for the MS/MSD. The field precision goal established in the QAPPs is a RPD of less than or equal to 50%, except for the case in which one (or both) of the primary or duplicate result is less than five times the reporting limit. For the latter case, the acceptance criteria is the reporting limit (i.e., the absolute value of the difference between the primary and duplicate result is less than or equal to the reporting limit). Laboratory precision goals are defined for specific analytical methods.

Field precision for the parcel samples was assessed by evaluating the field duplicate results in accordance with the Statistical Analysis Recommendations for Field Duplicates and Field Splits (NDEP 2008d), where the primary sample and field duplicate are independent samples. A total of 65 pairs of primary and field duplicate results for Parcel C, 43 pairs for Parcel D, and 11 pairs for Parcel G were qualified due to RPD or reporting limit exceedance (see Appendix E, Table E-4). For laboratory duplicates, there were 20 data (for Th-228, Th-230, and chlorate) for Parcel C, no data for Parcel D, and 14 data (for Ra-226 and Ra-228) for Parcel G qualified due to RPD or reporting limit exceedance (see DVSRs tables in Appendix E). In addition, only one data point (for vinyl acetate in TSB-CR-01-0, which was not detected above the laboratory reporting limit) was qualified for MS/MSD RPD exceedance (see DVSR tables in Appendix E). All data with precision exceedances were qualified as “J/Estimated” or “UJ/Estimated non-detected” and are determined to be usable for purposes of the HRA, and the effects of these qualified data on the results of conclusions of HRA are further discussed in Section 6.1.5.

Accuracy

Accuracy measures the level of bias that an analytical method or measurement exhibits. Both field accuracy and laboratory accuracy are evaluated under this DQI. Accuracy in the field is assessed through the use of trip and equipment blanks and through adherence to all sample handling, preservation, and holding time requirements. Accuracy in the laboratory analytical data is a measure of the overestimation or underestimation of reported concentrations. Several QC parameters are used to evaluate the accuracy of reported analytical results, including:

- Holding times;
- Field and laboratory blanks;
- MS/MSD percent recovery;
- Surrogate spike recovery; and
- LCS percent recovery.

All qualified results (i.e., U, J, J-, and J+ qualified data)[26] for the non-asbestos analytes are presented in Appendix F, Table F-1, and the reasons for these qualified results are summarized in the DVSRs (see Appendix E). Although laboratory limits were exceeded

[26] J, estimated value; J-, estimated, biased low; J+, estimated, biased high; U, not detected.

for certain compounds or analyses, as identified by the laboratory (and confirmed during data validation), there does not appear to be a systematic or widespread impact on the quality of the analytical results. Furthermore, based on a review of the laboratory narratives (provided in the laboratory reports in each DVSR), the laboratory does not believe that the observed exceedances of laboratory criteria are cause for concern. Therefore, the qualified data are determined to be usable and valid for purposes of the post-remediation HRA and are included in the HRA data set. As discussed further in Section 6.1.6, use of qualified data resulting from one or more of the above parameters is not expected to significantly impact the results and conclusions of the post-remediation HRA.

Data collected before 2012 and associated with field and laboratory blank contamination were originally qualified as nondetects based on the NDEP guidance at that time. As requested by NDEP and in accordance with the most recent guidance (NDEP 2012) for evaluating data associated with blank contamination, Ramboll Environ queried the censored data for blank contamination from the project database, and changed them from nondetected values at PQLs (U qualified) to detected values at reported concentrations (J qualified) if the PQLs were higher than the reported concentrations. Such revisions did not affect any sample in Parcel C, D, or G. However, during our review, Ramboll Environ noticed that several discrepancies in the data associated with blank contamination exist between the project database and the amended tables of the DVSRs Northgate prepared in the Soil HRA Report Revision 3 (Northgate 2014), especially for the reported concentrations. Data consistent with the project database are included in this HRA, and the impacts of such discrepancies on the HRA results are further discussed in Section 6.1.6.

4.1.1.8 Data Usability Conclusions

Evaluation of the soil analytical data for Parcels C, D, and G in terms of usability for the risk assessment was conducted in accordance with USEPA and NDEP guidance. Based on the evaluation, the overall goals for data quality for risk assessment were achieved, and all DVSRs were reviewed and approved by NDEP (with the exception of the DVSR for the Parcel Area 5 soil data collected in 2014 and 2016, which was submitted to NDEP for review and approval on July 26, 2017. NDEP provided comments on the DVSR on July 31, 2017 (NDEP 2017a) and Ramboll Environ submitted responses to these comments on August 30 , 2017. The DVSR and responses to comments are currently under NDEP review). In summary, with the exception of the rejected data discussed above, all parcel data are deemed to be usable for risk assessment purposes.

4.1.2 Data Analysis

Consistent with guidance (NDEP 2010c), the steps of the exploratory data analysis (EDA), as described in the following sections, include (1) preparation of summary statistics for the post-remediation soil HRA data set (Section 4.1.2.1), (2) evaluation of background conditions for metals and radionuclides (Section 4.1.2.2), and (3) preparation and review of spatial plots for detected analytes (Section 4.1.2.3). Section 4.1.2.4 discusses the results of the EDA in the context of current and former land use and operations within Parcels C, D, and G and the CSM.

4.1.2.1 Summary Statistics

Summary statistics for analytical data collected from shallow soils (i.e., samples collected between 0 and 10 ft bgs) are presented as follows:

- Table 4-4 – Summary Statistics for Soil Data – Parcel C;
- Table 4-5 – Summary Statistics for Soil Data – Parcel D; and
- Table 4-6 – Summary Statistics for Soil Data – Parcel G;

Tables 4-4, 4-5, and 4-6 include analytes detected in one or more soil samples; Appendix G presents summary statistics for all analytes (i.e., detected analytes and analytes reported at less than the SQL in all samples). Individual sample locations are shown on Figures 3-1 and 3-2. In developing the summary statistics, soil samples with primary and field duplicate results were treated as independent samples. The effect of duplicate treatment on the HRA results and conclusions is further discussed in Section 6.1.7.

Table 4-7 presents the soil data summary results for asbestos (long amphibole and long chrysotile fibers). Results are reported in terms of the number of long fibers (i.e., >10 µm long and <0.4 µm wide) observed in the sample. As shown in Table 4-7, no long amphibole fibers were observed in any of the samples. One or more long chrysotile fibers were observed in seven out of 19 post-abatement samples in Parcel C, three out of 11 post-abatement samples in Parcel D, and one out of eight post-abatement samples in Parcel G.

4.1.2.2 Background Evaluation

To support the EDA, a background evaluation was conducted for each parcel individually, because among the different parcels the operational histories were different and previous soil investigations identified different potential contaminants (see Section 3.2). As requested by NDEP (2010d), analytical results for soil samples within RZ-A were used as the background data set for metals.[27] A detailed discussion of this data set is presented in the Revised Technical Leaching Memorandum (Northgate 2010d). In summary, 31 soil samples, including three field duplicates, were collected from 14 borings[28] within RZ-A during the Phase B investigation; 16 of these samples were collected between 0 and 2 ft bgs and 15 samples were collected between 10 and 11.5 ft bgs. Consistent with the background evaluations conducted in previous versions of this HRA, a single Phase A boring location (SA02) and five Phase B boring locations (RSAU4, RSAU5, SA28, SA146, and SA147) within LOU 62 (former State Industries, Inc. operational area and boron source area) were excluded from the RZ-A background set due to elevated

[27] NDEP investigated the differences observed in metals concentrations among available BMI background data sets and determined that the RZ-A data set was appropriate for statistical background analysis of metals at the Tronox facility (presently the NERT Site) (NDEP 2010d).

[28] As shown on Figure H-1, RSAT7, RSAT8, and RSAS6 are located outside the boundaries of RZ-A and the Site. These three off-site samples are retained in the background data set.

concentrations of boron and other metals (arsenic, chromium, cobalt, iron, molybdenum, nickel, platinum, and sodium).[29]

The RZ-A samples identified for the metals background evaluation were also used for the radionuclide background evaluation. In previous versions of Parcel Soil HRA, the BRC/TIMET background data set presented in *Background Shallow Soil Summary Report, BMI Complex and Common Area Vicinity* (BRC and TIMET 2007) was used for the radionuclide background evaluation. However, in comments on Soil HRA Report Revision 3 (NDEP 2015a), NDEP clarified that the RZ-A data set (and not the BRC/TIMET data set) should also be used for the radionuclides. The data set used for the background evaluation of both metals and radionuclides and the background sample locations are included in Appendix H.

The background evaluation was performed using normal and lognormal Q-Q plots, and side-by-side box-and-whisker plots (box plots). These plots are included in Appendix I. Normal and lognormal Q-Q plots provide a visual assessment of how closely the data follow a normal or lognormal distribution. Data points that fall roughly on a straight line may be considered to follow a normal or lognormal distribution. Both background and parcel data are included on these plots such that the Q-Q plots provide a direct visual comparison of the two distributions. The Shapiro-Wilk test was used to more formally evaluate the consistency of each data set with a normal or lognormal distribution.

Box plots provide a visual comparison between Parcels C, D and G and background data. These plots are included in Appendix I. For each data set, the "box" in the box-and-whisker plot encompasses the central 50 percent of the results (i.e., the results from the 25th to 75th percentiles, or equivalently, between quartile 1 [Q1] and quartile 3 [Q3]). Substantial overlap between the boxes for background and parcel data indicates that the parcel data may not be significantly different from background. The whiskers demarcate one "step" above the 75th percentile and one step below the 25th percentile. One "step" is defined as 1.5 times the interquartile range (IQR, the difference between the 75th and 25th percentiles). Data points above and below the whiskers are considered potential outliers from the distribution and are shown on the plots as open circles for non-detected values and as crosses for detected values. As used here, "outliers" may indicate potential hotspots for spatial analysis.

The computer statistical software program Guided Interactive Statistical Decision Tools (GiSdT®, Neptune 2007) was used to perform all statistical tests.[30] Specifically, statistical background comparisons were performed using the t-test, Gehan test, Quantile test, and Slippage test. This suite of tests is sometimes referred to as "Gilbert's Toolbox." The t-test is a parametric test (i.e., an underlying condition is that the data or log-transformed data are normally distributed). In contrast, the Gehan test, Quantile test, and Slippage test are nonparametric, and thus do not require that the data are normally or lognormally distributed (USEPA 2002a; NDEP 2009d). These tests are described below:

[29] Although metals concentrations in these samples were elevated relative to background, the results of the RZ-A HRA indicated that exposures to residual chemicals in the upper 10 ft of soil were below risk levels of concern (Northgate 2010e).

[30] Neptune provided Ramboll Environ with a copy of the GiSdT® program used for the statistical evaluation.

The two-sample t-test tests for equality of the means of the parcel and background concentrations. An underlying assumption of the test is that concentrations are normally distributed for both data sets.

The Gehan test is a modification of the Wilcoxon Rank Sum test that evaluates the difference between the sums of the ranks for two populations. This is a nonparametric method for assessing differences in the centers of the distributions and is based solely on the relative order (or ranking) of the observations from the two samples. This test has less power than the two-sample t-test when the data are normally distributed, but the assumptions are not as restrictive. The GiSdT® version of the Gehan test uses the Mantel approach for ranking the data, which is equivalent to using the Gehan ranking system. The Gehan ranking system is used to rank non-detects with the detected concentrations (NDEP 2009d).

The Quantile test evaluates "tail effects" that are not specifically considered in the Wilcoxon Rank Sum test. The Quantile test looks for differences in the right tails (upper end of the distribution), rather than evaluating central tendency. The Quantile test was performed using a defined quantile of 0.80, consistent with the approach used in previous versions of the parcel soil HRA (personal communication between Northgate and Neptune on October 7, 2009).

The Slippage test looks for a shift to the right in the extreme right tail of the background data set as compared with the extreme right tail of the parcel data set. This test evaluates whether the number of parcel samples with concentrations greater than the maximum background concentration is greater than would be expected statistically if the parcel and background distributions were the same.

NDEP guidance (2008d) recommends including field duplicates in a data set when the variance of the duplicates is similar to the variance of the primary samples. As noted in the guidance, field duplicate samples represent a discrete and unique measurement of soil chemical conditions proximal to the primary sample (unlike split samples). For the background evaluation presented in this report, soil samples with primary and field duplicate results were treated as independent samples, consistent with Option 2 in NDEP guidance (NDEP 2008d). The effect of duplicate treatment on the COPC selection and HRA results is further discussed in Section 6.1.7.

Consistent with NDEP guidance (NDEP 2009d), non-detect results were set equal to one-half the limit of detection for the parametric tests and equal to the detection limit for the non-parametric tests. Substitution is not required for the non-parametric tests, which use the Gehan ranking scheme to rank non-detects. For the t-test, the Gehan ranking scheme cannot be used; in comments on Revision 2 of the parcel soil HRA, NDEP stated that the value of one-half the detection limit for non-detects is preferred to represent the results by the most-likely actual values (NDEP 2009d).

Metals

The background evaluation for metals in Parcels C, D, and G is presented in Appendix I, as follows:

- Table I-1 presents summary statistics for each metal, including the total number of samples number of detections, percent detections, minimum SQL, maximum SQL, minimum detected value, maximum detected value, median, mean, and standard

deviation. Consistent with NDEP guidance (NDEP 2008e), the median, mean, and standard deviation are calculated based on detected concentrations only. The results of the Shapiro-Wilk test are also presented.

- Table I-2 includes the calculated probability (p-values) for the four statistical tests and the overall determination as to whether soil concentrations in each parcel are greater than background levels. (Five results are shown in the table because the t-test was performed twice, once on the raw data set and once on the log-transformed data set).
- Figures I1-1 through I1-32 present boxplots for metals in background soils and Parcels C, D, and G soils (upper 10 ft).
- Figures I2-1 through I2-31 present normal and lognormal Q-Q plots for metals in background soils and Parcels C, D, and G soils (upper 10 ft).

A significance level of alpha = 0.025 was used to evaluate the statistical significance of the Gilbert's Toolbox results, consistent with NDEP guidance (NDEP 2009d).

Radionuclides

The background (RZ-A) data set includes results for the long-lived radionuclides in the U-238 decay series (U-238, U-234, Th-230, and Ra-226) and in the Th-232 series (Th-232, Ra-228, and Th-228). The RZ-A background data set also includes data for U-235, but not for the U-235 decay chain. NDEP guidance (2009b) notes that most isotopes of the U-235 decay chain are barely discernible from the minimal detectable concentrations. The background evaluation and tests for secular equilibrium are presented in Appendix I, as follows:

- Table I-3 presents summary statistics for each radionuclide, including the total number of samples, number of detections, percent detections, minimum and maximum detected values, median, mean, and standard deviation. Consistent with NDEP guidance (NDEP 2008e), the median, mean, and standard deviation are calculated based on detected concentrations only. The results of the Shapiro-Wilk test are also presented.
- Table I-4 includes the p-values for the four statistical tests and the overall determination as to whether soil concentrations in each parcel are greater than background levels. (Five results are shown in the table because the t-test was performed twice, once on the raw data set and once on the log-transformed data set).
- Tables I-5A and I-5B present the results of the equivalence testing for secular equilibrium of the uranium decay series (U-238 chain) and thorium decay series (Th-232 chain), respectively.
- Table I-6 presents the correlation matrices for the uranium decay series and the thorium decay series.
- Figures I1-33 through I1-40 present the boxplots for radionuclides in background soils and Parcels C, D, and G soils (upper 10 ft).
- Figures I2-33 through I2-40 present normal and lognormal Q-Q plots for radionuclides in background soils and Parcels C, D, and G soils (upper 10 ft).

- The significance level used for the background evaluation of metals (alpha = 0.025) was also used for the background evaluation of radionuclides.

4.1.2.3 Spatial Analysis of Chemicals in Soil

Spatial quartile plots (included in Appendix J) were prepared for detected chemicals in Parcels C, D, and G to illustrate the spatial distribution of the data, identify potential hotspots, and compare the results to the expectations of the CSM. Each spatial quartile plot presents the following information:

- Sample locations;
- Chemical concentrations. The concentration shown at each sample location is the maximum detected concentration for all samples collected at that location for soils from 0-10 ft bgs, unless results for all samples at that location were reported as less than the detection limits; concentration bins are defined as follows:
  - Dark green - concentrations < detection limits;
  - Light green - concentrations <Q1;
  - Yellow - concentrations within the IQR;
  - Orange - concentrations >Q3 and <(Q3 + 1.5×IQR); and
  - Red - concentrations >(Q3 + 1.5×IQR).

Spatial quartile plots are presented for 14-18 detected analytes for each parcel, as follows:

- Chloroxyanions – chlorate and perchlorate;
- Metals – all metal COPCs (identified in Section 5.1.1) and metals with concentrations greater than background (with the exception of potassium and sodium);
- Radionuclides – U-238, Th-232, and U-235 (the parent radionuclides);
- Other inorganics – only COPCs (identified in Section 5.1.1); and
- Organics - all organic COPCs (identified in Section 5.1.1) and organics with a detection frequency of 20 percent or greater (with the exception of common field/laboratory contaminants, e.g., acetone) or identified as SRCs. In addition, certain organics (e.g., dichlorodiphenyltrichloroethane [DDT]/ dichlorodiphenyldichloroethylene [DDE]) were selected for plotting to enable spatial analysis of chemically-related contaminants.

The plots are presented in Appendix J (organized alphabetically by chemical name) and discussed in the following section. The EDA (including the review of the Appendix J spatial quartile plots) is presented in Table 4-8 for chlorine oxyanions, metals, other inorganics, and radionuclides, and in Table 4-9 for dioxins/furans, other organics, PAHs, pesticides, SVOCs, and VOCs.

4.2 Soil Gas

4.2.1 Data Usability Evaluation

The soil gas samples evaluated using the data quality criteria previously described for soil are identified in Section 4.2.1.1 and the evaluation of the sample results relative to

these criteria is presented in Sections 4.2.1.2 through 4.2.1.7. A summary of the DUE is presented in Section 4.2.1.8.

4.2.1.1 Soil Gas Data Set

Soil gas samples within the Study Area are available from the following three investigations:

- 2007 Phase 2 investigations: soil gas samples were collected in Parcels C and D in November 2007 as part of the Phase 2 Tronox Parcels C and D sampling investigation;
- 2008 Phase B investigations: soil gas samples were collected from across the Site (including the Study Area) in 2008 during the Phase B site-wide soil gas survey; and
- 2013 soil gas sampling: soil gas samples were collected in March 2013 to address some of the data gaps identified in the 2008 site-wide soil gas survey.

4.2.1.2 Criterion I – Reports to Risk Assessor

Criterion I requires confirmation that the reports relied upon are complete and appropriate for use in the HRA. The required information specified under this criterion was verified and is available within the following documentation associated with the Study Area data collection efforts:

- A description of Parcels C, D, and G is provided in the 2012 and 2013 Parcels Soil Gas Work Plans (ENVIRON 2012, 2013b) and in Section 3 of this HRA. Information on the regional and local geology, hydrogeology, and historical industrial operations is provided in the Site RI/FS Work Plan (ENVIRON 2014a).
- The sampling design, rationale, and sampling procedures for the 2007, 2008 and 2013 soil gas investigations are provided in the 2007 SAP, and in the 2008 and 2013 work plans, respectively:
  - Phase 2 Sampling and Analysis Plan to Conduct Soil Characterization, Tronox Parcels "C" and “D” Site (BEC 2007a, approved by NDEP on October 29, 2007);
  - Phase B Source Area Investigation Work Plan, Soil Gas Survey, Tronox LLC Facility (ENSR 2008a, approved by NDEP on March 26, 2008); and
  - Soil Gas Investigation and Human Health Risk Assessment Work Plan for Parcels “C”, “D”, “F”, “G”, and “H” (ENVIRON 2013b, approved by NDEP on April 9, 2013).
- Soil gas sampling locations for the 2007, 2008 and 2013 sampling events, provided in the work plans, are shown on Figures 3-1 and 3-2 of this HRA.
- For the 2013 soil gas sampling, field conditions and associated field data, including soil gas probe construction details, soil gas purging and sampling, and soil gas probe leak checking are provided in Appendix B.
- Laboratory reports for the 2007, 2008 and 2013 soil gas data are included in the 2007, 2008, and 2013 DVSRs (Appendix L-1, Appendix L-2, and Appendix L-3, respectively). The laboratory reports include the name and address of the laboratory, a unique identifier for the test report, client and project name, and dates of sample receipt and analysis.

- The reports also identify the analytical methods and include information on sample preparation. Results are provided individually for each sample. For each analyte, method detection limits and PQLs are provided. The reports also include information on the gas chromatography/mass spectroscopy (GC/MS) tuning, initial and continuing calibrations, method and canister blanks, surrogate spike recoveries, internal standard results, laboratory control (LC) samples, field duplicate results, laboratory duplicate results, target compound identification, and dilution factors. A QA/QC narrative was included with each analytical data package, and the data review provided a narrative of qualified analytical results. These narratives are included in the DVSR for the 2007 soil gas data (Appendix L-1), Revised DVSR for the 2008 soil gas data (Appendix L-2), and the DVSR for the 2013 soil gas data (Appendix L-3).
- Data flags used by the laboratories were defined and described adequately in the 2007, 2008 and 2013 DVSRs (Appendix L-1, Appendix L-2, and Appendix L-3, respectively). The qualification findings are summarized in Section 4.2.1.7.

The soil gas data from the 2007 investigation were provided in the 2007 DVSR as an Access© compatible database (ERM-West 2008, Appendix L-1), which was approved by NDEP on October 20, 2008. The soil gas data from the 2008 investigation was provided in the 2008 DVSR as an Access© compatible database (ENSR 2008b, Appendix L-2), which was approved by NDEP on October 20, 2008.[31] Soil gas data for the 2013 investigation are included in the EDD (Appendix L-3). The EDD includes an Access© compatible data file (on the report CD) containing the analytical results. Validation of laboratory data was completed on April 24, 2013. The 2013 DVSR was prepared in accordance with NDEP guidance (NDEP 2009a). The 2008 and 2013 analytical data are provided on a per-sample basis, qualified for analytical limitations and error, and accompanied by SQLs.

The 2007, 2008, 2012, and 2013 work plans and associated DVSRs are considered complete for HRA purposes. The sampling depth of the 2007 soil gas samples were discussed in the 2007 Parcel C and D soil gas SAP (BEC 2007a) but were not included in the DVSRs. The depth of the 2007 soil gas samples was confirmed with BRC.

4.2.1.3 Criterion II - Documentation

The objective of the documentation review is to ensure that all analytical data can be associated with a specific sample location and appropriate sample collection procedure.

All 2007, 2008 and 2013 soil gas locations were surveyed as described in the 2007 BRC SOP (BRC, ERM and MWH 2007a), and BRC SOP-10 (ERM-West and MWH 2008). Chain-of-custody forms prepared in the field were reviewed and compared to the analytical results provided by the laboratory, and all samples and results were correlated to the correct geographic location at the property. Reviewed reports provided adequate information regarding sample results relative to location, time of sampling and analysis, and sampling procedures. Figures 3-1 and 3-2 show the location of all soil gas samples

[31] The soil gas analytical data presented in the 2008 DVSR (ENSR 2008b) included data from samples collected across the entire Site. The 2008 data discussed in this section includes only the data from samples collected in or near the Study Area and evaluated in this HRA.

included in the HRA data set; a complete set of the analytical results is included in the EDD (Appendix L).

4.2.1.4 Criterion III – Data Sources

The review of data sources is performed to ensure that adequate sample coverage of source areas has been obtained and that the analytical methods are appropriate to identify COPCs and estimate exposure concentrations.

According to the 2007 Phase 2 SAP for Parcels C and D (BEC 2007a), the soil gas samples collected in accordance with the 2007 Phase 2 Sampling SAP were 1) placed to both evaluate potential future land use exposures and to characterize potential source areas in the current boundaries of Parcels C and D; and 2) to provide spatial coverage to ensure that these two parcels were reasonably and completely covered for sampling purposes (BEC 2007a). Both judgemental samples and random samples have been collected within the current boundary of Parcels C and D to ensure spatial coverage. Samples collected in accordance with the 2008 Work Plan were (1) located within LOUs where VOCs may have been used in historical operations; (2) located to evaluate soil gas concentrations associated with on-site plumes; (3) co-located with existing groundwater monitoring wells; and (4) located randomly throughout the Site (including the Study Area) to obtain spatial coverage. Samples collected in 2013 were biased in order to sample areas not previously sampled in 2008 and that overlie the highest chloroform concentrations in groundwater. The 2008 and 2013 sampling locations are shown on Figures 3-1 and 3-2. Based on this review, sample coverage is considered adequate for purposes of this HRA, assuming groundwater conditions remain stable.

Analytical methods were appropriate to identify a broad spectrum of VOCs in soil gas. As identified in the approved 2007 SAP (BEC 2007a), 2008 and 2013 work plans (ENSR 2008a, ENVIRON 2013b) and approved by NDEP, the soil gas samples and QC samples collected in 2007 were analyzed by USEPA Method TO-14, and the soil gas samples and QC samples collected in 2008 and 2013 were analyzed by USEPA Method TO-15, as described in *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* (USEPA 1999b). Analyses were conducted by NDEP-certified laboratories for VOCs in soil gas.

4.2.1.5 Criterion IV – Analytical Method and Detection Limits

Under Criterion IV, the SQLs were evaluated to confirm that they were sufficient for risk characterization. Because NDEP has not derived BCLs for soil gas, risk–based concentrations (RBCs) were derived corresponding to the more stringent of (1) a cancer risk of 1×10^{-6} or (2) a noncancer hazard quotient (HQ) of 1. The RBCs were derived using the outputs from the Johnson and Ettinger (1991) model and values for exposure assumptions and toxicity criteria presented in Section 5 of this HRA. The lowest RBCs among the RBCs developed for indoor workers, outdoor workers and construction workers for 10 ft soil gas and 5 ft soil gas were selected in the evaluation of the SQLs of the 10 ft soil gas data set, and 5 ft soil gas data set, respectively.

For analytes for which the detection frequency was less than 100%, the maximum SQL from the 2007 data set, and the combined 2008 and 2013 data set for each parcel was compared to the RBCs. Tables 4-10A and 4-10B list the maximum SQLs from the 2007 data set (approximately 10 ft bgs samples) and 10-ft soil gas RBCs, present the ratio of

the maximum SQL to 1/10th of the RBC, and include the number of samples with SQLs greater than 1/10th of the RBC for Parcels C and D, respectively. Tables 4-11A through 4-11C list the maximum SQLs from the combined 2008 and 2013 data set (approximately 5 ft bgs samples) and 5-ft soil gas RBCs, present the ratio of the maximum SQL to 1/10th of the RBC, and include the number of samples with SQLs greater than 1/10th of the RBC for Parcels C, D, and G, respectively. For all of the 2007, 2008 and 2013 sampling events, the maximum SQLs were less than 10% of the respective RBCs for all analytes (i.e. no non-detects were greater than 10% of the RBC). This result is consistent with the QAPP goal that SQLs are less than 1/10th of the BCL, as established by NDEP for the BMI Complex and Common Areas (NDEP 2010c). The SQLs achieved were confirmed to be adequate for risk assessment.

4.2.1.6 Criterion V – Data Review

The laboratory results of the soil gas samples for the 2007 Phase 2 sampling investigation, 2008 Phase B Source Area Soil Gas Survey, and the 2013 soil gas investigation were subjected to formal data validation consistent with (1) USEPA guidance on data validation (USEPA 1999a, 2001, 2008, 2009a), (2) the BMI Plant Site Specific Supplemental Guidance on Data Validation (NDEP 2009a), and (3) BRC SOP 40 and Data Review/Validation (BRC 2009). The specific data validation procedures are summarized in the following paragraphs.

The 2007 data from the laboratory were submitted to BEC, as CLP-like data packages in PDF format and EQuIS® format EDDs. The EDDs were imported into an EQuIS® database specifically created for this project. ERM-West validated the 2007 soil gas data; all data validation qualifiers were entered into the project database. The soil gas data set from 2007 was compared to the goals established in the 2007 QAPP (BRC, ERM, and MWH 2007b). The 2008 and 2013 data from the laboratory were submitted to Exponent and ENVIRON, respectively, as CLP-like data packages in PDF format and EQuIS® format EDDs. The EDDs were imported into an EQuIS® database specifically created for this project. ENSR and LDC validated the 2008 and 2013 data, respectively; all data validation qualifiers were entered into the project database. The soil gas data set from 2008 was compared to the goals established in the 2008 QAPP (ENSR 2008c) and the soil gas dataset from 2013 was compared to the goals established in the 2009 QAPP (AECOM and Northgate 2009).

As part of the 2007 soil gas DVSR (Appendix L-1), individual validation memoranda (included in Appendix A of the 2007 soil gas DVSR) were developed for batches of soil gas samples (ERM-West 2008). BEC reviewed the 2007 soil gas DVSR. The validation memoranda reported on the verification and examination of the following data elements:

- Data package completeness;
- Holding times;
- GC/MS instrument performance check;
- Initial and continuing calibrations;
- Method blanks;
- Surrogate spike recoveries;
- MS/MSD analysis;

- LC sample results;
- Regional QA/QC;
- Internal standard results;
- Target compound identifications
- Compound quantitation and contract required quantitation limits (CRQLs);
- Tentatively identified compounds;
- System performance;
- Overall assessment of data;
- Field duplicates;
- Volatiles data qualification summary;
- Laboratory blank data qualification summary; and
- Field blank data qualification summary

As part of the 2008 and 2013 soil gas DVSRs, individual validation memoranda were developed for batches of soil gas samples (ENSR 2008b, Ramboll Environ 2016e). Exponent reviewed the 2008 soil gas DVSR; Ramboll Environ reviewed the 2013 soil gas DVSR. Both of the 2008 and 2013 soil gas DVSRs reported on the verification and examination of the following data elements:

- Data package completeness;
- Holding times;
- Initial and continuing calibrations;
- Method blanks/canister blanks;
- Surrogate spike recoveries;
- Internal standard results;
- LC sample results;
- Field duplicate results;
- Laboratory duplicate results;
- Quantitation limits and sample results; and
- Helium gas concentrations

Within Appendix L-1, the data validation report in Attachment A summarizes the qualification findings as presented in the 2007 soil gas DVSR with regard to calibrations, field duplications, quantitation issues, and blank contamination, respectively. Within Appendix L-2, the data validation memos in Attachment B summarizes the qualification findings as presented in the 2008 DVSR with regard to blank contamination, calibrations, field duplications, quantitation problems, and helium tracer results, respectively. Within Appendix L-3, the DVSR summarizes the qualification findings with regard to calibrations, field duplications, quantitation issues, and blank contamination, respectively. These data qualifications are discussed below, as a component of Criterion VI.

4.2.1.7 Criterion VI – Data Quality Indicators

The DQIs include completeness, comparability, representativeness, precision, and accuracy. The information from the DQI review supports the discussion of uncertainties in the HRA (presented in Section 6) as related to (1) selection of COPCs; (2) characterization of exposure concentrations; and (3) the estimated cancer risks and noncancer hazards. Further, this final step of the DUE is conducted to insure that the overall quality of the data is sufficient to support the HRA and the risk management decisions that will be made for the Study Area. The specific criteria for assessing DQIs were identified in the NDEP-approved QAPPs (BRC, ERM, and MWH 2007b, ENSR 2008c, AECOM and Northgate 2009).

Completeness

The completeness criterion includes an evaluation of field completeness and laboratory completeness. Field completeness was 100% for the 2007, 2008, and 2013 sampling events, exceeding the goal of greater than 90% completeness established in the QAPPs (BRC, ERM, and MWH 2007b, ENSR 2008c, AECOM and Northgate 2009). The field completeness calculation is based on the number of locations sampled and number of samples collected, as identified in the investigation work plans, as compared with the number of locations sampled and number of samples shown on the completed chain-of-custodies.

All chain-of-custody requests were executed by the laboratories, with only a few minor exceptions reported for the 2008 sampling. (Exceptions are detailed in the data validation memoranda included in Appendix L-2.) Laboratory completeness achieved for each of the 2007, 2008 and 2013 data sets was 100%, based on the number of requested analyses on the chain-of-custodies as compared with the number reported by the laboratory. Overall data completeness was 100% for the 2007 data set, 99% for the 2008 data set, and 100% for the 2013 data set, based on the number of validated data points. For all data sets, data completeness exceeded the QAPP goals of 95%.

Comparability

Comparability is a qualitative characteristic expressing the confidence with which one data set can be combined with another for purposes of estimating exposure. More specifically, comparability is a qualitative measure of confidence that two or more data sets may contribute to a common analysis. In general, comparability of data was maximized by using standard methods for sampling and analysis, data reporting, and data validation over the 2007, 2008, and 2013 sampling programs. In the 2007 investigation, samples were collected at 10 ft bgs in Parcels C and D. There are no 10 ft bgs soil gas samples collected from Parcel G. Information was not identified on proceedures used for leak checking during the 2007 sample collection. These will be discussed in the uncertainties in Section 6.1. In both 2008 and 2013 investigations, samples were collected at five ft bgs in Parcels C, D, and G, and helium was used as the tracer gas for leak checking during sample collection. USEPA Method TO-14 was used for the 2007 analytical program. USEPA Method TO-15 was used for both 2008 and 2013 analytical programs. The 2007 sampling results were reported in parts per billion in volume (ppbv), and both 2008 and 2013 sampling results were reported in $\mu g/m^3$. Additionally, the 2008 and 2013 used the same sample preservation, extraction, and preparation techniques. This same information for the 2007 investigation was not

identified. Finally, similar site conditions existed during the 2007, 2008, and 2013 sampling programs.

One difference between the 2008 and 2013 sampling events is that Low-Level USEPA Method TO-15 was used in 2013, as compared to the standard USEPA Method TO-15 used in 2008. For this reason, the SQLs were approximately 2- to 30-fold lower in the 2013 data set than in the 2008 data set. The 2007 sampling event used TO-14, and SQLs were approximately one order of magnitude higher in the 2007 dataset than the 2008 dataset. However, because maximum detected concentrations were used in the HRA (and SQLs were sufficiently low in all investigations, as discussed in Section 4.2.1.5), the differences in detection limits does not affect the results of the HRA.

Temporal factors were also considered in the comparability evaluation. Soil gas concentrations would be expected to follow trends in groundwater concentrations, in cases where groundwater is the source of VOCs. However, the sample location selection method for the 2007 soil gas investigation is different from the 2008 soil gas investigation; the objective of the 2013 investigation was to expand spatial coverage, particularly in areas not previously sampled in 2008 and not to evaluate concentration trends. Because no sample was co-located among the 2007, 2008 and 2013 soil gas sample, soil gas concentrations among the three investigations cannot be directly compared (this issue is discussed in Section 6.1, Uncertainty Analysis).

Representativeness

Representativeness is the degree to which data accurately and precisely represent a characteristic of the population at a sampling point or across an area (e.g., represented by the average concentration). There is no standard method or formula for evaluating representativeness. Spatial representativeness is achieved through selection of sampling locations that are appropriate relative to the objective of the specific investigation and by collection of an adequate number of samples from locations identified in relation to the investigation objectives. Concentration representativeness is achieved by obtaining analytical results of sufficient quality, as specified in the QAPP.

Spatial representativeness was discussed previously in Section 4.2.1.4. As noted, locations sampled in 2007 were placed at 10 ft bgs to both evaluate potential future land use exposures and to characterize potential source areas in the current boundaries of Parcels C and D, with sufficient spatial coverage for these two parcels for sampling purposes (BEC 2007a). Locations sampled in 2008 and/or 2013 were placed at five ft bgs near or within LOUs where VOCs may have been used in past operations; in areas overlying trespassing (western site boundary) groundwater plumes (Parcels C and D); and/or co-located with groundwater monitoring wells. Additional locations were included to achieve spatial coverage.For Parcels C and D, at least one soil gas sample was located within the area of the highest VOC concentrations in groundwater, consistent with the investigation objective. Collectively, the 2007, and combined 2008 and 2013 data sets are representative of potential source areas (i.e., LOUs) and areas overlying the highest VOC concentrations in groundwater within each Study Area parcel.

The degree to which the analytical data are representative of soil gas concentrations at the locations sampled is evaluated in this section by reviewing the helium leak check data from the 2008 and 2013 investigations. Analytical precision and accuracy, also considered in the evaluation of representativeness, are discussed in Section 4.2.1.7.

Entrainment of contaminants and dilution with surface air can impact the representativeness of analytical results. Helium gas was used in both the 2008 and 2013 investigations as a leak check compound during purging and sampling. For the 2008 investigation, all sample results with helium concentrations between 1% and 10% of the shroud average were qualified as estimated (J) based on possible contamination and dilution by surface air. This rule was based on a conservative interpretation of the Interstate Technology Regulatory Council (ITRC) document *Vapor Intrusion Pathway: A Practical Guideline* (ITRC 2007) and *Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (New York State Department of Health 2006). Based on this criterion, the analytical results for only one sample location within the Study Area, SG17, was J qualified. No helium concentration in soil gas exceeded 10% of the shroud average.

For the 2013 investigation, helium shroud concentrations ranged from 20.0% to 34.7% and averaged 28.7%. Helium was detected in two probes, E-SG-1 (2.85%) and E-SG-3 (0.5%); however, the laboratory detections for the samples collected at these locations were 0.0067% and 0.0082%, respectively, so the field detections do not appear to have impacted sample results. As listed in Appendix B, Table B-3, helium was detected in 9 samples at concentrations less than 0.1% of the shroud concentration. Because criteria for qualifying samples with helium detections was not specifically identified in the QAPP, none of the 2013 analytical results were qualified as a result of the helium detections. Section 6.1.2 discusses a sensitivity analysis conducted to evaluate the impact of the helium detections on the exposure concentrations used in the HRA.

Precision

Precision is a measure of the degree of agreement between replicate measurements of the same source (field precision) or sample (analytical precision). Precision is expressed by the RPD between replicate measurements. Replicate measurements can be made on the same sample or on two samples from the same source.

Field precision for the Study Area samples was assessed by evaluating the field duplicate results for the 2007, 2008 and 2013 investigations:

- 2007 investigation: As specified in the 2007 SAP, two field duplicates (at TSB-CJ-01 and TSB-DR-01) were collected during the 2007 investigation in Parcel C and Parcel D, respectively. The precision goal for field duplicates was plus or minus 50% RPD except for the case in which results are less than five times the reporting limit. For the latter case, the acceptance criteria is the reporting limit (i.e., the absolute value of the difference between the primary result and duplicate result is compared to the reporting limit). Based on this review, no paired results for the parent sample and field duplicate were qualified for imprecision in the 2007 soil gas dataset. Table L-1 in Appendix L shows all paired results in the 2007 soil gas dataset for Parcel C and Parcel D.
- 2008 investigation: Although field duplicate samples were collected in 2008, none of the duplicate samples were collected from locations in or near the Study Area. As summarized in the 2010 Site-Wide Soil Gas HRA (Northgate and Exponent 2010c), for samples collected outside the Study Area, 84 associated field sample results in nine primary sample/field duplicate pairs were qualified estimated (J) based on RPDs that exceeded the QAPP criteria. These values were summarized from information in

the 2008 DVSR. Field duplicates were associated with each of the 2008 sample delivery groups (SDGs), as discussed further in Section 6.1.5.

- 2013 investigation: As specified in the 2013 work plan, no field duplicate was collected during the 2013 investigation near the Study Area. One field duplicate (E-SG-6) was collected outside the Study Area, 20 paired values (total of 40 sample results) were qualified based on RPDs that exceeded the QAPP criteria. These values were summarized from information in the 2013 DVSR. Field duplicates were associated with each of the 2013 SDGs, as discussed further in Section 6.1.5.

Laboratory precision was quantitated for each laboratory data batch using data for the laboratory control versus the laboratory control duplicate (LC/LCD) and/or data for the MS/MSD. The laboratory duplicate precision was within the limits established in the QAAPs for the 2007, 2008, and 2013 analytical programs.

Accuracy

For this DQI, field accuracy and laboratory accuracy are evaluated. Accuracy in the field is assessed through the use of trip and equipment blanks and through adherence to all sample handling, preservation, and holding time requirements. As specified in the QAPP, the objective for trip and equipment blanks is for no analyte to be present at levels greater than the laboratory PQL.

For the 2007 data set, 18 analytical results for methylene chloride were qualified as estimated (J) due to contamination in trip or equipment blanks (Table L-2 in Appendix L). A comparison of the estimated concentrations in Table L-2 with the 10 ft bgs soil gas RBC shows that concentrations in the trip and field blanks were well below the RBCs. For the 2008 data set, no analytical result was qualified due to contamination in equipment or field blanks. For the 2013 data set, 25 analytical results were qualified as estimated (J) due to contamination in trip or equipment blanks (Table L-2 in Appendix L). A comparison of the estimated concentrations in Table L-2 with the 5 ft bgs soil gas RBCs shows that concentrations in the trip and field blanks were well below the RBCs.

For the 2007, 2008 and 2013 investigations, all samples were analyzed within the holding time of 30 days specified for USEPA Method TO-14 and TO-15, and sample preservation and sample integrity criteria were met. No deviations in sample handling were reported.

Accuracy in the laboratory analytical data is a measure of the overestimation or underestimation of reported concentrations. Accuracy is quantitated for each laboratory data batch using data for method blanks, LC samples and/or MS samples.

- Method blanks. Qualifications based on contamination in method blanks were reviewed. For the 2007 data, one result was qualified as estimated (J) due to contamination in blanks associated with samples TSB-DR-01(FD) (Table L-1.2). For the 2008 data, six results were qualified as estimated (J) due to contamination in blanks associated with samples SG16 and SG19 (Table L-2.2).
- For the 2013 data set, no result was qualified due to method blank contamination.
- Spike recovery. Surrogate percent recovery and LC standard percent recovery met the QAPP acceptance criteria of 70 to 130% for all sample analyses.

Table L-2 identifies samples qualified due to blank contamination for the 2007, 2008, and 2013 soil gas data set.

4.2.1.8 Data Usability Conclusions

All analytical results from the 2007, 2008, and 2013 soil gas sampling programs were deemed usable for conducting the HRA. The HRA soil gas data set includes a total of 38 soil gas samples. Twenty-four samples were collected in Parcels C and D in 2007, all collected at a depth of approximately 10 ft bgs. Eight samples collected in 2008 within or near the Study Area and six samples collected within the Study Area in 2013, all collected at a depth of approximately five ft bgs. As shown on Table 3-2 and Figures 3-1 and 3-2, 19 samples were located within (or on the border of) the current boundaries of the Study Area except for sample SG-17 (located within Parcel E, between Parcels C and D) located near the Study Area. TSB-CJ-06 sampled in 2007, SG17 and SG18 sampled in 2008, and E-SG-1 sampled in 2013 were collected near the border of Parcels C and D and were used for the evaluation of both Parcels C and D. In summary, a total of 25 samples were collected within or near Parcel C (16 samples were collected in 2007, six samples were collected in 2008 and 3 samples were collected in 2013). A total of 14 samples were collected within or near Parcel D (eight samples were collected in 2007, three samples were collected in 2008 and two samples were collected in 2013). A total of three samples were collected within or near Parcel G (one sample was collected in 2008 and two samples were collected in 2013).

All J-qualified data were considered usable and were retained for purposes of the HRA. The impact of qualified data on the HRA risk results is discussed in Section 6.1.

4.2.2 Data Analysis

As described by NDEP (2010c), the purpose of the data analysis step is to “use simple exploratory data analysis to compare data to the expectations of the CSM, to determine if the data adequately represent the source terms and exposure areas or evaluation areas.” Consistent with the NDEP guidance, summary statistics and spatial plots were prepared. Additionally, specific data analyses requested by NDEP were conducted, as described below.

4.2.2.1 Summary Statistics

Summary statistics for the 2007 data set for Parcels C and D are presented in Tables 4-12A and 4-12B, respectively. Summary statistics for the combined 2008 and 2013 data set for each Parcel in the Study Area are presented in Tables 4-16A through 4-16C, respectively. Summary statistics for the 2013 data set is presented in Appendix B, Table B-5. As discussed above, field duplicate samples were collected at two locations during the 2007 investigation, and at one location during the 2013 investigation. For the 2008 investigation, duplicate samples were collected only outside the Study Area.

For the 2007 soil gas dataset, as shown in Tables 4-12A, 27 of the 51 VOCs analyzed in 2007 were detected in at least one sample and none of them was detected in 100% of the samples collected within or near Parcel C. The highest detected concentrations were for chloroform (119,000 µg/m^3), 1,1-DCA (1,360 µg/m^3), and PCE (1,590 µg/m^3). No other VOC was detected at concentrations of over 1,000 µg/m^3, and most VOCs were detected at concentrations of less than 100 µg/m^3 in Parcel C. As shown in Tables 4-12B, 16 of the 51 VOCs analyzed in 2007 were detected in at least one sample and two of the VOCs were detected in 100% of the samples collected within or near Parcel D. The

highest detected concentration was for chloroform (3,230 µg/m^3). No other VOC was detected at concentrations of over 1,000 µg/m^3, and most VOCs were detected at concentrations of less than 100 µg/m^3 in Parcel D. Most SQLs were low (less than 2 µg/m^3) although in a few cases elevated SQLs were reported (up to 73 µg/m^3 for cyclohexane in Parcel C) due to sample dilution.

For the combined 2008 and 2013 soil gas dataset, as shown in Table 4-13A, 58 of the 78 VOCs were detected in at least one soil gas sample, and 20 VOCs were detected in 100% of the samples collected within or near Parcel C. The highest detected concentrations were for chloroform (3,900 µg/m^3) and PCE (1,100 µg/m^3). No other VOC was detected at concentrations of over 1,000 µg/m^3, and most VOCs were detected at concentrations of less than 100 µg/m^3 in Parcel C. As shown in Table 4-13B, 56 of the 78 VOCs were detected in at least one soil gas sample, and 23 VOCs were detected in 100% of the samples collected within or near Parcel D. The highest detected concentration was for chloroform (1,800 µg/m^3). No other VOC was detected at concentrations of over 1,000 µg/m^3, and most VOCs were detected at concentrations of less than 100 µg/m^3. As shown in Table 4-13C, 40 of the 78 VOCs were detected in at least one soil gas sample, and 27 VOCs were detected in 100% of the samples collected within or near Parcel G. The highest detected concentration was for chloroform (140 µg/m^3). No VOC was detected at concentrations of over 1,000 µg/m^3, and most VOCs were detected at concentrations of less than 100 µg/m^3. Most SQLs were low (less than 2 µg/m^3) although in a few cases elevated SQLs were reported (up to 73 µg/m^3 for cyclohexane in Parcel C) due to sample dilutions.

4.2.2.2 Spatial Analysis of VOCs in Soil Gas

Spatial plots were prepared for carbon tetrachloride; chloroform; 1,1-DCA; PCE; and TCE based on the following criteria:

- Contribution to total cancer risk: Chloroform, PCE, 1,1-DCA, TCE, and carbon tetrachloride were among the highest contributors to total risk.
- Detection frequency: The detection frequency was 100 percent for all plotted COPCs with the exception of 1,1-DCA (0-80%).
- Chemical class: 1,1-DCA; PCE; and TCE were selected to examine co-location of these chlorinated VOCs.

The concentrations of the five COPCs identified for plotting in 10 ft bgs soil gas and five ft bgs soil gas are presented on Figures 4-1 and 4-2, respectively.

4.3 Groundwater

4.3.1 Data Usability Evaluation

In response to NDEP comments (NDEP 2017b), groundwater data were used in this HRA to evaluate potential risks for the vapor intrusion pathway. In the previous draft HRA report for the vapor intrusion pathway (Ramboll Environ 2016b), risks were evaluated using soil gas data, with a screening-level evaluation using groundwater data presented in an appendix. Considering USEPA's recent vapor intrusion guidance (USEPA 2015), which states that both soil gas and groundwater data should be considered in a line-of-evidence approach, risks for the vapor intrusion pathway were evaluated using both soil gas and groundwater results.

Consistent with previous USEPA guidance and NERT project work plans, only soil gas samples were collected to support evaluation of the vapor intrusion pathway. The objectives of groundwater sampling at the Site have been primarily to characterize SRCs in groundwater near suspected source areas and plume delineation; that is, no groundwater investigation was conducted to specifically provide data to evaluate the vapor intrusion pathway. Further, the majority of groundwater sampling on the Site has focused on perchlorate and hexavalent chromium, with limited sampling for VOCs and SVOCs.[32]

To provide groundwater data for this HRA, the NERT project database (discussed in Section 4.1.1.1) and the BMI database[33] were queried to identify wells within or near Parcels C, D, and G and for which VOC and/or SVOC results were available for shallow groundwater. The identified wells include wells owned and sampled by NERT and wells on the Site that are owned and sampled by other BMI entities. The wells meeting these criteria and relevant information, including well owners and sampling dates, are listed in Table 3-2.

Considering the approach for identifying groundwater data for evaluation in the HRA, the groundwater DUE addresses those DUE elements that are relevant and practicable to evaluate. Specifically, it is not practicable to conduct a comprehensive DUE for data collected by NERT predecessors and other BMI entities that have been reported in over 30 work plans and DVSRs that span a period of over 15 years. Ramboll Environ understands that groundwater data and the associated DVSRs would have been reviewed and approved by NDEP prior to entry into the NERT and BMI databases. According to NDEP comment #7 on the July 31, 2017 HRA Report for Parcels C, D and G, the only DVSR for groundwater data used in this HRA that has not been reviewd and approved is the Henderson_Offsite_Relational_062807 DVSR (Appendix N). Only one groundwater sample M-7B collected on 12/18/2007 in Parcel 7 is from this DVSR. The uncertainty associated with this sample is discussed in Section 6.1.1 of this report.

4.3.1.1 Groundwater Data Set

As noted above, groundwater wells were identified by querying the NERT and the BMI databases. VOC and/or SVOC results were identified from 23 wells across Parcels C, D, and G. The x,y coordinates for each well were plotted to verify that the wells are located within or near the parcels. A complete set of the groundwater analytical results is included in Appendix M.

Similar to the data processing steps described in Section 4.1.1.1 for soils, the combined groundwater data from the NERT and BMI databases were reviewed to 1) identify and

[32] Volatile SVOCs are also included in the vapor intrusion analysis due to the change of definition of volatile compounds by EPA. The volatile compounds are currently identified using the following criteria consistent with recommendation from the USEPA Regional Screening Levels Table (USEPA 2016): 1) vapor pressure greater than 1 mm Hg or 2) Henry's Law constant greater than 0.00001 atm-m^3/mole.

[33] The BMI Database, or the BMI Complex, Common Areas and Vicinity Database (BMIdbase) version 2 BETA, us a database maintained by NDEP. The purpose of this site is to provide access to data from a variety of parties located within and near the BMI Complex and Common Areas in Henderson, Nevada. In addition to access to data, this site provides access to certain tools which can be used to manipulate and depict the data. http://ndep.neptuneinc.org/ndep_gisdt/home/index.xml

correct inconsistencies in data field entries and 2) create additional fields to support data management and interpretation. The following steps of data processing were completed:

- Standardize chemical names and CAS registry numbers;
- Standardize analytical method names;
- Correct errors in data entry (e.g. errors in sample identification codes);
- Identify a unique result for use in the HRA for sample/analyte pairs for which more than one result was reported. For example, if two results were reported for BaP in the same sample – one by USEPA Method 8270 and the second by USEPA Method 8270 SIM – the result to be used in the HRA was identified as that from the 8270 SIM analysis because of the greater sensitivity (lower reporting limits) of this method.
- Develop database queries and confirm that queries returned the correct output.

The above steps were necessary due to the approximately 10-year period over which the groundwater data was collected and the differences in sampling, analysis, and data entry across investigations conducted by multiple BMI entities.

4.3.1.2 Criterion I – Reports to Risk Assessor

Criterion I requires confirmation that the reports relied upon are complete and appropriate for use in the HRA. As noted previously, Ramboll Environ relied upon the information presented in the NERT project database and the BMI Database. Specifically, this information included location ID, x,y coordinates, sample ID, sample type, sampling date, sampling depth, analyte, analytical method, analysis date and time, result, unit, data qualifiers, dilution factor, filtered flag, reanalysis flag, source of data, and available DVSR IDs.

4.3.1.3 Criterion II – Documentation

The objective of the documentation review is to ensure that all analytical data can be associated with a specific sample location and appropriate sample collection procedure.

The NERT and BMI databases provide adequate information regarding sampling results relative to sampling location, sampling date, and time and date of sample analysis. Information on sampling procedures is not available in the databases and has not been reviewed.

4.3.1.4 Criterion III – Data Sources

The review of data sources is performed to ensure that adequate sample coverage of source areas has been obtained and that the analytical methods are appropriate to identify COPCs and estimate exposure concentrations.

For the groundwater data, the review of sample coverage included consideration of both spatial and temporal coverage. The findings of the review are summarized for each parcel as follows:

Parcel C: Considering groundwater flow direction (shown on Figure 3-3) and the date of the most recent sampling event for the Parcel C wells identified in Table 3-2, spatial and temporal coverage of the western portion of Parcel C (i.e., the area west of M-7B) is considered adequate for evaluation of the vapor intrusion pathway. Specifically, wells AA-BW-04A, AA-BW-05A, H-28/28A, M-6A, and M-7B provide groundwater

concentrations on the southern (upgradient) parcel boundary; these wells were last sampled for chloroform in October 2011, October 2011, March 2015, January 2015, and Aril 2015, respectively. Chloroform results for the wells east of M-7B (M-98, M-99, and M-100) are available from only one sampling event each, in 2006, 2010, and 2006, respectively. These wells were dry during the 2015 RI data gap investigation. New deeper wells are currently being installed in the area as part of the Phase 2 RI investigation; these wells are scheduled for sampling in the second half of 2017.

Parcel D: Similar to Parcel C, spatial and temporal coverage of the western portion of Parcel D (i.e., the area to the north of Parcel E) is adequate for evaluation of the vapor intrusion pathway. The wells in this area, which are downgradient of the OSSM groundwater treatment system, were most recently sampled for chloroform (and other VOCs) in 2015. With the exception of MC-94, all other Parcel D wells listed in Table 3-2 were most recently sampled for chloroform and other VOCs in 2015.

Parcel G: There is one well in Parcel G (TR-08) and one adjacent to the north (AA-MW-23). TR-08 was sampled in January 2015 with a chloroform concentration of 8.8 µg/L. Parcel G is located outside of the known area of high concentrations of chloroform in groundwater. Limited VOCs were detected in these wells, all at low concentrations. Along with the soil gas data, these data are adequate for evaluation of the vapor intrusion pathway.

Information on analytical methods was available in the NERT and BMI databases. Standard USEPA methods were used, specicifically USEPA Method SW-8260 or SW-8260 SIM for VOCs and SW-8270 or SW-8270 SIM for SVOCs.

4.3.1.5 Criterion IV – Analytical Method and Detection Limits

Under Criterion IV, the SQLs were evaluated to confirm that they were sufficiently sensitive for risk characterization. Because NDEP has not derived groundwater BCLs for the vapor intrusion pathway, groundwater RBCs were derived corresponding to the more stringent of (1) a cancer risk of 1×10^{-6} or (2) a noncancer HQ of 1. The RBCs were derived using outputs from the Johnson and Ettinger (1991) model and the values for exposure assumptions and toxicity criteria presented in Section 5.

For each groundwater analyte for which the detection frequency was less than 100%, the maximum SQL was compared to the RBC. Tables 4-14A through 4-14C list the maximum SQL, the most stringent groundwater RBC, the ratio of the maximum SQL to $1/10^{th}$ of the RBC, and the number of samples with SQLs greater than $1/10^{th}$ of the RBC. For all analytes, the maximum SQL was less than 10% of the respective RBC (i.e. no non-detects were greater than 10% of the RBC). This result is consistent with the QAPP goal that SQLs are less than $1/10^{th}$ of the screening level, as established by NDEP for the BMI Complex and Common Areas (NDEP 2010c). The SQLs achieved were confirmed to be adequate for risk assessment.

4.3.1.6 Criterion V – Data Review

The majority of the groundwater data included in the HRA have DVSRs identified and summarized in Appendix L. The data review included evaluation of completeness, instrument calibration, laboratory precision, laboratory accuracy, blanks, adherence to method specification and QC limits, and method performance in sample matrix. The laboratory results of the groundwater samples included for this HRA were subjected to formal data validation consistent with (1) USEPA guidance on data validation (USEPA

1999a; 2001; 2004a; 2005a,b; 2008; 2009a), (2) the BMI Plant Site Specific Supplemental Guidance on Data Validation (NDEP 2009), and (3) BRC SOP 40 and Data Review/Validation (BRC 2009). The specific data validation procedures are summarized in the DVSRs listed in Appendix L.

The available DVSRs for groundwater data included in the HRA are provided in Appendix L, in which the names and qualifications of the reviewers, the specific data validation procedures, and the qualification findings are presented. Each DVSR includes the following summaries of the data qualifications:

- Summary of data qualified due to holding time exceedances
- Summary of data qualified due to detection below quantitation limit
- Summary of data qualified due to laboratory blank contamination
- Summary of data qualified due to field blank contamination
- Summary of data qualified due to MS/MSD recovery exceedances
- Summary of data qualified due to LCS recovery exceedances
- Summary of data qualified due to field/laboratory duplicate
- Summary of data qualified due to surrogate recovery exceedances
- Summary of data qualified due to calibration violations
- Summary of data qualified due to calibration range exceedances
- Summary of data qualified due to internal standard recovery exceedances
- Summary of data qualified due to serial dilutions
- Summary of qualified data results
- Summary of rejected data results

These data qualifications are further discussed below as a component of Criterion VI.

4.3.1.7 Criterion VI – Data Quality Indicators

This section presents the DQI review; the specific criteria for assessing DQIs were identified in the NDEP-approved QAPPs (BRC, ERM and MWH 2007b; ENSR 2008c; AECOM and Northgate 2009).

Completeness

The completeness criterion (an evaluation of field completeness and laboratory completeness) was not evaluated for the groundwater dataset given the data selection criteria. That is, well locations for inclusion in the HRA data set were selected because relevant data were available and not specific to being part of an investigation. Completeness is typically evaluated based on a single study and not for data drawn from multiple studies.

Comparability

Comparability is a qualitative characteristic expressing the confidence with which one data set can be combined with another for purposes of estimating exposure. A limited

evaluation of this DQI is presented based on the information available in the NERT and BMI databases.

The same analytical methods were used across most investigations; specifically, USEPA Method SW-8260 for VOCs and SW-8270 for SVOCs. In some investigations, the more sensitive SW-8260 SIM was used for VOCs; SW-8270 SIM was used for PAHs across all analytical programs. All groundwater sampling results were reported in µg/L.

Because maximum detected concentrations were used in the HRA (and SQLs were sufficiently low in all investigations, as discussed in Section 4.3.1.5), the differences in detection limits does not impact the results of the HRA.

It is noted that the same set of analytes was not consistently analyzed for in all groundwater samples. For Parcel C, sample number was reasonably consistent across analytes ranging from 45 to 65 samples (Table 4-15A). For Parcel D, most VOCs were analyzed in over 100 samples, whereas SVOC analyses were more limited (less than 10 samples) with the exception of hexachlorobutadiene and naphthalene, each with over 100 samples (Table 4-15B). For Parcel G, sample number ranged from one to seven (Table 4-15C).

Few wells have been sampled over time for VOCs and/or SVOCs such that temporal factors were not considered in the comparability evaluation. The VOC concentrations in the two wells with multiple sampling events (AA-BW-04A and AA-BW-05A) are influenced by the operating OSSM treatment system.

Representativeness

Spatial representativeness was discussed previously in Section 4.3.1.4.

Precision

Precision is a measure of the degree of agreement between replicate measurements of the same source (field precision) or sample (analytical precision). Precision is expressed by the RPD between replicate measurements. Replicate measurements can be made on the same sample or on two samples from the same source.

Field precision was assessed by evaluating the field duplicate results for the HRA groundwater data. A total of 24 field duplicates (Table N-3) were collected for the groundwater data set: 14 field duplicates in Parcel C, eight in Parcel D, and two in Parcel G. The precision goal for field duplicates was plus or minus 50% RPD except for the case in which results are less than five times the reporting limit. For the latter case, the acceptance criteria is the reporting limit (i.e., the absolute value of the difference between the primary result and duplicate result is compared to the reporting limit). Based on this review, 110 associated field sample results in four primary sample/field duplicate pairs were qualified estimated (J) based on RPDs that exceeded the QAPP criteria. These values were summarized from information in Appendix N. Field duplicates were associated with each of the SDGs, as discussed further in Section 6.1.5. Table N-3 in Appendix N shows all paired results in the groundwater dataset.

Accuracy

This DQI includes an evaluation of field accuracy and laboratory accuracy. Accuracy in the field is assessed through the use of trip and equipment blanks and through adherence to all sample handling, preservation, and holding time requirements. The

QAPP goal is for the trip and equipment blanks is for no analyte to be present at levels greater than the laboratory PQL.

For the groundwater data set, 36 analytical results were qualified as estimated (J or J+) due to contamination in trip or equipment blanks (Table N-4) in accordance with the most recent NDEP guidance (NDEP 2012). A comparison of the estimated concentrations in Table N-4 with the groundwater RBCs shows that concentrations in the trip and field blanks were well below the RBCs.

Accuracy in the laboratory analytical data is a measure of the overestimation or underestimation of reported concentrations. Accuracy is quantitated for each laboratory data batch using data for method blanks, LC samples and/or MS samples.

- Method blanks. Qualifications based on contamination in method blanks were reviewed. For the groundwater dataset, no results was qualified as estimated (J) due to contamination in blanks associated with the groundwater samples identified in Table N-4.

4.3.1.8 Data Usability Summary

The groundwater HRA dataset includes a total of 204 samples: 93 samples collected in Parcel C, 104 samples in Parcel D, and seven samples in Parcel G. The included groundwater wells are located within or upgradient of the parcels, with analytical results reported for VOCs and/or SVOCs. The dataset includes results for samples collected since January 2006. All J-qualified data were considered usable and were retained for purposes of the HRA; all R-qualified data were excluded from the dataset. The impact of qualified data on the HRA risk results is discussed in Section 6.1.

4.3.2 Data Analysis

As described by NDEP (2010c), the purpose of the data analysis step is to "use simple exploratory data analysis to compare data to the expectations of the CSM, to determine if the data adequately represent the source terms and exposure areas or evaluation areas." Consistent with the NDEP guidance, summary statistics and spatial plots were prepared. Additionally, specific data analyses requested by NDEP were conducted, as described below.

4.3.2.1 Summary Statistics

Summary statistics for the groundwater data set for each of Parcels C, D, and G are presented in Tables 4-15A through 4-15C, respectively.

- Parcel C (Table 4-15A): 92 of the 158 VOCs analyzed were detected in at least one sample, with detection frequencies ranging from 1.4 to 89 percent. The highest detected concentrations were: chlorobenzene (160,000 µg/L), benzene (120,000 µg/L), chloroform (4,000 µg/L), 1,4-dichlorobenzene (3,600 µg/L), and 1,2-dichlorobenzene (1,900 µg/L). No other VOC was detected at a concentration greater than 1,000 µg/L, and most VOCs were detected at concentrations of less than 100 µg/L.
- Parcel D (Table 4-15B): 66 of the 108 VOCs analyzed were detected in at least one sample, with detection frequencies ranging from 0.99 to 88 percent. The highest detected concentrations were for chlorobenzene (1,800 µg/L) and benzene (2,000 µg/L). No other VOC was detected at a concentration greater 1,000 µg/L, and most VOCs were detected at concentrations of less than 100 µg/L.

- Parcel G (Table 4-15C): 8 of the 159 VOCs analyzed were detected in at least one sample, with detection frequencies ranging from 14 to 100 percent. Chloroform is the only chemical detected in 100% of the samples. All VOCs were detected at very low concentrations, i.e., less than or equal to 10 µg/L.

4.3.2.2 Spatial Analysis of VOCs in Groundwater

Spatial plots were prepared for chloroform, which is the primary risk driver in groundwater and which has the highest detection frequency among all volatile compounds in the parcels. The concentrations of chloroform in groundwater are depicted on Figure 4-3.

4.3.2.3 Temporal Changes in VOC Groundwater Concentrations

In NDEP's January 29, 2013 comment letter (NDEP 2013, Comment #9b), NDEP requested a comparison of the groundwater VOC concentrations presented in the 2010 Site-Wide Soil Gas HRA (Northgate and Exponent 2010c) with the most recent groundwater sampling results for the same wells to evaluate temporal changes in concentration.

In response to this request, sampling results for chloroform in wells located within or immediately upgradient of the Parcels C and D with the highest cancer risks and were sample in multiple sampling events (AA-BW-04A and AA-BW-05A) were plotted in Figure 4-4. The 2008/2009 chloroform concentrations are significantly higher than the results from 2010/2011. Similar trends were observed for chloroform at other locations and for other VOCs at these two wells and at other locations. In general, wells in which a downward trend was not observed are wells in which the VOC concentrations were low, i.e., near reporting limits. The one exception is well M-23 in which the chloroform concentration was somewhat higher in 2015 (460 µg/L) as compared with 2008 (130 µg/L).

4.4 Study Area CSM

The following presents an overall summary of the soil data in the context of our understanding of current and former land use and operations within Parcels C, D, and G and the CSM.

- Chloroxyanions. Chlorate and perchlorate manufacturing operations have been conducted at the Site since approximately 1945 (Ramboll Environ 2016f), although the former manufacturing and disposal areas were not located in Parcel C, D, or G. Although these compounds are detected throughout Parcels C (Figures J-4 and J-12), D (Figures J-22 and J-27), and G (Figures J-37 and J-43) soils, concentrations in the parcels (<0.051 mg/kg to 253 mg/kg for chlorate and <0.0034 mg/kg to 138 mg/kg for perchlorate) are generally substantially lower than the concentrations reported in former manufacturing areas (above 1,000 mg/kg for chlorate and perchlorate).
- Metals. The 2011 NDEP Action Memorandum (NDEP 2011) identified "metals" as possible SRCs at many of the LOUs within the Operations Area, and in LOUs 69 (the Storm Sewer System), 60 (the Acid Drain System), and 65 (not specific to 65d [Green Ventures International]) within Parcel G. This does not mean metal contamination was known to be present – only metals were possible soil contamination. Metals associated with LOUs 69 and 60, if present, would not necessarily have been associated with operations at Parcel G, since the sewer and acid drain system would carry metals from other areas of the Site. Results of the

background evaluation of metals in Parcels C, D and G (Appendix I) show that post-removal soil concentrations were greater than background (as compared with the RZ-A background dataset) for arsenic, barium, beryllium, chromium (total), potassium, sodium, and uranium (total) in one or more parcels.

- Other Inorganics. This group of inorganic compounds includes common industrial chemicals that are used as chemical feedstocks and/or expected to be present in process waste streams. With the exception of fluoride and nitrate, all compounds were historically identified as SRCs at the Operations Area. These compounds are generally highly soluble when present as free anions or cations. Many of these compounds are physiological electrolytes and/or occur naturally in foods. Although all of the listed inorganics occur naturally in soil, RZ-A background data sets are not available to conduct a background analysis. At the concentrations detected in soil, these inorganics do not present human health concerns. Generally, these inorganics are of greater concern when detected as contaminants in groundwater than when present at elevated concentrations in soil.
- Radionuclides. Radionuclides are not known to be associated with any of the former operations identified in Parcels C, D, or G (or in the Operations Area). Although no specific source areas were identified, the parcel soil investigations included analyses for radionuclides in the U-238 and Th-232 decay series and for U-235. Although several radionuclides failed the statistical testing for background soil (Appendix I), the validity of the statistical testing is confounded by several analytical and other issues (see detailed discussion in Section 5.1.1.2).
- Dioxins/Furans. As shown in Table 4-9, dioxins/furans were frequently detected in soil samples collected within Parcels C, D, and G. The high detection frequency is not unexpected given that 1) sensitive analytical methods were used, and 2) dioxin/furans are formed during various combustion processes (in the presence of a source of hydrocarbons and chlorine) and are by-products of the production of certain chlorinated chemicals, including pesticides. Dioxins are typically detected in shallow surface soils as a result of airborne deposition. They are extremely persistent in soils and over time will accumulate in the presence of a continuing source. A removal polygon for dioxins was identified in the 2010 soil removal action in Parcel C (Figure 3-1). The post-removal soil concentration is greater than the site-specific action level of 0.0027 mg/kg at one location in Parcel C.
- PAHs. PAHs are ubiquitous environmental contaminants and formed during incomplete combustion of organic materials. The detection frequencies of PAHs in Parcels C, D, and G were generally very low.
- Organochlorine Pesticides. The detections of organochlorine pesticides is consistent with former site operations, including the manufacture of chlorobenzenes and DDT by Hardesty /AMECCO from 1946 to 1949 (Ramboll Environ 2016f), as well as with the manufacture of chlorinated compounds at the adjacent OSSM facility. Stauffer produced lindane at the former Lindane Plant from 1946 through 1958.
- SVOCs. Only three SVOCs were detected in Parcels C, D, or G with very low detection frequencies. Bis(2-ethylhexyl)phthalate and carbazole were not historically listed as SRCs, and bis(2-ethylhexyl)phthalate is a common field/laboratory contaminant. Octachlorostyrene was historically listed as a SRC, and is highly

persistent in soil. It is a by-product of many industrial chemical processes, and formed during incineration and combustion processes involving chlorinated compounds.

- VOCs. Consistent with results observed in investigations at other industrial facilities, a range of VOCs were detected in soils, but at low frequencies and low concentrations. Several of the VOCs are common field/laboratory contaminants, including acetone, 2-butanone, methylene chloride, and toluene.

A review of the spatial quartile plots (Appendix J) did not identify a particular spatial pattern of the chemicals in soils or the presence of hot spots or potential point sources of contamination.

As part of the ongoing RI/FS, Ramboll Environ completed an extensive review of existing information and data generated previously at the Site and developed a preliminary CSM, as presented in the RI/FS Work Plan (ENVIRON 2014a). More recently, Ramboll Environ conducted a comprehensive review and analysis of historical and recently collected sampling results to assess the magnitude and extent of chloroform impacts to soil, soil gas, and groundwater at the Site, including groundwater sampling results within the

Study Area (Ramboll Environ 2015b, 2016c). The conclusions of the review considering the RI data gap investigation results are presented below. Additional investigation of the presence and extent of chloroform in shallow groundwater upgradient of Parcels C and D is being conducted as part of the RI Phase 2 investigation in progress. Within the Site, additional investigation at Unit Buildings 4 and 5 is also inprogress.

- Chloroform impacts to shallow groundwater, both on-Site and in the downgradient plume area to the north, appear related in part to historical wastewater discharges to the former Beta Ditch. The highest concentrations of chloroform found in shallow groundwater at the Site have consistently been associated with the area where the former Beta Ditch extended across the property.
- Chloroform is migrating onto the Site from the adjacent OSSM site located to the west. Chloroform in the dissolved phase is present in shallow groundwater beneath the western portion of Parcel F and below the western portion of Parcel C upgradient of the OSSM extraction wells. In the deeper Middle Water Bearing Zone (WBZ), Montrose is investigating a lobe of dense non-aqueous phase liquid (DNAPL) that originates at the OSSM site and extends into the western portion of the NERT Site. However, the DNAPL in the Middle WBZ has not been found beneath the Study Area parcels.
- On-Site soil and shallow groundwater sampling results collected as part of the RI data gap investigation are not indicative of historic on-Site releases of chloroform to soils nor of significant on-Site sources of chloroform to groundwater. Specifically, no soil sample collected during this investigation contained chloroform at concentrations above the residential BCL of 353 µg/kg (NDEP 2015a), and chloroform concentrations were more than an order of magnitude below the industrial BCL for worker exposures (1,560 µg/kg).
- The soil sampling at all locations exhibited a vertical profile whereby chloroform concentrations increased with depth. The most stringent leaching based BCL (dilution attenuation factor of 1) of 30 µg/kg was exceeded in only 8 of the 201 samples

collected (6 out of 34 locations). The highest concentrations of chloroform detected were associated with vertical depth intervals near the water table, indicating the effect of adsorption onto soils of chloroform present in groundwater in the capillary fringe. Given that the concentrations observed in groundwater grab samples were generally two to three orders of magnitude above soil concentrations, there is no evidence to suggest that soils at the Site are acting as a source of observed groundwater contamination by chloroform.

- Additional investigation is necessary at the Unit 4 and 5 Buildings to better understand the distribution of chloroform in this area. This work was begun in early 2016 and is continuing in 2017.

Available information and investigation results for the Study Area (specifically, Parcels C,D, and G) are consistent with the CSM tenet that the source of VOCs in soil gas is groundwater that was historically impacted by releases of VOCs from other areas(Ramboll Environ 2015b, 2016c). Although VOCs were identified in desk-top reviews that considered historical operations at the LOUs within the Study Area, VOC concentrations in soil were not indicative of historic releases of chloroform or other VOCs to Study Area soils nor is there evidence of significant on-Site sources of groundwater contamination.

As summarized in Section 3, the VOC detections in soil within the 0 to 10 ft depth interval were generally sporadic and reported concentrations were low, with few exceptions. The higher concentrations were for common laboratory contaminants (i.e., acetone, methylene chloride, and methyl n-butyl ketone). Chloroform was detected at relatively high concentrations (i.e., between 200 and 410 µg/kg) in soil at depths of 20 ft bgs; however, chloroform was not detected in the surface or 10 ft bgs samples from the same location. Similarly, chloroform was detected at a relatively high concentration of 110 µg/kg at 40 ft bgs in Parcel G, but not in the 0, 10, 20, or 30 ft bgs samples from the same location. The Parcel G sample (as well as other soil samples where chloroform was detected at depth) appears to be representative of the inferred capillary fringe of the water table in this location as the depth of this sample (35 ft bgs) was collected from the vertical interval directly above the water table. These results are consistent with groundwater as the source of chloroform (and other VOCs) in soil gas samples collected within the Study Area.

There is no evidence to suggest that soils within Parcels C, D, and G are acting as a source of groundwater VOC contamination; further, concentrations in soil are not indicative of historic releases of chloroform to soils.

5. POST-REMEDIATION HEALTH RISK ASSESSMENT

This section presents the post-remediation HRA, which includes the following elements:

- Identification of COPCs;
- Exposure assessment;
- Toxicity assessment; and
- Risk characterization.

The post-remediation HRA follows the basic procedures outlined in the USEPA's Risk Assessment Guidance for Superfund: Volume I—Human Health Evaluation Manual (USEPA, 1989). Other guidance documents consulted in preparing the HRA include:

- Risk Assessment Guidance for Superfund: Volume I—Human Health EvaluationManual (Part A) (USEPA 1989);
- Guidelines for Exposure Assessment (USEPA 1992c);
- Exposure Factors Handbook (USEPA 2011);
- Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) (USEPA 2004b);
- Soil Screening Guidance: Technical Background Document (USEPA 1996);
- Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites (USEPA 2002b);
- Soil Screening Guidance for Radionuclides (USEPA 2000);
- Technical Support Document for a Protocol to Assess Asbestos-Related Risk, Final Draft (USEPA 2003);
- Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment) (USEPA 2009b);
- Office of Solid Waste and Emergency Response (OSWER) Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance) (USEPA 2002c);
- User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings (USEPA 2004c);
- OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air (USEPA 2015);
- Technical and Regulatory Guidance, Vapor Intrusion Pathway: A Practical Guideline
- (ITRC 2007);
- Soil Physical and Chemical Property Measurement and Calculation Guidance, BMI
- Plant Sites and Common Areas Projects, Henderson, Nevada (NDEP 2010b);

5.1 Identification of COPCs

5.1.1 Soil COPCs

Soil COPCs for quantitative evaluation in the post-remediation HRA were identified from the risk assessment data set in Section 4 for each parcel based on the following three-step approach:

1. Concentration/toxicity screen;
2. Background evaluation for metals and radionuclides; and
3. Chemical-specific considerations.

The chemicals that "fail" these steps are retained as COPCs and those that "pass" are excluded as COPCs[34], as described in Sections 5.1.1.1 through 5.1.1.3 and shown on Figure 5-1.

5.1.1.1 Step 1 – Concentration/Toxicity Screen

The concentration/toxicity screen is conducted to identify those chemicals that could contribute significantly to the cancer risk and/or non-cancer hazard estimate (i.e., the hazard index [HI]). The screen considers the maximum detected concentration in soils in each parcel and chemical-specific toxicity, as reflected in the BCL (or other criteria established for the Site); specifically, a chemical is excluded as a COPC if the maximum detected concentration is less than 0.1 times the BCL (0.1×BCL). Chemicals that pass this screen for a parcel are eliminated as COPCs for that parcel. Chemicals that fail this screen (i.e., are present at concentrations greater than or equal to 0.1×BCL) are further screened under Step 2 and/or Step 3.

The post-remediation soil HRA data set identified in Section 4 is the starting point for the concentration/toxicity screen. This data set includes the results for all analytes detected in one or more samples from the 0 to 10 ft depth interval[35], with the exception of the analytical results excluded based on the DUE, as discussed in Section 4. For most analytes, the BCL used for the concentration/toxicity screen is the minimum of the indoor and outdoor commercial/industrial worker BCL (NDEP 2015b). Because BCLs have not been established for all analytes in parcel soils, surrogate values were identified where possible. Surrogates and other chemical-specific exceptions as well as the results of the screen are presented in Tables 5-1 through 5-3 and discussed in the following sections.

5.1.1.2 Surrogates

The concentration/toxicity screen can be implemented only for chemicals for which a BCL or appropriate surrogate is available. Surrogates were identified as follows:

[34] The three screening steps are consistent with the COPC identification steps outlined in the Baseline Health Risk Assessment Work Plan for Operations Area (ENVIRON 2014b). However, as agreed upon by NDEP (Ramboll Environ 2015c), the order of the steps has been changed.

[35] An underlying assumption is that soils from depths of up to 10 ft could be brought to the surface during excavation or other activities, leading to potential worker exposures.

Analyte	Surrogate
• gamma-Chlordane	• Chlordane
• Chromium (total)	• Chromium III
• 2,4'- dichlorodiphenyldichloroethane (DDD)	• 4,4'-DDD
• 2,4'-DDE	• 4,4'-DDE
• Endrin aldehyde	• Endrin
• ortho-Phosphate	• Phosphoric acid
• Phosphorus (total)	• Phosphoric acid
• 1,2,3-Trichlorobenzene	• 1,2,4-Trichlorobenzene

Surrogates were identified for all but eight analytes (calcium, palladium, potassium, silicon, sodium, sulfate, sulfur, and octachlorostyrene). By default, these analytes are carried forward to Step 2 (metals) and Step 3 (all other analytes) of the COPC selection process.

5.1.1.3 Chemicals with Non-Health Based BCLs

NDEP has established a non-health based upper-limit soil concentration or a "not-to-exceed" concentration of 100,000 mg/kg for metals and for inorganic and organic compounds with low toxicity. That is, if the calculated health-based BCL is greater than 100,000 mg/kg, a limit value of 100,000 mg/kg is listed in the BCL table. For all detected analytes with a NDEP-established upper limit BCL, the maximum concentration is less than 100,000 mg/kg (see Tables 5-1 through 5-3). Thus, these compounds were not identified as COPCs based on concentration considerations.

For health-based considerations (i.e., COPC identification), it is appropriate to use the NDEP-calculated health-based BCL (and not the concentration-limit value of 100,000 mg/kg). The health-based BCLs were taken from the BCL calculation tables (NDEP 2015b). Due to the very low toxicity, the calculated health-based BCL for some chemicals is greater than one million parts per million. The chemicals for which health-based BCLs are used in place of non-health based BCLs are identified in Tables 5-1 through 5-3.

5.1.1.4 Arsenic, Dioxin TEQs, and Lead

As presented in the HRA work plan (Northgate and Exponent 2010b), site-specific screening values are used for arsenic and dioxin TEQs:

- For arsenic, the maximum detected concentration is compared to the site-specific remediation goal of 7.2 mg/kg (NDEP 2010b), which is the maximum arsenic concentration reported for the BRC/TIMET background data set (BRC and TIMET 2007); arsenic is eliminated as a COPC if the maximum concentration is less than this screening value. This screening value has been used as the soil remediation goal in removal actions completed at the Site (BEC 2008a; Ramboll Environ 2016a).
- For dioxin TEQs, the maximum detected value is compared to the site-specific action level of 0.0027 mg/kg; this value was derived based on an *in vitro* soil bioaccessibility study conducted using Site soils (Northgate 2010a); NDEP (2010b) approved this value based on the information presented in the study.

USEPA has not established toxicity values (i.e., a cancer slope factor [CSF] or reference dose [RfD]) for lead (USEPA 2016a). Instead, USEPA used a blood-lead model to establish a RSL of 800 mg/kg, which NDEP has adopted as the BCL for commercial/industrial workers.

Because the health endpoint for lead (i.e., a blood lead concentration) is not a cancer risk or non-cancer HI, the maximum detected concentration is compared directly to the commercial/industrial worker BCL of 800 mg/kg, and not to 0.1×BCL.

5.1.1.5 Asbestos

BCLs have not been established for asbestos (long amphibole and long chrysotile fibers). Exposure and risk assessments for asbestos are highly dependent on sample size (see discussion in Section 6.2.2.2). Even for the case where fibers are not identified (i.e., zero fibers), upper-bound cancer risk estimates can be greater than 1×10^{-6}, depending on sample size. One or more long chrysotile fibers were observed in seven out of 19 post-abatement samples in Parcel C, three out of 11 post-abatement samples in Parcel D, and one out of eight post-abatement samples in Parcel G. Therefore, long chrysotile fiber was identified as a COPC. Although not observed in any of the samples analyzed for asbestos, long amphibole fiber was also included as a COPC per NDEP guidance (Neptune 2015).

5.1.1.6 Results of Concentration/Toxicity Screen

The concentration/toxicity screen is presented in Tables 5-1 through 5-3 for Parcels C, D, and G, respectively. For each listed chemical, the maximum detected concentration and the BCL (or other screening value) are presented. The final column indicates whether the chemical "passed" or "failed" the screen. The results of concentration/toxicity screen are discussed as follows:

- Parcel C: Of the 93 analytes listed in Table 5-1, 73 chemicals passed, 12 chemicals failed based on the BCL (or other screening criteria) comparison, and eight chemicals (calcium, palladium, potassium, silicon, sodium, sulfate, sulfur, and octachlorostyrene) did not have a screening level.
- Parcel D: Of the 71 analytes listed in Table 5-2, 55 chemicals passed, nine chemicals failed based on the BCL (or other screening criteria) comparison, and seven chemicals (calcium, palladium, potassium, silicon, sodium, sulfate, and sulfur) did not have a screening level.
- Parcel G: Of the 67 analytes listed in Table 5-3, 48 chemicals passed, 12 chemicals failed based on the BCL (or other screening criteria) comparison, and seven chemicals (calcium, palladium, potassium, silicon, sodium, sulfate, and sulfur) did not have a screening level.

Chemicals that failed or that did not have a screening level are carried forward to Steps 2 and/or 3.

5.1.1.7 Step 2 – Background Evaluation

The background evaluation step is consistent with USEPA (1989) and NDEP (2009d) guidance, which indicate that metals and radionuclides can be eliminated as COPCs if site concentrations are consistent with background levels. Metals and radionuclides that are present at concentrations greater than background and those for which a background data set are not available are then further screened under Step 3.

The metals and radionuclides that either failed the concentration/toxicity screen or for which a BCL was not available for screening are listed in Tables 5-4 and 5-5, respectively. The results of the background evaluation presented in Section 4.1.2.2 and Appendix I are also included, and summarized as follows:

- Parcel C: Of the eight metals carried forward from Step 1, calcium[36] was present at concentrations consistent with background and is eliminated as a COPC. Three metals (arsenic, potassium, and sodium) were present at concentrations greater than background, and background data were not available for four metals (palladium, silicon, sulfur, and zirconium). Of the eight radionuclides carried forward from Step 1, six radionuclides (U-238, U-234, Th-232, Th-230, Ra-228, and Ra-226) failed the statistical testing for background consistency, while concentrations of all the other radionuclides were consistent with background.
- Parcel D: Of the seven metals carried forward from Step 1, two metals (calcium and potassium)[36] were present at concentrations consistent with background and are eliminated as COPCs. Sodium was present at concentrations greater than background, and background data were not available for four metals (palladium, silicon, sulfur, and zirconium). Of the eight radionuclides carried forward from Step 1, four radionuclides (U-234, Th-230, Ra-228, and Ra-226) failed the statistical testing for background consistency, while concentrations of all the other radionuclides were consistent with background.
- Parcel G: Of the seven metals carried forward from Step 1, three metals (calcium, potassium, and sodium)[36] were present at concentrations consistent with background and are eliminated as COPCs. No metals were present at concentrations greater than background, and background data were not available for four metals (palladium, silicon, sulfur, and zirconium). Of the eight radionuclides carried forward from Step 1, three radionuclides (U-234, Th-230, and Ra-228) failed the statistical testing for background consistency, while concentrations of all the other radionuclides were consistent with background.

For radionuclides, as presented in the NDEP flowchart (Appendix O), when approximate secular equilibrium is exhibited in an isotope decay chain, in theory radionuclides in the same decay chain should yield similar background comparison results; if any radionuclide is greater than background, all the radionuclides in that decay chain would be carried forward in the risk assessment. When approximate secular equilibrium is not exhibited in an isotope decay chain, those radionuclides that fail the background evaluation would be carried forward in the risk assessment. As indicated in Table 5-5, secular equilibrium is exhibited in all the decay chains. However, for all the parcels, it is unexpected that radionuclides in the same decay series both passed and failed the background comparisons. Similar issues have previously been identified by NDEP in the radionuclide analytical data sets for soil samples collected across the BMI Complex (NDEP 2009b).

Sample preparation and analytical methods were important factors in explaining some of the radionuclide data anomalies. The Trust submitted a radionuclide data packet prepared by Ramboll Environ to NDEP via email on September 17, 2015, including a comparison of sample preparation and analytical methods between the parcel data sets and the RZ-A background data set. RZ-A background samples were collected and analyzed in 2009, while parcel samples were collected and analyzed between 2006 and 2014, i.e, both before and after NDEP issued guidance for evaluating radionuclide data (NDEP 2009b). Over this time period, samples were submitted for analysis to different analytical laboratories and analyzed

[36] NDEP (2015b) notes that calcium, potassium, and sodium are essential nutrients and do not need to be evaluated in a HRA.

using different preparation and analytical methods. For example, the analytical methods for Ra-228 included beta spectroscopy and gamma spectroscopy, depending on the laboratory, which may be the reason for the lack of correlation with Ra-228 in the Th-232 decay chain (Table I-6). It is also an unexpected finding that for the RZ-A background data set, the Th-232 decay chain was not in secular equilibrium (Table I-5B).

Given that the validity of the statistical testing is confounded by several issues identified above, it is difficult to interpret the results of background evaluation for radionuclides and consider them as a reliable basis for the COPC selection. In order to provide a point of comparison from a health risk perspective between radionuclides in parcel soils and in site and regional background soils, the total cancers risks from all the radionuclides were calculated by taking the ratio of soil activities to BCLs corresponding to a cancer risk of 10^{-6}. The 95% upper confidence limit (UCL) on the mean soil activity, calculated by the ProUCL software (Version 5.1), was used in the cancer risk calculation for each parcel, RZ-A background, BRC/TIMET regional background[37]. The results of radionuclide cancer risks are presented in Table 5-6, and the ProUCL output files are included in Appendix P. As indicated in Table 5-6, the total radionuclide cancer risks for Parcels C, D, and G were all 2×10^{-4}; the total radionuclide cancer risks for RZ-A background and BRC/TIMET regional background were also 2×10^{-4}. Although total radionuclide cancer risks for Parcels C, D, and G were slightly above the NDEP acceptable risk range of 10^{-6} to 10^{-4}, they are consistent with background in the area. Radionuclides are not known to be associated with any of the former operations within Parcels C, D, or G. Based on the above discussion, radionuclides were not identified as COPCs. The impact of excluding radionuclides as COPCs on the HRA results and conclusions is further discussed in the uncertainties in Section 6.2.1.

5.1.1.8 Step 3 – Chemical-specific Evaluations

For the final step of COPC identification, chemicals commonly recognized as having low toxicity and for which a BCL was not available (such that a concentration/toxicity screen could not be conducted) were further reviewed. These chemicals include macronutrients or essential micronutrients and/or are listed on the Generally Recognized as Safe (GRAS) list developed by the U.S. Food and Drug Administration[38]:

- **Potassium, Sodium** (essential macronutrients, required in large quantities; high consumption from foods; GRAS); NDEP (2015b) identifies potassium and sodium as elements that typically do not need to be included in a risk assessment because of their low toxicity;
- **Silicon** (essential nutrient; present in foods, with a typical dietary intake of over 20 mg/day in adults); and
- **Sulfur, Sulfate** (essential macronutrients, required in large quantities; high consumption from foods; GRAS).

Potassium, silicon, sodium, sulfur, and sulfate were eliminated as COPCs based on their low toxicity.

[37] The radionuclide data used in the 95% UCL calculation were not censored based on NDEP guidance (NDEP 2008c).

[38] http://www.ecfr.gov/cgi-bin/text-idx?SID=e956d645a8b4e6b3e34e4e5d1b690209&mc=true&node=pt21.3.184&rgn=div5

5.1.1.9 Summary of Soil COPCs

The soil COPCs identified for soils in Parcels C, D, and G are listed in Table 5-7, and summarized as follows:

- Parcel C: The seven COPCs identified for Parcel C include two metals (palladium and zirconium), dioxin TEQ, hexachlorobenzene, octachlorostyrene, and asbestos (long amphibole and long chrysotile fibers). Although failing the concentration/toxicity screen and background evaluation, arsenic was not identified as a COPC for Parcel C. A review of the data indicated that after the soil removal conducted in Parcel C Area 5 in September 2016 (see Section 3.3.2), arsenic was detected at concentrations above the NDEP-approved remediation goal of 7.2 mg/kg (NDEP 2010b) in only five out of the 74 samples collected in Parcel C. These five samples were all collected at 10 ft bgs, with arsenic concentrations ranging from 7.8 mg/kg to 10.6 mg/kg, only slightly above the remediation goal.
- Parcel D: The four COPCs identified for Parcel D include two metals (palladium and zirconium) and asbestos (long amphibole and long chrysotile fibers).
- Parcel G: The seven COPCs identified for Parcel G include perchlorate, two metals (palladium and zirconium), chloride, BaPEq, and asbestos (long amphibole and long chrysotile fibers).

For two COPCs (palladium and octachlorostyrene), BCLs (and associated toxicity values) are not available; in absence of toxicity values, these COPCs were evaluated qualitatively in Section 6.2.4. Also, RZ-A background data are not available for palladium and zirconium and therefore a background evaluation cannot be conducted. The parcel data for these two metals were compared to BRC/TIMET regional background data in Section 6.2.4.

Spatial intensity plots were developed for most COPCs, including perchlorate, zirconium, chloride, dioxin TEQ, BaPEq, hexachlorobenzene, and long chrysotile fibers. (Figures 5-2 through 5-12).[39] Since BCLs are not available for palladium and octachlorostyrene, no spatial intensity plots were prepared for these two COPCs and their spatial distributions are presented in the spatial quartile plots (Figures J-10, J-11, J-26, and J-42, respectively). No spatial intensity plot was prepared for long amphibole fiber since it was not observed in any soil sample collected in Parcels C, D, or G.

Each COPC spatial intensity plot presents the following information:

- Sample locations;
- COPC concentrations. The concentration shown at each sample location is the maximum detected concentration for all samples collected at that location for soils from 0-10 ft bgs, unless results for all samples at that location were reported as less than the detection limits; concentrations are binned relative to BCLs or other screening criteria, as

[39] In addition to the spatial quartile plots discussed in Section 4.1.2.3 (and included in Appendix J) as part of Data Analysis, additional spatial intensity plots were developed for most COPCs. The two sets of plots differ in the concentration bins used for plotting. The concentration bins used for the Appendix J plots are based on quartiles of the distribution of detected concentrations. The concentration bins used for the COPC plots are based on the BCLs or other screening criteria.

shown on the individual plots. Results for samples reported as less than the detection limit are colored dark green.

As indicated in the spatial intensity plots, exceedances of BCLs (or other screening criteria) only happened in isolated locations, and possible "hot spots"[40] or other spatial patterns were not identified, which supports the use of 95% UCL over the entire individual parcel as the soil EPC (see Section 5.2.2.1).

5.1.2 Soil Gas COPCs

All chemicals detected in one or more validated soil gas sample were selected as COPCs, as recommended by NDEP in their April 9, 2013 comment letter (NDEP 2013, Comment #3). Using this selection criterion, 60 VOCs were identified as COPCs in soil gas (Table 5-8).

5.1.3 Groundwater COPCs

All VOCs and volatile SVOCs (vapor pressure is greater than 1 millimeter of mercury [mm Hg] or the Henry's law constant is greater than 10^{-5} atmosphere-cubic meter per mole [atm-m^3/mol]) detected in one or more validated groundwater samples were selected as COPCs (USEPA 2015). Using this selection criterion, 76 VOCs and volatile SVOCs were identified as COPCs in shallow groundwater (Table 5-8).

5.2 Exposure Assessment

5.2.1 Conceptual Site Model and Exposure Scenarios

To evaluate the human health risks posed by a site, it is necessary to identify the populations that may potentially be exposed to the chemicals present and to determine the pathways by which these exposures may occur. A CSM was developed in order to characterize exposure potential in Parcels C, D, and G. The CSM outlines information relevant to conducting the exposure assessment for Parcels C, D, and G by (1) evaluating potential chemical sources and releases, (2) identifying populations that could potentially be exposed to chemicals present in the parcels, and (3) identifying exposure pathways and routes through which human exposure might occur. The CSM can be an important tool in guiding site characterization, evaluating data quality in the context of potential risks to exposure populations, and developing exposure scenarios. The CSM for Parcels C, D, and G is presented in Figure 5-13, and its elements are discussed below.

5.2.1.1 Potential Chemical Sources and Release Mechanisms

Historically, NDEP concurred with a list of SRCs that had been identified based on a review of historical site operations and practices, as well as those at neighboring facilities. Based on the CSM, many of the SRCs identified for the Site as a whole were not related to the more limited operations in Parcels C, D, and G and were therefore not expected to be detected in parcel soils. Specifically, as summarized in Section 3.1, much of the parcel property has never been developed, and few LOUs were identified within Parcels D and G while no LOUs were identified in Parcel C. However, as a conservative investigation approach, samples collected in the parcels were analyzed for the same chemicals identified for analysis in samples collected within the Operations Area, including chlorine oxyanions (chlorate and

[40] "Hotspot" refers to a localized area in which concentrations tend to be at the upper end of the distribution. These areas are identified based on review of the spatial intensity plots; a statistical hotspot analysis has not been conducted.

perchlorate), metals and other inorganics, radionuclides, asbestos, dioxins/furans, organic acids, PAHs, PCBs, OCPs, OPPs, SVOCs, and VOCs.

As discussed previously in Section 3.2, soil samples were collected at both random and judgmental locations, with the latter targeting possible source areas or potentially-impacted areas within each parcel.

As indicated in the CSM (Figure 5-13), SRCs were released from potential on-site/off-site sources to surface soils and groundwater through several primary release mechanisms, such as spills and leaks/infiltration, water level fluctuation, and groundwater transport. In addition to the potential primary release mechanisms, secondary/tertiary release mechanisms included resuspension of SRCs in surface soils into ambient air, migration of VOCs in subsurface through soil column to indoor air, outdoor air, or trench air, and leaching of SRCs in soils to groundwater. Also, VOCs in Parcels C and D groundwater were treated through the OSSM Groundwater Extraction and Treatment System.

5.2.1.2 Potentially Exposed Human Populations and Exposure Pathways

The identification of potentially exposed populations and exposure pathways is supported by the CSM. For a complete exposure pathway to exist, all of the following elements must be present (USEPA 1989):

- A source and mechanism for chemical release;
- An environmental transport medium (i.e., air, water, soil);
- A point of potential human contact with the exposure medium; and
- A route of exposure (e.g., inhalation, ingestion, dermal contact).

As noted previously, the land within Parcels C, D, and G is mostly vacant. Future land use will be restricted to industrial and/or commercial purposes through a land-use covenant. Accordingly, future on-site receptors identified for the post-remediation HRA were long-term indoor industrial/ commercial workers, long-term industrial/ commercial outdoor workers, and short-term construction workers, consistent with USEPA guidance (2002b). Other potential on-site receptors, such as visitors or trespassers, do not warrant assessment; as discussed by USEPA (2002b), evaluation of exposures to members of the public under a non-residential land-use scenario is generally not warranted, based on the following considerations:

- Public access is generally restricted at industrial sites; and
- While the public may have access to commercial sites, on-site workers have a much higher exposure potential because they spend substantially more time at a site.

In accordance with the NDEP-approved HRA Work Plan (Northgate and Exponent 2010b, ENVIRON 2013b), off-site receptors were not quantitatively evaluated in the HRA. Current and future off-site receptors include indoor and outdoor commercial/industrial workers and residents located outside the Site boundaries who could be exposed to airborne chemicals (vapors and particulates) emitted during, e.g., routine operations or construction projects (USEPA 2002b). The Site is located within the BMI complex, surrounding by several industrial facilities. For Parcels C and D, there are off-site industrial/commercial workers at the OSSM extraction and treatment system to the west, at Joker's Wild Casino on the corner of Warm Springs Road and Boulder Highway, and in businesses to the northwest along Warm Springs Road, near Eastgate Road. For Parcel G, there are Tronox workers to the east, Olin

workers to the west and various industrial facilities to the south. The nearest residents to Parcels C, D, and G are located 1,550 ft north/northwest of Parcel D. A qualitative discussion of the potential risks to off-site is presented in Section 6.2.2.1.

Based on the source and release mechanisms presented in the CSM, the following receptor populations and exposure pathways were identified for quantitative evaluation:

- Indoor commercial/industrial workers[41]
  - Incidental soil ingestion[42]
  - Inhalation of airborne dust particulates[42,43]
  - External exposure from soil[44]
  - Inhalation of vapors migrating from soil gas/groundwater to indoor air
- Outdoor commercial/industrial workers
  - Incidental soil ingestion[42]
  - Dermal contact with soil
  - Inhalation of airborne soil particulates[42,43]
  - External exposure from soil[44]
  - Inhalation of vapors migrating from soil gas/groundwater to outdoor air
- Construction workers
  - Incidental soil ingestion[42]
  - Dermal contact with soil
  - Inhalation of airborne soil particulates[42,43]
  - External exposure from soil[44]
  - Inhalation of vapors migrating from soil gas/groundwater to trench air

Future commercial/industrial workers were assumed to have direct contact with shallow soils (0–2 ft bgs) when minimum soil excavation occurs that could bring subsurface soil to the surface, or with surface and subsurface soils (0–10 ft bgs) when soils from depths of up to 10 ft bgs could be brought to the surface during excavation or other activities. Construction workers were assumed to have direct contact with surface and subsurface soils (0–10 ft bgs) during excavation or other activities.

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[41] In accordance with USEPA (2002b) guidance, dermal absorption is not considered to be a complete exposure pathway for indoor worker. Soil ingestion is identified by USEPA (2002b) as a potentially complete exposure pathway for an indoor worker due to the potential for contact through ingestion of soil tracked indoors. Inhalation of indoor dust (particulates) is identified by NDEP (2015b) as a potentially complete exposure pathway for an indoor worker.

[42] Includes radionuclide exposures; however, as noted in Section 5.1.1.4, radionuclides were not selected as soil COPCs for Parcels C, D, and G.

[43] Includes asbestos exposures.

[44] Only radionuclide exposures; however, as noted in Section 5.1.1.4, radionuclides were not selected as soil COPCs for Parcels C, D, and G.

To be conservative, construction workers were assumed to be exposed to vapors migrating from soil gas/groundwater while standing in a 10-foot trench in the unsaturated zone, placing them closer to the potential sources.

Exposure via domestic use of groundwater was not evaluated because Site groundwater is not used as a domestic water supply. Incidental ingestion of groundwater and dermal contact with groundwater during short-term construction activities were not considered complete exposures pathways due to the groundwater depth being greater than 10 ft bgs.

5.2.2 Exposure Point Concentrations

An EPC of a COPC is the estimated concentration of that chemical in an environmental medium to which a receptor (i.e., a member of a potentially exposed population) is exposed over an assumed duration of exposure. EPCs are used in the dose equation for evaluating the potential exposure (dose) of each receptor and exposure pathway. The derivation of EPCs for soil, airborne soil particulates, and VOCs migrating from soil gas and groundwater to indoor, outdoor, or trench air are described in the following sections.

5.2.2.1 Soil

Soil EPCs were used to estimate direct-contact soil exposures (i.e., incidental ingestion and dermal contact) for future on-site indoor and outdoor commercial/industrial workers and construction workers. The soil EPCs were also used to derive airborne particulate concentrations for the COPCs, as presented in Section 5.2.2.2.

The soil EPC was calculated as the 95% UCL on the mean soil concentration of all soil samples collected at 0-2 ft depth interval and all soil samples collected at 0-10 ft depth interval within each parcel, respectively, which is representative for a reasonable maximum exposure (RME) estimate. The bias-corrected accelerated bootstrap method (BCA UCL) by the ProUCL software (Version 5.1) was used to calculate the UCLs, since it is generally robust regardless of data distribution. The ProUCL output files are included in Appendix P. The soil EPCs for Parcels C, D, and G are presented in Tables 5-9A and 5-9B.

5.2.2.2 Air: Airborne Soil/Dust Particulates

Exposure to COPCs bound to soil/dust particles was evaluated using USEPA's particulate emission factor (PEF) approach (USEPA 2002b). The PEF relates COPC concentrations in soil to the COPC concentrations in airborne soil/dust particles. The site-specific dispersion factor (Q/C) used in the calculations is based on information for Las Vegas, Nevada, as presented in Appendix E of USEPA (2002b). The calculation of a PEF is also a function of the areal extent of site surface contamination, which is assumed to correspond to the area of each individual parcel.

For long-term commercial/industrial indoor and outdoor workers, the PEF is estimated based on emissions from wind erosion of surface soils and was calculated using the equations presented by Neptune (2015). The PEF for short-term construction workers includes two components: (1) emissions from unpaved roads and (2) emissions from wind erosion, excavation, dozing, grading, and tilling (USEPA 2002b). These two components were calculated and then combined into a single PEF using the equations presented in Neptune (2015). The parameters used to estimate the PEFs are presented in Table 5-10.

Air EPCs for Chemicals

The air EPCs for chemical COPCs bound to soil/dust particles were derived from soil EPCs by applying the PEFs, as follows:

$$EPC_{air} = EPC_{soil} \times CF \times \left(\frac{1}{PEF}\right)$$

where:

EPC_{air} = Air Exposure Point Concentration (µg/m^3)

EPC_{soil} = Soil Exposure Point Concentration (mg/kg)

CF_1 = Conversion Factor (1000 µg/mg)

PEF = Particulate Emission Factor (m^3/kg)

Air EPCs for Asbestos

Exposures to asbestos are evaluated for the inhalation pathway only. Air EPCs for asbestos were derived based on the concentration of asbestos in surface soils (only surface samples were analyzed for asbestos), consistent with the NDEP guidance (Neptune 2015) which is based on the protocols described in USEPA (2003) and has been modified for application to the BMI Complex. Asbestos concentrations in surface soils were estimated for fibers identified as carcinogenic, specifically, fibers of dimensions >10 µm long and <0.4 µm wide, using the following equation:

$$C_{soil} = f \times \text{Pooled } AS$$

$$Pooled\ AS = 1 \times \frac{1}{\sum_{i=1}^{n} AS_n}$$

where:

C_{soil} = Soil Concentration (fiber [f]/g)

f = Number of long fibers observed in soil samples (unitless)

AS = Analytical Sensitivity (f/g) [45]

n = Sample Size

Two types of the asbestos soil concentrations were estimated, i.e., a best estimate and an upper-bound estimate, as defined in USEPA (2003) and Neptune (2015). The best-estimate concentration is similar to a central-tendency exposure (CTE) estimate, whereas the upper-bound concentration is comparable to a RME estimate. For the best estimate, the number of long fibers observed in all the soil samples was incorporated into the calculation above. The upper bound estimate was calculated as the 95% UCL of the number of long fibers from a Poisson distribution as follows (Neptune 2015):

$$f_{UCL} = \frac{\chi^2_{0.95}\left(2 \times (f+1)\right)}{2}$$

where:

[45] The laboratory results are reported as “structures”; however, the term “fibers” is used herein for simplicity.

f_{UCL} = 95% UCL of the number of long fibers observed in soil samples from a Poisson distribution (unitless)

f = Number of long fibers observed in soil samples (unitless)

$\chi^2_{0.95}$ = Chi-squared distribution at 95%

The f_{UCL} was then multiplied by the pooled AS to estimate the upper-bound soil concentration.

The air EPCs were derived from soil concentrations by applying the PEFs, as follows:

$$EPC_{air} = C_{soil} \times CF \times \left(\frac{1}{PEF}\right)$$

where:

EPC_{air} = Air Exposure Point Concentration (f/m^3)

C_{soil} = Soil Concentration (f/g)

PEF = Particulate Emission Factor (m^3/kg)

The air EPCs are presented in Tables 5-9A and 5-9B. For asbestos, the soil concentrations and air concentrations (and associated health risks) were calculated using NDEP's "asbestos guidance riskcalcs.xls" spreadsheet, and are presented in Appendix Q.

5.2.2.3 Indoor, Outdoor, and Trench Air: VOCs Migrating from Soil Gas and Groundwater

The following subsections describe the derivation of the exposure concentrations and includes descriptions of the source terms and fate and the transport modeling conducted to estimate the exposure concentrations.

Source Terms

Chemicals detected in soil gas (sourcing from groundwater and/or soil) can potentially migrate through the unsaturated zone to ambient or indoor air (USEPA 2004c). For this evaluation, the groundwater and multiple depths of soil gas data are used as the source term to model the indoor and outdoor concentrations (i.e., the exposure concentrations in the exposure medium or air). For all COPCs evaluated, an exposure concentration is modeled for each individual parcel (using the maximum concentrations detected within the parcel) and for each individual sampling location.[46]

As a conservative approach for estimating exposure concentrations for chloroform and all other COPCs detected in soil gas samples (Table 3-1) and the most recent two years' groundwater samples (Table 3-2) at each well located within or near the Study Area (see Figures 3-1 and 3-2) are included in the HRA data set. Inclusion of samples near the parcel boundaries expands the spatial coverage of the Study Area. Sample SG45, located in the former southern portion of Parcel G, is very near the current border of Parcel G and provides data relevant to the eastern side of the current parcel; and sample SG17, located between Parcels C and D, provides data relevant to the northwestern portion of Parcel C and the

[46] The soil gas concentration terms for each modeled volatile compound in each individual parcel are shown in Tables 5-15A and 5-15B for 10 ft soil gas and 5 ft soil gas, respectively; soil gas concentrations for each individual sample are shown in Appendix K, Table K-1.

southwestern portion of Parcel D. Further, two samples (E-SG-1 and SG18) located on the border of Parcels C and D were included in the evaluation of both parcels. These samples provide data relevant to the northwestern portion of Parcel C and the southwestern portion of Parcel D.

Fate and Transport Modeling

The migration of chemicals detected in soil gas (sourcing from soil and groundwater) or groundwater is quantified for the purposes of this assessment through an intermedia transfer factor. When the transfer factor is multiplied by the source concentration of a chemical in soil gas (in $\mu g/m^3$) or groundwater (in µg/L), the product is the predicted steady-state concentration in indoor or ambient air (in $\mu g/m^3$).

For the receptors evaluated in this HRA (future onsite workers), transfer factors for soil gas to indoor air and outdoor air were derived based on migration of groundwater from the water table or soil gas from 5 or 10 ft bgs into a commercial slab-on-grade building and into ambient air. The transfer factors were estimated using the screening-level model described by Johnson and Ettinger (1991); this model was developed to predict vapor migration into buildings using a combination of diffusion and advection. Specifically, Version 3.1 of the spreadsheet implementation developed by the USEPA was used (USEPA 2004c). The Study Area and parcel-specific input parameters used as model inputs are listed in Table 5-12, and the COPC physical/chemical properties are presented in Table 5-13. Unless otherwise noted, all proper

Soil gas or groundwater concentrations were used as the source term for modeling the following scenarios:

- Soil gas from five ft bgs migrating to commercial indoor air and outdoor air at Parcels C, D, and G;
- Soil gas from 10 ft bgs migrating to commercial indoor air and outdoor air at Parcels C and D;
- Soil gas migrating from 1 centimeter below the base of a 10 foot construction trench in Parcels C, D, and G;
- Groundwater from 30 ft bgs migrating to commercial indoor air, outdoor air, or a 10 foot construction trench from Parcel C;
- Groundwater from 25 ft bgs migrating to commercial indoor air, outdoor air, or a 10 foot construction trench from Parcel D; and
- Groundwater from 40 ft bgs migrating to commercial indoor air, outdoor air, or a 10 foot construction trench from Parcel G.

As reported in the 2010 Site-Wide Soil Gas HRA (Northgate and Exponent 2010c), soil samples were collected to determine site-specific soil properties representative of the unsaturated zone. Samples were collected at 16 locations at depths of 9 to 15 ft bgs (mostly at 10 ft) across the Site (sampling locations and boring logs in included in Appendix R) to determine volumetric water content, total porosity, dry bulk density, and grain density in accordance with NDEP guidance (NDEP 2010e). The soil property results (shown in Table 5-13) were used for modeling purposes and are the average of 15 site-specific values measured from 9-10 ft bgs. One sample collected at a depth of 15 ft bgs was not included as it represents wetter than average conditions at the site.

A review of site stratigraphy and boring logs indicated that these samples collected at 9-10 ft bgs should be representative of the entire stratigraphic unit Qal and there is not expected to be significant variation with depth in that stratigraphic unit. In general, the Qal extends from the ground surface to the groundwater table. In places, the groundwater table occurs as much as 10 feet below the base of the Qal in the underlying fine-grained UMCf. For simplicity and to be conservative, the entire vadose zone was modeled as Qal with no UMCf included. Each sample was also plotted on a ternary diagram to determine soil typing for Johnson and Ettinger modeling as well. The samples clustered well near the sand to loamy sand border, with the average soil type being loamy sand. A careful review of boring logs from each parcel was used to confirm these soil properties and this soil type would be representative of conditions at each of the parcels modeled. Soil types identified in the on-site soil borings include poorly sorted gravel, silty gravel, poorly sorted sand, well sorted sand, and silty sand (ENSR 2005) and are consistent with an average soil type of loamy sand in each parcel.

Depth to groundwater for each Parcel was determined by evaluating both current and historic groundwater elevations for non-artisanal wells within the Parcel. The depth to groundwater was selected to be a conservative estimate given both current and recent historic measurements.

A conservative default building (with building characteristics shown on Table 5-12), was assumed for modeling. The default building size of 100 meters by 100 meters (USEPA2004c) was selected. The default building has an assumed vapor flow rate of 5 liters/minute into the building (USEPA 2004c). California's default air exchange rate of one air change per hour (California Environmental Protection Agency [Cal/EPA] 2011) was used in the absence of a default rate from NDEP or USEPA. A conservative building height of 10 ft was assumed.

When modeling the above-ground outdoor air scenarios, the Q/C model described in the Soil Screening Users Guidance (USEPA 2002b) was used with parcel-specific site areas. For trench scenarios, a box model was used to simulate dispersion. Trench dimensions of 10 ft deep, 20 ft long, and 5 ft wide were assumed. For this box model, the air flow through the trench was controlled by a site-specific windspeed that was reduced by a factor of 10 to ensure it would be conservative for a trench scenario where the breathing zone may be a few ft bgs. Additionally, soil gas samples were assumed to be within 1 cm of the base of the trench and VOCs were emitted from all the trench walls in addition to the base of the trench.

Benzene is well known to degrade naturally due to aerobic respiration at many sites. Measured concentrations of benzene at shallow depths are consistently lower than would be predicted from deeper sources (soil gas and groundwater) using typical diffusion modeling with no biodegradation providing evidence for biodegradation at the Site. To account for this, the software bioVapor (American Petroleum Institute [API] 2012) was used to calculate the relative impact of biodegradation between the samples collected at depth and the surface for all soil gas and groundwater scenarios. The input parameters for this calculation are also presented in Table 5-12.

Table 5-15A summarizes the transfer factors from soil gas to indoor air, outdoor air and trench air for Parcels C and D, at depths of 10 ft. Table 5-15B summarizes the transfer factors from soil gas to indoor air, outdoor air and trench air for Parcels C, D and G, at depths of 10 ft. Table 5-16 summarizes the transfer factors from groundwater to indoor air, outdoor air and trench air for Parcels C, D, and G, respectively. The conservative nature of the model input parameters and modeling uncertainties are discussed in Section 6.2.

Exposure Point Concentrations

Using the maximum soil gas or groundwater concentration of each COPC within a parcel as the source term, indoor air, outdoor air and trench air concentrations were modeled using the Johnson and Ettinger model and a basic diffusion model, respectively. The contaminant concentration in air, rather than contaminant intake, is used as the basis for estimating chemical inhalation risks based on guidance described in *Part F, Supplemental Guidance for Inhalation Risk Assessment* (USEPA 2009b). The EPCs for noncarcinogens and carcinogens are estimated as follows:

$$EPC_{air} = EPC_{SG/GW} \times TF$$

where:

EPC_{air} = Air Exposure Point Concentration (µg/m^3)

$EPC_{SG/GW}$ = Exposure Point Concentration (µg/m^3 for soil gas, µg/L for groundwater)

TF = Transfer Factor (µg/m^3 per µg/m^3 for soil gas, µg/m^3 per µg/L for groundwater)

Tables 5-15A and 5-15B present the calculated EPCs in indoor air, outdoor air and trench air based on the maximum detected concentration in each parcel for a chemical in approximately 10 ft soil gas (2007 soil gas data) and approximately five ft soil gas (2008 and 2013 soil gas data), respectively. Table 5-16 presents the calculated EPCs in indoor air, outdoor air and trench air based on the maximum detected concentration in groundwater for each parcel in the most recent two years groundwater data.

5.2.3 Exposure Assumptions and Calculations

The magnitude of exposure for any given receptor is a function of the amount of chemical in the exposure medium, and the frequency, intensity, and duration of contact with that medium. In order to quantify exposures, an upper-bound estimate of the theoretical intake was developed for each of the potentially exposed human populations via each of the exposure pathways identified in the CSM, and the exposure dose could be calculated by multiplying the EPC in the exposure medium by the intake factor. For carcinogens, lifetime average daily dose (LADD), based on chronic lifetime exposure averaged over a 70-year lifetime, is used in the risk characterization, while non-carcinogens, average daily dose (ADD), based on exposure averaged over the exposure period, is used (USEPA 1989). This section provides the equations and assumptions used to develop the intake factors used in the risk characterization.

5.2.3.1 Chemicals

As shown in Table 5-17, exposure assumptions recommended by NDEP (2015b) were used for the indoor and outdoor commercial/industrial workers. For the construction workers, exposure assumptions recommended by USEPA (USEPA 2016a) were used for soil ingestion, dermal contact, and particulate inhalation pathways, except that a utility trench scenario was also evaluated for the construction workers assuming that they could be exposed to volatile compounds migrating from subsurface soil gas and groundwater to air in a utility trench. The construction workers are assumed to be conducting excavation activities for four hours per

day, 30 days per year for one year per NDEP's comment (NDEP 2017b, General Comment #3).

Soil Ingestion

The intake factor for soil ingestion was calculated using the following equation (USEPA 1989):

$$IF_{soil.ing} = \frac{IR_S \times EF \times ED \times CF}{BW \times AT}$$

where:

$IF_{soil.ing}$ = Intake Factor for soil ingestion (kg of soil/kg body weight-day)

IR_s = Soil Ingestion Rate (mg of soil/day)

EF = Exposure Frequency (day/year)

ED = Exposure Duration (year)

BW = Body Weight (kg)

AT = Averaging Time (day)

CF = Conversion Factor (kg of soil/mg of soil)

Dermal Contact with Soil

The intake factor for dermal contact with soil was calculated using the following equation (USEPA 2004b):

$$IF_{soil.derm} = \frac{AF \times SA_s \times EF \times ED \times CF}{BW \times AT}$$

where:

$IF_{soil.derm}$ = Intake Factor for dermal contact with soil (kg of soil/kg body weight-day)

AF = Adherence Factor (mg of soil/square centimeter [cm^2])

SA_s = Skin Surface Area for soil contact (cm^2/day)

EF = Exposure Frequency (day/year)

ED = Exposure Duration (year)

BW = Body Weight (kg)

AT = Averaging Time (day)

CF = Conversion Factor (kg of soil/mg of soil)

Inhalation of Airborne Soil Particulate or Vapor Migrating from Soil Gas or Groundwater to Air

The intake factor for inhalation of airborne particulates or vapor migrating from soil gas or groundwater to air was calculated using the following equation (USEPA 2009b):

$$IF_{inh} = \frac{ET \times EF \times ED}{AT \times CF}$$

where:

IF_{inh} = Intake Factor for air inhalation (unitless)

ET = Exposure Time (hour/day)

EF = Exposure Frequency (day/year)

ED = Exposure Duration (year)

AT = Averaging Time (day)

CF = Conversion Factor (hour/day)

5.2.3.2 Asbestos

The exposure assumptions for asbestos are presented in NDEP's "asbestos guidance riskcalcs.xls" spreadsheet (Appendix Q), and the intake equation was analogous to that presented above for evaluating inhalation exposures to chemicals with carcinogenic effect (averaged over a 70-year lifetime), with an exception that an indoor attenuation factor was incorporated as follows:

$$IF_{inh} = \frac{[ET_{out} + (ET_{in} \times ATT_{in})] \times EF \times ED}{AT \times CF}$$

where:

ET_{out} = Outdoor Exposure Time (hour/day)

ET_{in} = Indoor Exposure Time (hour/day)

ATT_{in} = Indoor Attenuation Factor (unitless)

EF = Exposure Frequency (day/year)

ED = Exposure Duration (year)

AT = Averaging Time (day)

CF = Conversion Factor (hour/day)

5.3 Toxicity Assessment

The purpose of toxicity assessment is to present the weight-of-evidence regarding the potential for a chemical to cause adverse effects in exposed individuals, and to quantitatively characterize, where possible, the relationship between exposure to a chemical and the increased likelihood and/or severity of adverse effects (i.e., the dose-response assessment). Well conducted epidemiological studies that show a positive association between exposure to a chemical and a specific health effect are the most convincing evidence for predicting potential hazards for humans. However, human data that would be adequate to serve as the basis for the dose-response assessment are available for only a few chemicals. In most cases, toxicity assessment for a chemical has to rely on information derived from experiments conducted on non-human mammals, such as the rat, mouse, rabbit, guinea pig, hamster, dog, or monkey.

Chemicals are usually evaluated for their potential health effects in two categories, carcinogenic and non-carcinogenic. Different methods are used to estimate the potential for carcinogenic and non-carcinogenic health effects to occur. Several chemicals produce non-carcinogenic effects at sufficiently high doses but only some chemicals are associated with carcinogenic effects. Most regulatory agencies consider carcinogens to pose a risk for cancer at all exposure levels (i.e., a "no-threshold" assumption); that is, any increase in dose is associated with an increase in the probability of developing cancer. In contrast, non-carcinogens generally are thought to produce adverse health effects only when some minimum exposure level is reached (i.e., a threshold dose).

Oral CSFs, which are expressed in units of $(mg/kg\text{-}day)^{-1}$, and inhalation unit risks (IURs), which are expressed in units of $(\mu g/m^3)^{-1}$, are chemical specific and experimentally derived potency values that are used to calculate the risk of cancer resulting from exposure to potentially carcinogenic chemicals. The CSFs and IURs are defined as upper-bound estimates of the probability of an individual developing cancer per unit intake of a potential carcinogen over a lifetime. With CSFs and IURs, a higher value implies a more potent carcinogenic potential.

Non-cancer oral RfDs, which are expressed in units of mg/kg-day, and inhalation reference concentrations (RfCs), which are expressed in units of $\mu g/m^3$, are experimentally derived “no-effect” levels that are used to quantify the extent of toxic effects other than cancer due to exposure to chemicals. The RfDs and RfCs are intended to represent the dose or concentration of a chemical that is not expected to cause adverse health effects, assuming daily exposure over the exposure duration, even in sensitive individuals, with a substantial margin of safety. With RfDs and RfCs, a lower value implies a more potent toxicant.

The toxicity values used for chemicals and asbestos are discussed in the following subsections.

5.3.1 Chemicals

For COPCs, an initial list of chronic toxicity values was developed based on the values used by NDEP for the derivation of the 2015 BCLs (NDEP 2015b). For most chemicals in the BCL table, NDEP selected toxicity values from the USEPA’s Integrated Risk Information System (IRIS); however, on a case-by-case basis, values provided by other sources, e.g., California, were selected over the IRIS values. Also, for chemicals not included in IRIS, NDEP relied on other sources for toxicity values. Ramboll Environ checked the chronic toxicity values from the 2015 BCL table against the identified source to confirm that the most current values were being used. Particularly, the most recent toxicity values from IRIS (USEPA 2017a) were used for BapEq.

For COPCs not listed in the 2015 BCL table, the following approach was used:

- Toxicity values from IRIS were selected; if not in IRIS, toxicity values from the USEPA RSL table (USEPA 2016b) were used; and
- For COPCs for which toxicity values were not available from any of the sources listed, Ramboll Environ used the toxicity values from surrogate chemicals (chemicals with similar chemical structure).

For construction workers who were assumed to be present at Parcel C, D, or G for one year, subchronic toxicity values were used whenever available for the evaluation of adverse non-

cancer effect in accordance with recommendations by USEPA (USEPA 2016a). The general hierarchy of sources used for the subchronic toxicity values are as below:

- USEPA Provisional Peer Reviewed Toxicity Values for Superfund (PPRTV) (USEPA 2017b);
- Agency for Toxic Substances & Disease Registry (ATSDR). Minimal Risk Levels (MRLs) (ATSDR 2016); and
- USEPA's Health Effects Assessment (HEAST) Summary Tables (USEPA 1997).

Specific dermal route toxicity values have not yet been developed for any chemicals. Consistent with NDEP and USEPA guidance, potential health effects associated with dermal exposure were calculated using the oral toxicity values.

Also, the USEPA weight-of-evidence classification was identified for each carcinogenic COPC.

The toxicity values are presented in Table 5-18 for soil COPCs. Tables 5-19A and 5-19B present chronic and subchronic toxicity values for soil gas and groundwater COPCs, respectively. The uncertainties in the selection of toxicity values are further discussed in Section 6.2.3.

5.3.2 Asbestos

The IURs for asbestos are based on the estimated additional deaths from lung cancer or mesothelioma due to constant lifetime exposure, which are calculated using the following equation (Neptune 2015):

$$R = 0.5 \times \Big(\big(0.786 \times (NSM + NSF)\big) + \big(0.214 \times (SM + SF)\big) \Big)$$

where:

R = Estimated additional deaths from lung cancer or mesothelioma per 100,000 persons from constant lifetime exposure to 0.0001 transmission electron microscopy fiber per cubic centimeter (f/cm^3) longer than 10 µm and thinner than 0.4 µm
NSM = Risk coefficient for population of non-smoking males
NSF = Risk coefficient for population of non-smoking females
SM = Risk coefficient for population of smoking males
SF = Risk coefficient for population of smoking females

The parameter values for NSM, NSF, SM, and SF, which are "optimized" risk coefficients for pure fiber types obtained from Berman and Crump (2003) and presented in Neptune (2015), are used in the calculation of R, representing a weighted average of the combined risks to the general population with the assumption that 50% of the fibers will be longer than 10 um. The R values are calculated separately for long amphibole and long chrysotile fibers, reflecting the difference in potency between fiber types. Then, the R value is used to calculate the IUR as follows:

$$IUR = \frac{10^{-5}}{0.0001} \times R = \frac{1}{10} \times R$$

where:

IUR = Inhalation Unit Risk $(f/cm^3)^{-1}$

R = Estimated additional deaths from lung cancer or mesothelioma per 100,000 persons from constant lifetime exposure to 0.0001 f/cm^3 longer than 10 µm and thinner than 0.4 µm

The resulting IURs for lung cancer and mesothelioma are 6.3206 $(f/cm^3)^{-1}$ for long amphibole fibers and 0.0569 $(f/cm^3)^{-1}$ for long chrysotile fibers. These values were used to estimate inhalation risks associated with exposure to asbestos in parcel soils (see Appendix Q).

5.4 Risk Characterization

Risk characterization represents the final step in the risk assessment process. In this step, the results of exposure and toxicity assessments are integrated into quantitative or qualitative estimates of potential health risks. In each environmental medium (i.e., soil, soil gas, groundwater), potential excess lifetime cancer risks and non-cancer adverse health effects for each COPCs were characterized separately. In addition, potential cancer risks associated with exposure to asbestos in soil are characterized separately from other carcinogenic soil COPCs.

The National Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] § 300) is cited as the basis for target risk and hazard levels by NDEP (2015b). According to the NCP, lifetime incremental cancer risks posed by a site should not exceed 1 x 10^{-6} to one hundred in a million (1 x 10^{-4}), and non-carcinogenic chemicals should not be present at levels expected to cause adverse health effects (i.e., a HI greater than one). The NDEP generally considers a cumulative incremental cancer risk of 1 x 10^{-6} to be a point of departure for purposes of making risk management decisions (NDEP 2015b).

It should be noted that the cancer risk and non-cancer hazard estimated in this HRA do not represent absolute estimates in Parcels C, D, and G, since generic and conservative assumptions were used, which are likely to overestimate actual exposures and calculated risks. Exceedance of the target cancer risk range of 10^{-6} to 10^{-4} or the target non-cancer HI of greater than one does not indicate that adverse impacts to human health are occurring or will occur but suggests that further evaluation may be warranted.

5.4.1 Soil

5.4.1.1 Cancer Risks: Chemicals

The excess lifetime cancer risk is estimated as the upper-bound incremental probability of an individual developing cancer over a lifetime as a result of exposure to a potential carcinogen at a given concentration. The equation used to calculate cancer risk for indoor commercial/industrial workers due to exposure via incidental soil ingestion and inhalation of airborne dust particulates is as follows:

$$\textit{Cancer Risk} = EPC_{soil} \times IF_{soil.ing} \times CSF_{oral} + EPC_{air} \times IF_{inh} \times IUR$$

where:

EPC_{soil} = Soil Exposure Point Concentration (mg/kg)

EPC_{air} = Air Exposure Point Concentration (µg/m^3)

$IF_{soil.ing}$ = Intake Factor for soil ingestion (kg of soil/kg body weight-day)

IF_{inh} = Intake Factor for air inhalation (unitless)

CSF_{oral} = Oral Cancer Slope Factor (mg/kg body weight-day)$^{-1}$

IUR = Inhalation Unit Risk (µg/m^3)$^{-1}$

The equation used to calculate cancer risk for outdoor commercial/industrial workers and construction workers due to exposure via incidental soil ingestion, dermal contact, and inhalation of airborne soil particulates is as follows:

$$\textit{Cancer Risk} = EPC_{soil} \times (IF_{soil.ing} + IF_{soil.derm} \times ABS) \times CSF_{oral} + EPC_{air} \times IF_{inh} \times IUR$$

where:

EPC_{soil} = Soil Exposure Point Concentration (mg/kg)

EPC_{air} = Air Exposure Point Concentration (µg/m^3)

$IF_{soil.ing}$ = Intake Factor for soil ingestion (kg of soil/kg body weight-day)

$IF_{soil.derm}$ = Intake Factor for dermal contact with soil (kg of soil/kg body weight-day)

IF_{inh} = Intake Factor for air inhalation (unitless)

ABS = Soil Absorption Factor (unitless)

CSF_{oral} = Oral Cancer Slope Factor (mg/kg body weight-day)$^{-1}$

IUR = Inhalation Unit Risk (µg/m^3)$^{-1}$

Soil absorption factors (ABS) used in the risk calculation are presented in Table 5-18.

The detailed calculation of cancer risks for each receptor population is presented in Appendix Q. The estimated excess lifetime cancer risk for each COPC was conservatively summed, regardless of the type of cancer, to estimate the total cancer risk from soil COPCs for an exposed individual. The cancer risk results for Parcels C, D, and G are shown for each chemical and exposure route in Appendix Q-1, Tables Q-1-1 through Q-1-9. The cancer risk results for Parcels C, D, and G are summarized in Table 5-20 and discussed as follows:

Parcel C

The excess lifetime cancer risks due to exposure to chemicals in soil in Parcel C were 4×10^{-6} (0-2 ft bgs) and 2×10^{-6} (0-10 ft bgs) for future indoor commercial/industrial workers, 1×10^{-5} (0-2 ft bgs) and 6×10^{-6} (0-10 ft bgs) for future outdoor commercial/industrial workers, and 8×10^{-7} (0-10 ft bgs) for future construction workers, which were below or within the NDEP acceptable risk range of 10^{-6} to 10^{-4}. The cancer risk driver is dioxin TEQ, the concentrations of which would correspond to a maximum cancer risk of $1x10^{-5}$ at 0-2 ft bgs and $6x10^{-6}$ at 0-10 ft bgs (both for an outdoor commercial/industrial worker). It should be noted that the site-specific action level for dioxin TEQ (0.0027 mg/kg) would correspond to a cancer risk of $6x10^{-5}$ for an outdoor commercial/industrial worker (Northgate 2010a). Therefore, potential exposure to COPCs in soil in Parcel C is not expected to pose an unacceptable carcinogenic health risk under the conditions evaluated.

Parcel D

No carcinogen was identified as soil COPC for Parcel D. Therefore, potential exposure to COPCs in soil in Parcel D is not expected to pose an unacceptable carcinogenic health risk under the conditions evaluated.

Parcel G

The excess lifetime cancer risks due to exposure to chemicals in soil in Parcel G were 2×10^{-8} (0-2 ft bgs) and 1×10^{-8} (0-10 ft bgs) for future indoor commercial/industrial workers, 5×10^{-8} (0-2 ft bgs) and 3×10^{-8} (0-10 ft bgs) for future outdoor commercial/industrial workers, and 4×10^{-9} (0-10 ft bgs) for future construction workers, which were below the lower end of the NDEP acceptable risk range of 10^{-6} to 10^{-4}, indicating that potential exposure to COPCs in soil in Parcel G is not expected to pose an unacceptable carcinogenic health risk under the conditions evaluated.

5.4.1.2 Non-Cancer Health Effects: Chemicals

The likelihood of non-cancer adverse effects is quantified by the development of an HQ. The HQ represents the ratio of the estimated exposure to a non-carcinogen at a given concentration to a value that is believed not to produce non-cancer adverse health effects. The equation used to calculate non-cancer HQ for indoor commercial/industrial workers due to exposure via incidental soil ingestion and inhalation of airborne dust particulates is as follows:

$$HQ = EPC_{soil} \times IF_{soil.ing}/RfD_{oral} + EPC_{air} \times IF_{inh}/RfC_{inh}$$

where:

HQ = Hazard Quotient

EPC_{soil} = Soil Exposure Point Concentration (mg/kg)

EPC_{air} = Air Exposure Point Concentration (µg/m^3)

$IF_{soil.ing}$ = Intake Factor for soil ingestion (kg of soil/kg body weight-day)

IF_{inh} = Intake Factor for air inhalation (unitless)

RfD_{oral} = Oral Reference Dose (mg/kg body weight-day)

RfC_{inh} = Inhalation Reference Concentration (µg/m^3)

The equation used to calculate non-cancer HQ for outdoor commercial/industrial workers and construction workers due to exposure via incidental soil ingestion, dermal contact, and inhalation of airborne soil particulates is as follows:

$$HQ = EPC_{soil} \times (IF_{soil.ing} + IF_{soil.derm} \times ABS)/RfD_{oral} + EPC_{air} \times IF_{inh}/RfC_{inh}$$

where:

HQ = Hazard Quotient

EPC_{soil} = Soil Exposure Point Concentration (mg/kg)

EPC_{air} = Air Exposure Point Concentration (µg/m^3)

$IF_{soil.ing}$ = Intake Factor for soil ingestion (kg of soil/kg body weight-day)

$IF_{soil.derm}$ = Intake Factor for dermal contact with soil (kg of soil/kg body weight-day)

IF_{inh} = Intake Factor for air inhalation (unitless)

ABS = Soil Absorption Factor (unitless)

RfD_{oral} = Oral Reference Dose (mg/kg body weight-day)

RfC_{inh} = Inhalation Reference Concentration ($\mu g/m^3$)

The detailed calculation of non-cancer HQs for each receptor population is presented in Appendix Q. The estimated non-cancer HQs for each COPC were conservatively summed, regardless of the target organ, to estimate the total non-cancer HI from soil COPCs for the exposed individual. The non-cancer HI results for Parcels C, D, and G are shown for each chemical and exposure route in Appendix Q-1, Tables Q-1-1 through Q-1-9. The non-cancer HI results for Parcels C, D, and G are summarized in Table 5-20 and discussed as follows:

Parcel C

The non-cancer HIs due to exposure to chemicals in soil in Parcel C were 0.2 (both 0-2 ft bgs and 0-10 ft bgs) for future indoor commercial/industrial workers, 0.6 (0-2 ft bgs) and 0.4 (0-10 ft bgs) for future outdoor commercial/industrial workers, and 0.9 (0-10 ft bgs) for future construction workers, which were below the NDEP significant threshold of greater than one. Therefore, potential exposure to COPCs in soil in Parcel C is not expected to pose an unacceptable non-carcinogenic health effect under the conditions evaluated.

Parcel D

The non-cancer HIs due to exposure to chemicals in soil in Parcel D were 0.1 (both 0-2 ft bgs and 0-10 ft bgs) for future indoor commercial/industrial workers, 0.2 (both 0-2 ft bgs and 0-10 ft bgs) for future outdoor commercial/industrial workers, and 0.7 (0-10 ft bgs) for future construction workers, which were below the NDEP significant threshold of greater than one. Therefore, potential exposure to COPCs in soil in Parcel D is not expected to pose an unacceptable non-carcinogenic health effect under the conditions evaluated.

Parcel G

The non-cancer HIs due to exposure to chemicals in soil in Parcel G were 0.2 (both 0-2 ft bgs and 0-10 ft bgs) for future indoor commercial/industrial workers, 0.4 (0-2 ft bgs) and 0.3 (0-10 ft bgs) for future outdoor commercial/industrial workers, and one (0-10 ft bgs) for future construction workers, which were below the NDEP significant threshold of greater than one. Therefore, potential exposure to COPCs in soil in Parcel G is not expected to pose an unacceptable non-carcinogenic health effect under the conditions evaluated.

5.4.1.3 Cancer Risks: Asbestos

The equation for assessing inhalation cancer risk for asbestos is analogous to that used for other inhalation carcinogens (Neptune 2015), as follows:

$$Cancer\ Risk = EPC_{air} \times IF_{inh} \times IUR$$

where:

EPC_{air} = Air Exposure Point Concentration (f/m^3)

IF_{inh} = Intake Factor for air inhalation (unitless)

IUR = Inhalation Unit Risk $(f/cm^3)^{-1}$

The inhalation cancer risks for asbestos (combined risks associated with death from lung cancer and mesothelioma) were calculated using the NDEP's "asbestos guidance riskcalcs.xls" spreadsheet, and are presented in Appendix Q. The best estimate and upper-bound estimate of asbestos cancer risks for Parcels C, D, and G are summarized in Table 5-21 and discussed below.

As shown in Table 5-21, the best estimates and upper-bound estimates for indoor commercial/industrial workers, outdoor commercial/industrial workers, and construction workers from potential inhalation exposure to chrysotile long fibers were all less than 1×10^{-6} in Parcels C, D, and G, which were below the lower end of the NDEP acceptable risk range of 10^{-6} to 10^{-4}. For amphibole long fibers, the best estimate were zero for all parcels. The upper-bound estimates for indoor and outdoor commercial/industrial workers were less than 1×10^{-6} for all parcels, and were 2×10^{-6} (Parcel C) and 4×10^{-6} (Parcels D and G) for construction workers. It should be noted that the upper-bound risk estimates for long amphibole fibers were based on an observed count of zero fiber in 19 post-abatement soil samples in Parcel C, 11 post-abatement soil samples in Parcel D, and eight post-abatement soil samples in Parcel G, respectively.[47] Overall, potential exposure to asbestos in soil in Parcels C, D, and G is not expected to pose an unacceptable carcinogenic health risk under the conditions evaluated. Uncertainties in the risk estimates for asbestos, including the impact of sample size, are discussed in Section 6.2.2.2.

5.4.2 Soil Gas VOCs

5.4.2.1 Assessment of Cancer Risks

Carcinogenic risks were estimated as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the Study Area COPCs. The following equations were used to calculate chemical-specific risk and total risk:

$$Chemical\text{-}Specific\ Risk_{inhalation} = EPC_{air} \times IFinh \times UR$$

where:

EPC_{air} = exposure concentration in air ($\mu g/m^3$)

IF_{inh} = inhalation intake factor (unitless)

UR = unit risk $(\mu g/m^3)^{-1}$

and

$$Total\ Risk = \sum Chemical\text{-}Specific\ Risk$$

[47] For asbestos, risks are estimated even in the case of zero fiber counts. As discussed in detail in Neptune (2015), the risk assessment results are affected by the calculation of 95% UCL, which for a fiber count of zero in soil samples, yields a value of three fibers per gram of soil (also see the discussion in Section 6.2.2.2).

The cancer risk estimates were calculated for each parcel based on maximum chemical concentrations detected in the approximately 10 ft bgs soil gas samples, and approximately 5 ft bgs soil gas samples, regardless of whether they were co-located.

The estimated total excess lifetime cancer risks associated with exposures of indoor, outdoor commercial/industrial workers, and construction workers to COPCs migrating from approximately 10 ft soil gas to indoor and outdoor air in Parcels C and D are summarized in Table 5-22. The associated maximum parcel-specific cancer risk for all COPCs detected in approximately 10 ft soil gas samples are presented in Appendix Q-2 (Tables Q-2-1 through Q-2-3). As shown in Table 5-22, the total estimated excess lifetime cancer risks estimated for indoor industrial/commercial workers are 4×10^{-5} (Parcel C) and 1×10^{-6} (Parcel D) for an indoor commercial/industrial worker, 7×10^{-7} (Parcel C) to 2×10^{-8} (Parcel D) for an outdoor commercial/industrial worker, and 7×10^{-7} (Parcel C) to 2×10^{-8} (Parcel D) for a construction worker. For both Parcels C and D, chloroform is the only risk contributor with an excess lifetime cancer risk greater than 1×10^{-6}.

Figure 5-14 plots the estimated excess lifetime cancer risk for chloroform for each approximately 10 ft bgs soil gas sampling location and shows the underlying chloroform plume in shallow groundwater. As shown in Figure 5-14, the locations with a total estimated excess lifetime cancer risk greater than 1×10^{-6} are located on the east side of Parcel C, downgradient of the Parcel E groundwater extraction and treatment system. These locations include TSB-CR-03 (4×10^{-5}), TSB-CJ-02 (3×10^{-5}), TSB-CJ-01 (6×10^{-6}) and TSB-CR-01 (4×10^{-6}).

The estimated excess lifetime cancer risks associated with exposures of indoor, outdoor commercial/industrial workers, and construction workers to COPCs migrating from approximately 5 ft soil gas to indoor and outdoor air in Parcels C, D and G are summarized in Table 5-23. The associated maximum parcel-specific excess lifetime cancer risks for all COPCs detected in approximately 5 ft soil gas samples are presented in Appendix Q-2 (Tables Q-2-4 through Q-2-6). As shown in Table 5-23, the total excess lifetime cancer risks estimated for Parcels C, D and G are 2×10^{-6} (Parcel C), 1×10^{-6} (Parcel D), and 9×10^{-8} (Parcel G) for an indoor commercial/industrial worker, 5×10^{-8} (Parcel C), 2×10^{-8} (Parcel D), and 1×10^{-9} (Parcel G) for an outdoor commercial/industrial worker, and 3×10^{-8} (Parcel C), 1×10^{-8} (Parcel D), and 1×10^{-9} (Parcel G) for a construction worker. In all parcels, chloroform is the only risk contributor with an excess lifetime cancer risk greater than 1×10^{-6}.

Figure 5-15 plots the chloroform excess lifetime cancer risk estimated for each approximately 5 ft bgs soil gas sampling location and shows the underlying chloroform plume in shallow groundwater. As shown on Figure 5-15, the Parcel C locations with estimated excess lifetime cancer risks greater than 1×10^{-6} are located at the southern boundary (SG-90 at 2×10^{-6}) near the Operations Area and in the eastern portion (E-SG-3 at 2×10^{-6}), downgradient of the Parcel E groundwater extraction and treatment system.

5.4.2.2 Assessment of Noncancer Health Effects

For each COPC, the potential for noncancer adverse health effects were estimated as follows:

$$Hazard\ Quotient_{inhalation} = \frac{EC \times IFinh}{RfC}$$

where:

EC = exposure concentration (µg/m^3)

IF_{inh} = inhalation intake factor (unitless)

RfC = reference concentration (µg/m^3)

The HQs for each COPC are summed to obtain the HI:

$$Hazard\ Index = \sum Hazard\ Quotients$$

The estimated total HIs associated with exposures of indoor, outdoor commercial/industrial workers, and construction workers to COPCs migrating from 10 ft soil gas to indoor and outdoor air in Parcels C and D are summarized in Tables 5-22. The associated maximum parcel-specific HQs for all COPCs detected in 10 ft soil gas are presented in Appendix Q-2 (Tables Q-2-1 through Q-2-3). As shown in Table 5-22, the total HIs estimated for indoor industrial/commercial workers are 0.1 (Parcel C) and 0.06 (Parcel D) for an indoor commercial/industrial worker, 0.002 (Parcel C) to 0.001 (Parcel D) for an outdoor commercial/industrial worker, and 0.01 (Parcel C) to 0.0005 (Parcel D) for a construction worker.

The estimated total HIs associated with exposures of indoor, outdoor commercial/industrial workers, and construction workers to COPCs migrating from 5 ft soil gas to indoor and outdoor air in Parcels C, D and G are summarized in Tables 5-23. The associated maximum parcel-specific HQs for all COPCs detected in 5 ft soil gas are presented in Appendix Q-2 (Tables Q-2-4 through Q-2-6). As shown in Table 5-23, the total HI estimated for Parcels C, D and G are 0.03 (Parcel C), 0.006 (Parcel D), and 0.004 (Parcel G) for an indoor commercial/industrial worker, 0.0006 (Parcel C), 0.0001 (Parcel D), and 0.00005 (Parcel G) for an outdoor commercial/industrial worker, and 0.005 (Parcel C), 0.0003 (Parcel D), and 0.0009 (Parcel G) for a construction worker.

5.4.3 Groundwater VOCs

5.4.3.1 Assessment of Cancer Risks

Carcinogenic risks were estimated as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the Study Area COPCs. The following equations were used to calculate chemical-specific risk and total risk:

$$Chemical\text{-}Specific\ Risk_{inhalation} = EPC_{air} \times IFinh \times UR$$

where:

EPC_{air} = exposure concentration in air (µg/m^3)

IF_{inh} = inhalation intake factor (unitless)

UR = unit risk (µg/m^3)$^{-1}$

and

$$Total\ Risk = \sum Chemical\text{-}Specific\ Risk$$

The cancer risk estimates were calculated based on maximum chemical concentrations detected in the shallow groundwater in each parcel, regardless of whether they were co-located.

The estimated excess lifetime cancer risks associated with exposures of indoor, outdoor commercial/industrial workers, and construction workers to COPCs migrating from shallow groundwater to indoor and outdoor air in Parcels C and D are summarized in Table 5-24. The associated maximum parcel-specific excess lifetime cancer risk for all COPCs detected in shallow groundwater are presented in Appendix Q-2 (Tables Q-3-1 through Q-3-3). As shown in Table 5-24, the excess lifetime cancer risk estimated for Parcels C, D, and G are 1×10^{-5} (Parcel C), 3×10^{-6} (Parcel D), and 1×10^{-7} (Parcel G) for an indoor commercial/industrial worker, 2×10^{-7} (Parcel C), 4×10^{-8} (Parcel D), and 2×10^{-9} (Parcel G) for an outdoor commercial/industrial worker, and 7×10^{-10} (Parcel C), 2×10^{-10} (Parcel D), and 9×10^{-12} (Parcel G) for a construction worker. In all parcels, chloroform is the primary contributor to the total estimated cancer risk. For the Parcel C indoor worker, 1,4-dichlorobenzene (4×10^{-6}) and 1,2-DCA (1×10^{-6}), also contribute to the total risk estimate.

Figure 5-16 plots just the estimated excess lifetime cancer risk for the indoor worker for chloroform for each groundwater sampling location and shows the underlying chloroform plume in shallow groundwater. As shown in Figure 5-16, three locations exceed an estimated excess lifetime cancer risk of 1×10^{-6}: AA-BW-04A (4×10^{-6}), M-98 (4×10^{-6}) and M-23 (3×10^{-6}) for chloroform. M-98 was only sampled once in November 2006 with a chloroform concentration of 810 µg/L (J+ qualified). M-23 was sampled in 2015 with a chloroform concentration of 460 µg/L. AA-BW-04A was last sampled for chloroform in October 2011 with a chloroform concentration of 320 µg/L. The maximum chloroform concentration over the last two years of sampling for this well was 800 µg/L.

As shown on Figure 5-16, Parcel G does not map over the main area of chloroform in groundwater. Based on groundwater flow and review of investigations conducted on the adjacent OSSM property, chloroform concentrations in groundwater under Parcel G are not expected to increase in the future.

Parcels C and D are both located over the area of chloroform in groundwater (over a concentration of 70 µg/L to 1,000 µg/L according to 2015 groundwater data). On the western portion of Parcel C, groundwater is being actively drawn to and captured by the OSSM groundwater extraction and treatment system located in Parcel E. On the southern boundary of Parcel C, the existing shallow groundwater wells have gone dry. Additional shallow groundwater investigation is currently in process as part of the NERT RI Phase 2.

The parcel-specific cancer risk estimates were conservatively calculated using the maximum chemical concentrations detected in the most recent two years' groundwater data from each well evaluated for Parcels C, D and G, as discussed in Section 5.2.2.3. These maximum chemical concentrations may not be detected at the same monitoring well or from the same sampling event. Total cancer risk estimates for each groundwater sample included in the risk evaluation were further evaluated by summing cancer risk estimates for each chemical detected in each groundwater sample. The highest total excess lifetime cancer risk estimate for a groundwater sample at each monitoring well was selected and presented on Figure 5-17 As shown in Figure 5-17, four locations in Parcels C and D exceed an estimated excess lifetime cancer risk of 1×10^{-6}: AA-BW-04A (6×10^{-6}), M-98 (4×10^{-6}), M-23 (3×10^{-6}), AA-BW-05A (2×10^{-6}). The total excess lifetime cancer risk estimates for the two well locations evaluated for Parcel G are both well below 1×10^{-6}.

5.4.3.2 Assessment of Noncancer Health Effects

For each COPC, the potential for noncancer adverse health effects were estimated as follows:

$$Hazard\ Quotient_{inhalation} = \frac{EC \times IFinh}{RfC}$$

where:

EC = exposure concentration (µg/m^3)

IF_{inh} = inhalation intake factor (unitless)

RfC = reference concentration (µg/m^3)

The HQs for each COPC are summed to obtain the HI:

$$Hazard\ Index = \sum Hazard\ Quotients$$

The estimated total HIs associated with exposures of indoor, outdoor commercial/industrial workers, and construction workers to COPCs migrating from groundwater to indoor and outdoor air in Parcels C, D and G are summarized in Table 5-24. The associated maximum parcel-specific HQs for all COPCs detected in shallow groundwater are presented in Appendix Q-3 (Tables Q-3-1 through Q-3-3). As shown in Table 5-24, the total HI estimated for Parcels C, D and G are 2 (Parcel C), 0.03 (Parcel D), and 0.001 (Parcel G) for an indoor commercial/industrial worker, 0.02 (Parcel C), 0.0006 (Parcel D), and 0.00002 (Parcel G) for an outdoor commercial/industrial worker, and 0.0001 (Parcel C), 0.00003 (Parcel D), and 0.000002 (Parcel G) for a construction worker. For the Parcel C indoor worker, chlorobenzene, bromomethane and TCE are the primary contributors to the total estimated HI.

The parcel-specific HI estimates were conservatively calculated using the maximum chemical concentrations detected in the most recent two years' groundwater data from each well, as discussed in Section 5.2.2.3. These maximum chemical concentrations may not be detected at the same well or from the same sampling event. Total HI estimates for each groundwater sample included in the risk evaluation were further evaluated by summing HQ estimates for each chemical detected in each groundwater sample. The highest total HI estimate for a groundwater sample at each monitoring well were selected and presented on Figure 5-18. As shown in Figure 5-18, AA-BW-04A (1) has the highest total HI estimate among all wells, the next highest HI is at AA-BW-05 (0.1); both wells are located in the same area that is influenced by the groundwater plume from OSSM within or near the west portion of Parcel C. The total HI estimates for all wells in Parcels D and G are well below one.

6. UNCERTAINTY ANALYSIS

The process of risk assessment has inherent uncertainties associated with the calculations and assumptions used in the HRA, resulting from lack of knowledge and variability of site conditions as well as chemical toxicity and exposure. The approach used in the HRA is health protective and tends to overestimate potential exposure, resulting in estimated cancer risks and hazard levels that are likely to be higher than the actual risks or hazards experienced by the potentially exposed populations. These uncertainties are generally difficult to quantify. A qualitative discussion of key uncertainties associated with the available data and the methodology used in the HRA is presented below.

6.1 Uncertainties Identified in the Data Usability Evaluation

6.1.1 Site Characterization Data

For field sampling, it is impossible to collect samples from every possible location; therefore, there is always some uncertainties associated with the representativeness of site characterization data.

Soil data used in the post-remediation HRA came from investigations following both judgmental and random sampling approaches, with judgmental samples collected at locations targeting specific features within a parcel (e.g., LOUs, drains, ditches, and debris piles). Soil samples collected from these locations were analyzed for the full suite of SRC chemicals. For Parcels C and D, adequate soil samples were collected at 0-10 ft bgs. For Parcel G, given that the source area was roughly five ft in depth and the maximum detected concentrations across depths and locations were conservatively used in the COPC selection for Parcel G, although limited data were collected at 10 ft bgs, the vertical coverage was still considered adequate. Overall, the placement of the soil sample locations was deemed representative to evaluate the soil conditions of Parcels C, D, and G in the context of the CSM, and the relative uncertainty in the Site characterization data was considered to be low.

The 2007 soil gas samples were collected at a depth of approximately 10 ft bgs across Parcels C and D. These soil gas sampling locations were placed to both evaluate potential future land use exposures and to characterize potential source areas in the current boundaries of Parcels C and D, and to provide spatial coverage to ensure that these two parcels were reasonably and completely covered for sampling purposes (BEC 2007a). Both judgemental samples and random samples have been collected within the current boundary of Parcels C and D to ensure spatial coverage in the 2007 soil gas sampling event. Soil gas samples collected in 2008 (five ft bgs samples from 12 locations) and 2013 (five ft samples from nine locations) from within and near the Study Area were used to estimate cancer risks and noncancer hazards in the HRA. The 2008 Site-Wide Soil Gas Work Plan (ENSR 2008a) states that the majority of sampling locations were selected to (1) sample near or within one of the 18 LOUs identified as being a potential source of VOCs; (2) co-locate with groundwater wells; and/or (3) sample areas where VOCs had been detected in soil or groundwater. The majority of the 2013 sampling locations were placed in areas overlying the highest chloroform concentrations in groundwater and/or co-located with groundwater monitoring wells (ENVIRON 2012). This sample placement is consistent with the CSM in which groundwater is identified as the primary source of VOCs in soil gas. All 2008 and 2013 soil gas samples were analyzed for the full suite of VOCs using USEPA Method TO-15, as proposed in the soil gas investigation work plans (ENSR 2008a, ENVIRON 2012). Further, the analyses included both (1) VOCs associated with historical operations and (2) those VOCs

that had been detected in soil or groundwater. Given that (1) in the absence of a building footprint, risks associated with the vapor intrusion pathway are typically evaluated for each individual sampling location (i.e., statistical averages are not estimated); and (2) chloroform concentrations in the underlying groundwater plume were used to inform selection of the soil gas sampling locations, the available samples are considered adequate to characterize soil gas concentrations in the Study Area.

The DVSRs for the 2007, 2008, and 2013 soil gas analytical data are included in Appendix L. As noted in Section 4.2 and discuss in more detail in Section 6.1.2 through 6.1.7, a small number of data points were qualified based on minor method blank, field duplicate, and quantitation issues, but were deemed acceptable and were not biased low. All 2007, 2008, and 2013 soil gas data were deemed usable for risk assessment. Discussions of the impact on the risk results from helium detections in the sampling train and the findings for blank contamination and precision are provided in Section 6.1.6.

Consistent with previous USEPA guidance and NERT project work plans, only soil gas samples were collected to support evaluation of the vapor intrusion pathway. The objectives of groundwater sampling at the Site have been primarily to characterize SRCs in groundwater near suspected source areas and plume delineation; that is, no groundwater investigation was conducted to specifically provide data to evaluate the vapor intrusion pathway. Further, the majority of groundwater sampling on the Site has focused on perchlorate and hexavalent chromium, with limited sampling for VOCs and SVOCs. In response to NDEP comments (NDEP 2017b), groundwater data was also incorporated in this HRA to evaluate potential risks for the vapor intrusion pathway to provide additional line of evidence for the analysis. To provide groundwater data for this HRA, the NERT project database (discussed in Section 4.1.1.1) and the BMI database were queried to identify wells within or near Parcels C, D, and G and for which VOC and/or SVOC results were available for shallow groundwater. The identified wells include wells owned and sampled by NERT and wells on the Site that are owned and sampled by other BMI entities(Table 3-2). The findings of the review of sample coverage included consideration of both spatial and temporal coverage are summarized for each parcel as follows:

- Parcel C: Spatial and temporal coverage of the western portion of Parcel C (i.e., the area west of M-7B) is considered adequate for evaluation of the vapor intrusion pathway. Specifically, wells AA-BW-04A, AA-BW-05A, H-28 and -28A, M-6A, and M-7B provide groundwater concentrations on the southern (upgradient) parcel boundary; these wells were last sampled for chloroform in October 2011, October 2011, March 2015, January 2015,and Aril 2015, respectively. Chloroform results for the wells east of M-7B (M-98, M-99, and M-100) are available from only one sampling event each, in 2006, 2010, and 2006, respectively. These wells were dry during the 2015 RI data gap investigation; deeper wells will be installed in this area and sampled in the second half of 2017. As discussed in Section 5.4 and shown on Figures 5-17 and 5-18, the highest cancer risk and HI were identified in the western portion of Parcel C, where most of the groundwater wells were placed. The groundwater wells in Parcel C also tend to be placed towards the southern boundary (upgradient) of the parcel. Therefore the placement of the groundwater wells was deemed representative while conservative to evaluate the groundwater conditions of Parcels C. The relative uncertainty in the Site characterization groundwater data for Parcel C was considered relatively low.

- Parcel D: Similar to Parcel C, spatial and temporal coverage of the western portion of Parcel D (i.e., the area to the north of Parcel E) is adequate for evaluation of the vapor intrusion pathway. The wells in this area, which are downgradient of the OSSM groundwater treatment system, were most recently sampled for chloroform (and other VOCs) in 2015. With the exception of MC-94, all other Parcel D wells listed in Table 3-2 were most recently sampled for chloroform and other VOCs in 2015.
- Parcel G: There is one well in Parcel G (TR-08) and one adjacent to the north (AA-MW-23). TR-08 was sampled in January 2015 with a chloroform concentration of 8.8 µg/L. Parcel G is located outside of the known area of high concentrations of chloroform in groundwater. Limited VOCs were detected in these wells, all at low concentrations. Along with the soil gas data, these data are adequate for evaluation of the vapor intrusion pathway.
- Groundwater data included in this HRA and the associated DVSRs have been reviewed and approved by NDEP prior to entry into the NERT and BMI databases, except for the Henderson_Offsite_Relational_062807 DVSR (Appendix N). One groundwater sample M-7B collected on 12/18/2007 from this DVSR is within or near the Study Area. Because only the most recent two years of groundwater data at each well are used in the risk calculations and more recent groundwater samples are available from 2014 and 2015, M-7B from the 2007 groundwater sampling investigation was not used in the risk calculations for this HRA, and therefore has no impact on the groundwater risk results.

6.1.2 Detection Limit

For soil analytes for which the detection frequency was less than 100%, the SQLs from the soil HRA data set were compared to 0.1xBCL (or other screening criteria) to confirm that they were sufficiently low for risk characterization (see Section 4.1.1.5). As presented in Tables 4-1 through 4-3, most of the SQLs in Parcels C, D, and G were less than the screening levels, with the a few exceptions. The impacts of elevated SQLs on the soil COPC selection and risk estimates are discussed below.

- Dioxin TEQs in Parcels C and G: In Parcel C, the SQLs exceeded the site-specific action level of 0.0027 mg/kg in three out of nine samples reported as non-detected, with a maximum SQL of 0.016 mg/kg, while dioxin TEQ was identified as a soil COPC for Parcel C based on a maximum detected concentration of 0.0039 mg/kg. However, the soil EPC of dioxin TEQ (0.00045 mg/kg, calculated as 95% UCL using both detected and nondetected data) would correspond to cancer risks below or within the NDEP acceptable risk range of 10^{-6} to 10^{-4} for a commercial/industrial scenario. In Parcel G, the SQL exceeded the site-specific action level in one out of five samples reported as non-detected, with a maximum SQL of 0.020 mg/kg, while dioxin TEQ was not identified as a soil COPC for Parcel G based on a maximum detected concentration of 0.0017 mg/kg. Even if the dioxin TEQ was identified as a soil COPC for Parcel G, the soil EPC (0.00062 mg/kg, calculated as 95% UCL using both detected and nondetected data) would correspond to cancer risks below or within the NDEP acceptable risk range of 10^{-6} to 10^{-4} for a commercial/industrial scenario. Therefore, elevated SQLs for dioxin TEQs do not have any impact on the overall risk evaluation.
- BaPEqs in Parcels C, D, and G: The SQLs exceeded 0.1xBCL in most samples reported as nondetects, with the maximum SQLs of 0.49 mg/kg for Parcel C, 0.039 mg/kg for Parcel D, and 0.038 mg/kg for Parcel G. BaPEq was not identified as a soil COPC for Parcels C and D, while the estimated cancer risks associated with the maximum SQLs for a

commercial/industrial scenario would be 2 x 10^{-7} for Parcel C and 2 x 10^{-8} for Parcel D, which are below the NDEP acceptable risk range of 10^{-6} to 10^{-4}. Therefore, even if BaPEq was identified as a soil COPC for Parcels C and D, it would have little impact on the overall risk evaluation. BaPEq was identified as a soil COPC for Parcel G, and the 95% UCL calculated using both detected and nondetected data (0.068 mg/kg) was used as the soil EPC in the risk calculation. Therefore, elevated SQLs for BaPEqs do not have any impact on the risk evaluation for Parcel G.

- Hexachlorobenzene in Parcel C: The SQLs exceeded 0.1xBCL in two out of 44 samples reported as nondetects, with a maximum SQL of 0.42 mg/kg. Hexachlorobenzene was identified as a soil COPC for Parcel C, and the 95% UCL calculated using both detected and nondetected data (0.049 mg/kg) was used as the soil EPC in the risk calculation. Therefore, elevated SQLs for hexachlorobenzene do not have any impact on the risk evaluation for Parcel C.
- Benzidine, n-nitroso-di-n-propylamine, and 1,2-dibromo-3-chloropropane in Parcel C: These three chemicals were not detected in any samples; the SQLs exceeded 0.1xBCL in 100%, 27%, and 4% of the non-detected samples, respectively. The maximum SQL of benzidine would correspond to an estimated cancer risk of 7 x 10^{-5} for a commercial/industrial scenario, which is within the NDEP acceptable risk range of 10^{-6} to 10^{-4}. Therefore, if benzidine was identified as a soil COPC for Parcel C, there would be moderate impact on the overall risk evaluation. The maximum SQLs of n-nitroso-di-n-propylamine and 1,2-dibromo-3-chloropropane would correspond to estimated cancer risks of 2 x 10^{-7} and 1 x 10^{-7}, respectively for a commercial/industrial scenario, which are below the NDEP acceptable risk range of 10^{-6} to 10^{-4}. Therefore, if n-nitroso-di-n-propylamine and 1,2-dibromo-3-chloropropane were identified as soil COPCs for Parcel C, there would be little impact on the overall risk evaluation.

For soil gas analytes for which the detection frequency was less than 100%, the SQLs for the 2007, 2008, and 2013 soil gas dataset included in this HRA were compared to 0.1xRBC to confirm that they were sufficiently low for risk characterization (see Section 4.2.1.5). As presented in Tables 4-10A, 4-10B, 14-11A, 14-11B, and 14-11C, for the 2007, 2008 and 2013 sampling events, the maximum SQLs were all less than 10% of the respective RBCs for all analytes (i.e. no non-detects were greater than 10% of the RBC). This result is consistent with the QAPP goal that SQLs are less than 1/10^{th} of the screening level, as established by NDEP for the BMI Complex and Common Areas (NDEP 2010c). The SQLs achieved were confirmed to be adequate for risk assessment, and the uncertainty associated with the detection limits for the soil gas dataset is considered low.

For each groundwater analyte for which the detection frequency was less than 100%, the maximum SQL was compared to the RBC. Tables 4-14A through 4-14C list the maximum SQL, the most stringent groundwater RBC, the ratio of the maximum SQL to 1/10^{th} of the RBC, and the number of samples with SQLs greater than 1/10^{th} of the RBC. For all analytes, the maximum SQL was less than 10% of the respective RBC (i.e. no non-detects were greater than 10% of the RBC). This result is consistent with the QAPP goal that SQLs are less than 1/10^{th} of the screening level, as established by NDEP for the BMI Complex and Common Areas (NDEP 2010c). The SQLs achieved were confirmed to be adequate for risk assessment, and the uncertainty associated with the detection limits for the soil gas dataset is considered low.

6.1.3 Completeness

The rejected ("R" qualified) data associated with post-remediation soil samples at 0-10 ft bgs in Parcels C, D, and G are summarized in Appendix E, Table E-3. The percent completeness for the soil HRA data set is 99.8% for Parcel C, 99.7% for Parcel D, and 99.7% for Parcel G. Given the small percentage of rejected data and that there is no apparent spatial grouping of rejected data, these rejected data have little impact on the spatial coverage of the soil HRA data set. Additionally, none of the rejected data were above 0.1xBCL except for benzidine in Parcel C, reported as a nondetect at 0.65 mg/kg (see Table E-3). However, this rejected value was lower than the maximum SQL for benzidine in the HRA data set for Parcel C (0.75 mg/kg, see Table 4-1). Therefore, the rejected data do not significantly impact the overall risk evaluation.

There are no rejected ("R" qualified) data associated with soil gas samples in Parcels C, D, and G.

The rejected ("R" qualified) data associated with shallow groundwater samples in Parcels C, D, and G are summarized in Appendix N, Table N-1. The percent completeness for the groundwater dataset included for the Parcel C, D, and G evaluation is 97.2% for Parcel C, 99.98% for Parcel D, and 99.7% for Parcel G. Given the small percentage of rejected data and that there is no apparent spatial grouping of rejected data, these rejected data have little impact on the spatial coverage of the groundwater HRA data set. Additionally, none of the rejected data were above 0.1xRBC except for three bromomethane results in Parcel C, reported as nondetects at 2 µg/L (see Table N-1). However, these rejected values were lower than the maximum SQL for benzidine in the HRA data set for Parcel C (500 µg /L, see Table 4-14). Therefore, the rejected data do not significantly impact the overall risk evaluation.

6.1.4 Comparability

As discussed in Section 4.1.1.7, different reporting limits for the same analyte in soil may impact the comparability of the data sets. The ranges of the SQLs for each soil analyte for which the detection frequency was less than 100% are presented in Tables 4-1 through 4-3. For most of the soil analytes, the SQLs are well below 0.1xBCL (or other screening criteria); in each parcel, there are a few soil analytes with SQLs exceeding 0.1xBCL (or other screening criteria), and their impacts on the COPC selection and risk estimates are discussed in Section 6.1.2. In summary, different reporting limits for the same soil analyte would not affect the overall risk evaluation.

Also, differences in sample preparation and analytical methods exist between the parcel data sets and the RZ-A background data set for both metals and radionuclides, which may affect the statistical testing results of background evaluation. However, as discussed in Section 5.1.1, no metal or radionuclide was identified or eliminated as a soil COPC based solely on the statistical testing results of background evaluation. Therefore, potential changes of statistical testing results of background evaluation due to the incomparability issues of analytical methods would not have any impact on the overall risk calculation.

The 2007 soil gas samples were collected at 10 ft bgs in Parcels C and D. There are no 10 ft bgs soil gas samples collected from Parcel G. Both 2008 and 2013 soil gas samples were collected at five ft bgs in Parcels C, D, and G. For this HRA, in which maximum detected concentrations are used as the EPCs, it is reasonable to combine the 2008 and 2013 data sets for the five ft bgs soil gas evaluation and use the 2007 data to evaluate soil gas

conditions at 10 ft bgs. Combined, the two data sets provide adequate coverage of areas overlying VOC groundwater plumes within the Study Area, and the use of the maximum detected concentrations in each Parcel for the exposure estimates is considered conservative.

It should be noted that the 10 ft bgs soil gas results are based on 2007 sampling data which were collected ten years ago in Parcels C and D only; they were analyzed using TO-14 which has lower analytical precision than the 2008 and 2013 soil gas analytical programs. Helium was used as the tracer gas for leak checking during the 2008 and 2013 sample collection but not in the 2007 sample collection, as further discussed in detail in Section 6.1.6. The uncertainty associated with the 2007 soil gas dataset is considered higher than the combined 2008 and 2013 soil gas dataset.

Temporal factors were also considered in the comparability evaluation. Soil gas concentrations would be expected to follow trends in groundwater concentrations, in cases where groundwater is the source of VOCs. However, the sample location selection method for the 2007 soil gas investigation is different from the 2008 soil gas investigation; the objective of the 2013 investigation was to expand spatial coverage, particularly in areas not previously sampled in 2008 and not to evaluate concentration trends. Because no sample was co-located among the 2007, 2008, and 2013 soil gas sample, soil gas concentrations among the three investigations cannot be directly compared. Limited data was available to evaluate temporal trends in groundwater concentrations, the source of VOCs in soil gas. As noted in Section 4.3.1.4, available data indicate that more recent groundwater concentrations are approximately the same as or less than the older groundwater concentrations.

For the groundwater data used in the HRA, as discussed in Section 4.3, a limited evaluation of this DQI is presented based on the information available in the NERT and BMI databases.

The same analytical methods were used across most investigations; specifically, USEPA Method SW-8260 for VOCs and SW-8270 for SVOCs. In some investigations, the more sensitive SW-8260 SIM was used for VOCs; SW-8270 SIM was used for PAHs across all analytical programs. All groundwater sampling results were reported in µg/L.

Because maximum detected concentrations were used in the HRA (and SQLs were sufficiently low in all investigations, as discussed in Section 4.3.1.5), the differences in detection limits does not impact the results of the HRA.

It is noted that the same set of analytes was not consistently analyzed for in all groundwater samples. For Parcel C, sample number was reasonably consistent across analytes ranging from 45 to 65 samples (Table 4-15A). For Parcel D, most VOCs were analyzed in over 100 samples, whereas SVOC analyses were more limited (less than 10 samples) with the exception of hexachlorobutadiene and naphthalene, each with over 100 samples (Table 4-15B). For Parcel G, sample numbers ranged from one to seven (Table 4-15C).

Few wells have been sampled over time for VOCs and/or SVOCs such that temporal factors were not considered in the comparability evaluation.

6.1.5 Precision

Precision is a measure of the degree of agreement between replicate measurements of the same source (field precision) or sample (analytical precision). Precision is expressed by the

RPD between replicate measurements. Replicate measurements can be made on the same sample or on two samples from the same source.

As presented in Table E-4, in the soil HRA data set, a total of 65 pairs of primary and field duplicate results for Parcel C, 43 pairs for Parcel D, and 11 pairs for Parcel G were qualified due to RPD or reporting limit exceedance. Soil samples with qualified primary and field duplicate results were treated as independent samples in the HRA. Except for dioxin TEQ in Parcel C and chloride in Parcel G, none of the soil analytes qualified due to RPD or reporting limit exceedance was identified as soil COPCs. For both dioxin TEQ in Parcel C and chloride in Parcel G, the maximum detected concentrations used in the COPC selection (see Table 5-1 and 5-3) were greater than the duplicate results qualified due to RPD or reporting limit exceedance (see Table E-4). Also, the cancer risks associated with dioxin TEQ in Parcel C were below or within the NDEP acceptable risk range of 10^{-6} to 10^{-4}, and the non-cancer HQs associated with chloride in Parcel G were well below the significant threshold (see Appendix Q-1). Therefore, the precision issues for the duplicate samples do not impact on the overall risk calculation.

For the soil gas dataset used in the HRA, field precision for the Study Area samples was assessed by evaluating the field duplicate results for the 2007, 2008, and 2013 investigations as below:

2007 investigation: As presented in Table L-1, two field duplicates (at TSB-CJ-01 and TSB-DR-01) were collected during the 2007 investigation in Parcel C and Parcel D, respectively. No paired results for the parent sample and field duplicate were qualified for imprecision in the 2007 soil gas dataset.

- 2008 investigation: None of the duplicate samples were collected from locations in or near the Study Area. For samples collected outside the Study Area, 84 associated field sample results in nine primary sample/field duplicate pairs were qualified estimated (J) based on RPDs that exceeded the QAPP criteria. Based on the DVSR for the 2008 soil gas data (Apppendix L-2), the SDG was identified for each of the twelve 2008 samples used for the HRA and the specific analytes with results outside the RPD acceptance criteria were reviewed. For the primary contributors to the total estimated risk (i.e., chloroform), results were within the RPD acceptance criteria. However, even though chloroform is a primary risk contributor, the actual risk for carbon tetrachloride is below levels of concern (i.e., the cancer risk estimated for the maximum detected chloroform concentration at the Study Area is 7×10^{-7}. Thus, the higher uncertainty associated with the concentrations for this COPC would not significantly impact the risk results or conclusions.
- 2013 investigation: No field duplicate was collected during the 2013 investigation near the Study Area. One field duplicate (E-SG-6) was collected outside the Study Area, 20 paired values (total of 40 sample results) were qualified based on RPDs that exceeded the QAPP criteria. These values were summarized from information in the 2013 DVSR. Results for the two primary contributors to the total estimated risk (i.e., chloroform) were within the RPD acceptance criteria, which indicates that the J-qualified samples did not impact the risk results for the primary risk drivers.

For the shallow groundwater dataset used in the HRA, as presented in Table N-3, field precision for the Study Area samples was assessed by evaluating the field duplicate results for the HRA groundwater data. A total of 24 field duplicates (Table N-3) were collected for

the groundwater data set: 14 field duplicates in Parcel C, eight in Parcel D, and two in Parcel G. The precision goal for field duplicates was plus or minus 50% RPD except for the case in which results are less than five times the reporting limit. For the latter case, the acceptance criteria is the reporting limit (i.e., the absolute value of the difference between the primary result and duplicate result is compared to the reporting limit). Based on this review, 57 associated field sample results in four primary sample/field duplicate pairs were qualified estimated (J) based on RPDs that exceeded the QAPP criteria. These values were summarized from information in Appendix N. Results for the five primary contributors to the total estimated risk (i.e., chloroform, 1,4-dichlorobenzene, and 1,2-DCA) were all within the RPD acceptance criteria, which indicates that the J-qualified samples did not impact the risk results for the primary risk drivers.

6.1.6 Accuracy

The soil analytical data were evaluated in DVSRs presented in Appendix E, with a subset of the data qualified with a J qualifier (J, J-, or J+) based on method blank, field duplicate, and/or other quantitation issues (3,102 out of 39,476 data points, see Table E-1); that is, the reported value was estimated, with no (J), low (J-), or high (J+) bias. The potential impact of the J qualified data on the HRA results was evaluated:

- J and J+ Qualified Data: A review of the J and J+ qualified data indicated that the estimated results were either below the 0.1xBCL (or other screening criteria) or below/equal to the maximum detected concentration used in the COPC selection (Table 6-1). Only two soil COPCs (octachlorostyrene and zirconium in Parcel C) were identified based on a maximum detected concentration with a J qualifier. No toxicity value is available for octachlorostyrene, and this chemical is qualitatively discussed in Section 6.2.4. The non-cancer HQs associated with zirconium in Parcel C were below the significant threshold of greater than one (see Appendix Q). Therefore, the J and J+ qualified data do not have any impact on the overall risk evaluation.
- J- Qualified Data: A review of the J- qualified data indicated most of the results estimated with low bias were either significantly below the 0.1xBCL (or other screening criteria) or lower than the maximum detected concentration used in the COPC selection (Table 6-1). Therefore, correction for the low bias would not change the selection of COPCs. Only one soil COPC (zirconium in Parcel G) was identified based on a maximum detected concentration with a J- qualifier. The non-cancer HQs associated with zirconium in Parcel G were below the significant threshold of greater than one (see Appendix Q). Correction for the low bias of this chemical may slightly increase the estimated non-cancer HQs, but it would likely still be below the significantly threshold. Therefore, the J-qualified data have little impact on the overall risk evaluation.

As discussed in Section 4.1.1.7, Ramboll Environ noticed that several discrepancies in the data associated with blank contamination exist between the project database and the amended tables of the DVSRs Northgate prepared in the Soil HRA Report Revision 3 (Northgate 2014), especially for the reported concentrations. Data consistent with the project database are included in this HRA, and the impacts of such discrepancies on the soil results were evaluated (Table 6-2). Except for zirconium in Parcel D, the reported concentrations associated with blank contamination were all below 0.1xBCL. Zirconium was identified as a soil COPC for Parcel D, and the maximum detected concentration (28 mg/kg, Table 5-2) used in the COPC selection and the soil EPCs (22 mg/kg for 0-2 ft bgs and 23 mg/kg for 0-10 ft bgs) used in the risk estimate were greater than the maximum reported

concentration associated with blank contamination (19 mg/kg, Table 6-2). In addition, the data associated with blank contamination may result in the selection of additional metals (e.g., cadmium, mercury, molybdenum, thallium, and tungsten) as being above background; however, these metals all passed the concentration/toxicity screen and would not be identified as soil COPCs. Therefore, the data associated with blank contamination do not have any impact on the overall risk evaluation.

For asbestos, several data quality issues were identified in the DVSRs (Neptune 2014), ranging from unsigned chain of custody forms to inability to verify fiber counts on the bench sheet data reports due to poor legibility. A memorandum responding to the specific issues identified in the DVSRs along with the agreed data set for risk assessment purposes in the EDD was submitted to NDEP (ENVIRON 2014d). In the case of illegible bench sheet data, information (fiber counts and analytical sensitivity) presented in the laboratory reports was used. It is anticipated that the information in the laboratory reports would have been correct, or would not have deviated from the bench data sheet reports by more than one or two fiber counts. Further, bench data sheets were illegible for only two samples. Therefore, the overall impact of asbestos data quality issues on the risk estimates is relatively small.

For soil gas dataset, as presented in Appendix L, has a subset of the data qualified with a J qualifier (J, or J+) based on method blank, field duplicate, and/or other quantitation issues (600 out of 2,726 data points, see Table L-3); that is, the reported value was estimated, with no (J), or high (J+) bias. The potential impact of the J qualified data on the HRA results was evaluated. The maximum detected concentrations for each COPC in each Parcel were used in the risk evaluations. A review of the J and J+ qualified soil gas data indicated that some of the estimated results with no bias (J) for the primary contributors to the total estimated risk (i.e., chloroform were identified as the maximum detected concentrations for the Parcel and used in the soil gas risk estimations for the parcels. None of the bias high (J+) results were identified as the maximum detected concentrations for the parcel. Therefore, the J and J+ qualified data are not expected to have any significant impact on the overall risk evaluation.

- As noted in Section 4.2.1.7, the 2007, 2008 and 2013 results were qualified due to contamination in method, trip, and/or equipment blanks, as summarized below:
- 2008 Analytical Data: Low levels of common laboratory contaminants (acetone, 2-butanone, and methylene chloride) and other contaminants (carbon disulfide, ethanol, and vinyl acetate) were detected in method blanks and six results from SG16 and SG19 were qualified as not detected (U) as a result of blank contamination (Table L-2 of Appendix L).
- 2013 Analytical Data: A total of 25 results were J-qualified due to contamination in trip and/or equipment blanks. No data were qualified due to contamination in method blanks.

  The presence of contaminants in blanks and the approach for treating sample results associated with blank contamination in the risk assessment data set had no significant impact on the HRA results. For the 2008 data set, the blank contamination was not associated with any of the samples used as an exposure concentration (noting that for each COPC, the exposure concentration was the maximum detected concentration) and the six censored results would have had no impact on the risk estimates if these results had been included in the risk assessment data set.

  For the 2013 data set, blank contamination, where reported, was low in all samples (Table L-3). Further, blank contamination was not associated with any of the 2013 results that were

used as an exposure concentration, with the exception of the exposure concentration for dichlorodifluoromethane (sample E-SG-3). However, the estimated HQ for dichlorodifluoromethane was well below 1. Finally, although one result for carbon tetrachloride was qualified (J) due to blank contamination, the J-qualified datum was not the maximum detected concentration and therefore was not used as the exposure concentration.

Also, as noted in Section 4.2.1.7, helium gas was used as part of the leak-check procedure for the 2008 and 2013 soil gas sampling events. The primary advantage of using helium as a gaseous tracer is that leakage can be readily quantified by comparing laboratory results for helium with concentrations measured within the sampling shroud. Laboratory results are used because field results are less reliable at the low end of the concentration range. The field measurements are used to allow personnel to take corrective action in the field in response to potential leaks. Helium was detected in two soil gas probes, E-SG-1 and E-SG-3; the detections were reviewed in the field and potential impacts to sample integrity were considered prior to sampling. The following describes the decisions made in the field with respect to E-SG-1 and E-SG-3:

- **E-SG-1:** Sampling of E-SG-1 proceeded without corrective action even though field data suggested that a leak of greater than 5% was potentially occurring (concentrations of helium detected during the field probe leak check were 9.4-12% of shroud concentration). This decision was made because E-SG-1 was the last sample collected before postponing the remainder of the March 8, 2013 sampling event due to rain. Time was insufficient to perform a corrective action in the field, so the sample was submitted to the laboratory with the request to screen for helium prior to VOC analysis. The laboratory helium result of 0.0067% (0.024% of the shroud concentration) confirmed that the sample was not materially compromised by ambient air. The field detections in the probe likely resulted from a leak within the field instrument tubing (which is not in-line with the sample stream) or were anomalous readings due to atmospheric moisture from the light rain that had begun during sampling.
- **E-SG-3**: When sampling E-SG-3, the field detection of 0.1% helium in the probe leak check versus 30% in the shroud represented a potential leak of 0.3%, well below the accepted threshold of 5% at which corrective action to remedy the leak or relocate the probe is recommended (Cal/EPA 2012). Sampling therefore proceeded without corrective action. The laboratory detection of 0.0082% (0.027% of the shroud concentration) confirmed that the sample was not materially compromised by ambient air.

In both cases, the shut-in tests successfully demonstrated that the sampling trains were essentially leak free. Furthermore, the sampling proceeded in accordance with established protocols for performing quantitative helium leak-checks for soil gas sampling and is not considered deficient.

A second advantage of using helium as a gaseous tracer is that helium, being a conservative gaseous tracer, does not affect analysis of VOCs nor does its detection require sample dilution, both of which are common when using volatile liquid tracers. Therefore, quantitative leak-tests using helium can identify potential leaks that would not be discovered using more common techniques. Trace levels of helium are commonly detected in soil gas samples due to the sensitivity of the method. However, the additional data provided by the leak-tests allows for the quantitative evaluation of the significance of the leak. Furthermore, when a significant leak is identified, the VOC results can be adjusted to account for the leak.

Concentrations of helium in 9 of the 10 samples were insignificant, as indicated by the laboratory results (0.019-0.25% of shroud concentration). As discussed above, E-SG-1 and E-SG-3 had helium field detections in the probe during sampling that did not indicate leaks. One sample, E-SG-6, had a laboratory detection of helium of 2.0% (6.7% of shroud concentration); however, a field duplicate was collected simultaneously with this sample. The field duplicate, which shared the same sampling train and shroud, contained helium at a concentration of only 0.076% (0.25% of shroud concentration). The reason for the difference between the primary and duplicate sample is not known. To evaluate the impact of leakage on the risk estimates, VOC results were adjusted assuming a 6.7% leak. (These calculations are not shown.) The adjusted VOC results did not result in any material changes to the risk estimates or conclusions in the HRA.

The groundwater analytical data were evaluated in DVSRs presented in Appendix N, with a subset of the data qualified with a J qualifier (J, J-, or J+) based on method blank, field duplicate, and/or other quantitation issues (433 out of 7703 data points used in the groundwater risk evaluations, see Table N-5); that is, the reported value was estimated, with no (J), low (J-), or high (J+) bias. The potential impact of the J qualified data on the HRA results was evaluated.

As discussed in Section 4.3.1.7, 36 analytical results were qualified as estimated (J or J+) due to contamination in trip or equipment blanks (Table N-4) in accordance with the most recent NDEP guidance (NDEP 2012). A comparison of the estimated concentrations in Table N-4 with the groundwater RBCs shows that concentrations in the trip and field blanks were well below the RBCs.

- The maximum detected concentrations for each COPC in each Parcel were used in the risk evaluations. A review of the J, J-, and J+ qualified groundwater data indicated that some of the estimated results with no bias (J) or high bias (J+) results for two of the primary contributors to the total estimated risk (i.e., chloroform) were identified as the maximum detected concentrations for the Parcel and used in the groundwater risk estimations for the parcels. All estimated results for chloroform and PCE were based on no bias (J) results except for one estimated chloroform concentration of 810 µg/L with high (J+) bias etected in Parcel C was identified as the maximum detected concentration and used as the exposure point concentration in the risk estimation for chloroform in Parcel C. This may lead to risk estimates with high bias for chloroform in groundwater for Parcel C. No estimated results with low (J-) bias was used as exposure point concentration in the risk calculations for the Parcels.

6.1.7 Duplicate Treatment

In the HRA, soil samples with primary and field duplicate results were treated as independent samples, although the variance of the duplicate and primary samples was not tested. The impacts are discussed as follows:

- First, only perchlorate and chloride in Parcel G were identified as soil COPCs based on the maximum concentration detected in a sample with a duplicate. For perchlorate, the detected concentration was 138 mg/kg in TSB-GJ-09-0 and 124 mg/kg in TSB-GJ-09-0 FD, both of which were above the 0.1xBCL; therefore, perchlorate would be identified as a soil COPC for Parcel G regardless of how the duplicates were treated. For chloride, the detected concentration was 15,900 mg/kg in TSB-GJ-09-0 which was above the 0.1xBCL, and 10,900 mg/kg in TSB-GJ-09-0 FD which was below the 0.1xBCL; therefore, chloride

was conservatively identified as a soil COPC for Parcel G based on the result from the primary sample, but the non-cancer HQs associated with this chemical were well below the significant threshold.

- Second, although the treatment of duplicate samples may affect the results of background evaluation, no metals or radionuclides were identified as soil COPCs based solely on the background evaluation.
- Third, the treatment of duplicate samples may affect the soil EPCs calculated as the 95% UCLs on the mean concentrations in each parcel. However, as indicated in Table 5-20, the estimated excess lifetime cancer risks for Parcels C, D, and G were below or within the NDEP acceptable risk range of 10^{-6} to 10^{-4}, and the non-cancer HIs for Parcels C, D, and G were all below the significant threshold. The non-cancer HI for a future construction worker in Parcel G was one. The risk driver for the non-cancer HI for a future construction worker in Parcel G was zirconium, which was detected at 22 mg/kg in both duplicate samples (TSB-GJ-09-0-FD and TSB-GJ-02-0-FD). The duplicate results were comparable to both the concentrations detected in the primary samples (18 mg/kg in TSB-GJ-09-0 and 24 mg/kg in TSB-GJ-02-0) and the mean concentration in Parcel G (22 mg/kg). Therefore, the treatment of duplicate samples does not have much effect on the soil EPC of zirconium in Parcel G and the associated HQs.
- Finally, the asbestos risk calculations employed both original and field duplicate samples, resulting in an increase of sample size and decrease of pooled AS. As indicated in Appendix Q, Parcels C, D, and G contained one, two, and one field duplicate samples, respectively. Excluding these field duplicate samples would slightly increase the calculated asbestos cancer risks, but the best estimates and upper-bound estimates would still be less than 1×10^{-6} for all the receptor populations in Parcels C, D, and G, except for the upper-bound estimates for construction workers due to zero fibers and sample size issues (see discussion in Section 6.2.2.2).

In summary, there is only little impact of duplicate treatment on the overall soil risk evaluation.

Soil gas samples with primary and field duplicate results were treated as independent samples, although the variance of the duplicate and primary samples was not tested. The impacts are discussed as follows:

- No field duplicate samples were collected within or near Parcels C, D, and G during the 2008 and 2013 investigations. Therefore the field duplicates do not have any impact on the 5 ft soil gas risk evaluations.
- Two field duplicates (at TSB-CJ-01 and TSB-DR-01) were collected during the 2007 investigation in Parcel C and Parcel D at 10 ft bgs, respectively. The soil gas HRA included both the parent samples and field duplicate samples, resulting in increase of sample size. The 10 ft soil gas EPC for PCE in Parcel C was from the field duplicate sample collected at TSB-CJ-01. The PCE concentration detected in the parent sample is slightly lower. Similarly, the 10 ft soil gas EPC in Parcel D for bromomethan, chloroethane, chloromethane, and methylene chloride were from the field duplicate sample collected at TSB-DR-01. Excluding these field duplicate samples would slightly decrease the calculated risk estimates. The changes in risk estimates are very small and the impact on the 10 ft soilg gas risk results are negligible.

Groundwater samples with primary and field duplicate results were treated as independent samples, although the variance of the duplicate and primary samples was not tested. The impacts are discussed as follows:

- A total of 24 field duplicates (Table N-3) were collected for the groundwater data set: 14 field duplicates in Parcel C, eight in Parcel D, and two in Parcel G. For groundwater, the HRA included both the parent samples and field duplicate samples, resulting in an increase of sample size. Some of the maximum detected concentrations in Parcels C, D and G were from the field duplicate samples. Excluding these field duplicate samples would decrease the EPCs and hence the calculated risk estimates. By evaluating results from the field duplicate samples for the primary contributers to the total risk estimates in groundwater (i.e. chloroform, 1,2-dibromo-3-chloropropane, 1,4-dichlorobenzene, 1,2-DCA, PCE, and chlorobenzene), the changes in risk estimates are expected to be very small and the impact on the groundwater risk results are negligible.

6.2 Uncertainties Identified in the Risk Assessment

6.2.1 Identification of COPCs

Chemicals detected in at least one soil sample were included in the COPC selection process. Five out of 93 detected chemicals in Parcel C, two out of 71 detected chemicals in Parcel D, and five out of 67 detected chemicals in Parcel G were identified as soil COPCs. For most of the chemicals that were not selected as soil COPCs, the maximum detected concentrations were generally a factor of 10, if not a factor of 100 or more, lower than the screening levels; therefore, exclusion of these chemicals from the quantitative risk assessment may slightly underestimate the potential health risks posed by Parcels C, D, and G, but to such a small degree as to be inconsequential to the overall results of the HRA. It should be noted that, for a few chemicals, the SQLs were higher than the screening levels in a few soil samples (see Tables 4-1 through 4-3). The impacts of elevated SQLs on the risk evaluation are discussed in Section 6.1.2.

Surrogate BCLs were used for the toxicity screen and COPC selection for gamma-chlordane, chromium (total), 2,4'-DDD, 2,4'-DDE, endrin aldehyde, ortho-phosphate, phosphorus (total), and 1,2,3-trichlorobenzene in the absence of NDEP-derived BCLs for these compounds. As shown in Tables 5-1 through 5-3, these compounds were excluded as soil COPCs based on the toxicity screen. The surrogates identified are considered to be toxicologically representative of these compounds, and given that the ratios of the BCLs to the maximum detected concentrations were at least a factor of 10 and generally a factor of 100 or more, the detected concentrations of these compounds would not be expected to contribute significantly to the total risk estimates.

Besides the essential nutrients (calcium, potassium, silicon, sodium, sulfate, and sulfur), no representative surrogate was identified for palladium and octachlorostyrene. These two chemicals were identified as soil COPCs, and are discussed qualitatively in Section 6.2.4.

Based on comparison to RZ-A background, some metals were identified as being above background, while for others, there are insufficient detections in the background and/or parcel soil data sets to make a determination (see Appendix I). However, except for palladium and zirconium for which RZ-A background data are not available, no metal was identified as a soil COPC. That is because most metals passed the concentration/toxicity screen, some metals are essential nutrients, and arsenic in Parcel C was only detected at elevated concentrations above background at depths. Also, for the majority of metals, there

is no reason to believe they are related to historical parcel activities, based on the CSM. Therefore, although there were some uncertainties with the background evaluation for metals, such uncertainties do not have any impact on the selection of soil COPCs and overall risk evaluation.

Several radionuclides failed the statistical testing of background consistency, but given that the validity of the statistical testing is confounded by several issues (see discussion in Section 5.1.1.2), radionuclides were excluded as soil COPCs based on a comparison of cancer risks between parcel soils and site/regional background soils. As indicated in Table 5-6, although the radionuclide cancer risks for Parcels C, D, and G were slightly above the NDEP acceptable risk range of 10^{-6} to 10^{-4}, the background contribution ranged from 90% to 100%. Therefore, even if radionuclides are selected as soil COPCs, soil remediation for radionuclides would produce minimal risk reduction (approximately 10% at most). Excluding radionuclides as soil COPCs only have little impact on the overall risk evaluation.

In this report, the toxicity screening of soil data for COPC identification was conducted using the February 2015 soil BCLs, the most current at the time the report was written. When using the July 2017 soil BCLs for toxicity screening, two additional soil COPCs would be added:

- beta-Hexachlorocyclohexane in Parcel C. The detected concentration of this chemical would correspond to a cancer risk of less than 10^{-7}.
- Chromium VI in Parcel D. In the report, no carcinogenic soil COPC was identified in Parcel D. Adding chromium VI as a soil COPC would produce a cancer risk of less than 2×10^{-7}.

Based on the above discussion, using the July 2017 soil BCLs for toxicity screening will not affect the overall soil risk evaluation.

A total of 93 VOCs and volatile SVOCs were detected in soil gas or groundwater dataset selected for the risk evaluations, 69 were detected in at least one soil gas sample, and 86 were detected in at least one groundwater sample. As a conservative approach, all detected analytes were identified as COPCs (Table 5-8). For the chemicals reported as “not detected” in all samples, the SQLs were less than their respective RBCs (Tables 4-10, 4-11, and 4-14). Thus, it is unlikely the risks estimated in the HRA were underestimated as a result of the COPC selection process.

6.2.2 Exposure Assessment

6.2.2.1 Exposure Scenarios

The exposure assessment in this HRA is based on a RME scenario, which is defined by USEPA as the highest exposure that could reasonably be expected to occur for a given exposure pathway at a site (USEPA 1989). To achieve this goal, the RME scenario uses highly conservative exposure assumptions. For example, this HRA assumes that a on-site outdoor commercial/industrial worker incidentally ingests 100 mg of parcel soil per day, 225 days per year, for 25 years. These and other upper-bound, default exposure assumptions most likely overestimate the potential health risks associated with parcels.

Other potential receptors that were not quantitatively evaluated in the HRA include off-site indoor and outdoor commercial/industrial workers, off-site residents, and visitors and trespassers. The uncertainty associated with the exclusion of these receptors from the quantitative HRA is discussed below.

In accordance with the NDEP-approved *Health Risk Assessment Work Plan* (Northgate and Exponent 2010b), off-site receptors were not quantitatively evaluated in the HRA. Off-site receptors could be exposed to airborne chemicals (vapors and particulates) emitted during, e.g., routine operations or construction projects (USEPA 2002b).

For inhalation of airborne particulates, the PEF for the on-site construction worker (on the order of 10^{+6} cubic meter per kilogram [m^3/kg]) is much higher (approximately 1,000 fold) than the PEF during and after construction for off-site receptors (on the order of 10^{+9} m^3/kg) (see NDEP's "asbestos guidance riskcalcs.xls" spreadsheets presented in Appendix Q). Therefore, off-site receptors would be exposed to much lower airborne particulate concentrations than on-site construction workers. As compared with other exposure factors that may be higher (but much lower than 1,000 fold) for the off-site receptors, the exposures through inhalation of airborne particulates by off-site receptors are expected to be lower than the exposures by on-site construction workers.

Tables 5-15A, 5-15B, and, 5-16 present the estimated exposure point concentrations for air based on the maximum concentrations detected in soil gas (10 ft bgs), soil gas (five ft bgs) and groundwater, respectively. For Parcel D, the predicted outdoor concentration for chloroform, the major chemical contributor to the soil gas and groundwater risks, is 0.39 µg/m^3 based on groundwater, 0.011 µg/m^3 based on soil gas (10 feet bgs) and 0.012 µg/m^3 based on soil gas (five ft bgs). All concentrations are below the commercial RSL for air of 0.53 µg/m^3, but the outdoor air concentration predicted from groundwater is above the residential RSL for air of 0.12 µg/m^3.

For Parcel C, the predicted outdoor concentration for chloroform is 0.65 µg/m^3 based on groundwater, 0.4 µg/m^3 based on soil gas (10 ft bgs) and 0.026 µg/m^3 based on soil gas (five ft bgs). Only groundwater predicts a concentration in outdoor air that is above the commercial RSL. Both groundwater and soil gas (10 ft bgs) predict an outdoor air concentration that is above the residential RSL for air. Assuming no dilution with distance from the parcels to the nearest residential area, the estimated excess lifetime cancer risk to a resident exposed to chloroform in outdoor air would range from 9×10^{-8} to 5×10^{-6}. While this is a conservative estimate, it is well within the 10^{-6} to 10^{-4} target risk range. Due to air dispersion given the distances to the parcel boundaries, the EPCs in air for off-site receptors are expected to be much lower.

For Parcel G, all predicted outdoor air concentrations are below both the commercial and residential RSL for chloroform in ambient air.

As discussed in USEPA's *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites* (2002b), evaluation of exposures to members of the public entering an operating facility is generally not warranted for two reasons: (1) public access is restricted or controlled at industrial sites and (2) while the public may have access to a property, exposures of an on-site worker would be much higher than those of a visitor because workers spend substantially more time at a site. Accordingly, on-site visitors and trespassers were not quantitatively evaluated in the HRA. The potential health risks for on-site workers were estimated to be below the levels of concern, the potential health risks for visitors and trespassers would also be below the levels of concern.

6.2.2.2 EPCs

The soil EPC for non-asbestos soil COPCs was calculated as the 95% UCL on the mean soil concentration at 0-2 ft depth interval and 0-10 ft depth interval within each parcel, which is

representative for a RME estimate. It is very unlikely that receptors are exposed to COPCs in parcel soils at concentrations higher than the 95% UCLs over an extended period of time.

Consistent with NDEP guidance (Neptune 2015), asbestos EPCs are estimated using a methodology that differs from that used to estimate the EPCs for other soil COPCs. For asbestos, the estimated EPCs are highly dependent on sample size. As described in Section 5.2.2.2, the soil concentration used to estimate asbestos air EPC is equal to the number of long fibers detected multiplied by the pooled AS. For the best estimate, the number of long fibers observed in the soil samples collected in a parcel is used in the calculation. For the upper bound estimate, the 95% UCL on the number of long fibers observed in the soil samples collected in a parcel assuming a Poisson distribution is used in the calculation. Pooled AS, which was used in both calculations, is a function of sample size. Specifically, pooled AS decreases with increasing sample size (the equation for calculating pooled AS is presented in Section 5.2.2.2), resulting in a lower estimate of soil concentration and hence, a lower asbestos air EPC as sample size increases.

For the special case in which no fibers were detected, as was the case for amphibole long fibers in Parcels C, D, and G, the best estimate risk was zero (i.e., amphibole long fibers were not detected in any sample, so that both the soil concentration and air EPC were zero); while for the upper-bound estimate, the 95% UCL of the Poisson distribution for the case in which no fibers were detected was three fibers, and the risk was is a function of sample size. As shown in Table 5-21, although amphibole long fibers were not detected in any sample in Parcels C, D, or G, the estimated risks to construction workers were 2×10^{-6}, 4×10^{-6}, and 4×10^{-6}, with sample size of 19, 11, and eight, respectively. The relatively smaller sample size for Parcel G is a result of the change in the Parcel G boundary made in approximately 2012, in which the area of Parcel G was decreased; some samples collected within the original Parcel G boundaries are now excluded from the risk assessment.

Soil gas and groundwater concentrations were used as the source term for modeling volatile chemical concentrations in indoor air, outdoor air and trench air. As a screening-level approach, the maximum detected COPC concentrations in soil gas and groundwater for each parcel were used as the model source terms in the soil gas and groundwater risk evaluations, respectively. This approach is expected to overestimate the exposure concentrations (and associated risks) since a wide range of COPC concentrations exist within each parcel, and the maximum concentration is not likely representative for an entire building footprint. Furthermore, this may be an overly conservative procedure for purposes of estimating potential health risks associated with inhalation of vapors in outdoor air and utility trench, because it is unlikely that an outdoor worker or an construction worker would stay at only a single location. The undertainties associated with fate and transporting modeling are discussed in detail in Section 6.2.2.3.

6.2.2.3 Fate-and-Transport Modeling

The fate-and-transport modeling for soil is limited to estimating PEFs for construction workers and commercial/industrial workers. These values were estimated according to USEPA guidance (2002b) based on a combination of site-specific and default input parameters. For most COPCs, inhalation of airborne particulates did not contribute significantly to the overall risk estimates, because exposures via incidental ingestion and dermal contact were much higher (see Appendix Q); therefore, the uncertainty in the PEFs does not affect the conclusions of the HRA. However, for asbestos, which was evaluated as a carcinogen only for the inhalation route of exposure, the potential uncertainty in the PEFs

could contribute substantially to the overall risk estimates. This is particularly important for the construction worker scenario because the estimated PEFs were large relative to the commercial/industrial scenario (see Table 5-10). The PEF for construction accounted for several potential sources of particulates, including wind erosion, excavation, dozing, grading, and tilling; however, the largest contributor to the overall PEF was driving over unpaved roads. In this case, the majority of the input parameters were based on default values recommended by USEPA (2002b). USEPA provides the basis for most of these default values, except the average weight of the vehicle (eight tonnes) and the number of vehicles that will drive across the area every day (30). The applicability of these and other assumptions to future construction at the individual parcels is unknown; however, it is believed that, in combination, these assumptions are more likely to overestimate than underestimate potential health risks, potentially to a significant degree, especially when dust control measure will be implemented during construction.

Fate-and-transport models were used to estimate indoor and outdoor air concentrations from measured soil gas concentrations. For indoor air, the USEPA Johnson and Ettinger (1991) model spreadsheet was used. As discussed in Section 5.2.3, the Johnson and Ettinger model has numerous assumptions and limitations, each of which may over- or under estimate the predicted indoor air concentration. In this case, site-specific soil physical parameters were used in the modeling, which should reduce the uncertainty in the model estimates. For outdoor air, an approach analogous to that used by USEPA to estimate outdoor air concentrations from chemicals in soil was used. This model also has assumptions that may over- or underestimate the predicted concentrations.

The soil properties used for the Johnson and Ettinger model were conservatively selected assuming that the entire unsaturated zone in the Study Area is Qal. This is a conservative assumption in that for areas where the UMCf is part of the unsaturated zone, the finer-grained UMCf would act to reduce vapor transport of COPCs. Further, the site-specific soil properties used in the model (Table 5-13) were based on samples collected in the Qal. Additionally to be conservative the one sample collected from below 10 ft bgs was not used in our evaluation due to extraordinarily wet soil properties measured at that location.

If default soil properties were used in the evaluation of the 5 ft bgs samples, the results would increase by approximately a factor of 2. Currently, two 5 ft bgs soil gas locations are at an estimated excess lifetime cancer risk of 2×10^{-6}. The use of default soil properties would raise these to 4×10^{-6}. At location SG-18, the estimated excess lifetime cancer risk would increase to 2 x 10-6. No other 5 ft bgs soil gas location would exceed 1×10^{-6}.

Soil gas sampling depths are based on site-specific values for evaluating indoor and outdoor above-ground commercial scenarios. When evaluating outdoor trench scenarios, we conservatively assumed that the trench would be located only 1 cm above the soil gas sample, allowing for maximum potential exposure. We also conservatively assumed that air containing VOCs would be migrating from the walls of the trench in addition to the base to maximize exposure potential. Depth to groundwater was site-specific and selected to be conservative considering both current and historical data for each parcel.

A conservative default building (with building characteristics shown on Table 5-12), was assumed for modeling. The default building size was selected although many commercial buildings are larger. However, larger buildings are often partitioned into smaller areas or offices that represents an exposure zone. A conservative height of 10 ft was assumed, although many commercial buildings have higher first floor ceilings.

When modeling the dispersion in the trench scenarios, a box model was used to simulate dispersion, and the air flow through the trench was controlled by a site-specific windspeed that was reduced by a factor of 10 to ensure it would be conservative for a trench scenario were the breathing zone may be a few ft below ground surface. This is especially conservative because many construction trenches include a fan increasing airflow through the trench or are shallower than 10 ft, potentially increasing the breathing zone to above the ground surface.

6.2.3 Toxicity Assessment

One of the largest sources of uncertainty in any risk assessment is the limited understanding of toxicity to humans who are exposed to lower concentrations generally encountered in the environment than those used in the toxicity studies. The majority of the available toxicity data are from animal studies; these data are extrapolated using mathematical models or multiple uncertainty factors to predict what might occur in humans. Sources of uncertainty and/or conservatism in the toxicity criteria used in this HRA include:

- The use of conservative methods and assumptions to extrapolate from high-dose animal studies to predict the possible response in humans at exposure levels far below those administered to animals;
- The assumption that chemicals considered to be carcinogens do not have thresholds (i.e., for all doses greater than zero, some risk is assumed to be present); and
- The fact that epidemiological studies (i.e., human exposure studies) are limited and are not generally considered in a quantitative manner in deriving toxicity values.

Chemical-specific uncertainties in toxicity criteria are provided below for zirconium in soil and asbestos, followed by a discussion regarding soil gas and groundwater COPCs for which surrogate criteria were used.

Zirconium

The oral RfD for zirconium is a screening toxicity value taken from an appendix of a PPRTV assessment, which was based on two drinking water and feed studies over lifetime to rats and mice (USEPA 2012). The critical effect considered in the derivation of oral RfD is higher cholesterol levels in male rats which is not an adverse effect; therefore, basing the oral RfD on this endpoint is a more conservative approach than traditional hazard assessment. USEPA applied a composite uncertainty factor of 10,000 to the lowest-observed-adverse-effect level (LOAEL) to account for interspecies extrapolation between rats and humans, no acceptable two-generation reproductive or developmental toxicity studies, intraspecies differences for potentially susceptible individuals, and using LOAEL as the point of departure. USEPA concluded that insufficient data were available to derive provisional toxicity values for zirconium, and there is considerably more uncertainty associated with the appendix screening oral RfD.

Asbestos

The potential risk associated with exposure to long amphibole and chrysotile fibers in soil was assessed based on methodology from USEPA (2003), as specified in NDEP's asbestos risk assessment guidance (Neptune 2015). The methodology distinguishes between different fiber types (chrysotile and amphiboles) and sizes (greater than 10 µm in length and less than 0.4 µm in width). USEPA (2003) developed two sets of risk coefficients—one set is "optimized" based on the entirety of the available data, and the other set is "conservative"

based on data from a single epidemiology study. Per NDEP guidance (Neptune 2015), the optimized risk coefficients were used in this HRA. In addition, the risk coefficients are intended to assess long-term average exposure, such as on-site commercial/industrial workers. Applying this methodology to short-term workers such as construction workers, as was done in this HRA, increases uncertainty in the risk estimates (USEPA 2003).

As identified in Tables 5-19A and 5-19B, surrogate toxicity criteria were used to estimate HQs (for the noncancer endpoint) for 19 of the 93 soil gas an groundwater COPCs. Of these, 14 surrogates are those identified by NDEP in the table of BCLs (NDEP 2015b). Freon 113 was specified by NDEP as a surrogate for 1,2-dichloro-1,1,2,2-tetrafluoroethane in its response to the *Revised Technical Memorandum: Screening-Level Indoor Air Health Assessment for the 2008 Tronox Parcels A/B Soil Gas Investigation* (NDEP 2010f). The surrogates used for the four remaining COPCs are as follows: for cis- and trans-1,3-dichloropropene, the RfC for total 1,3-dichloropropene; and for ethyl tert-butyl ether (ETBE) and tert-amyl methyl ether (TAME), the RfC for MTBE.

The use of surrogate RfCs for evaluating soil gas and groundwater COPCs may overestimate or underestimate the potential for noncancer health effects. However, recognizing the very low HQs estimated for these COPCs ($<4 \times 10^{-6}$ in indoor air and less than 6×10^{-8} in outdoor air), use of surrogate RfCs is unlikely to have significantly impacted the noncancer evaluation or conclusions.

Surrogates are not typically identified for the cancer endpoint given the structural specificity of DNA-reactive carcinogens. For this reason, cancer risks for ETBE and TAME evaluating uncertainty, cancer risks are presented as part of this uncertainties analysis to evaluate impact on the risk results of excluding these two COPCs from the quantitative risk evaluation. Using the inhalation UR for MTBE as a surrogate, the estimated cancer risks from exposures to ETBE and TAME are 3.5×10^{-12} and 3.3×10^{-12} for the indoor commercial/industrial worker and 6.5×10^{-14} and 6.2×10^{-14} for the outdoor commercial/industrial worker, respectively. Assuming similar cancer potencies among MTBE, ETBE, and TAME, these results indicate that excluding ETBE and TAME from the quantitative risk evaluation does not impact the estimates of total cancer risk in the Study Area.

This HRA was prepared before the July 2017 NDEP BCL tables were released (NDEP 2017c). The toxicity values in the February 2015 BCL table were used in the risk calculations. The uncertainties associated with updates in toxicity values in the 2017 BCL tables are discussed below:

- For the soil COPCs, the toxicity values in the July 2017 BCL table have not changed when compared with those in the February 2015 BCL table; therefore, no impact is expected on the overall soil risk evaluation.
- The unit risk factors used in the soil gas and groundwater risk evaluations changed for six COPCs (i.e. chloromethane, dibromochloromethane, 1,4-dioxane, methylene chloride, tetrachloroethene, and trichloroethene) detected in soil gas or groundwater for Parcels C, D and G. None of the six chemicals are risk drivers for the Study Area. In addition, only the unit risk factor for trichloroethylene in the 2017 BCL table became more stringent than the value used in the HRA from the 2015 BCL table. The cancer risk estimates associated with trichloroethylene are all very low (lower than $3x10^{-8}$) for all media and scenarios. Therefore the impact on cancer risk estimates for soil gas and groundwater due to updates in toxicity values are insignificant and do not change the overall conclusions.

- The reference concentrations used in the soil gas and groundwater risk evaluations changed for ten COPCs (i.e. dichlorodifluoromethane, 1,2-dichloroethane, 1,2-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethyl acetate, methylene chloride, n-octane, n-propylbenzene, and tetrachloroethene) detected in soil gas or groundwater for Parcels C, D and G. None of these chemicals are noncancer hazard drivers for the Study Area. The HQs associated with these chemicals are all quite low ($2 \times 10^{-10} \sim 0.0006$). The impacts on HI estimates for soil gas and groundwater due to updates in the toxicity values are expected to be lower than 0.1, therefore they are insignificant and do not change the overall conclusions.

6.2.4 Risk Characterization

The uncertainties associated with risk characterization are generally the result of combined uncertainties in the site characterization data, COPC selection, exposure assessment, and toxicity assessment. In addition, risks cannot be quantitatively characterized for chemicals for which toxicity criteria have not been established. In this HRA, potential health risks were quantified for future on-site indoor and outdoor commercial/industrial workers and construction workers associated with direct contact with soil, inhalation of airborne particulates, and inhalation of vapors migrating from soil gas or groundwater to indoor, outdoor, or trench air. Given the highly conservative nature of the exposure parameters used to characterize these pathways, especially for the RME scenario, it is highly unlikely that the same receptor would be exposed at that level over the entire duration of exposure. These conservative estimates of exposure were then combined with even more conservative estimates of toxicity values to estimate the magnitude (non-cancer) or likelihood (cancer) of potential effects. This methodology is believed to not underestimate the true risk, but could overestimate the true risk by a considerable degree, and the true risk could be as low as zero.

One source of uncertainty that is unique to risk characterization is the assumption that the total risk associated with exposure to multiple chemicals is equal to the sum of the individual risks for each chemical (i.e., the risks are additive). Other possible interactions include synergism, where the total risk is higher than the sum of the individual risks, and antagonism, where the total risk is lower than the sum of the individual risks. Relatively few data are available regarding potential chemical interactions following environmental exposure to chemical mixtures. Some studies have been carried out in rodents that were given simultaneous doses of multiple chemicals. The results of these studies indicated that no interactive effects were observed for mixtures of chemicals that affect different target organs (i.e., each chemical acted independently), whereas antagonism was observed for mixtures of chemicals that affect the same target organ, but by different mechanisms (Risk Commission 1997). While there are no data on chemical interactions in humans exposed to chemical mixtures at the dose levels typically observed in environmental exposures, animal studies suggest that synergistic effects will not occur at levels of exposure below their individual effect levels (Seed et al. 1995). As exposure levels approach the individual effect levels, a variety of interactions may occur, including additive, synergistic, and antagonistic interactions (Seed et al. 1995).

USEPA guidance for risk assessment of chemical mixtures (USEPA 1986) recommends assuming an additive effect following exposure to multiple chemicals. Subsequent recommendations by other parties, such as the National Research Council (NRC 1988) and the Presidential/Congressional Commission on Risk Assessment and Risk Management (Risk Commission 1997), have also advocated a default assumption of additivity. As currently practiced in this HRA, risk assessments of chemical mixtures summed cancer risks regardless

of tumor type, and summed non-cancer HIs regardless of toxic endpoint or mode of action. Given the available experimental data, this approach likely overestimates potential risks associated with simultaneous exposure to multiple chemicals. Asbestos risks were evaluated separately from other chemical risks, consistent with approach outlined in the HRA Work Plan (Northgate and Exponent 2010b). These risk estimates are not additive because of differences in the basis for the carcinogenic toxicity criteria between chemicals and asbestos. For chemicals, the oral CSFs and IURs are defined as the 95% UCLs of the probability of a carcinogenic response, whereas the IURs for asbestos are based on the estimated number of additional deaths from lung cancer and mesothelioma.

For two soil COPCs (palladium and octachlorostyrene), toxicity values are not available; in absence of toxicity values, these COPCs were not evaluated quantitatively. Octachlorostyrene was detected in only two of 50 samples in Parcel C with a maximum detected concentration of 0.065 mg/kg. Considering the low detection frequency, the exclusion of this soil COPC from quantitative risk assessment is not expected to impact the risk estimates or overall conclusions of the HRA. Palladium had higher detection frequencies in Parcels C, D, and G (ranging from 72% to 100%); however, RZ-A background data are not available for this soil COPC. When compared to BRC/TIMET regional background data (ranging from 0.14 mg/kg to 1.5 mg/kg), the maximum detected concentrations of palladium in Parcels C, D, and G (0.90 mg/kg, 0.63 mg/kg, and 0.79 mg/kg, respectively) fell near the lower end of the range of regional background concentrations. Therefore, palladium concentrations in Parcels C, D, and G were consistent with regional background, and the exclusion of this soil COPC from quantitative risk assessment is not expected to impact the risk estimates or overall conclusions of the HRA. Finally, although zirconium was identified as a soil COPC for Parcels C, D, and G, RZ-A background data are not available for this soil COPC. When compared to BRC/TIMET regional background data (ranging from 60 mg/kg to 180 mg/kg), the maximum detected concentrations of zirconium in Parcels C, D, and G (30 mg/kg, 28 mg/kg, and 26 mg/kg, respectively) fell below the lower end of the range of regional background concentrations. Therefore, zirconium concentrations in Parcels C, D, and G were consistent with (or even below) regional background, and conservatively retaining this chemical as a soil COPC in the quantitative risk assessment is likely to overestimate the overall risk.

Dimethyl disulphide and pentachlorobenzene are the only two volatile compounds detected in soil gas or groundwater without toxicity values. Dimethyl disulphide was detected in one out of 21 groundwater samples in Parcel C with a maximum detected concentration at 0.5 µg/L; it was detected in four of 21 groundwater samples in Parcel D with a maximum detected concentration at 5.4 µg/L. Pentachlorobenzene was only detected in one out of 21 groundwater samples in Parcel C with a maximum detected concentration at 2.2 µg/L. With the low frequency of detection and concentration. These two chemicals are unlikely to have any significant impact on the soil gas and groundwater HRA results.

As discussed in Section 6.2.1, radionuclides were excluded as soil COPCs in the quantitative risk evaluation due to consistency with background and minimal risk reduction for remediation. Another source of uncertainty for radionuclides risk is the inhalation of radon gas (radon-222) within a commercial building, which is not addressed in the radionuclide BCLs (NDEP 2015b). This exposure pathway could be a significant contributor to potential human health risks, potentially of greater concern than exposure to Ra-226 via soil ingestion, inhalation of particulates, and external irradiation, particularly if activities of Ra-226 are elevated in soils beneath a building. However, as indicated in Table 5-6, the cancer risks for Ra-226 in Parcels C, D, and G were consistent with (or even lower than) the site

and regional background; therefore, activities of Ra-226 are not considered elevated in soils beneath a building in any parcel, and the risk associated with inhalation of radon-222 within a commercial building should not be a concern. Overall, excluding radionuclides as soil COPCs only have little impact on the overall risk evaluation.

In summary, assumptions used in each step of risk assessment contribute to the overall uncertainty in the HRA results. However, given that the largest sources of uncertainty generally cause overestimates of exposure or risk, the results presented in this HRA are considered to represent conservative estimates of the carcinogenic and non-carcinogenic risks, if any, posed by residual chemicals in Parcels C, D, and G.

7. DATA QUALITY ASSESSMENT

Data quality assessment is an analysis that is performed after the risk assessment to determine whether enough data have been collected to support the risk-based decisions that are recommended by the risk assessment. The results of data quality assessment for soil, soil gas, and groundwater data are discussed below.

7.1 Soil Data

For soils, the evaluation of the cancer risk or non-cancer HI was based on the 95% UCL, which is a measure of mean concentration. Therefore, the data quality assessment was conceptualized as a statistical test of comparing the mean of population cancer risk or non-cancer HI with target cancer risk or target non-cancer HI. In a hypothesis testing framework, a t-test can be used to evaluate the possibility that the mean of population cancer risk or non-cancer HI is greater than the target cancer risk or the target non-cancer HI. The null hypothesis is that the mean of the population cancer risk or the non-cancer HI is the same as the cancer risk or non-cancer HI based on the 95% UCL of sample results ($Mean_0$). The alternative hypothesis is that the mean of the population cancer risk or the non-cancer HI is greater than the target cancer risk or the target non-cancer HI ($Mean_1$).

As summarized in Table 5-20, the excess lifetime cancer risks and non-cancer HIs based on 95% UCLs for all of the receptor populations in all the parcels at both 0-2 and 0-10 ft bgs depth intervals were below the lower end of the target cancer risk range of 1×10^{-6} to 1×10^{-4} and the target HI of greater than one, except that for the future indoor and outdoor commercial/industrial workers in Parcel C the excess lifetime cancer risks were within the target cancer risk range of 1×10^{-6} to 1×10^{-4}. We considered a combination of depth interval, parcel, and cancer risk/non-cancer HI as one scenario. For each scenario, the data for the receptor population was used with the maximum excess lifetime cancer risk/non-cancer HI in our calculation. As indicated in Table 7-1, a total of 10 scenarios were selected. The sample size of the chemical as the cancer risk or non-cancer HI driver for each scenario was tested to evaluate if a sufficient number of samples were collected using the t tests - "Means: difference from constant (one sample case) test" in the software program G*Power version 3.1.9 (Faul et al. 2009).

The number of samples required to support the risk assessment depends on false rejection error rate (α), false acceptance rate (β), $Mean_0$, $Mean_1$, and standard deviation of cancer risk/non-cancer HQ from the driver chemical in a scenario. A value of 5% was used for both α and β. $Mean_0$ was defined as the cancer risk or non-cancer HI based on the 95% UCL of sample results in the corresponding scenario. In the G*Power program, the target cancer risk ($Mean_1$) for Parcel C was set to be 1.49×10^{-4} which can be rounded to 1×10^{-4}, the target cancer risk ($Mean_1$) for Parcels D and G was set to be 1.49×10^{-6} which can be rounded to 1×10^{-6}, and the target HQ ($Mean_1$) for all parcels was set to 1.49 which can be rounded to 1.

As shown in Table 7-1, the number of soil samples required to support risk assessment for all scenarios are smaller than the number of samples collected in the parcels. With α and β equal to 5%, the null hypothesis that the mean of the population cancer risk or the non-cancer HI is the same as the cancer risk or non-cancer HI based on 95% UCL of sample results is not rejected. Since the cancer risks and non-cancer HIs based on the 95% UCL of sample results for all the scenarios were below the target thresholds, the mean of population cancer risk or non-cancer HI is also expected to be below the target thresholds. Based on

this analysis, the number of soil samples collected in Parcels C, D, G during the soil investigations is sufficient for the purpose of risk characterization.

7.2 Soil Gas Data

The evaluation of the risk of vapor intrusion was based on maximum detected soil gas concentrations, rather than on a measure of mean concentrations. For the purposes of the data quality assessment, the risk evaluation was conceptualized as a statistical test of the proportion of the soil gas samples that are associated with an unacceptable risk of vapor intrusion. As summarized in Tables 5-22 and 5-23, the maximum cumulative cancer risk estimates for each parcel are all below or within the target cancer risk range of 1×10^{-6} to 1×10^{-4}, and the noncancer hazard does not exceed the noncancer threshold of greater than 1. The number of samples for each chemicals of concern for each scenario ranges between 3 and 16 for each parcel (Tables 4-12 and 4-13). Because the estimated risks and hazards at all the sampling locations did not exceed their respective thresholds, the proportion of samples with unacceptable risk is 0 out of the total number of samples, or 0%.

In a hypothesis testing framework, a binomial test of proportions was used to evaluate the possibility that there is a greater-than-zero proportion of samples with unacceptable risk. The null hypothesis is that the proportion of samples with an unacceptable risk is 0 (p1=0). The alternative hypothesis is that the proportion is greater than p2, which is p1 plus an appropriate effect size (i.e., population proportion) that the test should be able to detect.

For the purposes of evaluating if a sufficient number of samples were collected to support the risk assessment, the number of samples required for each scenario was determined using the Exact – Generic binomial test in the software program G*Power version 3.1.9 (Faul et al. 2009). In the HRA, a null hypothesis with a proportion of 0 indicates that the false rejection error rate (α) is 0 and independent of the sample size and other parameters. Thus, the number of samples required depends on false acceptance rate (β), p1, and p2. The number of samples required for β at 15%, 20% to 25% for each scenario was tested.

As a starting point, an effect size of one over the number of samples for each scenario was considered, which would be equivalent to one sample having an unacceptable risk. When employing this hypothesis test, the null hypothesis would be rejected if one or more samples with unacceptable risk were observed. As shown in Table 7-2 , the number of samples required for all scenarios are larger than corresponding number of samples. The null hypothesis that no soil gas samples would have unacceptable risk is rejected with effect size of 1 sample over number of samples and β smaller than 25%. Therefore, no sample having unacceptable risk within the current sample size cannot guarantee than all samples would have unacceptable risk.

Given the null hypothesis is rejected with effect size of one sample over number of samples, an effect size of two over the number of samples for each scenario was considered, which would be equivalent to two samples having unacceptable risk. When employing this hypothesis test, the null hypothesis would be rejected if two or more samples with unacceptable risk were observed. As shown in Table 7-2, the number of samples required for all scenarios are smaller than corresponding number of samples. With effect size of two samples over number of samples and β smaller than 25%, the null hypothesis that no soil gas samples would have unacceptable risk is not rejected, and the alternative hypothesis that two or more than two samples having unacceptable risk is rejected. Therefore, no

sample having unacceptable risk within the current sample size can guarantee than no more than one sample would have unacceptable risk.

7.3 Groundwater Data

The evaluation of the risk of vapor intrusion was based on maximum detected groundwater concentrations, rather than on a measure of mean concentrations. For the purposes of the data quality assessment, the risk evaluation was conceptualized as a statistical test of the proportion of the groundwater samples that are associated with an unacceptable risk of vapor intrusion. As summarized in Table 5-24 and discussed in Section 5.4.3, the total cancer risk estimates for all groundwater samples included in the risk evaluation for Parcels C, D, and G are all below or within the target cancer risk range of 1×10^{-6} to 1×10^{-4}, and the total noncancer hazard for these groundwater samples also did not exceed the noncancer threshold of greater than 1. The number of samples for each chemical of concern for each scenario ranged between 4 and 27 (Tables Q-3-1). Because the estimated risks and hazards at all the samples are within the target risk range, the proportion of samples with unacceptable risk is 0 out of the total number of samples, or 0%.

In a hypothesis testing framework, a binomial test of proportions was used to evaluate the possibility that there is a greater-than-zero proportion of samples with unacceptable risk. The null hypothesis is that the proportion of samples with an unacceptable risk is 0 ($p1=0$). The alternative hypothesis is that the proportion is greater than *p2*, which is *p1* plus an appropriate effect size (i.e., population proportion) that the test should be able to detect.

For the purposes of evaluating if a sufficient number of samples were collected to support the risk assessment, the number of samples required for each scenario was determined using the Exact – Generic binomial test in the software program G*Power version 3.1.9 (Faul et al. 2009). In the HRA, a null hypothesis with a proportion of 0 indicates that the false rejection error rate (α) is 0 and independent of the sample size and other parameters. Thus, the number of samples required depends on false acceptance rate (β), *p1*, and *p2*. We tested the number of samples required for β at 15%, 20%, and 25% for each scenario.

As a starting point, an effect size of one over the number of samples for each scenario was considered, which would be equivalent to one sample having unacceptable risk. When employing this hypothesis test, the null hypothesis would be rejected if one or more samples with unacceptable risk were observed. As shown in Table 7-3, the number of samples required for all scenario are larger than corresponding number of samples. The null hypothesis that no groundwater samples would have unacceptable risk is rejected with effect size of 1 sample over number of samples and β smaller than 25%. Therefore, no sample having unacceptable risk within the current sample size cannot guarantee than all samples would have unacceptable risk.

Given the null hypothesis is rejected with effect size of one sample over number of samples, an effect size of two over the number of samples for each scenario was considered, which would be equivalent to two samples having unacceptable risk. When employing this hypothesis test, the null hypothesis would be rejected if two or more samples with unacceptable risk were observed. As shown in Table 7-3, the number of samples required for all scenario are smaller than corresponding number of samples. With effect size of two samples over number of samples and β smaller than 25%, the null hypothesis that no groundwater samples would have unacceptable risk is not rejected, and the alternative hypothesis that two or more than two samples having unacceptable risk is rejected.

Therefore, no sample having unacceptable risk within the current sample size can guarantee than no more than one sample would have unacceptable risk.

8. CUMULATIVE RISKS

The cumulative cancer risk and non-cancer HI for each receptor population were estimated by summing the estimated excess lifetime cancer risk and non-cancer HI for chemicals from Table 5-20 for direct contact with soil and the estimated excess lifetime cancer risk and non-cancer HI for VOCs from Table 5-22 or 5-23 for inhalation of soil gas migrating to air (five and 10 ft bgs, respectively). Only soil gas samples were collected to support evaluation of the vapor intrusion pathway. The objectives of groundwater sampling at the Site have been primarily to characterize SRCs in groundwater near suspected source areas and plume delineation; that is, no groundwater investigation was conducted to specifically provide data to evaluate the vapor intrusion pathway. Shallow groundwater data was evaluated for the vapor intrusion pathway as a second line of evidence.

As shown in Table 8-1, the cumulative cancer risks are below or within the acceptable cancer risk range of 1×10^{-6} to 1×10^{-4} for future indoor commercial/industrial workers, outdoor commercial/industrial workers, and construction workers for Parcels C, D, and G. The cumulative HIs are below the threshold of greater than one for Parcels C, D, and G.

Only the cumulative cancer risks in Parcel C exceeded 1×10^{-6}, and the maximum cumulative cancer risk was 4×10^{-5} for future indoor commercial/industrial workers. Both the soil direct contact pathway (due to dioxin TEQ) and the vapor intrusion pathway (due to chloroform) were major risk contributors for future indoor commercial/industrial workers, while the soil direct contact pathway (due to dioxin TEQ) was the major cancer risk contributor for future outdoor commercial/industrial workers and construction workers. As discussed in Section 5.4.2, the Parcel C locations with estimated vapor intrusion cancer risks for future indoor commercial/industrial workers greater than 1×10^{-6} are located at the southern boundary near the Operations Area and in the eastern portion, downgradient of the Parcel E groundwater extraction and treatment system. The maximum estimated excess lifetime cancer risks in those same areas, based on groundwater, would be 4×10^{-6} at the southern boundary near the Operations Area and 6×10^{-6} in the western portion, downgradient of Parcel E.

Both the 10 ft bgs soil gas data and five ft bgs soil gas data were evaluated in the HRA and included in the cumulative risk calculations. It is noted that the 10 ft bgs soil gas results are based on 2007 sampling data which were collected ten years ago in Parcels C and D only; they were analyzed using TO-14 which has lower analytical precision than the 2008 and 2013 soil gas analytical programs.

9. SUMMARY AND CONCLUSIONS

The post-remediation HRA was conducted to evaluate potential risks to future onsite workers from exposures to residual levels of chemicals, radionuclides, and asbestos in soils and VOCs released from soil gas and groundwater to indoor, outdoor, and trench air.

The soil removal action completed for Parcels C, D, and G, which included the excavation and disposal of approximately 1,500 tons of soil, was completed in accordance with the 2008 RAW (BEC 2008a) and 2016 RAW (Ramboll Environ 2016a). Analytical results for confirmation samples collected following the soil removal action were all below the NDEP BCL for commercial/industrial workers (or other NDEP-approved risk-based criteria). However, small areas of un-remediated soil remain in Parcels C and G. In Parcel C, an un-remediated area of approximately 8,345 square feet south of the South Haul Road Fence line will be removed by BMI in conjunction with BMI's planned removal of the Haul Road. In Parcel G, an area of approximately 135 square feet in the northeast corner was not remediated because the soils were covered by asphalt. For this area, qualitative considerations suggest that associated risk would be insignificant because individuals would not spend a significant amount of time there.

Soil analytical data collected as part of initial and confirmation sampling efforts were evaluated and data representative of current conditions were selected for purposes of the HRA. The soil CSM and COPCs are summarized as follows:

- Based on the CSM for Parcel C, D, and G, potential exposure to soil was evaluated for future onsite indoor and outdoor commercial/industrial workers and construction workers via direct contact with soil (i.e., incidental ingestion and dermal contact) and inhalation of airborne particulates. Soil COPCs were selected according to a multi-step process, including concentration/ toxicity screen, background evaluation for metals and radionuclides, and chemical-specific consideration. Based on this process, seven chemicals were identified as soil COPCs for Parcel C, four chemicals were identified as soil COPCs for Parcel D, and seven chemicals were identified as soil COPCs for Parcel G. The soil COPCs included chloride, dioxin/furans, hexachorobenzene, octachlorostyrene, perchlorate, metals (palladium and zirconium) and asbestos (long amphibole fibers and long chrysotile fibers).
- Non-cancer HIs and excess lifetime cancer risks associated with direct contact with soil and inhalation of airborne particulates were estimated for all the soil COPCs except asbestos based on the 95% UCL on the mean soil concentration at 0-2 ft depth interval and at 0-10 ft depth interval within each parcel. The estimated HIs and excess lifetime cancer risks were below the NDEP significant threshold of greater than one for non-cancer effects (maximum HI was one) and below or within the NDEP acceptable cancer risk range of 10^{-6} to 10^{-4} for future onsite indoor and outdoor commercial/industrial workers and construction workers under the conditions evaluated. Only in Parcel C did the estimated excess lifetime cancer risk exceed 10^{-6}. The major chemical contributor wasa dioxin TEQ.
- With regard to asbestos (long amphibole and long chrysotile fibers), a best estimate and an upper-bound estimate of potential cancer risk via inhalation of airborne particulates for indoor commercial/industrial workers, outdoor commercial/industrial

workers, and construction workers were calculated for each parcel. The estimated combined risks for death from lung cancer and mesothelioma associated with asbestos exposures were all less than 1×10^{-6}, except for upper-bound risk estimates for exposure to amphibole fibers by future construction workers, which were all less than 1×10^{-5}. However, these upper-bound estimates were based on an observed count of zero long amphibole[48] fiber in the post-abatement soil samples, considered representative of current conditions within Parcels C, D, and G. Following completion of the asbestos abatement, zero fiber for long amphibole was less than the RAW specified level[49] of one (1) or more fibers. Similarly, for long chrysotile fibers, fiber counts were less than the level presented in the RAW (four or more long fibers per sample).

The soil gas and groundwater CSM and COPCs are summarized as follows:

- 2007 soil gas data (10 ft bgs), 2008 and 2013 soil gas data (five ft bgs) collected within or near Parcels C, D, and G were evaluated in the HRA. Potential exposure to soil gas was evaluated for future onsite indoor and outdoor commercial/industrial workers and construction workers via inhalation of vapors migrating from soil gas to indoor air, outdoor air, and trench air. All VOCs detected in at least one soil gas sample were selected as soil gas COPCs. A total of 60 VOCs were identified as soil gas COPCs for Parcels C, D, and G.

  Non-cancer HIs and excess lifetime cancer risks associated with inhalation of vapors migrating from soil gas to indoor air, outdoor air, and trench air. The estimated HIs were below the NDEP significant threshold of greater than one for non-cancer effects (maximum HI was 0.1), and the estimated excess lifetime cancer risks were below and/or within the NDEP acceptable cancer risk range of 10^{-6} to 10^{-4} for future onsite indoor and outdoor commercial/industrial workers and construction workers under the conditions evaluated. Only Parcel C had estimated cancer risks greater than 1×10^{-6} (maximum estimated excess lifetime cancer risk was 4×10^{-5} for Parcel C). The Parcel C locations with estimated excess lifetime cancer risks greater than 1×10^{-6} are located at the southern boundary near the Operations Area and in the western potion of the parcel, downgradient of the OSSM Parcel E groundwater extraction and treatment system. In all parcels, chloroform is the primary contributor to the total estimated cancer risk.

- Shallow groundwater data was evaluated for the vapor intrusion pathway as a second line of evidence for the soil gas evaluation. Shallow groundwater data collected after January 2006 within or near Parcels C, D, and G were evaluated in the HRA. Potential exposure to groundwater was evaluated for future onsite indoor and outdoor commercial/industrial workers and construction workers via inhalation of vapors migrating from shallow groundwater to indoor air, outdoor air, and trench air. All VOCs detected in at least one shallow groundwater sample were selected as

[48] Although amphibole fiber counts were zero (0), upper-bound fiber concentrations in soil are estimated assuming a Poisson distribution, which yields an upper-bound risk estimate that is greater than 0.

[49] The RAW does not specifically use the term “trigger level” or identify remediation goals. However, areas identified for asbestos abatement were those in which amphibole counts in soil samples were one (1) or more fibers and chrysotile counts were four (4) or more fibers (BEC 2008a).

groundwater COPCs. A total of 78 VOCs were identified as groundwater COPCs for Parcels C, D and G.

The estimated HIs based on maximum chemical concentrations detected in the most recent two years' groundwater data for each well were below the NDEP significant threshold of greater than one for non-cancer effects, except that the estimated HI for the indoor commercial/industrial workers in Parcel C is slightly over the NDEP significant threshold of greater than one for non-cancer effects (the maximum HI was 2 for Parcel C based on maximum parcel concentrations and 1 based on individual wells). The major chemical contributor to the HI is chlorobenzene.

The estimated excess lifetime cancer risks were below and/or within the NDEP acceptable cancer risk range of 10^{-6} to 10^{-4} for future onsite indoor and outdoor commercial/industrial workers and construction workers under the conditions evaluated (the maximum estimated excess lifetime cancer risk was 1×10^{-5} for Parcel C based on maximum parcel concentrations and 6×10^{-6} based on individual wells). In all parcels, chloroform is the primary contributor to the total estimated cancer risk. In Parcel C, 1,4-dichlorobenzene and 1,2-DCA, also contribute to the total cancer risk estimate.

The cumulative cancer risk and non-cancer HI for each receptor population were estimated by summing cancer risk and non-cancer HI for direct contact with soil and cancer risk and non-cancer HI for VOCs for inhalation of soil gas migrating to air (five and 10 ft bgs, respectively). Only soil gas samples were collected to support evaluation of the vapor intrusion pathway. The objectives of groundwater sampling at the Site have been primarily to characterize SRCs in groundwater near suspected source areas and plume delineation; that is, no groundwater investigation was conducted to specifically provide data to evaluate the vapor intrusion pathway. Shallow groundwater data was evaluated for the vapor intrusion pathway as a second line of evidence.

The cumulative cancer risks are below and/or within the acceptable cancer risk range of 1×10^{-6} to 1×10^{-4} for future indoor commercial/industrial workers, outdoor commercial/industrial workers, and construction workers for Parcels C, D, and G. The cumulative HIs are below the threshold of greater than one for Parcels C, D, and G.

Only the cumulative cancer risks in Parcel C exceeded 1×10^{-6}, and the maximum cumulative cancer risk was 4×10^{-5} for future indoor commercial/industrial workers. Both soil direct contact pathway (due to dioxin TEQ) and vapor intrusion pathway (due to chloroform) were major cancer risk contributors for future indoor commercial/industrial workers, while soil direct contact pathway (due to dioxin TEQ) was the major cancer risk contributor for future outdoor commercial/industrial workers and construction workers. It should be noted that the site-specific action level for dioxin TEQ (0.0027 mg/kg) would correspond to a cancer risk of 6×10^{-5} for an outdoor commercial/industrial worker (Northgate 2010a), which is higher than the maximum cancer risk which the Parcel C dioxin TEQ would contribute to (1×10^{-5}). Plots of total vapor intrusion cancer risk and chloroform cancer risk for future indoor commercial/industrial workers in Parcel C show the locations with a total estimated vapor intrusion cancer risk greater than 1×10^{-6} are located at its southern boundary with the Operations Area and on the west side of Parcel C, downgradient of Parcel E, which contains the OSSM groundwater treatment and extraction system.

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TABLES

TABLE ES-1. Summary of Cumulative Risks for Soil and Soil Gas – Parcels C, D, and G
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Exposure [1]	Indoor Commercial/Industrial Worker		Outdoor Commercial/Industrial Worker		Construction Worker	
		Cancer Risk	Non-Cancer HI	Cancer Risk	Non-Cancer HI	Cancer Risk	Non-Cancer HI
C	Cumulative Risk for Soil (0-2 ft) and Soil Gas (10 ft)	4E-05	0.3	1E-05	0.6	--	--
	Cumulative Risk for Soil (0-2 ft) and Soil Gas (5 ft)	6E-06	0.3	1E-05	0.6	--	--
	Cumulative Risk for Soil (0-10 ft) and Soil Gas (10 ft)	4E-05	0.3	7E-06	0.4	2E-06	0.9
	Cumulative Risk for Soil (0-10 ft) and Soil Gas (5 ft)	4E-06	0.2	6E-06	0.4	8E-07	0.9
	Asbestos - Best Estimate	3E-09	--	6E-09	--	6E-08	--
	Asbestos - Upper-Bound Estimate	1E-07	--	2E-07	--	2E-06	--
D	Cumulative Risk for Soil (0-2 ft) and Soil Gas (10 ft)	1E-06	0.2	2E-08	0.2	--	--
	Cumulative Risk for Soil (0-2 ft) and Soil Gas (5 ft)	1E-06	0.1	2E-08	0.2	--	--
	Cumulative Risk for Soil (0-10 ft) and Soil Gas (10 ft)	1E-06	0.2	2E-08	0.2	2E-08	0.7
	Cumulative Risk for Soil (0-10 ft) and Soil Gas (5 ft)	1E-06	0.1	2E-08	0.2	1E-08	0.7
	Asbestos - Best Estimate	4E-09	--	8E-09	--	8E-08	--
	Asbestos - Upper-Bound Estimate	2E-07	--	4E-07	--	4E-06	--
G	Cumulative Risk for Soil (0-2 ft) and Soil Gas (10 ft)	2E-08	0.2	5E-08	0.4	--	--
	Cumulative Risk for Soil (0-2 ft) and Soil Gas (5 ft)	1E-07	0.2	5E-08	0.4	--	--
	Cumulative Risk for Soil (0-10 ft) and Soil Gas (10 ft)	1E-08	0.2	3E-08	0.3	4E-09	1
	Cumulative Risk for Soil (0-10 ft) and Soil Gas (5 ft)	1E-07	0.2	3E-08	0.3	5E-09	1
	Asbestos - Best Estimate	5E-10	--	1E-09	--	1E-08	--
	Asbestos - Upper-Bound Estimate	2E-07	--	4E-07	--	4E-06	--

Notes:
-- = Not applicable
ft = feet
HI = Hazard index

TABLE 3-1. Soil Gas Samples Evaluated in the HRA - Parcels C, D, and G
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Sample ID	Investigation	Depth (feet bgs)	Sample Location	
				Within Parcel [1]	Near Parcel
Parcel C	E-SG-1	ENVIRON 2013	5	X	
	E-SG-2	ENVIRON 2013	5	X	
	E-SG-3	ENVIRON 2013	5	X	
	SG17	ENSR 2008	5		X
	SG18	ENSR 2008	5	X	
	SG19	ENSR 2008	5.5	X	
	SG24	ENSR 2008	5.5	X	
	SG90	ENSR 2008	6	X	
	SG91	ENSR 2008	6	X	
	TSB-CJ-01	ERM-West 2007	10	X	
	TSB-CJ-01(FD)	ERM-West 2007	10	X	
	TSB-CJ-02	ERM-West 2007	10	X	
	TSB-CJ-03	ERM-West 2007	10	X	
	TSB-CJ-04	ERM-West 2007	10	X	
	TSB-CJ-05	ERM-West 2007	10	X	
	TSB-CJ-06	ERM-West 2007	10	X	
	TSB-CJ-07	ERM-West 2007	10	X	
	TSB-CJ-08	ERM-West 2007	10	X	
	TSB-CR-01	ERM-West 2007	10	X	
	TSB-CR-02	ERM-West 2007	10	X	
	TSB-CR-03	ERM-West 2007	10	X	
	TSB-CR-04	ERM-West 2007	10	X	
	TSB-CR-05	ERM-West 2007	10	X	
	TSB-CR-06	ERM-West 2007	10	X	
	TSB-CR-07	ERM-West 2007	10	X	
Parcel D	E-SG-1	ENVIRON 2013	5		X
	E-SG-9	ENVIRON 2013	5	X	
	SG16	ENSR 2008	5	X	
	SG17	ENSR 2008	5		X
	SG18	ENSR 2008	5	X	
	TSB-CJ-06	ERM-West 2007	10		X
	TSB-DJ-01	ERM-West 2007	10	X	
	TSB-DR-01	ERM-West 2007	10	X	
	TSB-DR-01 (FD)	ERM-West 2007	10	X	
	TSB-DR-02	ERM-West 2007	10	X	
	TSB-DR-03	ERM-West 2007	10	X	
	TSB-DR-04	ERM-West 2007	10	X	
	TSB-DR-05	ERM-West 2007	10	X	
	TSB-DR-06	ERM-West 2007	10	X	
Parcel G	E-SG-7	ENVIRON 2013	5	X	
	E-SG-8	ENVIRON 2013	4.5	X	
	SG45	ENSR 2008	5		X

Notes:
bgs = below ground surface
FD = field duplicate

[1] Includes samples collected on or near the border of a parcel.

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ENVIRON International Corporation (ENVIRON), 2013. Soil Gas Investigation and Human Health Risk Assessment Work Plan for Parcels C, D, F, G, and H, Nevada Environmental Response Trust Site, Henderson, Nevada. March 18.

TABLE 3-2. Shallow Groundwater Wells with VOC Sampling Data Evaluated in the HRA - Parcels C, D, and G
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel[1],[2]	Well ID	Depth to Groundwater (feet bgs)	Water-Bearing Zone	Dates Sampled for VOCs after 2005	Well Owner
Parcel C	AA-BW-04A	38.06 - 38.43	Shallow	January 2009, April 2009, July 2009, October 2009, May 2010, October 2010, March 2011, October 2011	BRC
	H-28/28A[3]	38.86 - 38.86	Shallow	December 2007, April 2009, June 2009, July 2009, October 2009, April 2010, October 2010, March 2011, October 2011, March 2015	Stauffer
	M-6A	37.73 - 41.02	Shallow	June 2008, January 2015[4]	NERT
Parcel C[5]	M-7B	32.22 - 37.16	Shallow	June 2008, February 2009, April 2009, July 2009, October 2009, April 2010, October 2010, March 2011, October 2011, May 2012, June 2014, August 2014, February 2015, April 2015	NERT
	M-98	25.62 - 33.39	Shallow	November 2006	NERT
	M-99	25.64 - 34.8	Shallow	May 2010	NERT
	M-100	24.08 - 33.72	Shallow	December 2006	NERT
	AA-BW-05A	--	Shallow	January 2009, April 2009, July 2009, October 2009, May 2010, October 2010, March 2011, October 2011 [4]	BRC
	MC-3	33.25 - 37.57	Shallow	May 2009	Stauffer
	MC-97	33.2 - 39.67	Shallow	June 2008, February 2015	Stauffer
	MC-111	--	Shallow	December 2007, May 2012, June 2014, April 2015	OSSM
Parcel D	M-23	21.61 - 35.47	Shallow	June 2008,February 2015	NERT
	MC-45	22.6 - 32.65	Shallow	December 2006, June 2008, January 2015	Stauffer
	MC-50	27.34 - 40	Shallow	February 2006, April 2006, July 2006, November 2006, January 2007, April 2007, July 2007, December 2007, January 2008, April 2008, July 2008, November 2008, January 2009, April 2009 April 2010, June 2014, January 2015, May 2015	NERT
	MC-51	27.94 - 34.95	Shallow	February 2006, April 2006, July 2006, December 2006, January 2007, April 2007, July 2007, December 2007, January 2008, April 2008, July 2008, November 2008, January 2009, February 2015[4]	NERT
	MC-53	27.6 - 34.97	Shallow	February 2006, April 2006, July 2006, December 2006, January 2007, April 2007, July 2007, December 2007, January 2008, April 2008, June 2008, July 2008, November 2008, January 2009, April 2009, April 2010, June 2014, January 2015, April 2015	Stauffer
Parcel D[5]	MC-49	31.65 - 36	Shallow	February 2006, April 2006, July 2006, December 2006, January 2007, April 2007, July 2007, December 2007, January 2008, April 2008,July 2008, November 2008, January 2009, April 2009, April 2010, June 2014, April 2015	Stauffer
	MC-113	23.31 - 24.71	Shallow	November 2008, January 2009, April 2009, April 2010, June 2014, April 2015	OSSM
	MC-114	26.29 - 27.42	Shallow	November 2008, January 2009, April 2009, April 2010, June 2014, April 2015	OSSM
	MC-94	37.82 - 37.82	Shallow	October 2009	Stauffer
	MC-09R	29.46 - 31.8	Shallow	July 2009, May 2010, April 2011, April 2012, June 2014	OSSM
	MC-97	33.2 - 39.67	Shallow	June 2008, February 2015	Stauffer
Parcel G	TR-8	49.45 - 55.45	Shallow	March 2006, July 2009, January 2015	NERT
Parcel G[5]	AA-MW-23	39.79	Shallow	July 2008, October 2008	Montrose

Notes:

bgs = below ground surface

BRC = Basic Remediation Company

NERT = Nevada Environmental Response Trust

OSSM = Olin Chlor-Alkali/Stauffer/Syngenta/Montrose

VOC = volatile organic compound

[1] Sample locations located near more than one parcel are listed for each near parcel.

[2] Wells with sampling results from the shallow portion of the aquifer were evaluated because the shallow aquifer (in contrast to deeper aquifers) would be the primary source of chloroform in soil gas.

[3] Monitoring well H-28A no longer exists and has been replaced by H-28.

[4] Sampled on multiple additional dates for a limited number of chemicals.

[5] Located near a parcel boundary and included in parcel assessment.

References:

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TABLE 3-3. Summary of Scrape Area and Confirmation Sampling Information for Parcels C, D and G
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Sample Location Identified for Remediation	Analyte Detected Above Level Specifed in RAW	Confirmation Sample Identifier	Scrape Depth (feet)	Net Tonnage of Soil Removed (disposed weight)
C	TSB-CR-02	Long Amphibole = 1 fiber	E1-PC-1-1-0.0	1	2,751.65
	TSB-CR-03	Long Chrysotile = 7 fibers	G1-PC-1-1-0.0	0.4	
	TSB-CJ-03	Long Amphibole = 1 fiber	H2-PC-1-1-0.0	0.4	
	TSB-CR-07	Dioxin TEQ = 1,521 pg/g	I6-PC-1-1-0.0	0.5	
D	TSB-DR-04	Long Chrysotile = 4 fibers	F4-PD-1-1-0.0	0.4	139.9
G	TSB-GJ-04[1]	Long Amphibole = 1 fiber	S2-PG-1-1-0.0	0.3	1,588.56
	TSB-GJ-06	Benzo(a)pyrene = 0.99 mg/kg	S3-PG-2-0.0	0.3	
	TSB-GJ-09	Long Amphibole = 13 fibers	S3-PG-1-1-0.0	0.4	

Notes:

mg/kg = milligram per kilogram

pg/g = picogram per gram

RAW = Removal Action Workplan

TEQ = Toxicity equivalent

[1] TSB-GJ-04 is located outside the boundary of Parcel G

Sources:

BEC. 2008. Removal Action Workplan for Soil, Tronox Parcels “C”, “D”, “F”, “G” and “H” Sites, Henderson Nevada. July 1. NDEP approved July 2, 2008

TABLE 4-1. Evaluation of Sample Quantitation Limits – Parcel C Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Screening Level [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects				Screening Level Note
							Minimum SQL	Maximum SQL	No. of Samples Above Screen	No. of Samples Above 10% of Screen	
Chlorine Oxyanions	Chlorate	38,900	mg/kg	50	19	38	0.051	1.3	0	0	--
	Perchlorate	908	mg/kg	50	49	98	0.0034	0.0034	0	0	--
Metals	Antimony	519	mg/kg	50	33	66	0.052	0.56	0	0	--
	Boron	259,000	mg/kg	50	31	62	1.4	3.3	0	0	Use health-based BCL instead of non-health based upper-limit
	Cadmium	1,270	mg/kg	50	27	54	0.0050	0.28	0	0	--
	Chromium VI	1,230	mg/kg	50	2	4.0	0.13	0.47	0	0	--
	Lithium	2,600	mg/kg	35	32	91	0.66	0.73	0	0	--
	Mercury	389	mg/kg	50	17	34	0.0067	0.042	0	0	Use BCL for mercury compounds
	Molybdenum	6,490	mg/kg	50	20	40	0.052	1.1	0	0	--
	Niobium	130	mg/kg	40	0	0	0.76	2.0	0	0	--
	Palladium	N/A	mg/kg	46	33	72	0.048	0.061	N/A	N/A	--
	Platinum	649	mg/kg	37	2	5.4	0.010	0.024	0	0	--
	Selenium	6,490	mg/kg	50	0	0	0.16	0.63	0	0	--
	Silver	6,490	mg/kg	50	37	74	0.76	0.85	0	0	--
	Sulfur	N/A	mg/kg	45	29	64	22	390	N/A	N/A	--
	Thallium	86	mg/kg	50	4	8.0	0.10	0.28	0	0	--
	Tin	779,000	mg/kg	37	21	57	0.026	0.026	0	0	Use health-based BCL instead of non-health based upper-limit
	Tungsten	9,730	mg/kg	50	2	4.0	0.10	5.6	0	0	--
Other Inorganics	Ammonia	526,000,000	mg/kg	15	3	20	0.61	2.7	0	0	Use health-based BCL instead of non-health based upper-limit
	Bromide	441,000	mg/kg	50	7	14	0.063	3.9	0	0	Use health-based BCL instead of non-health based upper-limit
	Chlorite	35,000	mg/kg	29	0	0	0.040	0.80	0	0	RSL for industrial soil (USEPA 2016)
	Fluoride	55,000	mg/kg	35	11	31	0.10	0.25	0	0	--
	Nitrate	2,080,000	mg/kg	50	42	84	0.086	3.8	0	0	Use health-based BCL instead of non-health based upper-limit
	Nitrate/Nitrite	130,000	mg/kg	13	11	85	1.1	1.2	0	0	Minimum BCL of nitrate and nitrite, use health-based BCL instead of non-health based upper-limit
	Nitrite	130,000	mg/kg	44	3	6.8	0.020	1.2	0	0	Use health-based BCL instead of non-health based upper-limit
	ortho-Phosphate	52,600,000	mg/kg	50	1	2.0	0.50	6.3	0	0	Use phosphoric acid as a surrogate, use health-based BCL instead of non-health based upper-limit
Dioxin/Furans	2,3,7,8-TCDD TEQ*	0.0027	mg/kg	50	41	82	0.000017	0.016	3	--	Site-specific action level
Other Organics	Phthalic acid	2,600,000	mg/kg	48	1	2.1	0.25	1.4	0	0	Use health-based BCL instead of non-health based upper-limit
PAHs	Acenaphthene	2,360	mg/kg	50	0	0	0.0041	0.42	0	0	--
	Acenaphthylene	147	mg/kg	50	0	0	0.0041	0.42	0	0	--
	Anthracene	9,080	mg/kg	50	0	0	0.00067	0.42	0	0	--
	BaPEq*	0.32	mg/kg	50	1	2.0	0.0031	0.49	2	35	--
	Benzo(g,h,i)perylene	38,900	mg/kg	50	1	2.0	0.0041	0.42	0	0	--
	Fluoranthene	33,700	mg/kg	50	1	2.0	0.0041	0.42	0	0	--
	Fluorene	3,460	mg/kg	50	0	0	0.0041	0.42	0	0	--
	1-Methylnaphthalene	563	mg/kg	13	0	0	0.15	0.17	0	0	Use naphthalene as a surrogate (noncancer endpoint)
	2-Methylnaphthalene	563	mg/kg	50	0	0	0.033	0.42	0	0	Use naphthalene as a surrogate (noncancer endpoint)
	Naphthalene	16	mg/kg	56	0	0	0.00097	0.42	0	0	--
	Phenanthrene	24	mg/kg	50	0	0	0.0017	0.42	0	0	--
	Pyrene	20,800	mg/kg	50	1	2.0	0.0030	0.42	0	0	--
PCBs	Aroclor-1016	33	mg/kg	4	0	0	0.0049	0.042	0	0	--
	Aroclor-1221	1.2	mg/kg	4	0	0	0.0049	0.042	0	0	--
	Aroclor-1232	1.2	mg/kg	4	0	0	0.0049	0.042	0	0	--
	Aroclor-1242	1.2	mg/kg	4	0	0	0.0049	0.042	0	0	--
	Aroclor-1248	1.2	mg/kg	4	0	0	0.0049	0.042	0	0	--

TABLE 4-1. Evaluation of Sample Quantitation Limits – Parcel C Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Screening Level [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects				Screening Level Note
							Minimum SQL	Maximum SQL	No. of Samples Above Screen	No. of Samples Above 10% of Screen	
PCBs	Aroclor-1254	1.2	mg/kg	4	0	0	0.0027	0.042	0	0	--
	Aroclor-1260	1.2	mg/kg	17	0	0	0.0027	0.042	0	0	--
Pesticides - OCPs	Aldrin	0.15	mg/kg	49	0	0	0.000088	0.0022	0	0	--
	alpha-BHC	334	mg/kg	49	5	10	0.000096	0.0022	0	0	--
	beta-BHC	67	mg/kg	49	25	51	0.00019	0.0017	0	0	--
	delta-BHC	334	mg/kg	49	0	0	0.000083	0.0022	0	0	--
	gamma-BHC	11	mg/kg	49	1	2.0	0.000083	0.0022	0	0	--
	alpha-Chlordane	8.9	mg/kg	49	0	0	0.00010	0.0023	0	0	Use chlordane as a surrogate
	gamma-Chlordane	8.9	mg/kg	49	3	6.1	0.000086	0.0022	0	0	Use chlordane as a surrogate
	Chlordane (total)	8.9	mg/kg	36	0	0	0.0023	0.013	0	0	--
	2,4'-DDD	14	mg/kg	35	3	8.6	0.00011	0.00031	0	0	Use 4,4'-DDD as a surrogate
	2,4'-DDE	9.5	mg/kg	48	11	23	0.000089	0.0017	0	0	Use 4,4'-DDE as a surrogate
	4,4'-DDD	14	mg/kg	49	0	0	0.000089	0.0022	0	0	--
	4,4'-DDE	9.5	mg/kg	49	16	33	0.00019	0.0022	0	0	--
	4,4'-DDT	9.5	mg/kg	49	14	29	0.00020	0.0022	0	0	--
	Dieldrin	0.16	mg/kg	49	0	0	0.000073	0.0022	0	0	--
	Endosulfan I	5,500	mg/kg	49	0	0	0.000083	0.0022	0	0	Use endosulfan as a surrogate
	Endosulfan II	5,500	mg/kg	49	0	0	0.000093	0.0022	0	0	Use endosulfan as a surrogate
	Endosulfan sulfate	5,500	mg/kg	49	0	0	0.00012	0.0023	0	0	Use endosulfan as a surrogate
	Endrin	275	mg/kg	49	0	0	0.000083	0.0022	0	0	--
	Endrin aldehyde	275	mg/kg	49	1	2.0	0.00011	0.0022	0	0	Use endrin as a surrogate
	Endrin ketone	275	mg/kg	49	0	0	0.00016	0.0023	0	0	Use endrin as a surrogate
	Heptachlor	0.57	mg/kg	49	0	0	0.00017	0.0023	0	0	--
	Heptachlor epoxide	0.28	mg/kg	49	0	0	0.00012	0.0023	0	0	--
	Hexachlorobenzene	1.6	mg/kg	50	6	12	0.033	0.42	0	2	--
	Methoxychlor	4,580	mg/kg	49	4	8.2	0.00032	0.0042	0	0	--
	Toxaphene	2.3	mg/kg	49	1	2.0	0.0058	0.063	0	0	--
	2,4,5-TP	7,330	mg/kg	1	0	0	0.025	0.025	0	0	--
Pesticides - OPPs	Chlorpyrifos	2,750	mg/kg	1	0	0	0.025	0.025	0	0	--
	Coumaphos	N/A	mg/kg	1	0	0	0.016	0.016	N/A	N/A	--
	Dasanit	N/A	mg/kg	1	0	0	0.016	0.016	N/A	N/A	--
	Demeton-O	33	mg/kg	1	0	0	0.049	0.049	0	0	RSL for industrial soil (USEPA 2016)
	Demeton-S	33	mg/kg	1	0	0	0.019	0.019	0	0	RSL for industrial soil (USEPA 2016)
	Diazinon	825	mg/kg	1	0	0	0.028	0.028	0	0	--
	Dibrom	1,830	mg/kg	1	0	0	0.042	0.042	0	0	--
	Dichlorovos	8.8	mg/kg	1	0	0	0.029	0.029	0	0	--
	Dimethoate	160	mg/kg	1	0	0	0.028	0.028	0	0	RSL for industrial soil (USEPA 2016)
	Disulfoton	37	mg/kg	1	0	0	0.061	0.061	0	0	--
	Ethoprop	N/A	mg/kg	1	0	0	0.019	0.019	N/A	N/A	--
	Ethyl p-nitrophenyl benzenethiophosphate	8.2	mg/kg	1	0	0	0.016	0.016	0	0	RSL for industrial soil (USEPA 2016)
	o-Ethyl o-2,4,5-trichlorophenyl ethyl-phosphonothioate	N/A	mg/kg	1	0	0	0.025	0.025	N/A	N/A	--
	Famphur	N/A	mg/kg	1	0	0	0.016	0.016	N/A	N/A	--
	Fenthion	N/A	mg/kg	1	0	0	0.042	0.042	N/A	N/A	--
	Guthion	2,500	mg/kg	1	0	0	0.016	0.016	0	0	RSL for industrial soil (USEPA 2016)
	Malathion	18,300	mg/kg	1	0	0	0.019	0.019	0	0	--

TABLE 4-1. Evaluation of Sample Quantitation Limits – Parcel C Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Screening Level [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects				Screening Level Note
							Minimum SQL	Maximum SQL	No. of Samples Above Screen	No. of Samples Above 10% of Screen	
Pesticides - OPPs	Merphos	35	mg/kg	1	0	0	0.038	0.038	0	0	RSL for industrial soil (USEPA 2016)
	Methyl parathion	229	mg/kg	1	0	0	0.025	0.025	0	0	--
	Mevinphos	N/A	mg/kg	1	0	0	0.019	0.019	N/A	N/A	--
	Parathion	5,500	mg/kg	1	0	0	0.023	0.023	0	0	--
	Phorate	160	mg/kg	1	0	0	0.025	0.025	0	0	RSL for industrial soil (USEPA 2016)
	Prothiophos	N/A	mg/kg	1	0	0	0.025	0.025	N/A	N/A	--
	Ronnel	45,800	mg/kg	1	0	0	0.023	0.023	0	0	--
	Stirophos	107	mg/kg	1	0	0	0.019	0.019	0	0	--
	Sulfotepp	410	mg/kg	1	0	0	0.025	0.025	0	0	RSL for industrial soil (USEPA 2016)
	Sulprofos	N/A	mg/kg	1	0	0	0.016	0.016	N/A	N/A	--
	Thionazin	N/A	mg/kg	1	0	0	0.023	0.023	N/A	N/A	--
SVOCs	Acetophenone	1,740	mg/kg	35	0	0	0.033	0.033	0	0	--
	Aniline	450	mg/kg	48	0	0	0.033	0.096	0	0	--
	Azobenzene	21	mg/kg	35	0	0	0.033	0.033	0	0	--
	Benzenethiol	1,200	mg/kg	35	0	0	0.12	0.12	0	0	RSL for industrial soil (USEPA 2016)
	Benzidine	0.011	mg/kg	12	0	0	0.66	0.75	12	12	--
	Benzoic acid	3,670,000	mg/kg	48	0	0	0.033	0.38	0	0	Use health-based BCL instead of non-health based upper-limit
	Benzyl alcohol	458,000	mg/kg	48	0	0	0.033	0.17	0	0	Use health-based BCL instead of non-health based upper-limit
	bis(2-Chloro-1-methylethyl) ether	19	mg/kg	35	0	0	0.033	0.033	0	0	--
	bis(2-Chloroethoxy)methane	2,500	mg/kg	48	0	0	0.033	0.15	0	0	RSL for industrial soil (USEPA 2016)
	bis(2-Chloroethyl) ether	1.4	mg/kg	48	0	0	0.033	0.079	0	0	--
	bis(2-Ethylhexyl)phthalate	183	mg/kg	50	0	0	0.033	0.42	0	0	--
	bis(4-Chlorophenyl) disulfide	N/A	mg/kg	35	0	0	0.20	0.20	N/A	N/A	--
	bis(4-Chlorophenyl) sulfone	660	mg/kg	35	0	0	0.33	0.33	0	0	RSL for industrial soil (USEPA 2016)
	4-Bromophenyl-phenyl ether	N/A	mg/kg	48	0	0	0.033	0.085	N/A	N/A	--
	Butylbenzylphthalate	240	mg/kg	50	0	0	0.033	0.42	0	0	--
	Carbazole	128	mg/kg	35	0	0	0.033	0.033	0	0	--
	4-Chloro-3-methylphenol	82,000	mg/kg	48	0	0	0.033	0.079	0	0	RSL for industrial soil (USEPA 2016)
	4-Chloroaniline	13	mg/kg	48	0	0	0.033	0.15	0	0	--
	2-Chloronaphthalene	351	mg/kg	48	0	0	0.033	0.076	0	0	--
	2-Chlorophenol	1,730	mg/kg	48	0	0	0.033	0.079	0	0	--
	4-Chlorophenyl-phenyl ether	N/A	mg/kg	48	0	0	0.033	0.096	N/A	N/A	--
	4-Chlorothioanisole	N/A	mg/kg	35	0	0	0.0076	0.0076	N/A	N/A	--
	4-Chlorothiophenol	N/A	mg/kg	35	0	0	0.19	0.19	N/A	N/A	--
	3,3'-Dichlorobenzidine	5.7	mg/kg	48	0	0	0.033	0.17	0	0	--
	2,2'-/4,4'-Dichlorobenzil	389	mg/kg	35	0	0	0.070	0.12	0	0	Use 4,4-dichlorobenzil as a surrogate
	Dibenzofuran	2,600	mg/kg	48	0	0	0.033	0.076	0	0	--
	2,4-Dichlorophenol	2,750	mg/kg	48	0	0	0.033	0.076	0	0	--
	Diethylphthalate	733,000	mg/kg	50	0	0	0.033	0.42	0	0	Use health-based BCL instead of non-health based upper-limit
	2,4-Dimethylphenol	18,300	mg/kg	48	0	0	0.033	0.15	0	0	--
	Dimethylphthalate	9,160,000	mg/kg	50	0	0	0.033	0.42	0	0	Use health-based BCL instead of non-health based upper-limit
	Di-n-butylphthalate	91,600	mg/kg	50	0	0	0.033	0.42	0	0	--
	2,4-Dinitrophenol	1,830	mg/kg	48	0	0	0.33	0.37	0	0	--
	2,4-Dinitrotoluene	8.3	mg/kg	48	0	0	0.033	0.091	0	0	--
	2,6-Dinitrotoluene	916	mg/kg	48	0	0	0.033	0.11	0	0	--
	Di-n-octylphthalate	11,000	mg/kg	50	0	0	0.015	0.42	0	0	--

TABLE 4-1. Evaluation of Sample Quantitation Limits – Parcel C Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Screening Level [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects				Screening Level Note
							Minimum SQL	Maximum SQL	No. of Samples Above Screen	No. of Samples Above 10% of Screen	
SVOCs	Diphenyl disulfide	N/A	mg/kg	35	0	0	0.029	0.029	N/A	N/A	--
	Diphenyl sulfide	N/A	mg/kg	35	0	0	0.0035	0.0035	N/A	N/A	--
	Diphenyl sulfone	2,750	mg/kg	35	0	0	0.0067	0.0067	0	0	--
	1,2-Diphenylhydrazine	3.2	mg/kg	35	0	0	0.033	0.033	0	0	--
	1,4-Dioxane	26	mg/kg	37	0	0	0.033	0.42	0	0	--
	Hexachlorobutadiene	33	mg/kg	50	0	0	0.00096	0.033	0	0	--
	Hexachlorocyclopentadiene	5,470	mg/kg	48	0	0	0.13	0.33	0	0	--
	Hexachloroethane	183	mg/kg	48	0	0	0.033	0.15	0	0	--
	Hydroxymethyl phthalimide	N/A	mg/kg	35	0	0	0.043	0.043	N/A	N/A	--
	Isophorone	2,700	mg/kg	48	0	0	0.033	0.076	0	0	--
	2-Methylphenol	45,800	mg/kg	48	0	0	0.079	0.12	0	0	--
	3&4-Methylphenol	4,580	mg/kg	48	0	0	0.067	0.15	0	0	Minimum BCL of 4-methylphenol and 3-methylphenol
	2-Nitroaniline	2,740	mg/kg	48	0	0	0.033	0.076	0	0	--
	3-Nitroaniline	2,740	mg/kg	48	0	0	0.033	0.15	0	0	Use 2-nitroaniline as a surrogate
	4-Nitroaniline	2,740	mg/kg	48	0	0	0.13	0.33	0	0	Use 2-nitroaniline as a surrogate
	Nitrobenzene	14	mg/kg	50	0	0	0.033	0.42	0	0	--
	2-Nitrophenol	7,330	mg/kg	48	0	0	0.033	0.15	0	0	Use 4-nitrophenol as a surrogate
	4-Nitrophenol	7,330	mg/kg	48	0	0	0.14	0.33	0	0	--
	n-Nitroso-di-n-propylamine	0.37	mg/kg	48	0	0	0.033	0.079	0	13	--
	n-Nitrosodiphenylamine	524	mg/kg	48	0	0	0.033	0.091	0	0	--
	Octachlorostyrene	N/A	mg/kg	50	2	4.0	0.033	2.6	N/A	N/A	--
	Pentachlorobenzene	733	mg/kg	35	0	0	0.033	0.033	0	0	--
	Pentachlorophenol	4.4	mg/kg	48	0	0	0.33	0.38	0	0	--
	Phenol	275,000	mg/kg	48	0	0	0.033	0.10	0	0	Use health-based BCL instead of non-health based upper-limit
	Pyridine	886	mg/kg	50	0	0	0.033	2	0	0	--
	1,2,4,5-Tetrachlorobenzene	275	mg/kg	35	0	0	0.033	0.033	0	0	--
	2,4,5-Trichlorophenol	91,600	mg/kg	48	0	0	0.033	0.15	0	0	--
	2,4,6-Trichlorophenol	233	mg/kg	48	0	0	0.033	0.085	0	0	--
VOCs	Acetone	723,000	mg/kg	50	6	12	0.0017	0.013	0	0	Use health-based BCL instead of non-health based upper-limit
	Acetonitrile	6,150	mg/kg	35	0	0	0.0020	0.0054	0	0	--
	t-Amyl methyl ether	60,000	mg/kg	15	0	0	0.00096	0.0063	0	0	Use methyl tert-butyl ether as a surrogate (noncancer endpoint)
	Benzene	4.2	mg/kg	50	0	0	0.000087	0.0063	0	0	--
	Bromobenzene	695	mg/kg	50	0	0	0.00012	0.0063	0	0	--
	Bromochloromethane	630	mg/kg	49	0	0	0.00023	0.0063	0	0	RSL for industrial soil (USEPA 2016)
	Bromodichloromethane	3.4	mg/kg	50	0	0	0.00021	0.0063	0	0	--
	Bromoform	325	mg/kg	50	0	0	0.000059	0.0063	0	0	--
	Bromomethane	39	mg/kg	50	0	0	0.00013	0.013	0	0	--
	2-Butanone	34,100	mg/kg	49	2	4.1	0.00087	0.013	0	0	--
	n-Butylbenzene	237	mg/kg	50	0	0	0.00018	0.0063	0	0	--
	sec-Butylbenzene	223	mg/kg	50	0	0	0.00011	0.0063	0	0	--
	tert-Butylbenzene	393	mg/kg	50	0	0	0.00010	0.0063	0	0	--
	Carbon disulfide	721	mg/kg	35	0	0	0.00012	0.00055	0	0	--
	Carbon tetrachloride	3.9	mg/kg	50	0	0	0.00021	0.0063	0	0	--
	Chlorobenzene	695	mg/kg	50	0	0	0.00011	0.0063	0	0	--
	Chloroethane	1,250	mg/kg	50	0	0	0.00035	0.0063	0	0	--
	Chloroform	1.6	mg/kg	50	5	10	0.00010	0.0063	0	0	--

TABLE 4-1. Evaluation of Sample Quantitation Limits – Parcel C Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Screening Level [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects				Screening Level Note
							Minimum SQL	Maximum SQL	No. of Samples Above Screen	No. of Samples Above 10% of Screen	
VOCs	Chloromethane	8.0	mg/kg	50	0	0	0.00027	0.0063	0	0	--
	2-Chlorotoluene	511	mg/kg	50	0	0	0.00025	0.0063	0	0	--
	4-Chlorotoluene	511	mg/kg	50	0	0	0.00017	0.0063	0	0	Use 2-chlorotoluene as a surrogate
	Cumene	647	mg/kg	50	1	2.0	0.00010	0.0063	0	0	--
	p-Cymene	647	mg/kg	49	0	0	0.00012	0.0063	0	0	--
	Dibromochloromethane	6.1	mg/kg	50	0	0	0.00012	0.0063	0	0	--
	1,2-Dibromo-3-chloropropane	0.053	mg/kg	50	0	0	0.00021	0.0063	0	2	--
	Dibromomethane	191	mg/kg	50	0	0	0.00017	0.0063	0	0	--
	1,2-Dibromoethane	0.18	mg/kg	15	0	0	0.00048	0.0063	0	0	--
	1,2-Dichlorobenzene	373	mg/kg	50	1	2.0	0.00012	0.0063	0	0	--
	1,3-Dichlorobenzene	373	mg/kg	50	2	4.0	0.00013	0.0063	0	0	--
	1,4-Dichlorobenzene	14	mg/kg	50	3	6.0	0.00011	0.0063	0	0	--
	Dichlorodifluoromethane	340	mg/kg	50	0	0	0.00029	0.0063	0	0	--
	1,1-Dichloroethane	22	mg/kg	50	0	0	0.000070	0.0063	0	0	--
	1,2-Dichloroethane	2.2	mg/kg	50	0	0	0.000066	0.0063	0	0	--
	1,1-Dichloroethene	1,280	mg/kg	50	0	0	0.00012	0.0063	0	0	--
	1,2-Dichloroethene	548	mg/kg	35	0	0	0.00011	0.00054	0	0	Minimum BCL of trans-1,2-Dichloroethene and cis-1,2-Dichloroethene
	cis-1,2-Dichloroethene	741	mg/kg	50	0	0	0.000054	0.0063	0	0	--
	trans-1,2-Dichloroethene	548	mg/kg	50	0	0	0.000090	0.0063	0	0	--
	1,2-Dichloropropane	4.3	mg/kg	50	0	0	0.00011	0.0063	0	0	--
	1,3-Dichloropropane	65	mg/kg	50	0	0	0.000051	0.0063	0	0	--
	2,2-Dichloropropane	65	mg/kg	50	0	0	0.00017	0.0063	0	0	Use 1,3-dichloropropane as a surrogate
	1,1-Dichloropropene	142	mg/kg	50	0	0	0.000087	0.0063	0	0	Use 1,3-dichloropropene as a surrogate (noncancer endpoint)
	cis-1,3-Dichloropropene	4.6	mg/kg	50	0	0	0.00010	0.0063	0	0	Use 1,3-dichloropropene as a surrogate
	trans-1,3-Dichloropropene	4.6	mg/kg	50	0	0	0.00010	0.0063	0	0	Use 1,3-dichloropropene as a surrogate
	Diisopropyl ether	9,400	mg/kg	15	0	0	0.00096	0.0063	0	0	RSL for industrial soil (USEPA 2016)
	Dimethyl disulfide	N/A	mg/kg	35	0	0	0.00018	0.00021	N/A	N/A	--
	2,2-Dimethylpentane	N/A	mg/kg	35	0	0	0.00028	0.00028	N/A	N/A	--
	2,3-Dimethylpentane	N/A	mg/kg	35	0	0	0.00022	0.00022	N/A	N/A	--
	2,4-Dimethylpentane	N/A	mg/kg	35	0	0	0.00019	0.00019	N/A	N/A	--
	3,3-Dimethylpentane	N/A	mg/kg	35	0	0	0.00020	0.00020	N/A	N/A	--
	Ethanol	15,100,000	mg/kg	35	0	0	0.047	0.19	0	0	Use health-based BCL instead of non-health based upper-limit
	Ethyl benzene	20	mg/kg	50	2	4.0	0.000058	0.0063	0	0	--
	Ethyl tert-butyl ether	60,000	mg/kg	15	0	0	0.00096	0.0063	0	0	Use methyl tert-butyl ether as a surrogate (noncancer endpoint)
	3-Ethylpentane	N/A	mg/kg	35	0	0	0.00021	0.00021	N/A	N/A	--
	n-Heptane	220	mg/kg	35	0	0	0.00016	0.00016	0	0	--
	2-Hexanone	1,930	mg/kg	50	0	0	0.00024	0.013	0	0	--
	Iodomethane	1,510	mg/kg	35	0	0	0.00012	0.00026	0	0	--
	Methyl tert-butyl ether	209	mg/kg	50	0	0	0.000089	0.0063	0	0	--
	Methylene Chloride	59	mg/kg	49	0	0	0.00069	0.0063	0	0	--
	2-Methylhexane	N/A	mg/kg	35	0	0	0.00020	0.00020	N/A	N/A	--
	3-Methylhexane	N/A	mg/kg	35	0	0	0.00014	0.00014	N/A	N/A	--
	4-Methyl-2-pentanone	17,200	mg/kg	50	0	0	0.00029	0.013	0	0	--
	2-Nitropropane	0.060	mg/kg	35	0	0	0.00060	0.0017	0	0	--
	n-Nonyl aldehyde	N/A	mg/kg	35	0	0	0.00047	0.00088	N/A	N/A	--
	n-Propylbenzene	237	mg/kg	50	1	2.0	0.00011	0.0063	0	0	--

TABLE 4-1. Evaluation of Sample Quantitation Limits – Parcel C Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Screening Level [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects				Screening Level Note
							Minimum SQL	Maximum SQL	No. of Samples Above Screen	No. of Samples Above 10% of Screen	
VOCs	Styrene	1,730	mg/kg	50	0	0	0.00017	0.0063	0	0	--
	tert Butyl alcohol	21,300	mg/kg	15	0	0	0.0055	0.011	0	0	--
	1,1,1,2-Tetrachloroethane	20	mg/kg	50	0	0	0.00018	0.0063	0	0	--
	1,1,2,2-Tetrachloroethane	2.6	mg/kg	50	0	0	0.000078	0.0063	0	0	--
	Tetrachloroethene	3.5	mg/kg	50	2	4.0	0.000087	0.0063	0	0	--
	Toluene	521	mg/kg	50	2	4.0	0.00013	0.0063	0	0	--
	1,2,3-Trichlorobenzene	360	mg/kg	50	2	4.0	0.00039	0.0063	0	0	Use 1,2,4-trichlorobenzene as a surrogate (noncancer endpoint)
	1,2,4-Trichlorobenzene	125	mg/kg	50	4	8.0	0.00033	0.0063	0	0	--
	1,3,5-Trichlorobenzene	360	mg/kg	35	0	0	0.00037	0.00068	0	0	Use 1,2,4-trichlorobenzene as a surrogate (noncancer endpoint)
	1,1,1-Trichloroethane	1,390	mg/kg	50	0	0	0.00011	0.0063	0	0	--
	1,1,2-Trichloroethane	5.6	mg/kg	50	0	0	0.000067	0.0063	0	0	--
	Trichloroethene	6.0	mg/kg	50	0	0	0.00010	0.0063	0	0	--
	Trichlorofluoromethane	1,980	mg/kg	50	0	0	0.00022	0.0063	0	0	--
	1,2,3-Trichloropropane	0.12	mg/kg	50	0	0	0.00025	0.0063	0	0	--
	1,1,2-Trichloro-1,2,2-trifluoroethane	5,550	mg/kg	34	0	0	0.00015	0.00054	0	0	--
	1,2,4-Trimethylbenzene	604	mg/kg	50	3	6.0	0.00013	0.0063	0	0	--
	1,3,5-Trimethylbenzene	246	mg/kg	50	3	6.0	0.000097	0.0063	0	0	--
	2,2,3-Trimethylbutane	N/A	mg/kg	35	0	0	0.00021	0.00021	N/A	N/A	--
	Vinyl acetate	2,710	mg/kg	35	0	0	0.00018	0.00024	0	0	--
	Vinyl chloride	2.0	mg/kg	50	0	0	0.00011	0.0063	0	0	--
	m,p-Xylene	214	mg/kg	48	5	10	0.00017	0.0011	0	0	Minimum BCL of m-xylene and p-xylene
	o-Xylene	282	mg/kg	48	2	4.2	0.000076	0.00056	0	0	--
	Xylenes (total)	214	mg/kg	37	4	11	0.00023	0.013	0	0	--

Notes:

-- = Not applicable
mg/kg = milligram per kilogram
BaPEq = Benzo(a)pyrene equivalent
BCL = Basic Comparison Level
BHC = Hexachlorocyclohexane
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethylene
DDT = Dichlorodiphenyltrichloroethane
N/A = No screening level available
NDEP = Neveda Department of Environmental Protection
OCP = Organochlorine pesticide
OPP = Organophosphate pesticide
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
RSL = Regional screening level
SQL = Sample Quantitation Limit
SVOC = Semivolatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
TP = Trichlorophenoxy propionic acid
TEQ = Total toxicity equivalent
USEPA = United States Environmental Protection Agency
VOC = Volatile organic compound
* Methodology for equivalent calculations explained in text
[1] Screening levels are the lowest screning levels among the indoor worker and outdoor worker BCLs (NDEP 2015), unless noted.

Sources:

NDEP. 2015. User's Guide and Background Technical Document for NDEP Basic Comparison Levels (BCLs) for Human Health for the BMI Complex and Common Areas. Revision 13, February.
USEPA. 2016. Regional Screening Levels. May.

TABLE 4-2. Evaluation of Sample Quantitation Limits – Parcel D Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Screening Level [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects				Screening Level Note
							Minimum SQL	Maximum SQL	No. of Samples Above Screen	No. of Samples Above 10% of Screen	
Chlorine Oxyanions	Chlorate	38,900	mg/kg	16	3	19	1.0	1.0	0	0	--
Metals	Boron	259,000	mg/kg	16	8	50	1.4	1.4	0	0	Use health-based BCL instead of non-health based upper-limit
	Cadmium	1,270	mg/kg	16	9	56	0.0050	0.0050	0	0	--
	Chromium VI	1,230	mg/kg	16	1	6.3	0.16	0.16	0	0	--
	Molybdenum	6,490	mg/kg	16	8	50	0.052	0.052	0	0	--
	Niobium	130	mg/kg	16	2	13	0.76	0.76	0	0	--
	Platinum	649	mg/kg	16	0	0	0.010	0.010	0	0	--
	Selenium	6,490	mg/kg	16	0	0	0.16	0.16	0	0	--
	Sulfur	N/A	mg/kg	16	11	69	210	210	N/A	N/A	--
	Thallium	86	mg/kg	16	2	13	0.10	0.10	0	0	--
	Tin	779,000	mg/kg	16	15	94	0.026	0.026	0	0	Use health-based BCL instead of non-health based upper-limit
	Tungsten	9,730	mg/kg	16	2	13	0.10	0.10	0	0	--
	Zirconium	104	mg/kg	16	14	88	0.25	0.25	0	0	--
Other Inorganics	Bromide	441,000	mg/kg	16	5	31	0.063	0.063	0	0	Use health-based BCL instead of non-health based upper-limit
	Chlorite	35,000	mg/kg	16	0	0	0.040	0.40	0	0	RSL for industrial soil (USEPA 2016)
	Fluoride	55,000	mg/kg	16	6	38	0.25	0.25	0	0	--
	Nitrate	2,080,000	mg/kg	16	14	88	0.086	0.086	0	0	Use health-based BCL instead of non-health based upper-limit
	Nitrite	130,000	mg/kg	5	0	0	0.050	0.050	0	0	Use health-based BCL instead of non-health based upper-limit
	ortho-Phosphate	52,600,000	mg/kg	16	0	0	1.6	1.6	0	0	Use phosphoric acid as a surrogate, use health-based BCL instead of non-health based upper-limit
Dioxin/Furans	2,3,7,8-TCDD TEQ*	0.0027	mg/kg	16	13	81	0.000017	0.000024	0	--	oh bo
Other Organics	Phthalic acid	2,600,000	mg/kg	16	0	0	0.25	0.25	0	0	Use health-based BCL instead of non-health based upper-limit
PAHs	2-Methylnaphthalene	563	mg/kg	16	0	0	0.033	0.033	0	0	Use naphthalene as a surrogate (noncancer endpoint)
	Acenaphthene	2,360	mg/kg	16	0	0	0.033	0.033	0	0	--
	Acenaphthylene	147	mg/kg	16	0	0	0.033	0.033	0	0	--
	Anthracene	9,080	mg/kg	16	0	0	0.033	0.033	0	0	--
	BaPEq*	0.32	mg/kg	16	0	0	0.039	0.039	0	16	--
	Benzo(g,h,i)perylene	38,900	mg/kg	16	0	0	0.033	0.033	0	0	--
	Fluoranthene	33,700	mg/kg	16	0	0	0.033	0.033	0	0	--
	Fluorene	3,460	mg/kg	16	0	0	0.033	0.033	0	0	--
	Naphthalene	16	mg/kg	16	0	0	0.033	0.033	0	0	--
	Phenanthrene	24	mg/kg	16	0	0	0.033	0.033	0	0	--
	Pyrene	20,800	mg/kg	16	0	0	0.033	0.033	0	0	--
Pesticides - OCPs	Aldrin	0.15	mg/kg	16	0	0	0.000088	0.000088	0	0	--
	alpha-BHC	334	mg/kg	16	0	0	0.000096	0.000096	0	0	--
	beta-BHC	67	mg/kg	16	7	44	0.00035	0.00035	0	0	--
	delta-BHC	334	mg/kg	16	0	0	0.000083	0.000083	0	0	--
	gamma-BHC	11	mg/kg	16	0	0	0.000083	0.000083	0	0	--
	alpha-Chlordane	8.9	mg/kg	16	0	0	0.00010	0.00010	0	0	Use chlordane as a surrogate
	gamma-Chlordane	8.9	mg/kg	16	0	0	0.000086	0.000086	0	0	Use chlordane as a surrogate
	Chlordane (total)	8.9	mg/kg	16	0	0	0.0023	0.0023	0	0	--
	2,4'-DDD	14	mg/kg	16	1	6.3	0.00011	0.00011	0	0	Use 4,4'-DDD as a surrogate
	2,4'-DDE	9.5	mg/kg	16	3	19	0.000089	0.000089	0	0	Use 4,4'-DDE as a surrogate
	4,4'-DDD	14	mg/kg	16	1	6.3	0.00016	0.00016	0	0	--
	4,4'-DDE	9.5	mg/kg	16	6	38	0.00025	0.00025	0	0	--
	4,4'-DDT	9.5	mg/kg	16	3	19	0.00043	0.00043	0	0	--

TABLE 4-2. Evaluation of Sample Quantitation Limits – Parcel D Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Screening Level [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects				Screening Level Note
							Minimum SQL	Maximum SQL	No. of Samples Above Screen	No. of Samples Above 10% of Screen	
Pesticides - OCPs	Dieldrin	0.16	mg/kg	16	0	0	0.000073	0.000073	0	0	--
	Endosulfan I	5,500	mg/kg	16	0	0	0.000083	0.000083	0	0	Use endosulfan as a surrogate
	Endosulfan II	5,500	mg/kg	16	0	0	0.00015	0.00015	0	0	Use endosulfan as a surrogate
	Endosulfan sulfate	5,500	mg/kg	16	0	0	0.00012	0.00012	0	0	Use endosulfan as a surrogate
	Endrin	275	mg/kg	16	0	0	0.000083	0.000083	0	0	--
	Endrin aldehyde	275	mg/kg	16	0	0	0.00011	0.00011	0	0	Use endrin as a surrogate
	Endrin ketone	275	mg/kg	16	0	0	0.00038	0.00038	0	0	Use endrin as a surrogate
	Heptachlor	0.57	mg/kg	16	0	0	0.00059	0.00059	0	0	--
	Heptachlor epoxide	0.28	mg/kg	16	0	0	0.00012	0.00012	0	0	--
	Hexachlorobenzene	1.6	mg/kg	16	0	0	0.033	0.033	0	0	--
	Methoxychlor	4,580	mg/kg	16	1	6.3	0.00070	0.00070	0	0	--
	Toxaphene	2.3	mg/kg	16	0	0	0.0071	0.0071	0	0	--
SVOCs	Acetophenone	1,740	mg/kg	16	0	0	0.033	0.033	0	0	--
	Aniline	450	mg/kg	16	0	0	0.033	0.033	0	0	--
	Azobenzene	21	mg/kg	16	0	0	0.033	0.033	0	0	--
	Benzenethiol	1,200	mg/kg	16	0	0	0.12	0.12	0	0	RSL for industrial soil (USEPA 2016)
	Benzoic acid	3,670,000	mg/kg	16	0	0	0.033	0.033	0	0	Use health-based BCL instead of non-health based upper-limit
	Benzyl alcohol	458,000	mg/kg	16	0	0	0.033	0.033	0	0	Use health-based BCL instead of non-health based upper-limit
	bis(2-Chloro-1-methylethyl) ether	19	mg/kg	16	0	0	0.033	0.033	0	0	--
	bis(2-Chloroethoxy)methane	2,500	mg/kg	16	0	0	0.033	0.033	0	0	RSL for industrial soil (USEPA 2016)
	bis(2-Chloroethyl) ether	1.4	mg/kg	16	0	0	0.033	0.033	0	0	--
	bis(2-Ethylhexyl)phthalate	183	mg/kg	16	1	6.3	0.033	0.033	0	0	--
	bis(4-Chlorophenyl) disulfide	N/A	mg/kg	16	0	0	0.20	0.20	N/A	N/A	--
	bis(4-Chlorophenyl) sulfone	660	mg/kg	16	0	0	0.33	0.33	0	0	RSL for industrial soil (USEPA 2016)
	4-Bromophenyl-phenyl ether	N/A	mg/kg	16	0	0	0.033	0.033	N/A	N/A	--
	Butylbenzylphthalate	240	mg/kg	16	0	0	0.033	0.033	0	0	--
	Carbazole	128	mg/kg	16	0	0	0.033	0.033	0	0	--
	4-Chloro-3-methylphenol	82,000	mg/kg	16	0	0	0.033	0.033	0	0	RSL for industrial soil (USEPA 2016)
	4-Chloroaniline	13	mg/kg	16	0	0	0.033	0.033	0	0	--
	2-Chloronaphthalene	351	mg/kg	16	0	0	0.033	0.033	0	0	--
	2-Chlorophenol	1,730	mg/kg	16	0	0	0.033	0.033	0	0	--
	4-Chlorophenyl-phenyl ether	N/A	mg/kg	16	0	0	0.033	0.033	N/A	N/A	--
	4-Chlorothioanisole	N/A	mg/kg	16	0	0	0.0076	0.0076	N/A	N/A	--
	4-Chlorothiophenol	N/A	mg/kg	16	0	0	0.19	0.19	N/A	N/A	--
	Di-n-butylphthalate	91,600	mg/kg	16	0	0	0.033	0.033	0	0	--
	Di-n-octylphthalate	11,000	mg/kg	16	0	0	0.015	0.015	0	0	--
	Dibenzofuran	2,600	mg/kg	16	0	0	0.033	0.033	0	0	--
	3,3'-Dichlorobenzidine	5.7	mg/kg	16	0	0	0.033	0.033	0	0	--
	2,2'-/4,4'-Dichlorobenzil	389	mg/kg	16	0	0	0.070	0.070	0	0	Use 4,4-dichlorobenzil as a surrogate
	2,4-Dichlorophenol	2,750	mg/kg	16	0	0	0.033	0.033	0	0	--
	Diethylphthalate	733,000	mg/kg	16	0	0	0.033	0.033	0	0	Use health-based BCL instead of non-health based upper-limit
	2,4-Dimethylphenol	18,300	mg/kg	16	0	0	0.033	0.033	0	0	--
	Dimethylphthalate	9,160,000	mg/kg	16	0	0	0.033	0.033	0	0	Use health-based BCL instead of non-health based upper-limit
	2,4-Dinitrophenol	1,830	mg/kg	16	0	0	0.33	0.33	0	0	--
	2,4-Dinitrotoluene	8.3	mg/kg	16	0	0	0.033	0.033	0	0	--
	2,6-Dinitrotoluene	916	mg/kg	16	0	0	0.033	0.033	0	0	--

TABLE 4-2. Evaluation of Sample Quantitation Limits – Parcel D Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Screening Level [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects				Screening Level Note
							Minimum SQL	Maximum SQL	No. of Samples Above Screen	No. of Samples Above 10% of Screen	
SVOCs	1,4-Dioxane	26	mg/kg	16	0	0	0.033	0.033	0	0	--
	Diphenyl disulfide	N/A	mg/kg	16	0	0	0.029	0.029	N/A	N/A	--
	1,2-Diphenylhydrazine	3.2	mg/kg	16	0	0	0.033	0.033	0	0	--
	Diphenyl sulfide	N/A	mg/kg	16	0	0	0.0035	0.0035	N/A	N/A	--
	Diphenyl sulfone	2,750	mg/kg	16	0	0	0.0067	0.0067	0	0	--
	Hexachlorobutadiene	33	mg/kg	16	0	0	0.033	0.033	0	0	--
	Hexachlorocyclopentadiene	5,470	mg/kg	16	0	0	0.33	0.33	0	0	--
	Hexachloroethane	183	mg/kg	16	0	0	0.033	0.033	0	0	--
	Hydroxymethyl phthalimide	N/A	mg/kg	16	0	0	0.043	0.043	N/A	N/A	--
	Isophorone	2,700	mg/kg	16	0	0	0.033	0.033	0	0	--
	2-Methylphenol	45,800	mg/kg	16	0	0	0.12	0.12	0	0	--
	3&4-Methylphenol	4,580	mg/kg	16	0	0	0.067	0.067	0	0	Minimum BCL of 4-methylphenol and 3-methylphenol
	2-Nitroaniline	2,740	mg/kg	16	0	0	0.033	0.033	0	0	--
	3-Nitroaniline	2,740	mg/kg	16	0	0	0.033	0.033	0	0	Use 2-nitroaniline as a surrogate
	4-Nitroaniline	2,740	mg/kg	16	0	0	0.33	0.33	0	0	Use 2-nitroaniline as a surrogate
	Nitrobenzene	14	mg/kg	16	0	0	0.033	0.033	0	0	--
	2-Nitrophenol	7,330	mg/kg	16	0	0	0.033	0.033	0	0	Use 4-nitrophenol as a surrogate
	4-Nitrophenol	7,330	mg/kg	16	0	0	0.33	0.33	0	0	--
	n-Nitroso-di-n-propylamine	0.37	mg/kg	16	0	0	0.033	0.033	0	0	--
	n-Nitrosodiphenylamine	524	mg/kg	16	0	0	0.033	0.033	0	0	--
	Octachlorostyrene	N/A	mg/kg	16	0	0	0.033	0.033	N/A	N/A	--
	Pentachlorobenzene	733	mg/kg	16	0	0	0.033	0.033	0	0	--
	Pentachlorophenol	4.4	mg/kg	16	0	0	0.33	0.33	0	0	--
	Phenol	275,000	mg/kg	16	0	0	0.033	0.033	0	0	Use health-based BCL instead of non-health based upper-limit
	Pyridine	886	mg/kg	16	0	0	0.033	0.033	0	0	--
	1,2,4,5-Tetrachlorobenzene	275	mg/kg	16	0	0	0.033	0.033	0	0	--
	2,4,5-Trichlorophenol	91,600	mg/kg	16	0	0	0.033	0.033	0	0	--
	2,4,6-Trichlorophenol	233	mg/kg	16	0	0	0.033	0.033	0	0	--
VOCs	Acetone	723,000	mg/kg	16	4	25	0.0038	0.0038	0	0	Use health-based BCL instead of non-health based upper-limit
	Acetonitrile	6,150	mg/kg	16	0	0	0.0020	0.0020	0	0	--
	Benzene	4.2	mg/kg	16	0	0	0.00017	0.00017	0	0	--
	Bromobenzene	695	mg/kg	16	0	0	0.00023	0.00023	0	0	--
	Bromochloromethane	630	mg/kg	16	0	0	0.00041	0.00041	0	0	RSL for industrial soil (USEPA 2016)
	Bromodichloromethane	3.4	mg/kg	16	0	0	0.00033	0.00033	0	0	--
	Bromoform	325	mg/kg	16	0	0	0.00024	0.00024	0	0	--
	Bromomethane	39	mg/kg	16	0	0	0.00031	0.00031	0	0	--
	2-Butanone	34,100	mg/kg	16	0	0	0.0014	0.0014	0	0	--
	n-Butylbenzene	237	mg/kg	16	0	0	0.00053	0.00053	0	0	--
	sec-Butylbenzene	223	mg/kg	16	0	0	0.00025	0.00025	0	0	--
	tert-Butylbenzene	393	mg/kg	16	0	0	0.00027	0.00027	0	0	--
	Carbon disulfide	721	mg/kg	16	0	0	0.00055	0.00055	0	0	--
	Carbon tetrachloride	3.9	mg/kg	16	0	0	0.00090	0.00090	0	0	--
	Chlorobenzene	695	mg/kg	16	0	0	0.00012	0.00012	0	0	--
	Chloroethane	1,250	mg/kg	16	0	0	0.00035	0.00035	0	0	--
	Chloroform	1.6	mg/kg	16	0	0	0.00014	0.00014	0	0	--
	Chloromethane	8.0	mg/kg	16	0	0	0.00044	0.00044	0	0	--

TABLE 4-2. Evaluation of Sample Quantitation Limits – Parcel D Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Screening Level [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects				Screening Level Note
							Minimum SQL	Maximum SQL	No. of Samples Above Screen	No. of Samples Above 10% of Screen	
VOCs	2-Chlorotoluene	511	mg/kg	16	0	0	0.00046	0.00046	0	0	--
	4-Chlorotoluene	511	mg/kg	16	0	0	0.00088	0.00088	0	0	Use 2-chlorotoluene as a surrogate
	Cumene	647	mg/kg	16	0	0	0.00017	0.00018	0	0	--
	p-Cymene	647	mg/kg	16	0	0	0.00024	0.00024	0	0	--
	Dibromochloromethane	6.1	mg/kg	16	0	0	0.00029	0.00029	0	0	--
	1,2-Dibromo-3-chloropropane	0.053	mg/kg	16	0	0	0.00089	0.00089	0	0	--
	Dibromomethane	191	mg/kg	16	0	0	0.00035	0.00035	0	0	--
	1,2-Dichlorobenzene	373	mg/kg	16	0	0	0.00015	0.00015	0	0	--
	1,3-Dichlorobenzene	373	mg/kg	16	1	6.3	0.00013	0.00013	0	0	--
	1,4-Dichlorobenzene	14	mg/kg	16	0	0	0.00011	0.00011	0	0	--
	Dichlorodifluoromethane	340	mg/kg	16	0	0	0.00037	0.00037	0	0	--
	1,1-Dichloroethane	22	mg/kg	16	0	0	0.00095	0.00095	0	0	--
	1,2-Dichloroethane	2.2	mg/kg	16	0	0	0.00044	0.00044	0	0	--
	1,1-Dichloroethene	1,280	mg/kg	16	0	0	0.00055	0.00055	0	0	--
	1,2-Dichloroethene	548	mg/kg	16	0	0	0.00054	0.00054	0	0	Minimum BCL of trans-1,2-Dichloroethene and cis-1,2-Dichloroethene
	cis-1,2-Dichloroethene	741	mg/kg	16	0	0	0.00043	0.00043	0	0	--
	trans-1,2-Dichloroethene	548	mg/kg	16	0	0	0.00022	0.00022	0	0	--
	1,2-Dichloropropane	4.3	mg/kg	16	0	0	0.00037	0.00037	0	0	--
	1,3-Dichloropropane	65	mg/kg	16	0	0	0.00018	0.00018	0	0	--
	2,2-Dichloropropane	65	mg/kg	16	0	0	0.00017	0.00017	0	0	Use 1,3-dichloropropane as a surrogate
	1,1-Dichloropropene	142	mg/kg	16	0	0	0.00029	0.00029	0	0	Use 1,3-dichloropropene as a surrogate (noncancer endpoint)
	cis-1,3-Dichloropropene	4.6	mg/kg	16	0	0	0.00073	0.00073	0	0	Use 1,3-dichloropropene as a surrogate
	trans-1,3-Dichloropropene	4.6	mg/kg	16	0	0	0.00020	0.00020	0	0	Use 1,3-dichloropropene as a surrogate
	Dimethyl disulfide	N/A	mg/kg	16	0	0	0.00021	0.00021	N/A	N/A	--
	2,2-Dimethylpentane	N/A	mg/kg	16	0	0	0.00028	0.00028	N/A	N/A	--
	2,3-Dimethylpentane	N/A	mg/kg	16	0	0	0.00022	0.00022	N/A	N/A	--
	2,4-Dimethylpentane	N/A	mg/kg	16	0	0	0.00019	0.00019	N/A	N/A	--
	3,3-Dimethylpentane	N/A	mg/kg	16	0	0	0.00020	0.00020	N/A	N/A	--
	Ethanol	15,100,000	mg/kg	16	0	0	0.19	0.19	0	0	Use health-based BCL instead of non-health based upper-limit
	Ethyl benzene	20	mg/kg	16	1	6.3	0.00019	0.00019	0	0	--
	3-Ethylpentane	N/A	mg/kg	16	0	0	0.00021	0.00021	N/A	N/A	--
	n-Heptane	220	mg/kg	16	0	0	0.00016	0.00016	0	0	--
	2-Hexanone	1,930	mg/kg	16	0	0	0.00028	0.00028	0	0	--
	Iodomethane	1,510	mg/kg	16	0	0	0.00026	0.00026	0	0	--
	Methyl tert-butyl ether	209	mg/kg	16	0	0	0.00046	0.00046	0	0	--
	Methylene Chloride	59	mg/kg	16	0	0	0.0025	0.0025	0	0	--
	2-Methylhexane	N/A	mg/kg	16	0	0	0.00020	0.00020	N/A	N/A	--
	3-Methylhexane	N/A	mg/kg	16	0	0	0.00014	0.00014	N/A	N/A	--
	4-Methyl-2-pentanone	17,200	mg/kg	16	0	0	0.0016	0.0016	0	0	--
	2-Nitropropane	0.060	mg/kg	16	0	0	0.0017	0.0017	0	0	--
	n-Nonyl aldehyde	N/A	mg/kg	16	0	0	0.00088	0.00088	N/A	N/A	--
	n-Propylbenzene	237	mg/kg	16	1	6.3	0.00095	0.00095	0	0	--
	Styrene	1,730	mg/kg	16	0	0	0.0012	0.0012	0	0	--
	1,1,1,2-Tetrachloroethane	20	mg/kg	16	0	0	0.00022	0.00022	0	0	--
	1,1,2,2-Tetrachloroethane	2.6	mg/kg	16	0	0	0.00014	0.00014	0	0	--
	Tetrachloroethene	3.5	mg/kg	16	0	0	0.00027	0.00027	0	0	--

TABLE 4-2. Evaluation of Sample Quantitation Limits – Parcel D Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Screening Level [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects				Screening Level Note
							Minimum SQL	Maximum SQL	No. of Samples Above Screen	No. of Samples Above 10% of Screen	
VOCs	Toluene	521	mg/kg	16	1	6.3	0.00013	0.00013	0	0	--
	1,2,3-Trichlorobenzene	360	mg/kg	16	0	0	0.00078	0.00078	0	0	Use 1,2,4-trichlorobenzene as a surrogate (noncancer endpoint)
	1,2,4-Trichlorobenzene	125	mg/kg	16	0	0	0.00073	0.00073	0	0	--
	1,3,5-Trichlorobenzene	360	mg/kg	16	0	0	0.00068	0.00068	0	0	Use 1,2,4-trichlorobenzene as a surrogate (noncancer endpoint)
	1,1,1-Trichloroethane	1,390	mg/kg	16	0	0	0.00015	0.00015	0	0	--
	1,1,2-Trichloroethane	5.6	mg/kg	16	0	0	0.00028	0.00028	0	0	--
	Trichloroethene	6.0	mg/kg	16	0	0	0.00036	0.00036	0	0	--
	Trichlorofluoromethane	1,980	mg/kg	16	0	0	0.00050	0.00050	0	0	--
	1,2,3-Trichloropropane	0.12	mg/kg	16	0	0	0.00056	0.00056	0	0	--
	1,1,2-Trichloro-1,2,2-trifluoroethane	5,550	mg/kg	16	0	0	0.00054	0.00054	0	0	--
	1,2,4-Trimethylbenzene	604	mg/kg	16	1	6.3	0.00022	0.00022	0	0	--
	1,3,5-Trimethylbenzene	246	mg/kg	16	2	13	0.00021	0.00021	0	0	--
	2,2,3-Trimethylbutane	N/A	mg/kg	16	0	0	0.00021	0.00021	N/A	N/A	--
	Vinyl acetate	2,710	mg/kg	16	0	0	0.00018	0.00018	0	0	--
	Vinyl chloride	2.0	mg/kg	16	0	0	0.00024	0.00024	0	0	--
	m,p-Xylene	214	mg/kg	16	2	13	0.00057	0.00057	0	0	Minimum BCL of m-xylene and p-xylene
	o-Xylene	282	mg/kg	16	1	6.3	0.00031	0.00031	0	0	--
	Xylenes (total)	214	mg/kg	16	1	6.3	0.00086	0.00086	0	0	--

Notes:

-- = Not applicable
mg/kg = milligram per kilogram
BaPEq = Benzo(a)pyrene equivalent
BCL = Basic Comparison Level
BHC = Hexachlorocyclohexane
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethylene
DDT = Dichlorodiphenyltrichloroethane
N/A = No screening level available
NDEP = Neveda Department of Environmental Protection
OCP = Organochlorine pesticide
PAH = Polycyclic aromatic hydrocarbon
RSL = Regional screening level
SQL = Sample Quantitation Limit
SVOC = Semivolatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
USEPA = United States Environmental Protection Agency
VOC = Volatile organic compound
* Methodology for equivalent calculations explained in text
[1] Screening levels are the lowest screening levels among the indoor worker and outdoor worker BCLs (NDEP 2015), unless noted.

Sources:

NDEP, 2015. User's Guide and Background Technical Document for NDEP Basic Comparison Levels (BCLs) for Human Health for the BMI Complex and Common Areas. Revision 13, February.
USEPA. 2016. Regional Screening Levels. May.

TABLE 4-3. Evaluation of Sample Quantitation Limits – Parcel G Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Screening Level[1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects				Screening Level Note
							Minimum SQL	Maximum SQL	No. of Samples Above Screen	No. of Samples Above 10% of Screen	
Chlorine Oxyanions	Chlorate	38,900	mg/kg	16	8	50	0.53	1.0	0	0	--
Metals	Antimony	519	mg/kg	16	11	69	0.063	0.063	0	0	--
	Boron	259,000	mg/kg	16	4	25	1.4	3.3	0	0	Use health-based BCL instead of non-health based upper-limit
	Cadmium	1,270	mg/kg	16	7	44	0.0050	0.020	0	0	--
	Chromium VI	1,230	mg/kg	16	1	6.2	0.16	0.43	0	0	--
	Lithium	2,600	mg/kg	16	14	88	0.66	0.66	0	0	--
	Mercury	389	mg/kg	16	1	6.2	0.0067	0.012	0	0	Use BCL for mercury compounds
	Molybdenum	6,490	mg/kg	16	11	69	0.052	0.052	0	0	--
	Niobium	130	mg/kg	14	0	0	0.76	1.5	0	0	--
	Platinum	649	mg/kg	16	0	0	0.010	0.024	0	0	--
	Selenium	6,490	mg/kg	16	0	0	0.16	0.16	0	0	--
	Sulfur	N/A	mg/kg	16	12	75	22	210	N/A	N/A	--
	Thallium	86	mg/kg	16	0	0	0.10	0.15	0	0	--
	Tungsten	9,730	mg/kg	16	0	0	0.10	0.25	0	0	--
Other Inorganics	Bromide	441,000	mg/kg	16	3	19	0.062	0.25	0	0	Use health-based BCL instead of non-health based upper-limit
	Chlorite	35,000	mg/kg	13	0	0	0.040	0.21	0	0	RSL for industrial soil (USEPA 2016)
	Fluoride	55,000	mg/kg	16	8	50	0.10	0.25	0	0	--
	Nitrite	130,000	mg/kg	5	0	0	0.020	0.020	0	0	Use health-based BCL instead of non-health based upper-limit
	ortho-Phosphate	52,600,000	mg/kg	16	0	0	0.50	1.6	0	0	Use phosphoric acid as a surrogate, use health-based BCL instead of non-health based upper-limit
Dioxin/Furans	2,3,7,8-TCDD TEQ *	0.0027	mg/kg	11	6	55	0.0000011	0.020	1	--	Site-specific action level
Other Organics	Phthalic acid	2,600,000	mg/kg	16	0	0	0.25	0.25	0	0	Use health-based BCL instead of non-health based upper-limit
PAHs	Acenaphthene	2,360	mg/kg	16	1	6.2	0.011	0.033	0	0	--
	Acenaphthylene	147	mg/kg	16	1	6.2	0.015	0.033	0	0	--
	Anthracene	9,080	mg/kg	16	0	0	0.00067	0.033	0	0	--
	BaPEq*	0.32	mg/kg	16	3	19	0.0031	0.038	0	10	--
	Benzo(g,h,i)perylene	38,900	mg/kg	16	3	19	0.0061	0.033	0	0	--
	Fluoranthene	33,700	mg/kg	16	0	0	0.033	0.038	0	0	--
	Fluorene	3,460	mg/kg	16	0	0	0.019	0.033	0	0	--
	2-Methylnaphthalene	563	mg/kg	16	0	0	0.020	0.033	0	0	Use naphthalene as a surrogate (noncancer endpoint)
	Naphthalene	16	mg/kg	16	0	0	0.033	0.033	0	0	--
	Phenanthrene	24	mg/kg	16	2	12	0.0017	0.033	0	0	--
	Pyrene	20,800	mg/kg	16	2	12	0.0030	0.033	0	0	--
PCBs	Aroclor-1016	33	mg/kg	5	0	0	0.0049	0.0049	0	0	--
	Aroclor-1221	1.2	mg/kg	5	0	0	0.0049	0.0049	0	0	--
	Aroclor-1232	1.2	mg/kg	5	0	0	0.0049	0.0049	0	0	--
	Aroclor-1242	1.2	mg/kg	5	0	0	0.0049	0.0049	0	0	--
	Aroclor-1248	1.2	mg/kg	5	0	0	0.0049	0.0049	0	0	--
	Aroclor-1254	1.2	mg/kg	5	0	0	0.0027	0.0027	0	0	--
	Aroclor-1260	1.2	mg/kg	5	0	0	0.0027	0.0027	0	0	--
Pesticides - OCPs	Aldrin	0.15	mg/kg	16	0	0	0.000088	0.000095	0	0	--
	alpha-BHC	334	mg/kg	16	0	0	0.000096	0.00028	0	0	--
	beta-BHC	67	mg/kg	16	7	44	0.00019	0.00034	0	0	--
	delta-BHC	334	mg/kg	16	0	0	0.000083	0.00017	0	0	--
	gamma-BHC	11	mg/kg	16	0	0	0.000083	0.00012	0	0	--
	alpha-Chlordane	8.9	mg/kg	16	0	0	0.00010	0.00021	0	0	Use chlordane as a surrogate

TABLE 4-3. Evaluation of Sample Quantitation Limits – Parcel G Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Screening Level[1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects				Screening Level Note
							Minimum SQL	Maximum SQL	No. of Samples Above Screen	No. of Samples Above 10% of Screen	
Pesticides - OCPs	gamma-Chlordane	8.9	mg/kg	16	0	0	0.000083	0.000086	0	0	Use chlordane as a surrogate
	Chlordane (total)	8.9	mg/kg	16	0	0	0.0023	0.0023	0	0	--
	2,4'-DDD	14	mg/kg	16	0	0	0.00011	0.00030	0	0	Use 4,4'-DDD as a surrogate
	4,4'-DDD	14	mg/kg	16	1	6.2	0.000089	0.00016	0	0	--
	2,4'-DDE	9.5	mg/kg	16	1	6.2	0.000089	0.00020	0	0	Use 4,4'-DDE as a surrogate
	4,4'-DDE	9.5	mg/kg	16	9	56	0.00019	0.00025	0	0	--
	4,4'-DDT	9.5	mg/kg	16	8	50	0.00020	0.00043	0	0	--
	Dieldrin	0.16	mg/kg	16	0	0	0.000073	0.000091	0	0	--
	Endosulfan I	5,500	mg/kg	16	0	0	0.000083	0.00010	0	0	Use endosulfan as a surrogate
	Endosulfan II	5,500	mg/kg	16	0	0	0.000093	0.00015	0	0	Use endosulfan as a surrogate
	Endosulfan sulfate	5,500	mg/kg	16	0	0	0.00012	0.00026	0	0	Use endosulfan as a surrogate
	Endrin	275	mg/kg	16	0	0	0.000083	0.000083	0	0	--
	Endrin aldehyde	275	mg/kg	16	0	0	0.00011	0.00018	0	0	Use endrin as a surrogate
	Endrin ketone	275	mg/kg	16	0	0	0.00016	0.00038	0	0	Use endrin as a surrogate
	Heptachlor	0.57	mg/kg	16	0	0	0.00017	0.00059	0	0	--
	Heptachlor epoxide	0.28	mg/kg	16	0	0	0.00012	0.00013	0	0	--
	Hexachlorobenzene	1.6	mg/kg	16	0	0	0.033	0.033	0	0	--
	Methoxychlor	4,580	mg/kg	16	0	0	0.00032	0.00070	0	0	--
	Toxaphene	2.3	mg/kg	16	0	0	0.0058	0.0071	0	0	--
SVOCs	Acetophenone	1,740	mg/kg	16	0	0	0.033	0.033	0	0	--
	Aniline	450	mg/kg	16	0	0	0.033	0.033	0	0	--
	Azobenzene	21	mg/kg	16	0	0	0.033	0.033	0	0	--
	Benzenethiol	1,200	mg/kg	16	0	0	0.12	0.12	0	0	RSL for industrial soil (USEPA 2016)
	Benzoic acid	3,670,000	mg/kg	16	0	0	0.033	0.033	0	0	Use health-based BCL instead of non-health based upper-limit
	Benzyl alcohol	458,000	mg/kg	16	0	0	0.033	0.033	0	0	Use health-based BCL instead of non-health based upper-limit
	bis(2-Chloro-1-methylethyl) ether	19	mg/kg	16	0	0	0.033	0.033	0	0	--
	bis(2-Chloroethoxy)methane	2,500	mg/kg	16	0	0	0.033	0.033	0	0	RSL for industrial soil (USEPA 2016)
	bis(2-Chloroethyl) ether	1.4	mg/kg	16	0	0	0.033	0.033	0	0	--
	bis(2-Ethylhexyl)phthalate	183	mg/kg	16	0	0	0.033	0.033	0	0	--
	bis(4-Chlorophenyl) disulfide	N/A	mg/kg	16	0	0	0.20	0.20	N/A	N/A	--
	bis(4-Chlorophenyl) sulfone	660	mg/kg	16	0	0	0.33	0.33	0	0	RSL for industrial soil (USEPA 2016)
	4-Bromophenyl-phenyl ether	N/A	mg/kg	16	0	0	0.033	0.033	N/A	N/A	--
	Butylbenzylphthalate	240	mg/kg	16	0	0	0.033	0.033	0	0	--
	Carbazole	128	mg/kg	16	1	6.2	0.033	0.033	0	0	--
	4-Chloro-3-methylphenol	82,000	mg/kg	16	0	0	0.033	0.033	0	0	RSL for industrial soil (USEPA 2016)
	4-Chloroaniline	13	mg/kg	16	0	0	0.033	0.033	0	0	--
	2-Chloronaphthalene	351	mg/kg	16	0	0	0.033	0.033	0	0	--
	2-Chlorophenol	1,730	mg/kg	16	0	0	0.033	0.033	0	0	--
	4-Chlorophenyl-phenyl ether	N/A	mg/kg	16	0	0	0.033	0.033	N/A	N/A	--
	4-Chlorothioanisole	N/A	mg/kg	16	0	0	0.0076	0.0076	N/A	N/A	--
	4-Chlorothiophenol	N/A	mg/kg	16	0	0	0.18	0.18	N/A	N/A	--
	Di-n-butylphthalate	91,600	mg/kg	16	0	0	0.033	0.033	0	0	--
	Di-n-octylphthalate	11,000	mg/kg	16	0	0	0.015	0.015	0	0	--
	Dibenzofuran	2,600	mg/kg	16	0	0	0.033	0.033	0	0	--
	3,3'-Dichlorobenzidine	5.7	mg/kg	16	0	0	0.033	0.033	0	0	--
	2,2'-/4,4'-Dichlorobenzil	389	mg/kg	16	0	0	0.07	2.0	0	0	Use 4,4-dichlorobenzil as a surrogate

TABLE 4-3. Evaluation of Sample Quantitation Limits – Parcel G Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Screening Level[1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects				Screening Level Note
							Minimum SQL	Maximum SQL	No. of Samples Above Screen	No. of Samples Above 10% of Screen	
SVOCs	2,4-Dichlorophenol	2,750	mg/kg	16	0	0	0.033	0.033	0	0	--
	Diethylphthalate	733,000	mg/kg	16	0	0	0.033	0.033	0	0	Use health-based BCL instead of non-health based upper-limit
	2,4-Dimethylphenol	18,300	mg/kg	16	0	0	0.033	0.033	0	0	--
	Dimethylphthalate	9,160,000	mg/kg	16	0	0	0.033	0.033	0	0	Use health-based BCL instead of non-health based upper-limit
	2,4-Dinitrophenol	1,830	mg/kg	16	0	0	0.33	0.33	0	0	--
	2,4-Dinitrotoluene	8.3	mg/kg	16	0	0	0.033	0.033	0	0	--
	2,6-Dinitrotoluene	916	mg/kg	16	0	0	0.033	0.033	0	0	--
	1,4-Dioxane	26	mg/kg	16	0	0	0.033	0.033	0	0	--
	Diphenyl disulfide	N/A	mg/kg	16	0	0	0.029	0.029	N/A	N/A	--
	Diphenyl sulfide	N/A	mg/kg	16	0	0	0.0035	0.0035	N/A	N/A	--
	Diphenyl sulfone	2,750	mg/kg	16	0	0	0.0066	0.0066	0	0	--
	1,2-Diphenylhydrazine	3.2	mg/kg	16	0	0	0.033	0.033	0	0	--
	Hexachlorobutadiene	33	mg/kg	16	0	0	0.033	0.033	0	0	--
	Hexachlorocyclopentadiene	5,470	mg/kg	16	0	0	0.33	0.33	0	0	--
	Hexachloroethane	183	mg/kg	16	0	0	0.033	0.033	0	0	--
	Hydroxymethyl phthalimide	N/A	mg/kg	16	0	0	0.043	0.043	N/A	N/A	--
	Isophorone	2,700	mg/kg	16	0	0	0.033	0.033	0	0	--
	2-Methylphenol	45,800	mg/kg	16	0	0	0.12	0.12	0	0	--
	3&4-Methylphenol	4,580	mg/kg	16	0	0	0.067	0.067	0	0	Minimum BCL of 4-methylphenol and 3-methylphenol
	2-Nitroaniline	2,740	mg/kg	16	0	0	0.033	0.033	0	0	--
	3-Nitroaniline	2,740	mg/kg	16	0	0	0.033	0.033	0	0	Use 2-nitroaniline as a surrogate
	4-Nitroaniline	2,740	mg/kg	16	0	0	0.33	0.33	0	0	Use 2-nitroaniline as a surrogate
	Nitrobenzene	14	mg/kg	16	0	0	0.033	0.033	0	0	--
	2-Nitrophenol	7,330	mg/kg	16	0	0	0.033	0.033	0	0	Use 4-nitrophenol as a surrogate
	4-Nitrophenol	7,330	mg/kg	16	0	0	0.33	0.33	0	0	--
	n-Nitroso-di-n-propylamine	0.37	mg/kg	16	0	0	0.033	0.033	0	0	--
	n-Nitrosodiphenylamine	524	mg/kg	16	0	0	0.033	0.033	0	0	--
	Octachlorostyrene	N/A	mg/kg	16	0	0	0.033	0.033	N/A	N/A	--
	Pentachlorobenzene	733	mg/kg	16	0	0	0.033	0.033	0	0	--
	Pentachlorophenol	4.4	mg/kg	16	0	0	0.33	0.33	0	0	--
	Phenol	275,000	mg/kg	16	0	0	0.033	0.033	0	0	Use health-based BCL instead of non-health based upper-limit
	Pyridine	886	mg/kg	16	0	0	0.033	0.033	0	0	--
	1,2,4,5-Tetrachlorobenzene	275	mg/kg	16	0	0	0.033	0.033	0	0	--
	2,4,5-Trichlorophenol	91,600	mg/kg	16	0	0	0.033	0.033	0	0	--
	2,4,6-Trichlorophenol	233	mg/kg	16	0	0	0.033	0.033	0	0	--
VOCs	Acetone	723,000	mg/kg	16	10	62	0.0017	0.0038	0	0	Use health-based BCL instead of non-health based upper-limit
	Acetonitrile	6,150	mg/kg	16	0	0	0.0020	0.0054	0	0	--
	Benzene	4.2	mg/kg	16	0	0	0.000087	0.00017	0	0	--
	Bromobenzene	695	mg/kg	16	0	0	0.00012	0.00023	0	0	--
	Bromochloromethane	630	mg/kg	16	0	0	0.00022	0.00041	0	0	RSL for industrial soil (USEPA 2016)
	Bromodichloromethane	3.4	mg/kg	16	0	0	0.00021	0.00033	0	0	--
	Bromoform	325	mg/kg	16	0	0	0.000059	0.00024	0	0	--
	Bromomethane	39	mg/kg	16	0	0	0.00013	0.00031	0	0	--
	2-Butanone	34,100	mg/kg	16	1	6.2	0.00087	0.0014	0	0	--
	n-Butylbenzene	237	mg/kg	16	0	0	0.00018	0.00053	0	0	--
	sec-Butylbenzene	223	mg/kg	16	0	0	0.00011	0.00025	0	0	--

TABLE 4-3. Evaluation of Sample Quantitation Limits – Parcel G Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Screening Level[1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects				Screening Level Note
							Minimum SQL	Maximum SQL	No. of Samples Above Screen	No. of Samples Above 10% of Screen	
VOCs	tert-Butylbenzene	393	mg/kg	16	0	0	0.00010	0.00026	0	0	--
	Carbon disulfide	721	mg/kg	16	0	0	0.00012	0.00055	0	0	--
	Carbon tetrachloride	3.9	mg/kg	16	0	0	0.00020	0.00090	0	0	--
	Chlorobenzene	695	mg/kg	16	0	0	0.00011	0.00012	0	0	--
	Chloroethane	1,250	mg/kg	16	0	0	0.00035	0.00046	0	0	--
	Chloroform	1.6	mg/kg	16	0	0	0.00010	0.00014	0	0	--
	Chloromethane	8.0	mg/kg	16	0	0	0.00027	0.00044	0	0	--
	2-Chlorotoluene	511	mg/kg	16	0	0	0.00025	0.00046	0	0	--
	4-Chlorotoluene	511	mg/kg	16	0	0	0.00017	0.00088	0	0	Use 2-chlorotoluene as a surrogate
	Cumene	647	mg/kg	16	0	0	0.00010	0.00018	0	0	--
	p-Cymene	647	mg/kg	16	0	0	0.00012	0.00024	0	0	--
	1,2-Dibromo-3-chloropropane	0.053	mg/kg	16	0	0	0.00021	0.00089	0	0	--
	Dibromochloromethane	6.1	mg/kg	16	0	0	0.00012	0.00029	0	0	--
	Dibromomethane	191	mg/kg	16	0	0	0.00017	0.00035	0	0	--
	1,2-Dichlorobenzene	373	mg/kg	16	0	0	0.00012	0.00015	0	0	--
	1,3-Dichlorobenzene	373	mg/kg	16	0	0	0.00013	0.00013	0	0	--
	1,4-Dichlorobenzene	14	mg/kg	16	0	0	0.00011	0.00014	0	0	--
	Dichlorodifluoromethane	340	mg/kg	16	0	0	0.00029	0.00037	0	0	--
	1,1-Dichloroethane	22	mg/kg	16	0	0	0.000070	0.00095	0	0	--
	1,2-Dichloroethane	2.2	mg/kg	16	0	0	0.000066	0.00044	0	0	--
	1,1-Dichloroethene	1,280	mg/kg	16	0	0	0.00012	0.00055	0	0	--
	1,2-Dichloroethene	548	mg/kg	16	0	0	0.00011	0.00054	0	0	Minimum BCL of trans-1,2-Dichloroethene and cis-1,2-Dichloroethene
	cis-1,2-Dichloroethene	741	mg/kg	16	0	0	0.000054	0.00043	0	0	--
	trans-1,2-Dichloroethene	548	mg/kg	16	0	0	0.000090	0.00022	0	0	--
	1,2-Dichloropropane	4.3	mg/kg	16	0	0	0.00011	0.00037	0	0	--
	1,3-Dichloropropane	65	mg/kg	16	0	0	0.000051	0.00018	0	0	--
	2,2-Dichloropropane	65	mg/kg	16	0	0	0.00017	0.00023	0	0	Use 1,3-dichloropropane as a surrogate
	1,1-Dichloropropene	142	mg/kg	16	0	0	0.000087	0.00029	0	0	Use 1,3-dichloropropene as a surrogate (noncancer endpoint)
	cis-1,3-Dichloropropene	4.6	mg/kg	16	0	0	0.00010	0.00073	0	0	Use 1,3-dichloropropene as a surrogate
	trans-1,3-Dichloropropene	4.6	mg/kg	16	0	0	0.00010	0.00020	0	0	Use 1,3-dichloropropene as a surrogate
	Dimethyl disulfide	N/A	mg/kg	16	0	0	0.00018	0.00021	N/A	N/A	--
	2,2-Dimethylpentane	N/A	mg/kg	16	0	0	0.00028	0.00028	N/A	N/A	--
	2,3-Dimethylpentane	N/A	mg/kg	16	0	0	0.00022	0.00022	N/A	N/A	--
	2,4-Dimethylpentane	N/A	mg/kg	16	0	0	0.00019	0.00019	N/A	N/A	--
	3,3-Dimethylpentane	N/A	mg/kg	16	0	0	0.00020	0.00020	N/A	N/A	--
	Ethanol	15,100,000	mg/kg	16	0	0	0.047	0.19	0	0	Use health-based BCL instead of non-health based upper-limit
	Ethyl benzene	20	mg/kg	16	0	0	0.000058	0.00019	0	0	--
	3-Ethylpentane	N/A	mg/kg	16	0	0	0.00021	0.00021	N/A	N/A	--
	n-Heptane	220	mg/kg	16	0	0	0.00016	0.00016	0	0	--
	2-Hexanone	1,930	mg/kg	16	0	0	0.00024	0.00028	0	0	--
	Iodomethane	1,510	mg/kg	16	0	0	0.00012	0.00026	0	0	--
	Methyl tert-butyl ether	209	mg/kg	16	0	0	0.000089	0.00046	0	0	--
	4-Methyl-2-pentanone	17,200	mg/kg	16	0	0	0.00029	0.0016	0	0	--
	Methylene Chloride	59	mg/kg	16	3	19	0.00069	0.0025	0	0	--
	2-Methylhexane	N/A	mg/kg	16	0	0	0.00020	0.00020	N/A	N/A	--
	3-Methylhexane	N/A	mg/kg	16	0	0	0.00014	0.00014	N/A	N/A	--

TABLE 4-3. Evaluation of Sample Quantitation Limits – Parcel G Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Screening Level[1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects				Screening Level Note
							Minimum SQL	Maximum SQL	No. of Samples Above Screen	No. of Samples Above 10% of Screen	
VOCs	2-Nitropropane	0.060	mg/kg	16	0	0	0.00060	0.0017	0	0	--
	n-Nonyl aldehyde	N/A	mg/kg	16	0	0	0.00047	0.00088	N/A	N/A	--
	n-Propylbenzene	237	mg/kg	16	0	0	0.00011	0.00094	0	0	--
	Styrene	1,730	mg/kg	16	0	0	0.00017	0.0012	0	0	--
	1,1,1,2-Tetrachloroethane	20	mg/kg	16	0	0	0.00018	0.00022	0	0	--
	1,1,2,2-Tetrachloroethane	2.6	mg/kg	16	0	0	0.000078	0.00014	0	0	--
	Tetrachloroethene	3.5	mg/kg	16	0	0	0.000087	0.00027	0	0	--
	Toluene	521	mg/kg	16	1	6.2	0.00013	0.00032	0	0	--
	1,1,2-Trichloro-1,2,2-trifluoroethane	5,550	mg/kg	16	0	0	0.00014	0.00054	0	0	--
	1,2,3-Trichlorobenzene	360	mg/kg	16	0	0	0.00039	0.00078	0	0	Use 1,2,4-trichlorobenzene as a surrogate (noncancer endpoint)
	1,2,4-Trichlorobenzene	125	mg/kg	16	0	0	0.00033	0.00073	0	0	--
	1,3,5-Trichlorobenzene	360	mg/kg	16	0	0	0.00037	0.00068	0	0	Use 1,2,4-trichlorobenzene as a surrogate (noncancer endpoint)
	1,1,1-Trichloroethane	1,390	mg/kg	16	0	0	0.00010	0.00015	0	0	--
	1,1,2-Trichloroethane	5.6	mg/kg	16	0	0	0.000067	0.00028	0	0	--
	Trichloroethene	6.0	mg/kg	16	0	0	0.00010	0.00036	0	0	--
	Trichlorofluoromethane	1,980	mg/kg	16	0	0	0.00022	0.00050	0	0	--
	1,2,3-Trichloropropane	0.12	mg/kg	16	0	0	0.00025	0.00056	0	0	--
	1,2,4-Trimethylbenzene	604	mg/kg	16	1	6.2	0.00013	0.00022	0	0	--
	1,3,5-Trimethylbenzene	246	mg/kg	16	0	0	0.000097	0.00021	0	0	--
	2,2,3-Trimethylbutane	N/A	mg/kg	16	0	0	0.00021	0.00021	N/A	N/A	--
	Vinyl acetate	2,710	mg/kg	16	0	0	0.00018	0.00024	0	0	--
	Vinyl chloride	2.0	mg/kg	16	0	0	0.00011	0.00024	0	0	--
	m,p-Xylene	214	mg/kg	16	0	0	0.00017	0.00057	0	0	Minimum BCL of m-xylene and p-xylene
	o-Xylene	282	mg/kg	16	0	0	0.000076	0.00031	0	0	--
	Xylenes (total)	214	mg/kg	16	0	0	0.00023	0.00086	0	0	--

Notes:

-- = Not applicable
mg/kg = milligram per kilogram
BaPEq = Benzo(a)pyrene equivalent
BCL = Basic Comparison Level
BHC = Hexachlorocyclohexane
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethylene
DDT = Dichlorodiphenyltrichloroethane
N/A = No screening level available
NDEP = Neveda Department of Environmental Protection
OCP = Organochlorine pesticide
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
RSL = Regional screening level
SQL = Sample Quantitation Limit
SVOC = Semivolatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
USEPA = United States Environmental Protection Agency
VOC = Volatile organic compound
* Methodology for equivalent calculations explained in text
[1] Screening levels are the lowest screening levels among the indoor worker and outdoor worker BCLs (NDEP 2015), unless noted.

Sources:

NDEP. 2015. User's Guide and Background Technical Document for NDEP Basic Comparison Levels (BCLs) for Human Health for the BMI Complex and Common Areas. Revision 13, February.
USEPA. 2016. Regional Screening Levels. May.

TABLE 4-4. Summary Statistics for Soil Data - Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Chlorine Oxyanions	Chlorate	mg/kg	50	19	38	0.051	1.3	0.10	16	5.8	7.5	6.0	0.80	TSB-CJ-09
	Perchlorate	mg/kg	50	49	98	0.0034	0.0034	0.017	21	1.1	4.2	6.0	1.4	TSB-CJ-09
Metals	Aluminum	mg/kg	50	50	100	--	--	5,170	14,000	7,560	8,090	2,050	0.25	RISB-38
	Antimony	mg/kg	50	33	66	0.052	0.56	0.11	0.32	0.15	0.16	0.040	0.26	TSB-CR-07
	Arsenic	mg/kg	74	74	100	--	--	2.1	11	3.3	4.0	1.7	0.42	TSB-CJ-09
	Barium	mg/kg	50	50	100	--	--	87	340	180	180	46	0.25	TSB-CJ-08
	Beryllium	mg/kg	37	37	100	--	--	0.34	0.59	0.46	0.47	0.069	0.15	TSB-CR-06
	Boron	mg/kg	50	31	62	1.4	3.3	3.2	13	7.4	7.4	3.0	0.41	RISB-38
	Cadmium	mg/kg	50	27	54	0.0050	0.28	0.049	0.27	0.094	0.11	0.058	0.54	RISB-38
	Calcium	mg/kg	37	37	100	--	--	10,400	91,900	27,900	29,800	15,300	0.51	TSB-CJ-03
	Chromium (total)	mg/kg	50	50	100	--	--	4.8	19	11	10	3.4	0.32	RISB-42
	Chromium VI	mg/kg	50	2	4.0	0.13	0.47	0.11	0.52	0.32	0.32	0.29	0.92	RISB-42
	Cobalt	mg/kg	50	50	100	--	--	3.6	9.3	6.5	6.3	1.2	0.20	RISB-42
	Copper	mg/kg	50	50	100	--	--	10	27	14	15	4.0	0.27	TSB-CJ-03
	Iron	mg/kg	50	50	100	--	--	7,580	22,000	11,800	12,500	3,050	0.24	RISB-42
	Lead	mg/kg	50	50	100	--	--	4.9	29	8.4	9.1	3.6	0.39	TSB-CR-07
	Lithium	mg/kg	35	32	91	0.66	0.73	8.6	24	14	15	4.5	0.29	TSB-CJ-08
	Magnesium	mg/kg	50	50	100	--	--	5,760	14,600	9,660	9,550	2,150	0.23	TSB-CR-03
	Manganese	mg/kg	50	50	100	--	--	160	840	310	350	130	0.38	TSB-CR-07
	Mercury	mg/kg	50	17	34	0.0067	0.042	0.0081	0.092	0.022	0.034	0.025	0.73	RISB-46
	Molybdenum	mg/kg	50	20	40	0.052	1.1	0.38	0.92	0.51	0.54	0.13	0.24	TSB-CJ-01
	Nickel	mg/kg	50	50	100	--	--	8.4	20	14	14	2.4	0.18	RISB-42
	Palladium	mg/kg	46	33	72	0.048	0.061	0.24	0.90	0.46	0.48	0.17	0.36	TSB-CR-04
	Phosphorus (total)	mg/kg	48	48	100	--	--	560	1,440	950	950	220	0.23	TSB-CR-07
	Platinum	mg/kg	37	2	5.4	0.010	0.024	0.014	0.014	0.014	0.014	0	0	SA22
	Potassium	mg/kg	37	37	100	--	--	1,460	3,660	2,270	2,390	570	0.24	TSB-CJ-01
	Silicon	mg/kg	48	48	100	--	--	67	520	190	210	110	0.52	TSB-CJ-09
	Silver	mg/kg	50	37	74	0.76	0.85	0.076	0.18	0.099	0.10	0.022	0.21	TSB-CR-01
	Sodium	mg/kg	37	37	100	--	--	190	2,300	790	890	550	0.62	TSB-CJ-04
	Strontium	mg/kg	50	50	100	--	--	100	450	210	220	70	0.31	TSB-CR-04
	Sulfur	mg/kg	45	29	64	22	390	466	24,800	950	1,810	4,440	2.5	TSB-CR-04
	Thallium	mg/kg	50	4	8.0	0.10	0.28	0.10	0.24	0.15	0.16	0.067	0.42	TSB-CR-01
	Tin	mg/kg	37	21	57	0.026	0.026	0.41	1.2	0.50	0.56	0.20	0.37	TSB-CJ-02
	Titanium	mg/kg	37	37	100	--	--	290	700	440	480	110	0.24	TSB-CR-06
	Tungsten	mg/kg	50	2	4.0	0.10	5.6	0.46	0.87	0.67	0.67	0.29	0.44	SA22
	Uranium (total)	mg/kg	50	50	100	--	--	0.52	2.7	1.1	1.3	0.52	0.40	TSB-CR-04
	Vanadium	mg/kg	37	37	100	--	--	20	49	29	32	8.2	0.26	TSB-CR-06
	Zinc	mg/kg	50	50	100	--	--	19	50	28	29	6.9	0.23	TSB-CJ-05
	Zirconium	mg/kg	48	48	100	--	--	16	30	22	22	3.4	0.15	RISB-38

TABLE 4-4. Summary Statistics for Soil Data - Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Other Inorganics	Ammonia	mg/kg	15	3	20	0.61	2.7	2.6	3.9	3.5	3.3	0.67	0.20	RISB-42
	Bromide	mg/kg	50	7	14	0.063	3.9	1.7	15	7.2	6.7	4.2	0.63	TSB-CR-04
	Chloride	mg/kg	50	50	100	--	--	0.85	2,910	390	670	830	1.2	TSB-CR-04
	Fluoride	mg/kg	35	11	31	0.10	0.25	0.48	8.2	1.2	2.2	2.3	1.1	TSB-CJ-09
	Nitrate	mg/kg	50	42	84	0.086	3.8	0.13	160	5.2	16	29	1.8	RISB-45
	Nitrate/Nitrite	mg/kg	13	11	85	1.1	1.2	1.6	37	7.3	11	9.9	0.94	RISB-45
	Nitrite	mg/kg	44	3	6.8	0.020	1.2	0.68	1.4	1.1	1.1	0.36	0.34	RISB-46
	ortho-Phosphate	mg/kg	50	1	2.0	0.50	6.3	6.3	6.3	6.3	6.3	--	--	SA22
	Sulfate	mg/kg	50	50	100	--	--	5.4	16,700	230	960	2,530	2.6	TSB-CR-04
Radionuclides	Radium-226	pCi/g	50	50	100	--	--	0.78	1.8	1.1	1.1	0.18	0.16	TSB-CJ-09
	Radium-228	pCi/g	50	50	100	--	--	0.90	3.2	1.7	1.6	0.37	0.23	TSB-CJ-09
	Thorium-228	pCi/g	50	50	100	--	--	1.2	4.9	1.7	1.8	0.55	0.31	TSB-CJ-09
	Thorium-230	pCi/g	50	50	100	--	--	0.80	3.4	1.3	1.4	0.43	0.30	TSB-CJ-09
	Thorium-232	pCi/g	50	50	100	--	--	1.2	2.2	1.6	1.7	0.24	0.15	TSB-CJ-09
	Uranium-234	pCi/g	37	37	100	--	--	0.87	2.1	1.4	1.4	0.31	0.22	TSB-CR-05
	Uranium-235	pCi/g	37	37	100	--	--	0.014	0.33	0.039	0.052	0.054	1.1	TSB-CJ-09
	Uranium-238	pCi/g	50	50	100	--	--	0.80	1.9	1.1	1.2	0.22	0.19	TSB-CR-02
Dioxin/Furans	2,3,7,8-TCDD TEQ*	mg/kg	50	41	82	0.000017	0.016	0.00000027	0.0039	0.000038	0.00027	0.00064	2.4	TSB-CJ-09
Other Organics	Phthalic acid	mg/kg	48	1	2.1	0.25	1.4	0.40	0.40	0.40	0.40	--	--	TSB-CJ-09
PAHs	BaPEq*	mg/kg	50	1	2.0	0.0031	0.49	0.0093	0.0093	0.0093	0.0093	--	--	RISB-43
	Benzo(g,h,i)perylene	mg/kg	50	1	2.0	0.0041	0.42	0.0050	0.0050	0.0050	0.0050	--	--	RISB-43
	Fluoranthene	mg/kg	50	1	2.0	0.0041	0.42	0.0070	0.0070	0.0070	0.0070	--	--	RISB-43
	Pyrene	mg/kg	50	1	2.0	0.0030	0.42	0.0060	0.0060	0.0060	0.0060	--	--	RISB-43
Pesticides - OCPs	alpha-BHC	mg/kg	49	5	10	0.000096	0.0022	0.0021	0.046	0.0043	0.012	0.019	1.5	TSB-CJ-05
	beta-BHC	mg/kg	49	25	51	0.00019	0.0017	0.0016	0.18	0.054	0.056	0.046	0.82	TSB-CR-07
	gamma-BHC	mg/kg	49	1	2.0	0.000083	0.0022	0.013	0.013	0.013	0.013	--	--	TSB-CJ-05
	gamma-Chlordane	mg/kg	49	3	6.1	0.000086	0.0022	0.0024	0.0053	0.0040	0.0039	0.0015	0.37	TSB-CJ-09
	2,4'-DDD	mg/kg	35	3	8.6	0.00011	0.00031	0.0018	0.0066	0.0027	0.0037	0.0026	0.69	TSB-CR-07
	2,4'-DDE	mg/kg	48	11	23	0.000089	0.0017	0.0019	0.085	0.0041	0.018	0.026	1.4	TSB-CJ-05
	4,4'-DDE	mg/kg	49	16	33	0.00019	0.0022	0.0018	0.20	0.0073	0.030	0.053	1.8	TSB-CJ-05
	4,4'-DDT	mg/kg	49	14	29	0.00020	0.0022	0.0018	0.096	0.0044	0.016	0.026	1.6	TSB-CJ-05
	Endrin aldehyde	mg/kg	49	1	2.0	0.00011	0.0022	0.0029	0.0029	0.0029	0.0029	--	--	TSB-CR-07
	Hexachlorobenzene	mg/kg	50	6	12	0.033	0.42	0.035	0.37	0.081	0.16	0.15	0.96	TSB-CJ-05
	Methoxychlor	mg/kg	49	4	8.2	0.00032	0.0042	0.0030	0.0078	0.0069	0.0061	0.0022	0.35	TSB-CJ-06
	Toxaphene	mg/kg	49	1	2.0	0.0058	0.063	0.12	0.12	0.12	0.12	--	--	RISB-42
SVOCs	Octachlorostyrene	mg/kg	50	2	4.0	0.033	2.6	0.039	0.065	0.052	0.052	0.018	0.35	TSB-CJ-05
VOCs	Acetone	mg/kg	50	6	12	0.0017	0.013	0.0088	0.32	0.070	0.14	0.14	1.1	TSB-CR-01
	2-Butanone	mg/kg	49	2	4.1	0.00087	0.013	0.0036	0.011	0.0073	0.0073	0.0052	0.72	TSB-CJ-06
	Chloroform	mg/kg	50	5	10	0.00010	0.0063	0.00056	0.0023	0.00095	0.0013	0.00084	0.63	TSB-CJ-01

TABLE 4-4. Summary Statistics for Soil Data - Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
VOCs	Cumene	mg/kg	50	1	2.0	0.00010	0.0063	0.00029	0.00029	0.00029	0.00029	--	--	TSB-CR-01
	1,2-Dichlorobenzene	mg/kg	50	1	2.0	0.00012	0.0063	0.00036	0.00036	0.00036	0.00036	--	--	TSB-CJ-01
	1,3-Dichlorobenzene	mg/kg	50	2	4.0	0.00013	0.0063	0.00079	0.00080	0.00080	0.00080	0.0000071	0.0089	TSB-CR-01
	1,4-Dichlorobenzene	mg/kg	50	3	6.0	0.00011	0.0063	0.00027	0.00051	0.00043	0.00040	0.00012	0.30	TSB-CR-01
	Ethyl benzene	mg/kg	50	2	4.0	0.000058	0.0063	0.00037	0.0022	0.0013	0.0013	0.0013	1.0	TSB-CR-01
	n-Propylbenzene	mg/kg	50	1	2.0	0.00011	0.0063	0.0010	0.0010	0.0010	0.0010	--	--	TSB-CR-01
	Tetrachloroethene	mg/kg	50	2	4.0	0.000087	0.0063	0.0010	0.0027	0.0019	0.0019	0.0012	0.65	TSB-CR-01
	Toluene	mg/kg	50	2	4.0	0.00013	0.0063	0.00031	0.00056	0.00043	0.00043	0.00018	0.41	TSB-CR-06
	1,2,3-Trichlorobenzene	mg/kg	50	2	4.0	0.00039	0.0063	0.00098	0.0017	0.0013	0.0013	0.00051	0.38	TSB-CR-01
	1,2,4-Trichlorobenzene	mg/kg	50	4	8.0	0.00033	0.0063	0.0012	0.014	0.0036	0.0056	0.0060	1.1	TSB-CR-01
	1,2,4-Trimethylbenzene	mg/kg	50	3	6.0	0.00013	0.0063	0.0021	0.0045	0.0034	0.0033	0.0012	0.36	TSB-CR-01
	1,3,5-Trimethylbenzene	mg/kg	50	3	6.0	0.000097	0.0063	0.00048	0.0019	0.0012	0.0012	0.00071	0.59	TSB-CR-01
	m,p-Xylene	mg/kg	48	5	10	0.00017	0.0011	0.00087	0.011	0.0014	0.0032	0.0044	1.4	TSB-CR-01
	o-Xylene	mg/kg	48	2	4.2	0.000076	0.00056	0.00047	0.0041	0.0023	0.0023	0.0026	1.1	TSB-CR-01
	Xylenes (total)	mg/kg	37	4	11	0.00023	0.013	0.0014	0.015	0.0016	0.0049	0.0068	1.4	TSB-CR-01

Notes:

-- = No value
mg/kg = milligram per kilogram
pCi/g = picocurie per gram
BaPEq = Benzo(a)pyrene equivalent
BHC = Hexachlorocyclohexane
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethylene
DDT = Dichlorodiphenyltrichloroethane
OCP = Organochlorine pesticide
PAH = Polycyclic aromatic hydrocarbon
SQL = Sample quantitation limit
SVOC = Semivolatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
VOC = Volatile organic compound
* Methodology for equivalent calculations explained in text

TABLE 4-5. Summary Statistics for Soil Data - Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Chlorine Oxyanions	Chlorate	mg/kg	16	3	19	1.0	1.0	1.1	12	6.3	6.5	5.6	0.85	TSB-DR-06
	Perchlorate	mg/kg	16	16	100	--	--	0.040	28	0.48	2.9	7.2	2.5	TSB-DR-06
Metals	Aluminum	mg/kg	16	16	100	--	--	3,430	10,800	7,730	7,360	1,710	0.23	TSB-DR-05
	Antimony	mg/kg	16	16	100	--	--	0.088	0.28	0.18	0.18	0.045	0.25	TSB-DR-04
	Arsenic	mg/kg	16	16	100	--	--	1.3	6.1	3.2	3.5	1.2	0.33	TSB-DR-04
	Barium	mg/kg	16	16	100	--	--	83	240	170	160	46	0.28	TSB-DR-04
	Beryllium	mg/kg	16	16	100	--	--	0.23	0.68	0.51	0.49	0.11	0.22	TSB-DR-05
	Boron	mg/kg	16	8	50	1.4	1.4	5.0	23	13	14	6.9	0.49	TSB-DR-05
	Cadmium	mg/kg	16	9	56	0.0050	0.0050	0.067	0.13	0.11	0.11	0.017	0.15	TSB-DR-04
	Calcium	mg/kg	16	16	100	--	--	8,900	43,400	21,800	25,400	10,800	0.43	TSB-DR-01
	Chromium (total)	mg/kg	16	16	100	--	--	4.1	18	11	11	3.4	0.32	TSB-DR-04
	Chromium VI	mg/kg	16	1	6.3	0.16	0.16	1.3	1.3	1.3	1.3	--	--	TSB-DR-05
	Cobalt	mg/kg	16	16	100	--	--	3.2	7.5	6.5	6.1	1.1	0.19	TSB-DR-05
	Copper	mg/kg	16	16	100	--	--	6.0	15	13	13	2.4	0.19	TSB-DJ-01
	Iron	mg/kg	16	16	100	--	--	5,950	14,400	12,500	11,800	2,260	0.19	TSB-DR-05
	Lead	mg/kg	16	16	100	--	--	3.8	20	9.1	9.5	3.6	0.37	TSB-DR-04
	Lithium	mg/kg	16	16	100	--	--	9.8	21	13	14	3.3	0.24	TSB-DJ-01
	Magnesium	mg/kg	16	16	100	--	--	4,100	14,300	8,950	9,080	2,730	0.30	TSB-DR-05
	Manganese	mg/kg	16	16	100	--	--	110	450	330	320	86	0.27	TSB-DR-04
	Mercury	mg/kg	16	16	100	--	--	0.0082	0.021	0.012	0.014	0.0044	0.32	TSB-DR-06
	Molybdenum	mg/kg	16	8	50	0.052	0.052	0.49	1.1	0.61	0.75	0.27	0.36	TSB-DR-06
	Nickel	mg/kg	16	16	100	--	--	6.0	16	14	13	2.7	0.20	TSB-DR-04
	Niobium	mg/kg	16	2	13	0.76	0.76	4.2	5.3	4.8	4.8	0.78	0.16	TSB-DR-06
	Palladium	mg/kg	16	16	100	--	--	0.090	0.63	0.28	0.32	0.13	0.40	TSB-DJ-01
	Phosphorus (total)	mg/kg	16	16	100	--	--	380	1,640	830	860	260	0.30	TSB-DR-04
	Potassium	mg/kg	16	16	100	--	--	190	4,480	2,370	2,580	950	0.37	TSB-DR-05
	Silicon	mg/kg	16	16	100	--	--	113	384	214	234	74	0.32	TSB-DR-05
	Silver	mg/kg	16	16	100	--	--	0.038	0.12	0.095	0.093	0.023	0.25	TSB-DR-05
	Sodium	mg/kg	16	16	100	--	--	220	2,100	500	690	520	0.75	TSB-DR-05
	Strontium	mg/kg	16	16	100	--	--	51	330	150	170	69	0.40	TSB-DJ-01
	Sulfur	mg/kg	16	11	69	210	210	430	5,670	550	1,370	1,550	1.1	TSB-DJ-01
	Thallium	mg/kg	16	2	13	0.10	0.10	0.40	0.45	0.43	0.43	0.035	0.083	TSB-DR-04
	Tin	mg/kg	16	15	94	0.026	0.026	0.28	0.67	0.55	0.54	0.11	0.21	TSB-DR-05
	Titanium	mg/kg	16	16	100	--	--	260	720	600	560	120	0.22	TSB-DR-05
	Tungsten	mg/kg	16	2	13	0.10	0.10	1.0	1.1	1.1	1.1	0.071	0.067	TSB-DR-06
Metals	Uranium (total)	mg/kg	16	16	100	--	--	0.39	2.5	0.96	1.2	0.62	0.52	TSB-DR-05
	Vanadium	mg/kg	16	16	100	--	--	19	47	36	35	7.5	0.21	TSB-DR-04
	Zinc	mg/kg	16	16	100	--	--	14	33	30	28	5.3	0.19	TSB-DR-02
	Zirconium	mg/kg	16	14	88	0.25	0.25	8.7	28	21	20	5.6	0.28	TSB-DR-05
Other Inorganics	Bromide	mg/kg	16	5	31	0.063	0.063	1.8	9.7	5.6	5.9	2.9	0.48	TSB-DR-01
	Chloride	mg/kg	16	16	100	--	--	13	3,730	190	1,160	1,490	1.3	TSB-DR-03
	Fluoride	mg/kg	16	6	38	0.25	0.25	0.50	2.3	1.2	1.2	0.60	0.49	TSB-DR-04
	Nitrate	mg/kg	16	14	88	0.086	0.086	0.54	32	1.5	4.3	8.3	2.0	TSB-DR-03
	Sulfate	mg/kg	16	16	100	--	--	8.9	6,660	199	1,240	2,040	1.6	TSB-DJ-01

TABLE 4-5. Summary Statistics for Soil Data - Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Radionuclides	Radium-226	pCi/g	16	16	100	--	--	0.96	1.5	1.1	1.1	0.12	0.11	TSB-DR-01
	Radium-228	pCi/g	16	16	100	--	--	1.6	2.0	1.8	1.8	0.14	0.078	TSB-DR-03
	Thorium-228	pCi/g	15	15	100	--	--	1.1	1.9	1.5	1.5	0.21	0.14	TSB-DR-05
	Thorium-230	pCi/g	15	15	100	--	--	0.98	2.0	1.3	1.3	0.26	0.20	TSB-DR-01
	Thorium-232	pCi/g	15	15	100	--	--	0.92	1.7	1.5	1.4	0.21	0.14	TSB-DR-05
	Uranium-234	pCi/g	16	16	100	--	--	0.84	2.3	1.2	1.3	0.38	0.29	TSB-DR-01
	Uranium-235	pCi/g	16	16	100	--	--	0.014	0.070	0.036	0.042	0.017	0.40	TSB-DJ-01
	Uranium-238	pCi/g	16	16	100	--	--	0.82	1.6	1.0	1.1	0.24	0.22	TSB-DR-01
Dioxin/Furans	2,3,7,8-TCDD TEQ*	mg/kg	16	13	81	0.000017	0.000024	0.0000014	0.00077	0.000073	0.00017	0.00024	1.4	TSB-DJ-01
Pesticides - OCPs	beta-BHC	mg/kg	16	7	44	0.00035	0.00035	0.0020	0.096	0.028	0.032	0.032	0.98	TSB-DR-04
	2,4'-DDD	mg/kg	16	1	6.3	0.00011	0.00011	0.0026	0.0026	0.0026	0.0026	--	--	TSB-DR-04
	4,4'-DDD	mg/kg	16	1	6.3	0.00016	0.00016	0.0019	0.0019	0.0019	0.0019	--	--	TSB-DR-04
	2,4'-DDE	mg/kg	16	3	19	0.000089	0.000089	0.0023	0.037	0.0088	0.016	0.018	1.2	TSB-DR-04
	4,4'-DDE	mg/kg	16	6	38	0.00025	0.00025	0.0018	0.10	0.0049	0.024	0.039	1.6	TSB-DR-04
	4,4'-DDT	mg/kg	16	3	19	0.00043	0.00043	0.0027	0.028	0.019	0.017	0.013	0.77	TSB-DR-04
	Methoxychlor	mg/kg	16	1	6.3	0.00070	0.00070	0.0020	0.0020	0.0020	0.0020	--	--	TSB-DR-03
SVOCs	bis(2-Ethylhexyl)phthalate	mg/kg	16	1	6.3	0.033	0.033	0.040	0.040	0.040	0.040	--	--	TSB-DR-03
VOCs	Acetone	mg/kg	16	4	25	0.0038	0.0038	0.0066	0.79	0.012	0.21	0.39	1.9	TSB-DR-01
	1,3-Dichlorobenzene	mg/kg	16	1	6.3	0.00013	0.00013	0.00034	0.00034	0.00034	0.00034	--	--	TSB-DR-03
	Ethyl benzene	mg/kg	16	1	6.3	0.00019	0.00019	0.0014	0.0014	0.0014	0.0014	--	--	TSB-DR-01
	n-Propylbenzene	mg/kg	16	1	6.3	0.00095	0.00095	0.0010	0.0010	0.0010	0.0010	--	--	TSB-DR-01
VOCs	Toluene	mg/kg	16	1	6.3	0.00013	0.00013	0.00051	0.00051	0.00051	0.00051	--	--	TSB-DR-05
	1,2,4-Trimethylbenzene	mg/kg	16	1	6.3	0.00022	0.00022	0.0038	0.0038	0.0038	0.0038	--	--	TSB-DR-01
	1,3,5-Trimethylbenzene	mg/kg	16	2	13	0.00021	0.00021	0.00029	0.0015	0.00089	0.00089	0.00086	0.96	TSB-DR-01
	m,p-Xylene	mg/kg	16	2	13	0.00057	0.00057	0.0011	0.0079	0.0045	0.0045	0.0048	1.1	TSB-DR-01
	o-Xylene	mg/kg	16	1	6.3	0.00031	0.00031	0.0026	0.0026	0.0026	0.0026	--	--	TSB-DR-01
	Xylenes (total)	mg/kg	16	1	6.3	0.00086	0.00086	0.010	0.010	0.010	0.010	--	--	TSB-DR-01

Notes:

-- = No Value
mg/kg = milligram per kilogram
pCi/g = picocurie per gram
BaPEq = Benzo(a)pyrene equivalent
BHC = Hexachlorocyclohexane
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethylene
DDT = Dichlorodiphenyltrichloroethane
OCP = Organochlorine pesticide
SQL = Sample Quantitation Limit
SVOC = Semivolatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
VOC = Volatile organic compound
* Methodology for equivalent calculations explained in text

TABLE 4-6. Summary Statistics for Soil Data – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Chlorine Oxyanions	Chlorate	mg/kg	16	8	50	0.53	1.0	5.5	250	8.9	61	99	1.6	TSB-GJ-09
	Perchlorate	mg/kg	16	16	100	--	--	0.38	140	1.2	21	44	2.2	TSB-GJ-09
Metals	Aluminum	mg/kg	16	16	100	--	--	6,410	8,870	7,860	7,720	680	0.089	TSB-GJ-08
	Antimony	mg/kg	16	11	69	0.063	0.063	0.17	0.22	0.19	0.19	0.017	0.090	TSB-GJ-06
	Arsenic	mg/kg	16	16	100	--	--	2.5	6.1	3.3	3.7	1.0	0.28	TSB-GJ-08
	Barium	mg/kg	16	16	100	--	--	89	230	180	180	36	0.20	TSB-GJ-09
	Beryllium	mg/kg	16	16	100	--	--	0.42	0.65	0.53	0.53	0.056	0.11	TSB-GJ-08
	Boron	mg/kg	16	4	25	1.4	3.3	8.0	14	9.6	10	2.6	0.25	TSB-GJ-08
	Cadmium	mg/kg	16	7	44	0.0050	0.020	0.069	0.17	0.11	0.12	0.041	0.35	TSB-GJ-08
	Calcium	mg/kg	16	16	100	--	--	12,700	50,900	25,400	28,600	10,700	0.37	TSB-GJ-06
	Chromium (total)	mg/kg	16	16	100	--	--	8.1	12	11	10	1.1	0.11	TSB-GJ-07
	Chromium VI	mg/kg	16	1	6.3	0.16	0.43	0.49	0.49	0.49	0.49	--	--	TSB-GJ-08
	Cobalt	mg/kg	16	16	100	--	--	6.0	8.1	7.1	7.2	0.60	0.084	TSB-GJ-01
	Copper	mg/kg	16	16	100	--	--	13	18	15	15	1.1	0.073	TSB-GJ-08
	Iron	mg/kg	16	16	100	--	--	10,800	14,300	13,000	12,800	1,050	0.082	TSB-GJ-06
	Lead	mg/kg	16	16	100	--	--	7.1	39	9.9	12	7.6	0.64	TSB-GJ-08
	Lithium	mg/kg	16	14	88	0.66	0.66	10	24	16	17	3.9	0.23	TSB-GJ-09
	Magnesium	mg/kg	16	16	100	--	--	7,500	25,000	9,160	10,500	4,170	0.40	TSB-GJ-08
	Manganese	mg/kg	16	16	100	--	--	240	710	350	390	140	0.35	TSB-GJ-06
	Mercury	mg/kg	16	1	6.3	0.0067	0.012	0.016	0.016	0.016	0.016	--	--	TSB-GJ-08
	Molybdenum	mg/kg	16	11	69	0.052	0.052	0.47	1.1	0.61	0.67	0.20	0.30	TSB-GJ-08
	Nickel	mg/kg	16	16	100	--	--	12	17	15	15	0.96	0.065	TSB-GJ-02
	Palladium	mg/kg	15	15	100	--	--	0.29	0.79	0.45	0.46	0.14	0.30	TSB-GJ-07
	Phosphorus (total)	mg/kg	16	16	100	--	--	610	1,140	920	920	120	0.13	TSB-GJ-02
	Potassium	mg/kg	16	16	100	--	--	1,290	2,630	1,790	1,810	310	0.17	TSB-GJ-06
	Silicon	mg/kg	16	16	100	--	--	72	380	150	160	82	0.50	TSB-GJ-09
	Silver	mg/kg	16	16	100	--	--	0.084	0.18	0.11	0.11	0.028	0.25	TSB-GJ-09
	Sodium	mg/kg	16	16	100	--	--	360	1,810	680	760	420	0.55	TSB-GJ-09
	Strontium	mg/kg	16	16	100	--	--	160	480	240	250	76	0.30	TSB-GJ-09
	Sulfur	mg/kg	16	12	75	22	210	440	1,740	540	940	560	0.60	TSB-GJ-09
	Tin	mg/kg	16	16	100	--	--	0.42	0.66	0.54	0.52	0.072	0.14	TSB-GJ-08
	Titanium	mg/kg	16	16	100	--	--	440	680	540	540	77	0.14	TSB-GJ-06
	Uranium (total)	mg/kg	16	16	100	--	--	0.84	3.9	1.2	1.4	0.71	0.51	TSB-GJ-08
Metals	Vanadium	mg/kg	16	16	100	--	--	34	50	41	41	4.6	0.11	TSB-GJ-06
	Zinc	mg/kg	16	16	100	--	--	27	52	34	34	5.5	0.16	TSB-GJ-08
	Zirconium	mg/kg	16	16	100	--	--	18	26	23	22	2.8	0.12	TSB-GJ-06
Other Inorganics	Bromide	mg/kg	16	3	19	0.062	0.25	1.6	17	10	9.6	7.8	0.81	TSB-GJ-09
	Chloride	mg/kg	16	16	100	--	--	7.3	15,900	500	2,050	4,540	2.2	TSB-GJ-09
	Fluoride	mg/kg	16	8	50	0.10	0.25	0.38	2.2	0.59	0.77	0.59	0.77	TSB-GR-01

TABLE 4-6. Summary Statistics for Soil Data – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Other Inorganics	Nitrate	mg/kg	16	16	100	--	--	0.52	160	8.8	25	43	1.7	TSB-GJ-09
	Sulfate	mg/kg	16	16	100	--	--	14	3,310	460	780	1,000	1.3	TSB-GJ-09
Radionuclides	Radium-226	pCi/g	16	16	100	--	--	0.77	1.3	1.0	1.0	0.17	0.16	TSB-GJ-02
	Radium-228	pCi/g	16	16	100	--	--	0.85	2.7	1.7	1.8	0.40	0.22	TSB-GJ-08
	Thorium-228	pCi/g	16	16	100	--	--	1.3	2.3	1.8	1.8	0.30	0.17	TSB-GJ-06
	Thorium-230	pCi/g	16	16	100	--	--	0.93	1.8	1.2	1.3	0.23	0.18	TSB-GJ-02
	Thorium-232	pCi/g	16	16	100	--	--	1.2	2.0	1.5	1.6	0.24	0.15	TSB-GR-01
	Uranium-234	pCi/g	14	14	100	--	--	0.80	2.0	1.3	1.3	0.36	0.27	TSB-GJ-02
	Uranium-235	pCi/g	14	14	100	--	--	0.020	0.17	0.056	0.067	0.035	0.52	TSB-GJ-09
	Uranium-238	pCi/g	14	14	100	--	--	0.66	1.6	1.1	1.1	0.26	0.23	TSB-GJ-02
Dioxin/Furans	2,3,7,8-TCDD TEQ*	mg/kg	11	6	55	0.0000011	0.020	0.00000065	0.0017	0.000017	0.00029	0.00069	2.3	TSB-GR-01
PAHs	Acenaphthene	mg/kg	16	1	6.3	0.011	0.033	0.41	0.41	0.41	0.41	--	--	TSB-GJ-08
	Acenaphthylene	mg/kg	16	1	6.3	0.015	0.033	0.17	0.17	0.17	0.17	--	--	TSB-GJ-08
	BaPEq*	mg/kg	16	3	19	0.0031	0.038	0.0032	0.25	0.027	0.094	0.14	1.5	TSB-GJ-08
	Benzo(g,h,i)perylene	mg/kg	16	3	19	0.0061	0.033	0.042	0.37	0.075	0.16	0.18	1.1	TSB-GJ-08
	Phenanthrene	mg/kg	16	2	13	0.0017	0.033	0.021	0.055	0.038	0.038	0.024	0.63	TSB-GJ-08
	Pyrene	mg/kg	16	2	13	0.0030	0.033	0.025	0.16	0.092	0.092	0.095	1.0	TSB-GJ-08
Pesticides - OCPs	beta-BHC	mg/kg	16	7	44	0.00019	0.00034	0.0052	0.045	0.016	0.022	0.017	0.76	TSB-GJ-09
	4,4'-DDD	mg/kg	16	1	6.3	0.000089	0.00016	0.0020	0.0020	0.0020	0.0020	--	--	TSB-GR-01
	2,4'-DDE	mg/kg	16	1	6.3	0.000089	0.00020	0.0056	0.0056	0.0056	0.0056	--	--	TSB-GR-01
	4,4'-DDE	mg/kg	16	9	56	0.00019	0.00025	0.0019	0.20	0.014	0.044	0.067	1.5	TSB-GJ-08
	4,4'-DDT	mg/kg	16	8	50	0.00020	0.00043	0.0018	0.16	0.016	0.034	0.052	1.5	TSB-GR-01
SVOCs	Carbazole	mg/kg	16	1	6.3	0.033	0.033	0.059	0.059	0.059	0.059	--	--	TSB-GJ-06
VOCs	Acetone	mg/kg	16	10	63	0.0017	0.0038	0.0073	0.046	0.015	0.019	0.011	0.60	TSB-GR-01
	2-Butanone	mg/kg	16	1	6.3	0.00087	0.0014	0.0038	0.0038	0.0038	0.0038	--	--	TSB-GJ-06
	Methylene Chloride	mg/kg	16	3	19	0.00069	0.0025	0.011	0.016	0.015	0.014	0.0026	0.19	TSB-GJ-09
	Toluene	mg/kg	16	1	6.3	0.00013	0.00032	0.00059	0.00059	0.00059	0.00059	--	--	TSB-GJ-06
	1,2,4-Trimethylbenzene	mg/kg	16	1	6.3	0.00013	0.00022	0.00045	0.00045	0.00045	0.00045	--	--	TSB-GJ-02

Notes:

-- = No value
mg/kg = milligram per kilogram
pCi/g = picocurie per gram
BaPEq = Benzo(a)pyrene equivalent
BHC = Hexachlorocyclohexane
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethylene
DDT = Dichlorodiphenyltrichloroethane
OCP = Organochlorine pesticide
PAH = Polycyclic aromatic hydrocarbon
SQL = Sample Quantitation Limit
SVOC = Semivolatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
VOC = Volatile organic compound
* Methodology for equivalent calculations explained in text

TABLE 4-7. Soil Sampling Results for Asbestos (Long Amphibole and Chrysotile Fibers) – Parcels C, D, and G
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Sample ID	Sample Type	Sample Date	Start Depth (ft bgs)	Long Amphibole Count (s/sample)	Long Chrysotile Count (s/sample)	Analytical Sensitivity (s/gPM_{10})
C	TSB-CJ-01-0_11/5/2007	N	11/5/2007	0	0	1	2996902
C	TSB-CJ-02-0_11/2/2007	N	11/2/2007	0	0	0	2985422
C	H2-PC-1-1-0.0	N	4/14/2010	0	0	0	2970000
C	TSB-CJ-04-0_11/2/2007	N	11/2/2007	0	0	1	2939784
C	TSB-CJ-05-0_11/2/2007	N	11/2/2007	0	0	0	2975224
C	TSB-CJ-06-0_11/2/2007	N	11/2/2007	0	0	0	2989641
C	TSB-CJ-07-0_11/2/2007	N	11/2/2007	0	0	0	2977917
C	TSB-CJ-08-0_11/2/2007	N	11/2/2007	0	0	1	2985422
C	TSB-CJ-10-0_7/8/2008	N	7/8/2008	0	0	0	2973432
C	TSB-CJ-11-0_7/8/2008	N	7/8/2008	0	0	0	2999026
C	TSB-CR-01-0_11/2/2007	N	11/2/2007	0	0	1	2978516
C	TSB-CR-01-0 FD_11/2/2007	FD	11/2/2007	0	0	1	2978516
C	E1-PC-1-1-0.0	N	4/13/2010	0	0	0	2960000
C	G1-PC-1-1-0.0	N	4/13/2010	0	0	0	2960000
C	TSB-CR-04-0_11/2/2007	N	11/2/2007	0	0	0	2985422
C	TSB-CR-05-0_11/2/2007	N	11/2/2007	0	0	2	2854495
C	TSB-CR-06-0_11/2/2007	N	11/2/2007	0	0	0	2997509
C	TSB-CR-07-0_11/2/2007	N	11/2/2007	0	0	2	2975224
C	SA22-0	N	12/2/2006	0	0	0	2883000
D	TSB-DJ-01-0_11/2/2007	N	11/2/2007	0	0	2	2956512
D	TSB-DR-01-0_11/2/2007	N	11/2/2007	0	0	0	2981515
D	TSB-DR-02-0_11/2/2007	N	11/2/2007	0	0	0	2964503
D	TSB-DR-02-0 FD_11/2/2007	FD	11/2/2007	0	0	0	2964503
D	TSB-DR-03-0_11/2/2007	N	11/2/2007	0	0	0	2997812
D	F4-PD-1-1-0.0	N	4/13/2010	0	0	0	2990000
D	TSB-DR-04E-0	N	6/4/2008	0	0	3	2961242
D	TSB-DR-04W-0	N	6/4/2008	0	0	0	2998419
D	TSB-DR-04W-0 FD	FD	6/4/2008	0	0	0	2972537
D	TSB-DR-05-0_11/2/2007	N	11/2/2007	0	0	0	2995083
D	TSB-DR-06-0_11/2/2007	N	11/2/2007	0	0	2	2960058
G	TSB-GJ-01-0_11/2/2007	N	11/2/2007	0	0	0	2678913
G	TSB-GJ-02-0_11/19/2007	N	11/19/2007	0	0	1	2972239
G	TSB-GJ-06-0_11/2/2007	N	11/2/2007	0	0	0	2980614
G	TSB-GJ-07-0_11/19/2007	N	11/19/2007	0	0	0	2966879
G	TSB-GJ-08-0_6/4/2008	N	6/4/2008	0	0	0	2983016
G	S3-PG-1-1-0.0	N	4/14/2010	0	0	0	2960000
G	TSB-GR-01-0_11/2/2007	N	11/2/2007	0	0	0	2992057
G	TSB-GR-01-0 FD_11/2/2007	FD	11/2/2007	0	0	0	2966285

Notes:

bgs = below ground surface

ft = feet

s/g PM_{10} = fiber per gram of particulate matter (< 10 micrometer)

s/sample = fiber per sample

FD = Field Duplicate

N = Normal Sample

TABLE 4-8. Exploratory Data Analysis: Comments for Chlorine Oxyanions, Metals, Other Inorganics, and Radionuclides (0-10 ft bgs Soil – Parcels C, D, and G)
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte [1]	Parcel C			Parcel D			Parcel G			2005 CSM SRC? [3]	Background Evaluation			Spatial Plot	Comment [4]
		No. of Samples	No. of Detects	Maximum Detected Concentration [2]	No. of Samples	No. of Detects	Maximum Detected Concentration [2]	No. of Samples	No. of Detects	Maximum Detected Concentration [2]		Fails Statistical Testing for Background?	Table	Figure		
Chlorine Oxyanions	Chlorate	50	19	16	16	3	12	16	8	250	Yes	--	--	--	J-4 (Parcel C) J-22 (Parcel D) J-37 (Parcel G)	Manufactured at the Site Operations Area from approximately 1945-1998; chlorate and perchlorate are frequently co-located. No manufacturing or disposal areas were located in Parcel C, D, or G. Parcel soil concentrations (<0.051 mg/kg to 253 mg/kg for chlorate and <0.0034 mg/kg to 138 mg/kg for perchlorate) are substantially lower than the concentrations reported in former manufacturing areas (above 1,000 mg/kg for chlorate and perchlorate).
	Perchlorate	50	49	21	16	16	28	16	16	140	Yes	--	--	--	J-12 (Parcel C) J-27 (Parcel D) 5-8, J-43 (Parcel G)	
Metals	Aluminum	50	50	14,000	16	16	10,800	16	16	8,870	Yes	No (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-1, I2-1	--	Although historically listed as a SRC, NDEP did not identify aluminum as a specific contaminant for the Study Area or Operations Area LOUs. Concentrations are consistent with background and <0.1xBCL.
	Antimony	50	33	0.32	16	16	0.28	16	11	0.22	Yes	LDF (Parcel C) LDF (Parcel D) LDF (Parcel G)	I2	I1-2, I2-2	--	Although historically listed as a SRC, NDEP did not identify antimony as a specific contaminant for the Study Area or Operations Area LOUs. Concentrations are <0.1xBCL.
	Arsenic	74	74	11	16	16	6.1	16	16	6.1	Yes	Yes (Parcel C) Yes (Parcel D) Yes (Parcel G)	I2	I1-3, I2-3	J-1 (Parcel C) J-19 (Parcel D) J-33 (Parcel G)	NDEP identified arsenic as a potential contaminant for LOU60 (Acid Drain system), a portion of which runs through Parcel G. Arsenic concentrations are greater than background in Parcels C, D, and G, with elevated concentrations detected at scattered locations. Concentrations slightly greater than NDEP-approved remediation goal of 7.2 mg/kg in a few locations in Parcel C at 10 feet bgs.
	Barium	50	50	340	16	16	240	16	16	230	Yes	Yes (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-4, I2-4	J-2 (Parcel C) '-- (Parcel D) '-- (Parcel G)	NDEP identified barium as a potential contaminant at several LOUs, including the Storm Sewer System (#59) and Acid Drain System (#60), portions of which run through Parcel G (but not through Parcel C or D). Barium concentrations are greater than background in Parcel C, with elevated concentrations detected at scattered locations. The maximum concentrations are <0.1xBCL.
	Beryllium	37	37	0.59	16	16	0.68	16	16	0.65	Yes	No (Parcel C) Yes (Parcel D) Yes (Parcel G)	I2	I1-5, I2-5	-- (Parcel C) J-20 (Parcel D) J-35 (Parcel G)	Although historically listed as a SRC, NDEP did not identify beryllium as a specific contaminant for the Study Area or Operations Area LOUs. Concentrations are greater than background in Parcels D and G but <0.1xBCL.
	Boron	50	31	13	16	8	23	16	4	14	Yes	LDF (Parcel C) LDF (Parcel D) LDF (Parcel G)	I2	I1-6, I2-6	--	Kerr-McGee manufactured boron at the Site beginning in approximately 1994, and Tronox continues to operate a boron plant. No boron manufacturing or disposal areas have been located in Parcel C, D, or G. The low detection frequency and a review of box plots and the Q-Q plots suggest that parcel concentrations are consistent with background. Concentrations are <0.1xBCL.
	Cadmium	50	27	0.27	16	9	0.13	16	7	0.17	Yes	No (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-7, I2-7	--	Although historically listed as a SRC, NDEP did not identify cadmium as a specific contaminant for the Study Area or Operations Area LOUs. Concentrations are consistent with background and <0.1xBCL.
	Calcium	37	37	91,900	16	16	43,400	16	16	50,900	Yes	No (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-8, I2-8	--	Used extensively or formed as a waste product (e.g., calcium is a process waste from chlorate and manganese production) at the Operations Area. However, not known to be associated with activities at Parcel C, D, or G, and concentrations are consistent with background.
	Chromium (total)	50	50	19	16	16	18	16	16	12	Yes	Yes (Parcel C) Yes (Parcel D) Yes (Parcel G)	I2	I1-9, I2-9	J-6 (Parcel C) J-23 (Parcel D) J-39 (Parcel G)	Chromium (total) concentrations are greater than background at Parcels C, G, and D but <0.1xBCL. In unimpacted soils, chromium VI concentrations are typically below detection limits (i.e., <0.5 mg/kg). Historically, hexavalent chromium (as sodium dichromate) was used extensively for production of sodium chlorate and sodium perchlorate within the Operations Area, but there were no . The maximum concentrations are <0.1xBCL. Low detection frequency.
	Chromium VI	50	2	0.52	16	1	1.3	16	1	0.49	Yes	LDF (Parcel C) LDF (Parcel D) LDF (Parcel G)	I2	I1-10, I2-10	--	
	Cobalt	50	50	9.3	16	16	7.5	16	16	8.1	Yes	No (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-11, I2-11	--	Cobalt may be a by-product of manganese production and within the Operations Area, cobalt was generally found to co-locate with manganese. Cobalt is not known to have been used at Parcel C, D, or G; and the parcel concentrations are consistent than background.
	Copper	50	50	27	16	16	15	16	16	18	Yes	No (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-12, I2-12	--	Although historically listed as a SRC, NDEP did not identify copper as a specific contaminant for the Study Area or Operations Area LOUs. Concentrations are consistent with background and <0.1xBCL.
	Iron	50	50	22,000	16	16	14,400	16	16	14,300	Yes	No (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-13, I2-13	--	NDEP identified iron as a potential contaminant at multiple LOUs within the Operations Area but did not did not identify iron as a specific contaminant for Parcel C, D, or G. Concentrations are consistent with background.
	Lead	50	50	29	16	16	20	16	16	39	Yes	No (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-14, I2-14	--	NDEP identified lead as a potential contaminant at several LOUs, including the Storm Sewer System (LOU59) and the Acid Drain System (LOU60) both of which run through Parcel G. Concentrations are consistent with background and less than the lead BCL.
	Lithium	35	32	24	16	16	21	16	14	24	No	--	--	--	--	Not historically identified as a SRC. RZ-A background data are not available.
	Magnesium	50	50	14,600	16	16	14,300	16	16	25,000	Yes	No (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-15, I2-15	--	Produced at the Site from approximately 1942 to 1944. NDEP identified magnesium as a potential contaminant associated with numerous LOUs. Concentrations are consistent with background levels.
	Manganese	50	50	840	16	16	450	16	16	710	Yes	No (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-16, I2-16	--	Produced at the Site since 1951; ongoing production by Tronox. Concentrations are consistent with background.

TABLE 4-8. Exploratory Data Analysis: Comments for Chlorine Oxyanions, Metals, Other Inorganics, and Radionuclides (0-10 ft bgs Soil – Parcels C, D, and G)
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte [1]	Parcel C			Parcel D			Parcel G			2005 CSM SRC? [3]	Background Evaluation			Spatial Plot	Comment [4]
		No. of Samples	No. of Detects	Maximum Detected Concentration [2]	No. of Samples	No. of Detects	Maximum Detected Concentration [2]	No. of Samples	No. of Detects	Maximum Detected Concentration [2]		Fails Statistical Testing for Background?	Table	Figure		
Metals	Mercury	50	17	0.092	16	16	0.021	16	1	0.016	Yes	No (Parcel C) No (Parcel D) LDF (Parcel G)	I2	I1-17, I2-17	--	Although historically identified as a SRC, NDEP did not identify mercury as a specific contaminant at an LOU. Concentrations are consistent with background and <0.1xBCL.
	Molybdenum	50	20	0.92	16	8	1.1	16	11	1.1	Yes	No (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-18, I2-18	--	Concentrations are consistent with background and <0.1xBCL.
	Nickel	50	50	20	16	16	16	16	16	17	Yes	No (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-19, I2-19	--	NDEP identified nickel as a potential contaminant within the Storm Sewer System (LOU 59) in Parcel G. Concentrations are consistent with background and <0.1xBCL.
	Niobium	40	0	ND	16	2	5.3	14	0	ND	No	--	--	--	--	Not historically identified as a SRC. Low detection frequency. RZ-A background data are not available.
	Palladium	46	33	0.90	16	16	0.63	15	15	0.79	No	--	--	--	J-11 (Parcel C) J-26 (Parcel D) J-42 (Parcel G)	Not historically identified as a SRC. RZ-A background data are not available.
	Phosphorus (total)	48	48	1,440	16	16	1,640	16	16	1,140	Yes	--	--	--	--	Although historically identified as a SRC, NDEP did not identify phosphorus as a specific contaminant at an LOU. RZ-A background data are not available. *See related discussion for "phosphates."*
	Platinum	37	2	0.014	16	0	ND	16	0	ND	Yes	LDF (Parcel C) LDF (Parcel D) LDF (Parcel G)	I2	I1-20, I2-20	--	Platinum was not identified as a potential contaminant at any LOU in Parcels C, D, or G. Low detection frequency. Concentrations < 0.1xBCL.
	Potassium	37	37	3,660	16	16	4,480	16	16	2,630	Yes	Yes (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-21, I2-21	--	Although historically listed as a SRC, NDEP did not identify potassium as associated with contamination at an LOU. Concentrations are greater than background in Parcel C. Essential nutrient.
	Silicon	48	48	520	16	16	380	16	16	380	Yes	--	--	--	--	Although historically listed as a SRC, NDEP did not identify silicon as specific contaminant at an LOU. RZ-A background data are not available.
	Silver	50	37	0.18	16	16	0.12	16	16	0.18	Yes	LDF (Parcel C) LDF (Parcel D) LDF (Parcel G)	I2	I1-23, I2-23	--	Although historically identified as a SRC, NDEP did not identify silver as a specific contaminant at an LOU. Concentrations are <0.1xBCL.
	Sodium	37	37	2,300	16	16	2,100	16	16	1,810	Yes	Yes (Parcel C) Yes (Parcel D) No (Parcel G)	I2	I1-24, I2-24	--	NDEP identified sodium as a potential contaminant at multiple LOUs. Concentrations are greater than background in Parcels C and D. Essential nutrient.
	Strontium	50	50	450	16	16	330	16	16	480	Yes	No (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-25, I2-25	--	Although historically listed as a SRC, NDEP did not identify strontium as a specific contaminant at an LOU. Concentrations are consistent with background and <0.1xBCL.
	Sulfur	45	29	24,800	16	11	5,670	16	12	1,740	Yes	--	--	--	--	*See discussion for "Other Inorganics."*
	Thallium	50	4	0.24	16	2	0.45	16	0	ND	Yes	LDF (Parcel C) LDF (Parcel D) LDF (Parcel G)	I2	I1-26, I2-26	--	Although historically listed as a SRC, NDEP did not identify thallium as a specific contaminant at an LOU. Concentrations are <0.1xBCL. Low detection frequency.
	Tin	37	21	1.2	16	15	0.67	16	16	0.66	Yes	LDF (Parcel C) LDF (Parcel D) LDF (Parcel G)	I2	I1-27, I2-27	--	Although historically listed as a SRC, NDEP did not identify tin as a specific contaminant at an LOU. Concentrations are <0.1xBCL.
	Titanium	37	37	700	16	16	720	16	16	680	Yes	No (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-28, I2-28	--	Concentrations are consistent with background and <0.1xBCL.
	Tungsten	50	2	0.87	16	2	1.1	16	0	ND	Yes	LDF (Parcel C) LDF (Parcel D) LDF (Parcel G)	I2	I1-29, I2-29	--	Low detection frequency. Concentrations are < 0.1xBCL.
	Uranium (total)	50	50	2.7	16	16	2.5	16	16	3.9	Yes	Yes (Parcel C) No (Parcel D) Yes (Parcel G)	I2	I1-30, I2-30	J-15 (Parcel C) '-- (Parcel D) J-46 (Parcel G)	Although historically identified as a SRC, NDEP did not identify uranium as a specific contaminant at an LOU. Concentrations are <0.1xBCL.
	Vanadium	37	37	49	16	16	47	16	16	50	Yes	No (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-31, I2-31	--	Although historically identified as a SRC, NDEP did not identify vanadium as a specific contaminant at an LOU. Concentrations are consistent with background and <0.1xBCL.
	Zinc	50	50	50	16	16	33	16	16	52	Yes	No (Parcel C) No (Parcel D) No (Parcel G)	I2	I1-32, I2-32	--	NDEP identified zinc as a potential contaminant within the Storm Sewer System (LOU59) in Parcel G. Soil concentrations are consistent with background and concentrations are <0.1xBCL.
	Zirconium	48	48	30	16	14	28	16	16	26	No	--	--	--	5-2, J-18 (Parcel C) 5-6, J-32 (Parcel D) 5-9, J-49 (Parcel G)	Not historically listed as a SRC. RZ-A background data are not available.

TABLE 4-8. Exploratory Data Analysis: Comments for Chlorine Oxyanions, Metals, Other Inorganics, and Radionuclides (0-10 ft bgs Soil – Parcels C, D, and G)
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte [1]	Parcel C			Parcel D			Parcel G			2005 CSM SRC? [3]	Background Evaluation			Spatial Plot	Comment [4]
		No. of Samples	No. of Detects	Maximum Detected Concentration [2]	No. of Samples	No. of Detects	Maximum Detected Concentration [2]	No. of Samples	No. of Detects	Maximum Detected Concentration [2]		Fails Statistical Testing for Background?	Table	Figure		
Other Inorganics	Ammonia	15	3	3.9	--	--	--	--	--	--	Yes	--	--	--	--	This group of inorganic compounds includes common industrial chemicals that are used as chemical feedstocks and/or expected to be present in process waste streams. With the exception of fluoride and nitrate, all compounds were historically identified as SRCs at the Operations Area. These compounds are generally highly soluble when present as free anions or cations. Many of these compounds are physiological electrolytes and/or occur naturally in foods. Although all of the listed inorganics occur naturally in soil, RZ-A background data sets are not available to conduct a background analysis. At the concentrations detected in soil, these inorganics do not present human health concerns. Generally, these inorganics are of greater concern when detected as contaminants in groundwater than when present at elevated concentrations in soil.
	Bromide	50	7	15	16	5	10	16	3	17	Yes	--	--	--	--	
	Chloride	50	50	2,910	16	16	3,730	16	16	15,900	Yes	--	--	--	-- (Parcel C) '-- (Parcel D) 5-10, J-38 (Parcel G)	
	Fluoride	35	11	8.2	16	6	2.3	16	8	2.2	No	--	--	--	--	
	Nitrate	50	42	160	16	14	32	16	16	160	Yes	--	--	--	--	
	Nitrate/Nitrite	13	11	37	--	--	--	--	--	--	Yes	--	--	--	--	
	Nitrite	44	3	1.4	5	0	ND	5	0	ND	No	--	--	--	--	
	ortho-Phosphate	50	1	6.3	16	0	ND	16	0	ND	Yes	--	--	--	--	
	Sulfate	50	50	16,700	16	16	6,660	16	16	3,310	Yes	--	--	--	--	
Radio-nuclides	Uranium-238	50	50	1.9	16	16	1.6	14	14	1.6	Yes	Yes (Parcel C) No (Parcel D) No (Parcel G)	I-4	I1-33, I2-33	J-17 (Parcel C) J-31 (Parcel D) J-48 (Parcel G)	Although historically listed as SRCs, radionuclides are not known to be associated with any of the former/current operations at the Site. Although several radionuclides failed the statistical testing for background consistency, the validity of the statistical testing is confounded by several analytical and other issues.
	Uranium-234	37	37	2.1	16	16	2.3	14	14	2.0	Yes	Yes (Parcel C) Yes (Parcel D) Yes (Parcel G)	I-4	I1-34, I2-34	--	
	Thorium-230	50	50	3.4	15	15	2.0	16	16	1.8	Yes	Yes (Parcel C) Yes (Parcel D) Yes (Parcel G)	I-4	I1-35, I2-35	--	
	Radium-226	50	50	1.8	16	16	1.5	16	16	1.3	Yes	Yes (Parcel C) Yes (Parcel D) No (Parcel G)	I-4	I1-36, I2-36	--	
	Thorium-232	50	50	2.2	15	15	1.7	16	16	2.0	Yes	Yes (Parcel C) No (Parcel D) No (Parcel G)	I-4	I1-37, I2-37	J-14 (Parcel C) J-29 (Parcel D) J-45 (Parcel G)	
	Thorium-228	50	50	4.9	15	15	1.9	16	16	2.3	Yes	No (Parcel C) No (Parcel D) No (Parcel G)	I-4	I1-39, I2-39	--	
	Radium-228	50	50	3.2	16	16	2.0	16	16	2.7	Yes	Yes (Parcel C) Yes (Parcel D) Yes (Parcel G)	I-4	I1-38, I2-38	--	
	Uranium-235	37	37	0.33	16	16	0.070	14	14	0.17	No	No (Parcel C) No (Parcel D) No (Parcel G)	I-4	I1-40, I2-40	J-16 (Parcel C) J-30 (Parcel D) J-47 (Parcel G)	

Notes:

-- = Not applicable
bgs = below ground surface
ft = feet
mg/kg = milligram per kilogram
pCi/g = picocurie per gram
BCL = Basic comparison level
CSM = Conceptual site model
LDF = Low detection frequency (<25%) in either site or background datasets. Background comparison results may not be applicable.
LOU = Letter of Understanding
ND = Not detected
NDEP = Nevada Division of Environmental Protection
SRC = Site related chemical, as identified in the Conceptual Site Model (ENSR 2005)

[1] Listed analytes are those detected in one or more samples in Parcel C, D, or G.
[2] Concentrations are in mg/kg for all groups except radionuclides; radionuclide activities are in pCi/g.
[3] From Table 5 of the ENSR (2005) Conceptual Site Model Report.
[4] Based on information from: ENSR 2005; ENVIRON 2011; NDEP 2011; and Ramboll Environ 2016.
Statements as to whether an analyte was historically listed as a SRC are based on the list of SRCs in Table 5 of the ENSR (2005) Conceptual Site Model report.
Statements regarding NDEP's identification of an analyte as associated with an LOU are based on the NDEP 2011 Action Memorandum.
It is recognized that a specific analyte may have been identified as a SRC in later investigations or as an LOU contaminant in other documents prepared for the Site.

Sources:

ENSR. 2005. Conceptual Site Model, Kerr-McGee Facility, Henderson, Nevada. February. NDEP requested response to comments during the next monthly meeting October 22.
ENVIRON. 2011. Phase I Environmental Site Assessment of Tronox LLC, Clark County, Nevada. January.
NDEP. 2011. Action Memorandum: Removal Actions, Nevada Environmental Response Trust Site, Clark County, Nevada. July.
Ramboll Environ. 2016. Technical Memorandum, Remedial Investigation Data Evaluation, Nevada Environmental Response Trust Site, Henderson, Nevada, dated May 2.

TABLE 4-9. Exploratory Data Analysis: Comments for Dioxins/Furans, Other Organics, PAHs, Pesticides, SVOCs, and VOCs (0-10 ft bgs Soil – Parcels C, D, and G)
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte [1]	Parcel C			Parcel D			Parcel G			2005 CSM SRC? [2]	Spatial Plot	Comment [3]
		No. of Samples	No. of Detects	Maximum Detected Concentration (mg/kg)	No. of Samples	No. of Detects	Maximum Detected Concentration (mg/kg)	No. of Samples	No. of Detects	Maximum Detected Concentration (mg/kg)			
Dioxins/ Furans	2,3,7,8-TCDD TEQ*	50	41	0.0039	16	13	0.00077	11	6	0.0017	Yes	5-3, J-13 (Parcel C) J-28 (Parcel D) J-44 (Parcel G)	Unintentional by-product of high-temperature processes, e.g., incomplete combustion and pesticide production (a source of chlorine is required). Highly persistent. High detection frequency due, in part, to sensitive analytical methods. A removal polygon for dioxins was identified in the 2010 soil removal action in Parcel C. The post-removal soil concentration is >0.0027 mg/kg at one location in Parcel C.
Other Organics	Phthalic acid	48	1	0.40	16	0	ND	16	0	ND	No	--	Not listed historically as a SRC. Low detection frequency. Concentration <0.1xBCL.
PAHs	Acenaphthene	50	0	ND	16	0	ND	16	1	0.41	Yes	--	Expected to co-locate with BaPEqs. Low detection frequency. Concentration <0.1xBCL.
	Acenaphthylene	50	0	ND	16	0	ND	16	1	0.17	Yes	--	
	BaPEq*	50	1	0.0093	16	0	ND	16	3	0.25	Yes	-- (Parcel C) '-- (Parcel D) 5-11, J-34 (Parcel G)	PAHs are ubiquitous environmental contaminants, formed during incomplete combustion of organic materials. Low detection frequency. The highest concentrations <0.1xBCL except in Parcel G.
	Benzo(g,h,i)perylene	50	1	0.0050	16	0	ND	16	3	0.37	Yes	--	Expected to co-locate with BaPEqs. Low detection frequency. Concentration <0.1xBCL.
	Fluoranthene	50	1	0.0070	16	0	ND	16	0	ND	Yes	--	
	Phenanthrene	50	0	ND	16	0	ND	16	2	0.055	Yes	--	
	Pyrene	50	1	0.0060	16	0	ND	16	2	0.16	Yes	--	
Pesticides OCPs	alpha-BHC	49	5	0.046	16	0	ND	16	0	ND	No	--	Not listed historically as a SRC. However, the former Stauffer facility (to the west) produced gamma-BHC (lindane) from 1946 through 1958; the alpha and beta isomers are by-products of lindane production. Concentrations < 0.1xBCL.
	beta-BHC	49	25	0.18	16	7	0.096	16	7	0.045	No	J-3 (Parcel C) J-21 (Parcel D) J-36 (Parcel G)	
	gamma-BHC	49	1	0.013	16	0	ND	16	0	ND	No	--	
	gamma-Chlordane	49	3	0.0053	16	0	ND	16	0	ND	No	--	NDEP did not identify chlordane as a specific contaminant at an LOU. Low detection frequency. Concentrations < 0.1xBCL.
	2,4'-DDD	35	3	0.0066	16	1	0.0026	16	0	ND	Yes	--	Historical information indicates that Hardesty/AMECCO (1946-1949) listed DDT for production. The detected concentrations of DDT and related compounds in Parcels C, D, and G are relatively low and < 0.1xBCL. 4,4'-DDT and 4,4'-DDE are mostly co-located.
	4,4'-DDD	49	0	ND	16	1	0.0019	16	1	0.0020	Yes	--	
	2,4'-DDE	48	11	0.085	16	3	0.037	16	1	0.0056	Yes	--	
	4,4'-DDE	49	16	0.20	16	6	0.10	16	9	0.20	Yes	J-7 (Parcel C) J-24 (Parcel D) J-40 (Parcel G)	
	4,4'-DDT	49	14	0.096	16	3	0.028	16	8	0.16	Yes	J-8 (Parcel C) J-25 (Parcel D) J-41 (Parcel G)	
	Endrin aldehyde	49	1	0.0029	16	0	ND	16	0	ND	No	--	NDEP did not identify endrin aldehyde as a specific contaminant at an LOU. Very persistent in soils. Low detection frequency. Concentrations are < 0.1xBCL.
	Hexachlorobenzene	50	6	0.37	16	0	ND	16	0	ND	Yes	5-4, J-9 (Parcel C) '-- (Parcel D) '-- (Parcel G)	Historically listed as a SRC. Formed as a by-product during the manufacture of other chemicals involving chlorine, mainly solvents and pesticides.
	Methoxychlor	49	4	0.0078	16	1	0.0020	16	0	ND	No	--	NDEP did not identify these pesticides as specific contaminants at an LOU. Low detection frequencies. Concentrations are <0.1xBCL.
	Toxaphene	49	1	0.12	16	0	ND	16	0	ND	No	--	
SVOCs	bis(2-Ethylhexyl)phthalate	50	0	ND	16	1	0.040	16	0	ND	No	--	Not historically listed as a SRC. Bis(2-ethylhexyl)phthalate is a common field/laboratory contaminant. Low detection frequency. Concentrations < 0.1xBCL.
	Carbazole	35	0	ND	16	0	ND	16	1	0.059	No	--	Not historically listed as a SRC. Low detection frequency. Concentrations < 0.1xBCL.
	Octachlorostyrene	50	2	0.065	16	0	ND	16	0	ND	Yes	J-10 (Parcel C) '-- (Parcel D) '-- (Parcel G)	Historically listed as a SRC. By-product of many industrial chemical processes; formed during incineration and combustion processes involving chlorinated compounds. Highly persistent. Low detection frequency.
VOCs	Acetone	50	6	0.32	16	4	0.79	16	10	0.046	Yes	--	*See VOC comments below.*
	2-Butanone	49	2	0.011	16	0	ND	16	1	0.004	No	--	
	Chloroform	50	5	0.0023	16	0	ND	16	0	ND	Yes	J-5 (Parcel C) '-- (Parcel D) '-- (Parcel G)	Although chloroform is the most prevalent groundwater VOC, there are no written records of its use at the Site. Tronox has communicated that chloroform was used in small quantities at the facility lab. Soil concentrations in Parcels C, D, and G are not indicative of a potential source area.
	Cumene	50	1	0.00029	16	0	ND	16	0	ND	No	--	*See VOC comments below.*
	1,2-Dichlorobenzene	50	1	0.00036	16	0	ND	16	0	ND	Yes	--	Mono- and dichlorobenzenes were produced by Hardesty/Amecco from 1946-1949. Soil concentrations are very low and are not considered indicative of a potential source area.
	1,3-Dichlorobenzene	50	2	0.00080	16	1	0.00034	16	0	ND	Yes	--	
	1,4-Dichlorobenzene	50	3	0.00051	16	0	ND	16	0	ND	Yes	--	

TABLE 4-9. Exploratory Data Analysis: Comments for Dioxins/Furans, Other Organics, PAHs, Pesticides, SVOCs, and VOCs (0-10 ft bgs Soil – Parcels C, D, and G)
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte [1]	Parcel C			Parcel D			Parcel G			2005 CSM SRC? [2]	Spatial Plot	Comment [3]
		No. of Samples	No. of Detects	Maximum Detected Concentration (mg/kg)	No. of Samples	No. of Detects	Maximum Detected Concentration (mg/kg)	No. of Samples	No. of Detects	Maximum Detected Concentration (mg/kg)			
VOCs	Ethyl benzene	50	2	0.0022	16	1	0.0014	16	0	ND	Yes	--	Historically, a number of individual VOCs were listed as SRCs, VOC soil contamination was not the subject of any of the interim soil removal actions completed within Parcels C, D, and G following the soil investigations. Also, NDEP did not specifically identify VOCs as potential contaminants for most LOUs within or directly upgradient of the Parcels C, D, and G. However, it is noted that the initial identification of potential LOU contaminants was based on a review of historical operations and the limited sampling data available at the time of the LOU designations in 1994. Given that Parcels C, D, and G are situated within the Trust's property, as well as in the vicinity of other BMI companies, it is possible that environmental media within one or more of the parcels could have been indirectly impacted by VOCs. At the same time, an operational history for an area that included former use of VOCs does not necessarily mean that environmental media in the area were impacted. Tthe soil sampling results show that VOCs were detected at low frequencies and low concentrations, not indicative of a source. Several of the VOCs are common field/laboratory contaminants, for example, acetone, 2-butanone, methylene chloride, and toluene.
	Methylene chloride	49	0	ND	16	0	ND	16	3	0.016	Yes	--	
	n-Propylbenzene	50	1	0.0010	16	1	0.0010	16	0	ND	No	--	
	Tetrachloroethene	50	2	0.0027	16	0	ND	16	0	ND	Yes	--	
	Toluene	50	2	0.00056	16	1	0.00051	16	1	0.00059	Yes	--	
	1,2,3-Trichlorobenzene	50	2	0.0017	16	0	ND	16	0	ND	No	--	
	1,2,4-Trichlorobenzene	50	4	0.014	16	0	ND	16	0	ND	No	--	
	1,2,4-Trimethylbenzene	50	3	0.0045	16	1	0.0038	16	1	0.00045	No	--	
	1,3,5-Trimethylbenzene	50	3	0.0019	16	2	0.0015	16	0	ND	No	--	
	m,p-Xylene	48	5	0.011	16	2	0.0079	16	0	ND	Yes	--	
	o-Xylene	48	2	0.0041	16	1	0.0026	16	0	ND	Yes	--	
	Xylenes (total)	37	4	0.015	16	1	0.010	16	0	ND	Yes	--	

Notes:
-- = Not applicable
bgs = below ground surface
ft = feet
mg/kg = milligram per kilogram
BaPEq = Benzo(a)pyrene equivalent
BCL = Basic comparison level
BHC = Hexachlorocyclohexane
CSM = Conceptual site model
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethylene
DDT = Dichlorodiphenyltrichloroethane
LOU = Letter of Understanding
ND = Not detected
NDEP = Nevada Division of Environmental Protection
OCP = Organochlorine pesticide
PAH = Polycyclic aromatic hydrocarbon
SRC = Site-related chemical
SVOC = Semivolatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
VOC = Volatile organic compound
* Methodology for equivalent calculations explained in text

[1] Listed analytes include only those detected in one or more samples in Parcel C, D, or G.
[2] From Table 5 of the ENSR (2005) Conceptual Site Model Report
[3] Based on information from: ENSR 2005; ENVIRON 2011; NDEP 2011; and Ramboll Environ 2016.
Statements as to whether an analyte was historically listed as a SRC are based on the list of SRCs in Table 5 of the ENSR (2005) Conceptual Site Model report.
Statements regarding NDEP's identification of an analyte as associated with an LOU are based on the NDEP 2011 Action Memorandum.
It is recognized that a specific analyte may have been identified as a SRC in later investigations or as an LOU contaminant in other documents prepared for the Site.

Sources:
ENSR. 2005. Conceptual Site Model, Kerr-McGee Facility, Henderson, Nevada. February. NDEP requested response to comments during the next monthly meeting October 22.
ENVIRON. 2011. Phase I Environmental Site Assessment of Tronox LLC, Clark County, Nevada. January.
NDEP. 2011. Action Memorandum: Removal Actions, Nevada Environmental Response Trust Site, Clark County, Nevada. July.
Ramboll Environ. 2016. Technical Memorandum, Remedial Investigation Data Evaluation, Nevada Environmental Response Trust Site, Henderson, Nevada, dated May 2.

TABLE 4-10A: Evaluation of Sample Quantitation Limits for 2007 Soil Gas (10 ft bgs) – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of RBC
Acetone	7.1E+08	µg/m^3	16	15	94	6.1	6.1	0
Benzene	1.2E+15	µg/m^3	16	8	50	4.9	4.9	0
Benzyl chloride	2.2E+03	µg/m^3	16	0	0	42	42	0
Bromodichloromethane	6.3E+03	µg/m^3	16	4	25	6.8	6.8	0
Bromoform	1.8E+05	µg/m^3	16	0	0	5.3	5.3	0
Bromomethane	1.8E+02	µg/m^3	16	2	13	7.9	7.9	0
2-Butanone	1.5E+08	µg/m^3	16	6	38	6.0	6.0	0
Carbon disulfide	1.9E+07	µg/m^3	16	1	6.3	6.3	6.3	0
Carbon tetrachloride	1.6E+04	µg/m^3	16	2	13	6.4	6.4	0
Chlorobenzene	1.8E+06	µg/m^3	16	3	19	4.7	4.7	0
Chloroethane	2.7E+08	µg/m^3	16	6	38	4.0	4.0	0
Chloroform	3.3E+03	µg/m^3	16	15	94	5.0	5.0	0
Chloromethane	4.0E+04	µg/m^3	16	6	38	2.1	2.1	0
Dibromochloromethane	1.3E+04	µg/m^3	16	0	0	8.7	8.7	0
1,2-Dibromoethane	1.7E+02	µg/m^3	16	0	0	7.8	7.8	0
1,2-Dichlorobenzene	7.7E+06	µg/m^3	16	0	0	5.5	5.5	0
1,3-Dichlorobenzene	7.7E+06	µg/m^3	16	4	25	4.9	4.9	0
1,4-Dichlorobenzene	9.8E+03	µg/m^3	16	0	0	18	18	0
Dichlorodifluoromethane	6.8E+06	µg/m^3	16	0	0	5.0	5.0	0
1,1-Dichloroethane	6.3E+04	µg/m^3	16	7	44	4.1	4.1	0
1,2-Dichloroethane	2.9E+03	µg/m^3	16	5	31	4.1	4.1	0
1,1-Dichloroethene	6.1E+06	µg/m^3	16	3	19	4.0	4.0	0
cis-1,2-Dichloroethene	2.2E+06	µg/m^3	16	0	0	3.2	3.2	0
trans-1,2-Dichloroethene	2.3E+06	µg/m^3	16	0	0	4.0	4.0	0
1,2-Dichloropropane	9.7E+03	µg/m^3	16	0	0	7.1	7.1	0
cis-1,3-Dichloropropene	2.9E+04	µg/m^3	16	0	0	6.9	6.9	0
trans-1,3-Dichloropropene	2.9E+04	µg/m^3	16	0	0	4.6	4.6	0
Ethyl benzene	4.0E+04	µg/m^3	16	1	6.3	4.4	4.4	0
4-Ethyltoluene	1.4E+07	µg/m^3	16	2	13	4.0	4.0	0
Freon 114	1.0E+09	µg/m^3	16	0	0	7.1	7.1	0

TABLE 4-10A: Evaluation of Sample Quantitation Limits for 2007 Soil Gas (10 ft bgs) – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of RBC
Hexachlorobutadiene	1.2E+04	µg/m^3	16	0	0	14	14	0
2-Hexanone	1.1E+06	µg/m^3	16	0	0	8.4	8.4	0
4-Methyl-2-pentanone	1.1E+08	µg/m^3	16	0	0	8.4	8.4	0
Methylene Chloride	1.6E+05	µg/m^3	16	15	94	2.8	2.8	0
Styrene	3.8E+07	µg/m^3	16	0	0	4.3	4.3	0
1,1,2,2-Tetrachloroethane	1.8E+03	µg/m^3	16	0	0	7.0	7.0	0
Tetrachloroethene	1.7E+04	µg/m^3	16	11	69	6.9	6.9	0
Toluene	1.6E+08	µg/m^3	16	14	88	3.8	3.8	0
1,2,4-Trichlorobenzene	1.7E+05	µg/m^3	16	0	0	19	19	0
1,1,1-Trichloroethane	1.7E+08	µg/m^3	16	0	0	5.6	5.6	0
1,1,2-Trichloroethane	6.0E+03	µg/m^3	16	5	31	5.6	5.6	0
Trichloroethene	4.8E+04	µg/m^3	16	6	38	5.5	5.5	0
Trichlorofluoromethane	2.2E+07	µg/m^3	16	0	0	5.7	5.7	0
1,2,4-Trimethylbenzene	2.1E+06	µg/m^3	16	1	6.3	6.5	6.5	0
1,3,5-Trimethylbenzene	2.1E+06	µg/m^3	16	0	0	5.5	5.5	0
Vinyl acetate	6.4E+06	µg/m^3	16	0	0	7.2	7.2	0
Vinyl chloride	1.7E+04	µg/m^3	16	4	25	3.9	3.9	0
o-Xylene	3.1E+06	µg/m^3	16	2	13	4.4	4.4	0
m,p-Xylene	3.5E+06	µg/m^3	16	8	50	8.9	8.9	0
Xylenes (total)	3.8E+06	µg/m^3	16	8	50	4.4	4.4	0
1,1,2-Trichloro-1,2,2-trifluoroethane	2.6E+09	µg/m^3	16	0	0	7.8	7.8	0

Notes:

-- = not available

bgs = below ground surface

ft = feet

RBC = Risk-Based Concentration

SQL = sample quantitation limit

µg/m^3 = microgram per cubic meter

[1] Risk-Based Concentrations (RBCs) used in this evaluation are the lowest among the 10 ft bgs soil gas RBCs for indoor workers, outdoor workers and construction workers.

TABLE 4-10B: Evaluation of Sample Quantitation Limits for 2007 Soil Gas (10 ft bgs) – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of RBC
Acetone	7.1E+08	µg/m^3	9	9	100	--	--	--
Benzene	1.2E+15	µg/m^3	9	4	44	4.9	4.9	0
Benzyl chloride	2.2E+03	µg/m^3	9	0	0	42	42	0
Bromodichloromethane	6.3E+03	µg/m^3	9	0	0	6.8	6.8	0
Bromoform	1.8E+05	µg/m^3	9	0	0	5.3	5.3	0
Bromomethane	1.8E+02	µg/m^3	9	1	11	7.9	7.9	0
2-Butanone	1.5E+08	µg/m^3	9	2	22	6.0	6.0	0
Carbon disulfide	1.9E+07	µg/m^3	9	0	0	6.3	6.3	0
Carbon tetrachloride	1.6E+04	µg/m^3	9	1	11	6.4	6.4	0
Chlorobenzene	1.8E+06	µg/m^3	9	0	0	4.7	4.7	0
Chloroethane	2.7E+08	µg/m^3	9	2	22	4.0	4.0	0
Chloroform	3.3E+03	µg/m^3	9	9	100	--	--	--
Chloromethane	4.0E+04	µg/m^3	9	1	11	2.1	2.1	0
Dibromochloromethane	1.3E+04	µg/m^3	9	0	0	8.7	8.7	0
1,2-Dibromoethane	1.7E+02	µg/m^3	9	0	0	7.8	7.8	0
1,2-Dichlorobenzene	7.7E+06	µg/m^3	9	0	0	5.5	5.5	0
1,3-Dichlorobenzene	7.7E+06	µg/m^3	9	1	11	4.9	4.9	0
1,4-Dichlorobenzene	9.8E+03	µg/m^3	9	0	0	18	18	0
Dichlorodifluoromethane	6.8E+06	µg/m^3	9	0	0	5.0	5.0	0
1,1-Dichloroethane	6.3E+04	µg/m^3	9	4	44	4.1	4.1	0
1,2-Dichloroethane	2.9E+03	µg/m^3	9	1	11	4.1	4.1	0
1,1-Dichloroethene	6.1E+06	µg/m^3	9	0	0	4.0	4.0	0
cis-1,2-Dichloroethene	2.2E+06	µg/m^3	9	0	0	3.2	3.2	0
trans-1,2-Dichloroethene	2.3E+06	µg/m^3	9	0	0	4.0	4.0	0
1,2-Dichloropropane	9.7E+03	µg/m^3	9	0	0	7.1	7.1	0
cis-1,3-Dichloropropene	2.9E+04	µg/m^3	9	0	0	6.9	6.9	0
trans-1,3-Dichloropropene	2.9E+04	µg/m^3	9	0	0	4.6	4.6	0
Ethyl benzene	4.0E+04	µg/m^3	9	0	0	4.4	4.4	0
4-Ethyltoluene	1.4E+07	µg/m^3	9	0	0	4.0	4.0	0
Freon 114	1.0E+09	µg/m^3	9	0	0	7.1	7.1	0

TABLE 4-10B: Evaluation of Sample Quantitation Limits for 2007 Soil Gas (10 ft bgs) – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of RBC
Hexachlorobutadiene	1.2E+04	µg/m^3	9	1	11	14	14	0
2-Hexanone	1.1E+06	µg/m^3	9	0	0	8.4	8.4	0
4-Methyl-2-pentanone	1.1E+08	µg/m^3	9	0	0	8.4	8.4	0
Methylene Chloride	1.6E+05	µg/m^3	9	9	100	--	--	--
Styrene	3.8E+07	µg/m^3	9	0	0	4.3	4.3	0
1,1,2,2-Tetrachloroethane	1.8E+03	µg/m^3	9	0	0	7.0	7.0	0
Tetrachloroethene	1.7E+04	µg/m^3	9	8	89	6.9	6.9	0
Toluene	1.6E+08	µg/m^3	9	7	78	3.8	3.8	0
1,2,4-Trichlorobenzene	1.7E+05	µg/m^3	9	0	0	19	19	0
1,1,1-Trichloroethane	1.7E+08	µg/m^3	9	0	0	5.6	5.6	0
1,1,2-Trichloroethane	6.0E+03	µg/m^3	9	0	0	5.6	5.6	0
Trichloroethene	4.8E+04	µg/m^3	9	5	56	5.5	5.5	0
Trichlorofluoromethane	2.2E+07	µg/m^3	9	0	0	5.7	5.7	0
1,2,4-Trimethylbenzene	2.1E+06	µg/m^3	9	0	0	6.5	6.5	0
1,3,5-Trimethylbenzene	2.1E+06	µg/m^3	9	0	0	5.5	5.5	0
Vinyl acetate	6.4E+06	µg/m^3	9	0	0	7.2	7.2	0
Vinyl chloride	1.7E+04	µg/m^3	9	0	0	3.9	3.9	0
o-Xylene	3.1E+06	µg/m^3	9	0	0	4.4	4.4	0
m,p-Xylene	3.5E+06	µg/m^3	9	0	0	8.9	8.9	0
Xylenes (total)	3.8E+06	µg/m^3	9	0	0	4.4	4.4	0
1,1,2-Trichloro-1,2,2-trifluoroethane	2.6E+09	µg/m^3	9	0	0	7.8	7.8	0

Notes:

-- = not available

bgs = below ground surface

ft = feet

RBC = Risk-Based Concentration

SQL = sample quantitation limit

µg/m^3 = microgram per cubic meter

[1] Risk-Based Concentrations (RBCs) used in this evaluation are the lowest among the 10 ft bgs soil gas RBCs for indoor workers, outdoor workers and construction workers.

TABLE 4-11A. Evaluation of Sample Quantitation Limits for 2008 and 2013 Soil Gas (5 ft bgs) – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of RBC
Acetone	4.1E+08	µg/m^3	9	9	100	--	--	--
Acrylonitrile	6.0E+02	µg/m^3	9	1	11	0.10	1.7	0
t-Amyl methyl ether	2.3E+05	µg/m^3	9	0	0	0.076	1.7	0
Benzene	2.9E+14	µg/m^3	9	9	100	--	--	--
Benzyl chloride	1.2E+03	µg/m^3	9	0	0	0.068	0.33	0
Bromodichloromethane	3.2E+03	µg/m^3	9	4	44	0.10	0.17	0
Bromoform	9.0E+04	µg/m^3	9	0	0	0.79	2.3	0
Bromomethane	9.9E+01	µg/m^3	9	1	11	0.16	0.33	0
1,3-Butadiene	1.5E+03	µg/m^3	3	0	0	0.28	0.44	0
2-Butanone	8.2E+07	µg/m^3	9	9	100	--	--	--
n-Butylbenzene	7.7E+06	µg/m^3	6	6	100	--	--	--
sec-Butylbenzene	7.7E+06	µg/m^3	6	2	33	0.82	1.7	0
tert-Butylbenzene	7.7E+06	µg/m^3	6	0	0	0.32	0.66	0
Carbon disulfide	1.1E+07	µg/m^3	9	6	67	0.042	0.044	0
Carbon tetrachloride	8.7E+03	µg/m^3	9	9	100	--	--	--
3-Chloro-1-propene	7.6E+03	µg/m^3	6	0	0	0.16	0.33	0
Chlorobenzene	9.8E+05	µg/m^3	9	4	44	0.16	0.33	0
Chloroethane	1.5E+08	µg/m^3	9	6	67	0.076	0.33	0
Chloroform	1.8E+03	µg/m^3	9	9	100	--	--	--
Chloromethane	2.3E+04	µg/m^3	9	0	0	0.022	0.33	0
Cumene	7.7E+06	µg/m^3	6	1	17	0.79	1.7	0
Cyclohexane	1.1E+08	µg/m^3	3	1	33	70	73	0
p-Cymene	7.7E+06	µg/m^3	6	4	67	1.6	1.7	0
1,2-Dibromo-3-chloropropane	8.5E+00	µg/m^3	9	0	0	0.20	1.7	33
Dibromochloromethane	6.3E+03	µg/m^3	9	0	0	0.11	0.33	0
1,2-Dibromoethane	9.1E+01	µg/m^3	9	0	0	0.096	0.33	0
1,2-Dichlorobenzene	4.1E+06	µg/m^3	9	3	33	0.15	0.33	0
1,3-Dichlorobenzene	4.1E+06	µg/m^3	9	5	56	0.10	0.33	0
1,4-Dichlorobenzene	5.2E+03	µg/m^3	9	8	89	0.18	0.18	0
Dichlorodifluoromethane	3.7E+06	µg/m^3	9	9	100	--	--	--
1,1-Dichloroethane	3.4E+04	µg/m^3	9	7	78	0.32	0.82	0

TABLE 4-11A. Evaluation of Sample Quantitation Limits for 2008 and 2013 Soil Gas (5 ft bgs) – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of RBC
1,2-Dichloroethane	1.6E+03	µg/m^3	9	7	78	0.32	0.33	0
1,1-Dichloroethene	3.4E+06	µg/m^3	9	3	33	0.040	0.33	0
cis-1,2-Dichloroethene	1.2E+06	µg/m^3	9	4	44	0.068	0.32	0
trans-1,2-Dichloroethene	1.2E+06	µg/m^3	9	2	22	0.064	0.33	0
1,2-Dichloropropane	5.2E+03	µg/m^3	9	4	44	0.11	0.32	0
cis-1,3-Dichloropropene	1.6E+04	µg/m^3	9	0	0	0.080	1.7	0
trans-1,3-Dichloropropene	1.6E+04	µg/m^3	9	0	0	0.24	1.7	0
1,4-Dioxane	5.5E+03	µg/m^3	9	1	11	0.096	1.7	0
Ethanol	1.2E+09	µg/m^3	6	6	100	--	--	--
Ethyl benzene	2.2E+04	µg/m^3	9	8	89	1.6	1.6	0
Ethyl acetate	1.4E+07	µg/m^3	3	3	100	--	--	--
4-Ethyltoluene	7.7E+06	µg/m^3	9	5	56	1.0	1.6	0
Freon 114	5.6E+08	µg/m^3	9	3	33	0.16	1.7	0
n-Heptane	1.6E+08	µg/m^3	9	5	56	0.077	1.7	0
Hexachlorobutadiene	5.9E+03	µg/m^3	9	8	89	0.14	0.14	0
n-Hexane	7.0E+06	µg/m^3	3	3	100	--	--	--
2-Hexanone	6.1E+05	µg/m^3	9	8	89	0.23	0.23	0
Methyl tert-butyl ether	2.0E+05	µg/m^3	9	0	0	0.096	0.33	0
4-Methyl-2-pentanone	5.8E+07	µg/m^3	9	7	78	0.85	1.6	0
Methylene Chloride	9.2E+04	µg/m^3	9	8	89	0.078	0.078	0
Methylmethacrylate	1.3E+07	µg/m^3	6	0	0	0.79	1.7	0
Naphthalene	1.9E+03	µg/m^3	9	9	100	--	--	--
n-Octane	3.7E+08	µg/m^3	6	3	50	0.79	1.7	0
Diisopropyl ether	6.4E+07	µg/m^3	9	0	0	0.058	1.7	0
n-Propylbenzene	7.7E+06	µg/m^3	6	5	83	1.6	1.6	0
Styrene	2.0E+07	µg/m^3	9	5	56	0.052	1.7	0
1,1,1,2-Tetrachloroethane	7.6E+03	µg/m^3	3	0	0	0.15	0.16	0
1,1,2,2-Tetrachloroethane	9.7E+02	µg/m^3	9	0	0	0.072	0.33	0
Tetrachloroethene	9.1E+03	µg/m^3	9	9	100	--	--	--
Tetrahydrofuran	3.1E+07	µg/m^3	3	0	0	1.2	1.3	0
Toluene	8.6E+07	µg/m^3	9	9	100	--	--	--

TABLE 4-11A. Evaluation of Sample Quantitation Limits for 2008 and 2013 Soil Gas (5 ft bgs) – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of RBC
1,2,4-Trichlorobenzene	8.3E+04	$\mu g/m^3$	9	2	22	0.16	0.33	0
1,1,1-Trichloroethane	9.4E+07	$\mu g/m^3$	9	0	0	0.092	0.33	0
1,1,2-Trichloroethane	3.3E+03	$\mu g/m^3$	9	3	33	0.10	0.33	0
Trichloroethene	2.6E+04	$\mu g/m^3$	9	9	100	--	--	--
Trichlorofluoromethane	1.2E+07	$\mu g/m^3$	9	7	78	1.1	1.2	0
1,2,4-Trimethylbenzene	1.2E+06	$\mu g/m^3$	9	9	100	--	--	--
1,3,5-Trimethylbenzene	1.2E+06	$\mu g/m^3$	9	3	33	0.15	1.7	0
Vinyl acetate	3.5E+06	$\mu g/m^3$	9	9	100	--	--	--
Vinyl chloride	9.5E+03	$\mu g/m^3$	9	2	22	0.12	0.33	0
o-Xylene	1.7E+06	$\mu g/m^3$	6	6	100	--	--	--
m,p-Xylene	1.9E+06	$\mu g/m^3$	6	6	100	--	--	--
Xylenes (total)	2.0E+06	$\mu g/m^3$	3	3	100	--	--	--
Ethyl tert-butyl ether	2.3E+05	$\mu g/m^3$	9	0	0	0.084	1.7	0
alpha-Methylstyrene	2.0E+07	$\mu g/m^3$	6	2	33	0.85	1.7	0
tert Butyl alcohol	4.7E+08	$\mu g/m^3$	9	9	100	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	1.3E+09	$\mu g/m^3$	9	6	67	1.6	1.6	0

Notes:

-- = not available

bgs = below ground surface

ft = feet

RBC = Risk-Based Concentration

SQL = sample quantitation limit

$\mu g/m^3$ = microgram per cubic meter

[1] Risk-Based Concentrations (RBCs) used in this evaluation are the lowest among the 5 ft bgs soil gas RBCs for indoor workers, outdoor workers and construction workers.

TABLE 4-11B. Evaluation of Sample Quantitation Limits for 2008 and 2013 Soil Gas (5 ft bgs) – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Minimum SQL	% Above 10% of RBC
Acetone	4.1E+08	µg/m^3	5	5	100	--	--	--
Acrylonitrile	6.0E+02	µg/m^3	5	1	20	0.10	0.79	0
t-Amyl methyl ether	2.3E+05	µg/m^3	5	0	0	0.076	0.82	0
Benzene	2.9E+14	µg/m^3	5	5	100	--	--	--
Benzyl chloride	1.2E+03	µg/m^3	5	0	0	0.068	0.16	0
Bromodichloromethane	3.2E+03	µg/m^3	5	3	60	0.10	0.16	0
Bromoform	9.0E+04	µg/m^3	5	0	0	0.79	2.2	0
Bromomethane	9.9E+01	µg/m^3	5	1	20	0.16	0.20	0
1,3-Butadiene	1.5E+03	µg/m^3	2	0	0	0.28	0.28	0
2-Butanone	8.2E+07	µg/m^3	5	5	100	--	--	--
n-Butylbenzene	7.7E+06	µg/m^3	3	3	100	--	--	--
sec-Butylbenzene	7.7E+06	µg/m^3	3	1	33	0.79	0.82	0
tert-Butylbenzene	7.7E+06	µg/m^3	3	0	0	0.31	0.33	0
Carbon disulfide	1.1E+07	µg/m^3	5	3	60	0.042	0.042	0
Carbon tetrachloride	8.7E+03	µg/m^3	5	5	100	--	--	--
3-Chloro-1-propene	7.6E+03	µg/m^3	3	0	0	0.16	0.16	0
Chlorobenzene	9.8E+05	µg/m^3	5	3	60	0.070	0.16	0
Chloroethane	1.5E+08	µg/m^3	5	3	60	0.076	0.076	0
Chloroform	1.8E+03	µg/m^3	5	5	100	--	--	--
Chloromethane	2.3E+04	µg/m^3	5	0	0	0.022	0.16	0
Cumene	7.7E+06	µg/m^3	3	0	0	0.79	0.82	0
Cyclohexane	1.1E+08	µg/m^3	2	1	50	0.18	0.18	0
p-Cymene	7.7E+06	µg/m^3	3	2	67	0.79	0.79	0
1,2-Dibromo-3-chloropropane	8.5E+00	µg/m^3	5	0	0	0.20	0.82	0
Dibromochloromethane	6.3E+03	µg/m^3	5	0	0	0.11	0.16	0
1,2-Dibromoethane	9.1E+01	µg/m^3	5	0	0	0.096	0.16	0
1,2-Dichlorobenzene	4.1E+06	µg/m^3	5	1	20	0.15	0.16	0
1,3-Dichlorobenzene	4.1E+06	µg/m^3	5	3	60	0.10	0.16	0
1,4-Dichlorobenzene	5.2E+03	µg/m^3	5	3	60	0.18	0.18	0
Dichlorodifluoromethane	3.7E+06	µg/m^3	5	5	100	--	--	--
1,1-Dichloroethane	3.4E+04	µg/m^3	5	3	60	0.82	0.82	0
1,2-Dichloroethane	1.6E+03	µg/m^3	5	4	80	0.090	0.090	0
1,1-Dichloroethene	3.4E+06	µg/m^3	5	1	20	0.040	0.16	0
cis-1,2-Dichloroethene	1.2E+06	µg/m^3	5	0	0	0.068	0.16	0

TABLE 4-11B. Evaluation of Sample Quantitation Limits for 2008 and 2013 Soil Gas (5 ft bgs) – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Minimum SQL	% Above 10% of RBC
trans-1,2-Dichloroethene	1.2E+06	µg/m^3	5	0	0	0.064	0.16	0
1,2-Dichloropropane	5.2E+03	µg/m^3	5	1	20	0.11	0.16	0
cis-1,3-Dichloropropene	1.6E+04	µg/m^3	5	0	0	0.080	0.82	0
trans-1,3-Dichloropropene	1.6E+04	µg/m^3	5	0	0	0.24	0.82	0
1,4-Dioxane	5.5E+03	µg/m^3	5	2	40	0.096	0.79	0
Ethanol	1.2E+09	µg/m^3	3	3	100	--	--	--
Ethyl benzene	2.2E+04	µg/m^3	5	5	100	--	--	--
Ethyl acetate	1.4E+07	µg/m^3	2	2	100	--	--	--
4-Ethyltoluene	7.7E+06	µg/m^3	5	2	40	0.79	1.0	0
Freon 114	5.6E+08	µg/m^3	5	3	60	0.16	0.16	0
n-Heptane	1.6E+08	µg/m^3	5	5	100	--	--	--
Hexachlorobutadiene	5.9E+03	µg/m^3	5	4	80	0.14	0.14	0
n-Hexane	7.0E+06	µg/m^3	2	2	100	--	--	--
2-Hexanone	6.1E+05	µg/m^3	5	5	100	--	--	--
Methyl tert-butyl ether	2.0E+05	µg/m^3	5	1	20	0.096	0.16	0
4-Methyl-2-pentanone	5.8E+07	µg/m^3	5	4	80	0.79	0.79	0
Methylene Chloride	9.2E+04	µg/m^3	5	3	60	0.078	0.078	0
Methylmethacrylate	1.3E+07	µg/m^3	3	0	0	0.79	0.82	0
Naphthalene	1.9E+03	µg/m^3	5	4	80	0.42	0.42	0
n-Octane	3.7E+08	µg/m^3	3	2	67	0.79	0.79	0
Diisopropyl ether	6.4E+07	µg/m^3	5	0	0	0.058	0.82	0
n-Propylbenzene	7.7E+06	µg/m^3	3	2	67	0.79	0.79	0
Styrene	2.0E+07	µg/m^3	5	3	60	0.050	0.79	0
1,1,1,2-Tetrachloroethane	7.6E+03	µg/m^3	2	0	0	0.15	0.15	0
1,1,2,2-Tetrachloroethane	9.7E+02	µg/m^3	5	0	0	0.072	0.16	0
Tetrachloroethene	9.1E+03	µg/m^3	5	5	100	--	--	--
Tetrahydrofuran	3.1E+07	µg/m^3	2	0	0	1.2	1.2	0
Toluene	8.6E+07	µg/m^3	5	5	100	--	--	--
1,2,4-Trichlorobenzene	8.3E+04	µg/m^3	5	1	20	0.16	0.22	0
1,1,1-Trichloroethane	9.4E+07	µg/m^3	5	0	0	0.092	0.16	0
1,1,2-Trichloroethane	3.3E+03	µg/m^3	5	2	40	0.10	0.16	0
Trichloroethene	2.6E+04	µg/m^3	5	5	100	--	--	--
Trichlorofluoromethane	1.2E+07	µg/m^3	5	3	60	1.1	1.1	0

TABLE 4-11B. Evaluation of Sample Quantitation Limits for 2008 and 2013 Soil Gas (5 ft bgs) – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Minimum SQL	% Above 10% of RBC
1,2,4-Trimethylbenzene	1.2E+06	$\mu g/m^3$	5	5	100	--	--	--
1,3,5-Trimethylbenzene	1.2E+06	$\mu g/m^3$	5	1	20	0.15	0.82	0
Vinyl acetate	3.5E+06	$\mu g/m^3$	5	5	100	--	--	--
Vinyl chloride	9.5E+03	$\mu g/m^3$	5	1	20	0.12	0.16	0
o-Xylene	1.7E+06	$\mu g/m^3$	3	3	100	--	--	--
m,p-Xylene	1.9E+06	$\mu g/m^3$	3	3	100	--	--	--
Xylenes (total)	2.0E+06	$\mu g/m^3$	2	2	100	--	--	--
Ethyl tert-butyl ether	2.3E+05	$\mu g/m^3$	5	0	0	0.084	0.82	0
alpha-Methylstyrene	2.0E+07	$\mu g/m^3$	3	3	100	--	--	--
tert Butyl alcohol	4.7E+08	$\mu g/m^3$	5	5	100	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	1.3E+09	$\mu g/m^3$	5	3	60	1.6	1.6	0

Notes:

-- = not available

bgs = below ground surface

ft = feet

RBC = Risk-Based Concentration

SQL = sample quantitation limit

$\mu g/m^3$ = microgram per cubic meter

[1] Risk-Based Concentrations (RBCs) used in this evaluation are the lowest among the 5 ft bgs soil gas RBCs for indoor workers, outdoor workers and construction workers.

TABLE 4-11C. Evaluation of Sample Quantitation Limits for 2008 and 2013 Soil Gas (5 ft bgs) – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of RBC
Acetone	4.1E+08	µg/m^3	3	3	100	--	--	--
Acrylonitrile	6.0E+02	µg/m^3	3	0	0	0.10	0.75	0
t-Amyl methyl ether	2.3E+05	µg/m^3	3	0	0	0.076	0.75	0
Benzene	2.9E+14	µg/m^3	3	3	100	--	--	--
Benzyl chloride	1.2E+03	µg/m^3	3	0	0	0.068	0.15	0
Bromodichloromethane	3.2E+03	µg/m^3	3	3	100	--	--	--
Bromoform	9.0E+04	µg/m^3	3	0	0	0.75	2.2	0
Bromomethane	9.9E+01	µg/m^3	3	0	0	0.15	0.20	0
1,3-Butadiene	1.5E+03	µg/m^3	2	0	0	0.28	0.28	0
2-Butanone	8.2E+07	µg/m^3	3	3	100	--	--	--
n-Butylbenzene	7.7E+06	µg/m^3	1	1	100	--	--	--
sec-Butylbenzene	7.7E+06	µg/m^3	1	0	0	0.75	0.75	0
tert-Butylbenzene	7.7E+06	µg/m^3	1	0	0	0.30	0.30	0
Carbon disulfide	1.1E+07	µg/m^3	3	1	33	0.042	0.042	0
Carbon tetrachloride	8.7E+03	µg/m^3	3	3	100	--	--	--
3-Chloro-1-propene	7.6E+03	µg/m^3	1	0	0	0.15	0.15	0
Chlorobenzene	9.8E+05	µg/m^3	3	2	67	0.15	0.15	0
Chloroethane	1.5E+08	µg/m^3	3	0	0	0.076	0.15	0
Chloroform	1.8E+03	µg/m^3	3	3	100	--	--	--
Chloromethane	2.3E+04	µg/m^3	3	0	0	0.022	0.15	0
Cumene	7.7E+06	µg/m^3	1	0	0	0.75	0.75	0
Cyclohexane	1.1E+08	µg/m^3	2	0	0	0.18	0.18	0
p-Cymene	7.7E+06	µg/m^3	1	1	100	--	--	--
1,2-Dibromo-3-chloropropane	8.5E+00	µg/m^3	3	0	0	0.20	0.75	0
Dibromochloromethane	6.3E+03	µg/m^3	3	0	0	0.11	0.15	0
1,2-Dibromoethane	9.1E+01	µg/m^3	3	0	0	0.096	0.15	0
1,2-Dichlorobenzene	4.1E+06	µg/m^3	3	1	33	0.15	0.15	0
1,3-Dichlorobenzene	4.1E+06	µg/m^3	3	0	0	0.10	0.15	0
1,4-Dichlorobenzene	5.2E+03	µg/m^3	3	2	67	0.18	0.18	0
Dichlorodifluoromethane	3.7E+06	µg/m^3	3	3	100	--	--	--
1,1-Dichloroethane	3.4E+04	µg/m^3	3	0	0	0.15	0.82	0

TABLE 4-11C. Evaluation of Sample Quantitation Limits for 2008 and 2013 Soil Gas (5 ft bgs) – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of RBC
1,2-Dichloroethane	1.6E+03	µg/m^3	3	0	0	0.090	0.15	0
1,1-Dichloroethene	3.4E+06	µg/m^3	3	0	0	0.040	0.15	0
cis-1,2-Dichloroethene	1.2E+06	µg/m^3	3	1	33	0.068	0.068	0
trans-1,2-Dichloroethene	1.2E+06	µg/m^3	3	0	0	0.064	0.15	0
1,2-Dichloropropane	5.2E+03	µg/m^3	3	0	0	0.11	0.15	0
cis-1,3-Dichloropropene	1.6E+04	µg/m^3	3	0	0	0.080	0.75	0
trans-1,3-Dichloropropene	1.6E+04	µg/m^3	3	0	0	0.24	0.75	0
1,4-Dioxane	5.5E+03	µg/m^3	3	0	0	0.096	0.75	0
Ethanol	1.2E+09	µg/m^3	1	1	100	--	--	--
Ethyl benzene	2.2E+04	µg/m^3	3	3	100	--	--	--
Ethyl acetate	1.4E+07	µg/m^3	2	2	100	--	--	--
4-Ethyltoluene	7.7E+06	µg/m^3	3	2	67	1.0	1.0	0
Freon 114	5.6E+08	µg/m^3	3	1	33	0.16	0.16	0
n-Heptane	1.6E+08	µg/m^3	3	2	67	0.074	0.074	0
Hexachlorobutadiene	5.9E+03	µg/m^3	3	0	0	0.14	0.15	0
n-Hexane	7.0E+06	µg/m^3	2	2	100	--	--	--
2-Hexanone	6.1E+05	µg/m^3	3	1	33	0.22	0.22	0
Methyl tert-butyl ether	2.0E+05	µg/m^3	3	0	0	0.096	0.15	0
4-Methyl-2-pentanone	5.8E+07	µg/m^3	3	3	100	--	--	--
Methylene Chloride	9.2E+04	µg/m^3	3	1	33	0.078	0.078	0
Methylmethacrylate	1.3E+07	µg/m^3	1	0	0	0.75	0.75	0
Naphthalene	1.9E+03	µg/m^3	3	3	100	--	--	--
n-Octane	3.7E+08	µg/m^3	1	1	100	--	--	--
Diisopropyl ether	6.4E+07	µg/m^3	3	0	0	0.058	0.75	0
n-Propylbenzene	7.7E+06	µg/m^3	1	1	100	--	--	--
Styrene	2.0E+07	µg/m^3	3	1	33	0.050	0.050	0
1,1,1,2-Tetrachloroethane	7.6E+03	µg/m^3	2	0	0	0.15	0.15	0
1,1,2,2-Tetrachloroethane	9.7E+02	µg/m^3	3	0	0	0.072	0.15	0
Tetrachloroethene	9.1E+03	µg/m^3	3	3	100	--	--	--
Tetrahydrofuran	3.1E+07	µg/m^3	2	0	0	1.2	1.2	0
Toluene	8.6E+07	µg/m^3	3	3	100	--	--	--

TABLE 4-11C. Evaluation of Sample Quantitation Limits for 2008 and 2013 Soil Gas (5 ft bgs) – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of RBC
1,2,4-Trichlorobenzene	8.3E+04	µg/m^3	3	0	0	0.15	0.22	0
1,1,1-Trichloroethane	9.4E+07	µg/m^3	3	0	0	0.092	0.15	0
1,1,2-Trichloroethane	3.3E+03	µg/m^3	3	0	0	0.10	0.15	0
Trichloroethene	2.6E+04	µg/m^3	3	3	100	--	--	--
Trichlorofluoromethane	1.2E+07	µg/m^3	3	3	100	--	--	--
1,2,4-Trimethylbenzene	1.2E+06	µg/m^3	3	3	100	--	--	--
1,3,5-Trimethylbenzene	1.2E+06	µg/m^3	3	2	67	0.15	0.15	0
Vinyl acetate	3.5E+06	µg/m^3	3	3	100	--	--	--
Vinyl chloride	9.5E+03	µg/m^3	3	0	0	0.12	0.15	0
o-Xylene	1.7E+06	µg/m^3	1	1	100	--	--	--
m,p-Xylene	1.9E+06	µg/m^3	1	1	100	--	--	--
Xylenes (total)	2.0E+06	µg/m^3	2	2	100	--	--	--
Ethyl tert-butyl ether	2.3E+05	µg/m^3	3	0	0	0.084	0.75	0
alpha-Methylstyrene	2.0E+07	µg/m^3	1	0	0	0.75	0.75	0
tert Butyl alcohol	4.7E+08	µg/m^3	3	3	100	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	1.3E+09	µg/m^3	3	1	33	1.6	1.6	0

Notes:

-- = not available

bgs = below ground surface

ft = feet

RBC = Risk-Based Concentration

SQL = sample quantitation limit

µg/m^3 = microgram per cubic meter

[1] Risk-Based Concentrations (RBCs) used in this evaluation are the lowest among the 5 ft bgs soil gas RBCs for indoor workers, outdoor workers and construction workers.

TABLE 4-12A. Summary Statistics for 2007 Soil Gas Data (10 ft bgs) – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
Acetone	µg/m^3	16	15	94	6.0	6.0	29	240	82	110	60	0.57	TSB-CJ-08
Benzene	µg/m^3	16	8	50	4.9	4.9	5.5	15	7.5	8.3	3.3	0.40	TSB-CR-02
Benzyl chloride	µg/m^3	16	0	0	42	42	--	--	--	--	--	--	--
Bromodichloromethane	µg/m^3	16	4	25	6.8	6.8	31	270	40	96	120	1.2	TSB-CJ-02
Bromoform	µg/m^3	16	0	0	5.3	5.3	--	--	--	--	--	--	--
Bromomethane	µg/m^3	16	2	13	7.9	7.9	8.3	9.1	8.7	8.7	0.56	0.064	TSB-CJ-02
2-Butanone	µg/m^3	16	6	38	6.0	6.0	9.3	23	14	15	6.2	0.41	TSB-CJ-08
Carbon disulfide	µg/m^3	16	1	6	6.3	6.3	12	12	12	12	--	--	TSB-CR-05
Carbon tetrachloride	µg/m^3	16	2	13	6.4	6.4	20	21	21	21	0.45	0.022	TSB-CR-05
Chlorobenzene	µg/m^3	16	3	19	4.7	4.7	5.6	12	5.6	7.7	3.5	0.46	TSB-CR-02
Chloroethane	µg/m^3	16	6	38	4.0	4.0	9.1	130	90	81	43	0.53	TSB-CR-01
Chloroform	µg/m^3	16	15	94	5.0	5.0	9.0	119000	995	17500	36300	2.1	TSB-CR-03
Chloromethane	µg/m^3	16	6	38	2.1	2.1	3.0	4.2	3.2	3.4	0.53	0.16	TSB-CJ-02
Dibromochloromethane	µg/m^3	16	0	0	8.7	8.7	--	--	--	--	--	--	--
1,2-Dibromoethane	µg/m^3	16	0	0	7.8	7.8	--	--	--	--	--	--	--
1,2-Dichlorobenzene	µg/m^3	16	0	0	5.5	5.5	--	--	--	--	--	--	--
1,3-Dichlorobenzene	µg/m^3	16	4	25	4.9	4.9	7.4	10	9.2	9.0	1.4	0.15	TSB-CR-01
1,4-Dichlorobenzene	µg/m^3	16	0	0	18	18	--	--	--	--	--	--	--
Dichlorodifluoromethane	µg/m^3	16	0	0	5.0	5.0	--	--	--	--	--	--	--
1,1-Dichloroethane	µg/m^3	16	7	44	4.1	4.1	54	1400	260	480	500	1.0	TSB-CR-03
1,2-Dichloroethane	µg/m^3	16	5	31	4.1	4.1	36	140	45	63	44	0.69	TSB-CJ-02
1,1-Dichloroethene	µg/m^3	16	3	19	4.0	4.0	6.5	24	7.3	13	10	0.79	TSB-CJ-02
cis-1,2-Dichloroethene	µg/m^3	16	0	0	3.2	3.2	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	µg/m^3	16	0	0	4.0	4.0	--	--	--	--	--	--	--
1,2-Dichloropropane	µg/m^3	16	0	0	7.1	7.1	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	µg/m^3	16	0	0	6.9	6.9	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	µg/m^3	16	0	0	4.6	4.6	--	--	--	--	--	--	--
Ethyl benzene	µg/m^3	16	1	6.3	4.4	4.4	4.4	4.4	4.4	4.4	--	--	TSB-CJ-03
4-Ethyltoluene	µg/m^3	16	2	13	4.0	4.0	4.4	7.4	5.9	5.9	2.1	0.35	TSB-CR-05
Freon 114	µg/m^3	16	0	0	7.1	7.1	--	--	--	--	--	--	--
Hexachlorobutadiene	µg/m^3	16	0	0	14	14	--	--	--	--	--	--	--
2-Hexanone	µg/m^3	16	0	0	8.4	8.4	--	--	--	--	--	--	--
4-Methyl-2-pentanone	µg/m^3	16	0	0	8.4	8.4	--	--	--	--	--	--	--
Methylene Chloride	µg/m^3	16	15	94	2.8	2.8	4.6	35	9.9	16	10	0.67	TSB-CR-01
Styrene	µg/m^3	16	0	0	4.3	4.3	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	µg/m^3	16	0	0	7.0	7.0	--	--	--	--	--	--	--
Tetrachloroethene	µg/m^3	16	11	69	6.9	6.9	7.6	1590	76	542.0	652.0	1.2	TSB-CJ-01
Toluene	µg/m^3	16	14	88	3.8	3.8	6.1	27	11	12	6.2	0.50	TSB-CJ-07

TABLE 4-12A. Summary Statistics for 2007 Soil Gas Data (10 ft bgs) – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
1,2,4-Trichlorobenzene	µg/m^3	16	0	0	19	19	--	--	--	--	--	--	--
1,1,1-Trichloroethane	µg/m^3	16	0	0	5.6	5.6	--	--	--	--	--	--	--
1,1,2-Trichloroethane	µg/m^3	16	5	31	5.6	5.6	6.7	36	22	23	11	0.50	TSB-CJ-02
Trichloroethene	µg/m^3	16	6	38	5.5	5.5	18	210	30	61	76	1.2	TSB-CR-02
Trichlorofluoromethane	µg/m^3	16	0	0	5.7	5.7	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	µg/m^3	16	1	6	6.5	6.5	10	10	10	10	--	--	TSB-CR-05
1,3,5-Trimethylbenzene	µg/m^3	16	0	0	5.5	5.5	--	--	--	--	--	--	--
Vinyl acetate	µg/m^3	16	0	0	7.2	7.2	--	--	--	--	--	--	--
Vinyl chloride	µg/m^3	16	4	25	3.9	3.9	10	150	12	47	71	1.5	TSB-CJ-02
o-Xylene	µg/m^3	16	2	13	4.4	4.4	4.4	4.4	4.4	4.4	0.0	0.0	TSB-CJ-02
m,p-Xylene	µg/m^3	16	8	50	8.8	8.8	8.8	16	10	11	2.5	0.22	TSB-CJ-03
Xylenes (total)	µg/m^3	16	8	50	4.4	4.4	8.8	20	10	12	4.5	0.36	TSB-CJ-03
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/m^3	16	0	0	7.8	7.8	--	--	--	--	--	--	--

Notes:

-- = not available

bgs = below ground surface

ft = feet

SQL = sample quantitation limit

µg/m^3 = microgram per cubic meter

TABLE 4-12B. Summary Statistics for 2007 Soil Gas Data (10 ft bgs) – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
Hexachlorobutadiene	µg/m^3	9	1	11	14	14	16	16	16	16	--	--	TSB-DR-04
Acetone	µg/m^3	9	9	100	--	--	29	140	87	88	32	0.36	TSB-DR-06
Benzene	µg/m^3	9	4	44	4.9	4.9	4.9	10	5.2	6.3	2.5	0.39	TSB-DR-04
Benzyl chloride	µg/m^3	9	0	0	42	42	--	--	--	--	--	--	--
Bromodichloromethane	µg/m^3	9	0	0	6.8	6.8	--	--	--	--	--	--	--
Bromoform	µg/m^3	9	0	0	5.3	5.3	--	--	--	--	--	--	--
Bromomethane	µg/m^3	9	1	11	7.9	7.9	9.9	9.9	9.9	9.9	--	--	TSB-DR-01
2-Butanone	µg/m^3	9	2	22	6.0	6.0	8.1	19	14	14	7.6	0.57	TSB-DR-06
Carbon disulfide	µg/m^3	9	0	0	6.3	6.3	--	--	--	--	--	--	--
Carbon tetrachloride	µg/m^3	9	1	11	6.4	6.4	9.6	9.6	9.6	9.6	--	--	TSB-DR-05
Chlorobenzene	µg/m^3	9	0	0	4.7	4.7	--	--	--	--	--	--	--
Chloroethane	µg/m^3	9	2	22	4.0	4.0	54	73	63	63	13	0.21	TSB-DR-01
Chloroform	µg/m^3	9	9	100	--	--	47	3200	390	740	990	1.3	TSB-DR-02
Chloromethane	µg/m^3	9	1	11	2.1	2.1	3.4	3.4	3.4	3.4	--	--	TSB-DR-01
Dibromochloromethane	µg/m^3	9	0	0	8.7	8.7	--	--	--	--	--	--	--
1,2-Dibromoethane	µg/m^3	9	0	0	7.8	7.8	--	--	--	--	--	--	--
1,2-Dichlorobenzene	µg/m^3	9	0	0	5.5	5.5	--	--	--	--	--	--	--
1,3-Dichlorobenzene	µg/m^3	9	1	11	4.9	4.9	6.1	6.1	6.1	6.1	--	--	TSB-DR-02
1,4-Dichlorobenzene	µg/m^3	9	0	0	18	18	--	--	--	--	--	--	--
Dichlorodifluoromethane	µg/m^3	9	0	0	5.0	5.0	--	--	--	--	--	--	--
1,1-Dichloroethane	µg/m^3	9	4	44	4.1	4.1	6.6	30	8.7	13	11	0.82	TSB-DR-02
1,2-Dichloroethane	µg/m^3	9	1	11	4.1	4.1	7.0	7.0	7.0	7.0	--	--	TSB-DR-02
1,1-Dichloroethene	µg/m^3	9	0	0	4.0	4.0	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	µg/m^3	9	0	0	3.2	3.2	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	µg/m^3	9	0	0	4.0	4.0	--	--	--	--	--	--	--
1,2-Dichloropropane	µg/m^3	9	0	0	7.1	7.1	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	µg/m^3	9	0	0	6.9	6.9	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	µg/m^3	9	0	0	4.6	4.6	--	--	--	--	--	--	--
Ethyl benzene	µg/m^3	9	0	0	4.4	4.4	--	--	--	--	--	--	--
4-Ethyltoluene	µg/m^3	9	0	0	4.0	4.0	--	--	--	--	--	--	--
Freon 114	µg/m^3	9	0	0	7.1	7.1	--	--	--	--	--	--	--
2-Hexanone	µg/m^3	9	0	0	8.4	8.4	--	--	--	--	--	--	--
4-Methyl-2-pentanone	µg/m^3	9	0	0	8.4	8.4	--	--	--	--	--	--	--
Methylene Chloride	µg/m^3	9	9	100	--	--	7.1	39	10	16	12	0.72	TSB-DR-01
Styrene	µg/m^3	9	0	0	4.3	4.3	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	µg/m^3	9	0	0	7.0	7.0	--	--	--	--	--	--	--

TABLE 4-12B. Summary Statistics for 2007 Soil Gas Data (10 ft bgs) – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
Tetrachloroethene	µg/m^3	9	8	89	6.9	6.9	11	310	97	130	99	0.77	TSB-DR-04
Toluene	µg/m^3	9	7	78	3.8	3.8	3.8	12	6.5	7.5	3.2	0.42	TSB-DR-06
1,2,4-Trichlorobenzene	µg/m^3	9	0	0	19	19	--	--	--	--	--	--	--
1,1,1-Trichloroethane	µg/m^3	9	0	0	5.6	5.6	--	--	--	--	--	--	--
1,1,2-Trichloroethane	µg/m^3	9	0	0	5.6	5.6	--	--	--	--	--	--	--
Trichloroethene	µg/m^3	9	5	56	5.5	5.5	6.0	18	7.1	9.4	5.1	0.54	TSB-DR-04
Trichlorofluoromethane	µg/m^3	9	0	0	5.7	5.7	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	µg/m^3	9	0	0	6.5	6.5	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	µg/m^3	9	0	0	5.5	5.5	--	--	--	--	--	--	--
Vinyl acetate	µg/m^3	9	0	0	7.2	7.2	--	--	--	--	--	--	--
Vinyl chloride	µg/m^3	9	0	0	3.9	3.9	--	--	--	--	--	--	--
o-Xylene	µg/m^3	9	0	0	4.4	4.4	--	--	--	--	--	--	--
m,p-Xylene	µg/m^3	9	0	0	8.8	8.8	--	--	--	--	--	--	--
Xylenes (total)	µg/m^3	9	0	0	4.4	4.4	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/m^3	9	0	0	7.8	7.8	--	--	--	--	--	--	--

Notes:

-- = not available

bgs = below ground surface

ft = feet

SQL = sample quantitation limit

µg/m^3 = microgram per cubic meter

TABLE 4-13A. Summary Statistics for 2008 and 2013 Soil Gas Data (5 ft bgs) – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
Acetone	µg/m^3	9	9	100	--	--	7.6	25	13	14	5.9	0.41	E-SG-3
Acrylonitrile	µg/m^3	9	1	10	0.10	1.7	0.15	0.15	0.15	0.15	--	--	SG17
t-Amyl methyl ether	µg/m^3	9	0	0	0.076	1.7	--	--	--	--	--	--	--
Benzene	µg/m^3	9	9	100	--	--	1.4	12	1.9	4.0	4.1	1.0	E-SG-2
Benzyl chloride	µg/m^3	9	0	0	0.068	0.33	--	--	--	--	--	--	--
Bromodichloromethane	µg/m^3	9	4	40	0.10	0.17	0.22	0.86	0.57	0.56	0.32	0.57	SG90
Bromoform	µg/m^3	9	0	0	0.79	2.3	--	--	--	--	--	--	--
Bromomethane	µg/m^3	9	1	10	0.16	0.33	0.36	0.36	0.36	0.36	--	--	E-SG-1
1,3-Butadiene	µg/m^3	3	0	0	0.28	0.44	--	--	--	--	--	--	--
2-Butanone	µg/m^3	9	9	100	--	--	3.4	13	4.9	6.0	3.0	0.50	SG24
n-Butylbenzene	µg/m^3	6	6	100	--	--	0.19	2.4	0.23	0.71	0.89	1.3	SG18
sec-Butylbenzene	µg/m^3	6	2	30	0.82	1.7	0.23	0.24	0.23	0.23	0.0071	0.030	SG18
tert-Butylbenzene	µg/m^3	6	0	0	0.32	0.66	--	--	--	--	--	--	--
Carbon disulfide	µg/m^3	9	6	70	0.042	0.044	0.93	13	2.5	4.5	4.8	1.1	SG17
Carbon tetrachloride	µg/m^3	9	9	100	--	--	0.28	260	2.0	49	87	1.8	SG90
3-Chloro-1-propene	µg/m^3	6	0	0	0.16	0.33	--	--	--	--	--	--	--
Chlorobenzene	µg/m^3	9	4	40	0.16	0.33	0.11	17	4.2	6.4	8.1	1.3	E-SG-2
Chloroethane	µg/m^3	9	6	70	0.076	0.33	0.41	140	2.5	41	62	1.5	E-SG-3
Chloroform	µg/m^3	9	9	100	--	--	2.2	3900	490	1200	1400	1.1	SG90
Chloromethane	µg/m^3	9	0	0	0.022	0.33	--	--	--	--	--	--	--
Cumene	µg/m^3	6	1	20	0.79	1.7	0.55	0.55	0.55	0.55	--	--	SG91
Cyclohexane	µg/m^3	3	1	30	70	73	4.9	4.9	4.9	4.9	--	--	E-SG-1
p-Cymene	µg/m^3	6	4	70	1.6	1.7	0.18	0.92	0.41	0.48	0.36	0.75	SG91
1,2-Dibromo-3-chloropropane	µg/m^3	9	0	0	0.20	1.7	--	--	--	--	--	--	--
Dibromochloromethane	µg/m^3	9	0	0	0.11	0.33	--	--	--	--	--	--	--
1,2-Dibromoethane	µg/m^3	9	0	0	0.096	0.33	--	--	--	--	--	--	--
1,2-Dichlorobenzene	µg/m^3	9	3	30	0.15	0.33	2.7	16	6.1	8.3	6.9	0.84	SG19
1,3-Dichlorobenzene	µg/m^3	9	5	60	0.10	0.33	0.14	38	0.31	10	16	1.6	E-SG-2
1,4-Dichlorobenzene	µg/m^3	9	8	90	0.18	0.18	0.52	29	8.6	11	9.9	0.91	SG24
Dichlorodifluoromethane	µg/m^3	9	9	100	--	--	1.5	2.6	2.1	2.1	0.29	0.14	E-SG-3
1,1-Dichloroethane	µg/m^3	9	7	80	0.32	0.82	0.40	330	2.6	90	150	1.7	E-SG-2
1,2-Dichloroethane	µg/m^3	9	7	80	0.32	0.33	0.15	33	1.1	9.0	14	1.6	E-SG-3
1,1-Dichloroethene	µg/m^3	9	3	30	0.040	0.33	0.17	33	13	15	17	1.1	E-SG-2
cis-1,2-Dichloroethene	µg/m^3	9	4	40	0.068	0.32	0.27	2.3	0.81	1.0	0.96	0.92	E-SG-2
trans-1,2-Dichloroethene	µg/m^3	9	2	20	0.064	0.33	2.1	2.2	2.2	2.2	0.071	0.033	E-SG-3

TABLE 4-13A. Summary Statistics for 2008 and 2013 Soil Gas Data (5 ft bgs) – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
1,2-Dichloropropane	µg/m^3	9	4	40	0.11	0.32	0.36	1.4	0.57	0.73	0.46	0.63	E-SG-3
cis-1,3-Dichloropropene	µg/m^3	9	0	0	0.080	1.7	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	µg/m^3	9	0	0	0.24	1.7	--	--	--	--	--	--	--
1,4-Dioxane	µg/m^3	9	1	10	0.096	1.7	0.51	0.51	0.51	0.51	--	--	SG17
Ethanol	µg/m^3	6	6	100	--	--	3.7	7.3	5.6	5.4	1.3	0.23	SG17
Ethyl benzene	µg/m^3	9	8	90	1.6	1.6	0.13	8.9	0.53	1.6	3.0	1.9	SG91
Ethyl acetate	µg/m^3	3	3	100	--	--	2.1	14	2.7	6.3	6.7	1.1	E-SG-1
4-Ethyltoluene	µg/m^3	9	5	60	1.0	1.6	0.11	5.1	0.42	1.6	2.1	1.3	SG91
Freon 114	µg/m^3	9	3	30	0.16	1.7	0.093	0.098	0.095	0.095	0.0025	0.026	SG17
n-Heptane	µg/m^3	9	5	60	0.077	1.7	0.21	2.4	0.51	1.2	1.1	0.91	E-SG-3
Hexachlorobutadiene	µg/m^3	9	8	90	0.14	0.14	0.26	56	3.5	17	24	1.4	SG24
n-Hexane	µg/m^3	3	3	100	--	--	2.3	3.4	3.1	2.9	0.57	0.19	E-SG-3
2-Hexanone	µg/m^3	9	8	90	0.23	0.23	0.17	1.2	0.64	0.62	0.33	0.52	E-SG-3
Methyl tert-butyl ether	µg/m^3	9	0	0	0.096	0.33	--	--	--	--	--	--	--
4-Methyl-2-pentanone	µg/m^3	9	7	80	0.85	1.6	0.24	7.2	0.77	1.9	2.5	1.3	E-SG-2
Methylene Chloride	µg/m^3	9	8	90	0.078	0.078	0.46	19	1.6	5.0	7.2	1.4	E-SG-2
Methylmethacrylate	µg/m^3	6	0	0	0.79	1.7	--	--	--	--	--	--	--
Naphthalene	µg/m^3	9	9	100	--	--	0.36	18	1.2	2.9	5.7	2.0	SG18
n-Octane	µg/m^3	6	3	50	0.79	1.7	0.11	11	0.36	3.8	6.2	1.6	SG91
Diisopropyl ether	µg/m^3	9	0	0	0.058	1.7	--	--	--	--	--	--	--
n-Propylbenzene	µg/m^3	6	5	80	1.6	1.6	0.088	3.0	0.34	0.87	1.2	1.4	SG91
Styrene	µg/m^3	9	5	60	0.052	1.7	0.098	0.46	0.26	0.28	0.13	0.47	SG17
1,1,1,2-Tetrachloroethane	µg/m^3	3	0	0	0.15	0.16	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	µg/m^3	9	0	0	0.072	0.33	--	--	--	--	--	--	--
Tetrachloroethene	µg/m^3	9	9	100	--	--	1.2	1100	53	200	360	1.9	E-SG-3
Tetrahydrofuran	µg/m^3	3	0	0	1.2	1.3	--	--	--	--	--	--	--
Toluene	µg/m^3	9	9	100	--	--	0.56	24	2.2	6.6	8.2	1.2	SG91
1,2,4-Trichlorobenzene	µg/m^3	9	2	20	0.16	0.33	9.9	79	44	44	49	1.1	E-SG-2
1,1,1-Trichloroethane	µg/m^3	9	0	0	0.092	0.33	--	--	--	--	--	--	--
1,1,2-Trichloroethane	µg/m^3	9	3	30	0.10	0.33	1.2	21	8.2	10	10	0.99	E-SG-3
Trichloroethene	µg/m^3	9	9	100	--	--	0.19	570	8.0	89	190	2.1	E-SG-2
Trichlorofluoromethane	µg/m^3	9	7	80	1.1	1.2	1.0	1.6	1.1	1.2	0.20	0.17	E-SG-3
1,2,4-Trimethylbenzene	µg/m^3	9	9	100	--	--	0.35	15	0.68	3.6	5.9	1.6	SG91
1,3,5-Trimethylbenzene	µg/m^3	9	3	30	0.15	1.7	0.33	4.5	3.3	2.7	2.1	0.79	SG91
Vinyl acetate	µg/m^3	9	9	100	--	--	1.8	6.3	3.8	3.7	1.7	0.45	E-SG-3
Vinyl chloride	µg/m^3	9	2	20	0.12	0.33	2.3	4.4	3.4	3.4	1.5	0.44	E-SG-2

TABLE 4-13A. Summary Statistics for 2008 and 2013 Soil Gas Data (5 ft bgs) – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
o-Xylene	µg/m^3	6	6	100	--	--	0.27	16	0.69	3.2	6.3	2.0	SG91
m,p-Xylene	µg/m^3	6	6	100	--	--	0.60	47	1.1	8.8	19	2.1	SG91
Xylenes (total)	µg/m^3	3	3	100	--	--	3.2	3.9	3.7	3.6	0.36	0.10	E-SG-2
Ethyl tert-butyl ether	µg/m^3	9	0	0	0.084	1.7	--	--	--	--	--	--	--
alpha-Methylstyrene	µg/m^3	6	2	30	0.85	1.7	0.19	0.30	0.24	0.24	0.078	0.32	SG18
tert Butyl alcohol	µg/m^3	9	9	100	--	--	0.23	3.1	0.63	1.2	1.1	0.90	E-SG-3
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/m^3	9	6	70	1.6	1.6	0.46	0.52	0.48	0.48	0.023	0.048	SG24

Notes:

-- = not available

bgs = below ground surface

ft = feet

µg/m^3 = microgram per cubic meter

SQL = sample quantitation limit

TABLE 4-13B. Summary Statistics for 2008 and 2013 Soil Gas Data (5 ft bgs) – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
Acetone	µg/m^3	5	5	100	--	--	6.6	19	11	11	4.9	0.43	SG17
Acrylonitrile	µg/m^3	5	1	20	0.10	0.79	0.15	0.15	0.15	0.15	--	--	SG17
t-Amyl methyl ether	µg/m^3	5	0	0	0.076	0.82	--	--	--	--	--	--	--
Benzene	µg/m^3	5	5	100	--	--	1.4	2.2	1.9	1.8	0.34	0.18	SG16
Benzyl chloride	µg/m^3	5	0	0	0.068	0.16	--	--	--	--	--	--	--
Bromodichloromethane	µg/m^3	5	3	60	0.10	0.16	0.30	0.69	0.36	0.45	0.21	0.47	SG16
Bromoform	µg/m^3	5	0	0	0.79	2.2	--	--	--	--	--	--	--
Bromomethane	µg/m^3	5	1	20	0.16	0.20	0.36	0.36	0.36	0.36	--	--	E-SG-1
1,3-Butadiene	µg/m^3	2	0	0	0.28	0.28	--	--	--	--	--	--	--
2-Butanone	µg/m^3	5	5	100	--	--	3.3	5.5	4.0	4.2	0.82	0.19	SG17
n-Butylbenzene	µg/m^3	3	3	100	--	--	0.18	2.4	0.22	0.93	1.3	1.4	SG18
sec-Butylbenzene	µg/m^3	3	1	30	0.79	0.82	0.24	0.24	0.24	0.24	--	--	SG18
tert-Butylbenzene	µg/m^3	3	0	0	0.31	0.33	--	--	--	--	--	--	--
Carbon disulfide	µg/m^3	5	3	60	0.042	0.042	0.90	13	7.3	7.1	6.1	0.86	SG17
Carbon tetrachloride	µg/m^3	5	5	100	--	--	0.28	110	0.35	27	48	1.7	SG18
3-Chloro-1-propene	µg/m^3	3	0	0	0.16	0.16	--	--	--	--	--	--	--
Chlorobenzene	µg/m^3	5	3	60	0.070	0.16	0.11	1.5	0.12	0.58	0.80	1.4	SG16
Chloroethane	µg/m^3	5	3	60	0.076	0.076	0.41	27	3.8	10	14	1.4	SG16
Chloroform	µg/m^3	5	5	100	--	--	2.2	1800	98	430	767	1.8	SG18
Chloromethane	µg/m^3	5	0	0	0.022	0.16	--	--	--	--	--	--	--
Cumene	µg/m^3	3	0	0	0.79	0.82	--	--	--	--	--	--	--
Cyclohexane	µg/m^3	2	1	50	0.18	0.18	4.9	4.9	4.9	4.9	--	--	E-SG-1
p-Cymene	µg/m^3	3	2	70	0.79	0.79	0.19	0.62	0.41	0.41	0.30	0.75	SG18
1,2-Dibromo-3-chloropropane	µg/m^3	5	0	0	0.20	0.82	--	--	--	--	--	--	--
Dibromochloromethane	µg/m^3	5	0	0	0.11	0.16	--	--	--	--	--	--	--
1,2-Dibromoethane	µg/m^3	5	0	0	0.096	0.16	--	--	--	--	--	--	--
1,2-Dichlorobenzene	µg/m^3	5	1	20	0.15	0.16	0.71	0.71	0.71	0.71	--	--	SG16
1,3-Dichlorobenzene	µg/m^3	5	3	60	0.10	0.16	0.12	0.65	0.14	0.30	0.30	0.99	SG16
1,4-Dichlorobenzene	µg/m^3	5	3	60	0.18	0.18	0.48	0.83	0.52	0.61	0.19	0.31	SG18
Dichlorodifluoromethane	µg/m^3	5	5	100	--	--	1.5	2.3	2.0	1.9	0.32	0.17	SG17
1,1-Dichloroethane	µg/m^3	5	3	60	0.82	0.82	0.68	3.7	2.6	2.3	1.5	0.66	SG16
1,2-Dichloroethane	µg/m^3	5	4	80	0.090	0.090	0.15	2.3	0.46	0.84	1.0	1.2	SG17
1,1-Dichloroethene	µg/m^3	5	1	20	0.040	0.16	0.10	0.10	0.10	0.10	--	--	SG16
cis-1,2-Dichloroethene	µg/m^3	5	0	0	0.068	0.16	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	µg/m^3	5	0	0	0.064	0.16	--	--	--	--	--	--	--

TABLE 4-13B. Summary Statistics for 2008 and 2013 Soil Gas Data (5 ft bgs) – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
1,2-Dichloropropane	µg/m^3	5	1	20	0.11	0.16	0.36	0.36	0.36	0.36	--	--	SG18
cis-1,3-Dichloropropene	µg/m^3	5	0	0	0.080	0.82	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	µg/m^3	5	0	0	0.24	0.82	--	--	--	--	--	--	--
1,4-Dioxane	µg/m^3	5	2	40	0.096	0.79	0.25	0.51	0.38	0.38	0.18	0.48	SG17
Ethanol	µg/m^3	3	3	100	--	--	5.6	7.3	5.7	6.2	0.95	0.15	SG17
Ethyl benzene	µg/m^3	5	5	100	--	--	0.13	1.3	0.23	0.49	0.49	1.0	E-SG-1
Ethyl acetate	µg/m^3	2	2	100	--	--	2.5	14	8.2	8.2	8.1	0.99	E-SG-1
4-Ethyltoluene	µg/m^3	5	2	40	0.79	1.0	0.11	1.9	1.0	1.0	1.3	1.3	SG18
Freon 114	µg/m^3	5	3	60	0.16	0.16	0.095	0.12	0.098	0.10	0.014	0.13	SG16
n-Heptane	µg/m^3	5	5	100	--	--	0.21	2.3	0.51	1.0	0.93	0.91	E-SG-1
Hexachlorobutadiene	µg/m^3	5	4	80	0.14	0.14	0.26	7.1	2.8	3.2	3.1	0.94	E-SG-9
n-Hexane	µg/m^3	2	2	100	--	--	1.1	2.3	1.7	1.7	0.85	0.50	E-SG-1
2-Hexanone	µg/m^3	5	5	100	--	--	0.38	0.83	0.54	0.61	0.18	0.31	SG17
Methyl tert-butyl ether	µg/m^3	5	1	20	0.096	0.16	0.13	0.13	0.13	0.13	--	--	SG16
4-Methyl-2-pentanone	µg/m^3	5	4	80	0.79	0.79	0.34	2.1	0.57	0.90	0.83	0.92	E-SG-9
Methylene Chloride	µg/m^3	5	3	60	0.078	0.078	0.94	6.4	1.8	3.0	2.9	0.96	SG16
Methylmethacrylate	µg/m^3	3	0	0	0.79	0.82	--	--	--	--	--	--	--
Naphthalene	µg/m^3	5	4	80	0.42	0.42	0.72	18	1.1	5.2	8.5	1.6	SG18
n-Octane	µg/m^3	3	2	70	0.79	0.79	0.24	0.36	0.30	0.30	0.085	0.28	SG17
Diisopropyl ether	µg/m^3	5	0	0	0.058	0.82	--	--	--	--	--	--	--
n-Propylbenzene	µg/m^3	3	2	70	0.79	0.79	0.088	0.69	0.39	0.39	0.43	1.1	SG18
Styrene	µg/m^3	5	3	60	0.050	0.79	0.26	0.46	0.35	0.36	0.10	0.28	SG17
1,1,1,2-Tetrachloroethane	µg/m^3	2	0	0	0.15	0.15	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	µg/m^3	5	0	0	0.072	0.16	--	--	--	--	--	--	--
Tetrachloroethene	µg/m^3	5	5	100	--	--	1.2	87	15	33	36	1.1	SG16
Tetrahydrofuran	µg/m^3	2	0	0	1.2	1.2	--	--	--	--	--	--	--
Toluene	µg/m^3	5	5	100	--	--	1.0	15	2.2	5.2	5.9	1.2	E-SG-1
1,2,4-Trichlorobenzene	µg/m^3	5	1	20	0.16	0.22	1.6	1.6	1.6	1.6	--	--	SG16
1,1,1-Trichloroethane	µg/m^3	5	0	0	0.092	0.16	--	--	--	--	--	--	--
1,1,2-Trichloroethane	µg/m^3	5	2	40	0.10	0.16	1.2	1.2	1.2	1.2	0	0	SG16
Trichloroethene	µg/m^3	5	5	100	--	--	0.30	4.4	0.41	1.2	1.8	1.4	SG16
Trichlorofluoromethane	µg/m^3	5	3	60	1.1	1.1	1.0	1.1	1.1	1.1	0.058	0.054	SG16
1,2,4-Trimethylbenzene	µg/m^3	5	5	100	--	--	0.25	13	0.44	2.9	5.6	1.9	SG18
1,3,5-Trimethylbenzene	µg/m^3	5	1	20	0.15	0.82	3.3	3.3	3.3	3.3	--	--	SG18
Vinyl acetate	µg/m^3	5	5	100	--	--	0.84	5.1	2.5	2.8	1.7	0.60	SG17
Vinyl chloride	µg/m^3	5	1	20	0.12	0.16	0.094	0.094	0.094	0.094	--	--	SG16

TABLE 4-13B. Summary Statistics for 2008 and 2013 Soil Gas Data (5 ft bgs) – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
o-Xylene	µg/m^3	3	3	100	--	--	0.27	0.64	0.39	0.43	0.19	0.44	SG18
m,p-Xylene	µg/m^3	3	3	100	--	--	0.55	0.69	0.60	0.61	0.071	0.12	SG17
Xylenes (total)	µg/m^3	2	2	100	--	--	3.5	3.7	3.6	3.6	0.14	0.039	E-SG-1
Ethyl tert-butyl ether	µg/m^3	5	0	0	0.084	0.82	--	--	--	--	--	--	--
alpha-Methylstyrene	µg/m^3	3	3	100	--	--	0.19	0.54	0.30	0.34	0.18	0.52	SG16
tert Butyl alcohol	µg/m^3	5	5	100	--	--	0.36	2.0	0.62	0.88	0.66	0.74	E-SG-1
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/m^3	5	3	60	1.6	1.6	0.46	0.47	0.46	0.46	0.0058	0.012	SG16

Notes:

-- = not available

bgs = below ground surface

ft = feet

µg/m^3 = microgram per cubic meter

SQL = sample quantitation limit

TABLE 4-13C. Summary Statistics for 2008 and 2013 Soil Gas Data (5 ft bgs) – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
Acetone	µg/m^3	3	3	100	--	--	6.2	13	12	10	3.7	0.35	E-SG-7
Acrylonitrile	µg/m^3	3	0	0	0.10	0.75	--	--	--	--	--	--	--
t-Amyl methyl ether	µg/m^3	3	0	0	0.076	0.75	--	--	--	--	--	--	--
Benzene	µg/m^3	3	3	100	--	--	1.5	2.4	1.7	1.9	0.47	0.25	SG45
Benzyl chloride	µg/m^3	3	0	0	0.068	0.15	--	--	--	--	--	--	--
Bromodichloromethane	µg/m^3	3	3	100	--	--	0.14	1.3	0.90	0.78	0.59	0.76	E-SG-8
Bromoform	µg/m^3	3	0	0	0.75	2.2	--	--	--	--	--	--	--
Bromomethane	µg/m^3	3	0	0	0.15	0.20	--	--	--	--	--	--	--
1,3-Butadiene	µg/m^3	2	0	0	0.28	0.28	--	--	--	--	--	--	--
2-Butanone	µg/m^3	3	3	100	--	--	2.9	4.6	3.2	3.6	0.91	0.25	E-SG-7
n-Butylbenzene	µg/m^3	1	1	100	--	--	0.24	0.24	0.24	0.24	--	--	SG45
sec-Butylbenzene	µg/m^3	1	0	0	0.75	0.75	--	--	--	--	--	--	--
tert-Butylbenzene	µg/m^3	1	0	0	0.30	0.30	--	--	--	--	--	--	--
Carbon disulfide	µg/m^3	3	1	30	0.042	0.042	10	10	10	10	--	--	SG45
Carbon tetrachloride	µg/m^3	3	3	100	--	--	3.5	63	33	33	30	0.90	E-SG-8
3-Chloro-1-propene	µg/m^3	1	0	0	0.15	0.15	--	--	--	--	--	--	--
Chlorobenzene	µg/m^3	3	2	70	0.15	0.15	0.29	0.43	0.36	0.36	0.099	0.27	E-SG-7
Chloroethane	µg/m^3	3	0	0	0.076	0.15	--	--	--	--	--	--	--
Chloroform	µg/m^3	3	3	100	--	--	36	140	63	80	54	0.68	E-SG-8
Chloromethane	µg/m^3	3	0	0	0.022	0.15	--	--	--	--	--	--	--
Cumene	µg/m^3	1	0	0	0.75	0.75	--	--	--	--	--	--	--
Cyclohexane	µg/m^3	2	0	0	0.18	0.18	--	--	--	--	--	--	--
p-Cymene	µg/m^3	1	1	100	--	--	1.5	1.5	1.5	1.5	--	--	SG45
1,2-Dibromo-3-chloropropane	µg/m^3	3	0	0	0.20	0.75	--	--	--	--	--	--	--
Dibromochloromethane	µg/m^3	3	0	0	0.11	0.15	--	--	--	--	--	--	--
1,2-Dibromoethane	µg/m^3	3	0	0	0.096	0.15	--	--	--	--	--	--	--
1,2-Dichlorobenzene	µg/m^3	3	1	30	0.15	0.15	3.4	3.4	3.4	3.4	--	--	E-SG-7
1,3-Dichlorobenzene	µg/m^3	3	0	0	0.10	0.15	--	--	--	--	--	--	--
1,4-Dichlorobenzene	µg/m^3	3	2	70	0.18	0.18	0.94	4.2	2.6	2.6	2.3	0.90	SG45
Dichlorodifluoromethane	µg/m^3	3	3	100	--	--	1.8	2.1	2.0	2.0	0.15	0.078	E-SG-8
1,1-Dichloroethane	µg/m^3	3	0	0	0.15	0.82	--	--	--	--	--	--	--
1,2-Dichloroethane	µg/m^3	3	0	0	0.090	0.15	--	--	--	--	--	--	--
1,1-Dichloroethene	µg/m^3	3	0	0	0.040	0.15	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	µg/m^3	3	1	30	0.068	0.068	0.14	0.14	0.14	0.14	--	--	SG45
trans-1,2-Dichloroethene	µg/m^3	3	0	0	0.064	0.15	--	--	--	--	--	--	--

TABLE 4-13C. Summary Statistics for 2008 and 2013 Soil Gas Data (5 ft bgs) – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
1,2-Dichloropropane	µg/m^3	3	0	0	0.11	0.15	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	µg/m^3	3	0	0	0.080	0.75	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	µg/m^3	3	0	0	0.24	0.75	--	--	--	--	--	--	--
1,4-Dioxane	µg/m^3	3	0	0	0.096	0.75	--	--	--	--	--	--	--
Ethanol	µg/m^3	1	1	100	--	--	2.2	2.2	2.2	2.2	--	--	SG45
Ethyl benzene	µg/m^3	3	3	100	--	--	0.71	0.85	0.79	0.78	0.070	0.090	SG45
Ethyl acetate	µg/m^3	2	2	100	--	--	0.75	2.0	1.4	1.4	0.88	0.64	E-SG-7
4-Ethyltoluene	µg/m^3	3	2	70	1.0	1.0	0.25	1.2	0.72	0.72	0.67	0.93	E-SG-8
Freon 114	µg/m^3	3	1	30	0.16	0.16	0.085	0.085	0.085	0.085	--	--	SG45
n-Heptane	µg/m^3	3	2	70	0.074	0.074	0.14	0.95	0.54	0.54	0.57	1.1	E-SG-7
Hexachlorobutadiene	µg/m^3	3	0	0	0.14	0.15	--	--	--	--	--	--	--
n-Hexane	µg/m^3	2	2	100	--	--	0.95	1.7	1.3	1.3	0.53	0.40	E-SG-7
2-Hexanone	µg/m^3	3	1	30	0.22	0.22	0.42	0.42	0.42	0.42	--	--	SG45
Methyl tert-butyl ether	µg/m^3	3	0	0	0.096	0.15	--	--	--	--	--	--	--
4-Methyl-2-pentanone	µg/m^3	3	3	100	--	--	1.9	4.2	2.5	2.9	1.2	0.42	E-SG-7
Methylene Chloride	µg/m^3	3	1	30	0.078	0.078	0.097	0.097	0.097	0.097	--	--	SG45
Methylmethacrylate	µg/m^3	1	0	0	0.75	0.75	--	--	--	--	--	--	--
Naphthalene	µg/m^3	3	3	100	--	--	0.89	1.3	0.94	1.0	0.22	0.21	SG45
n-Octane	µg/m^3	1	1	100	--	--	0.43	0.43	0.43	0.43	--	--	SG45
Diisopropyl ether	µg/m^3	3	0	0	0.058	0.75	--	--	--	--	--	--	--
n-Propylbenzene	µg/m^3	1	1	100	--	--	0.24	0.24	0.24	0.24	--	--	SG45
Styrene	µg/m^3	3	1	30	0.050	0.050	0.13	0.13	0.13	0.13	--	--	SG45
1,1,1,2-Tetrachloroethane	µg/m^3	2	0	0	0.15	0.15	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	µg/m^3	3	0	0	0.072	0.15	--	--	--	--	--	--	--
Tetrachloroethene	µg/m^3	3	3	100	--	--	1.5	9.1	2.5	4.4	4.1	0.95	SG45
Tetrahydrofuran	µg/m^3	2	0	0	1.2	1.2	--	--	--	--	--	--	--
Toluene	µg/m^3	3	3	100	--	--	0.77	3.1	1.8	1.9	1.2	0.62	E-SG-7
1,2,4-Trichlorobenzene	µg/m^3	3	0	0	0.15	0.22	--	--	--	--	--	--	--
1,1,1-Trichloroethane	µg/m^3	3	0	0	0.092	0.15	--	--	--	--	--	--	--
1,1,2-Trichloroethane	µg/m^3	3	0	0	0.10	0.15	--	--	--	--	--	--	--
Trichloroethene	µg/m^3	3	3	100	--	--	8.0	130	18	52	68	1.3	E-SG-8
Trichlorofluoromethane	µg/m^3	3	3	100	--	--	1.2	1.3	1.3	1.3	0.058	0.046	E-SG-8
1,2,4-Trimethylbenzene	µg/m^3	3	3	100	--	--	0.77	2.5	0.94	1.4	0.95	0.68	E-SG-8
1,3,5-Trimethylbenzene	µg/m^3	3	2	70	0.15	0.15	0.38	0.67	0.53	0.53	0.21	0.39	E-SG-8
Vinyl acetate	µg/m^3	3	3	100	--	--	2.3	3.0	2.4	2.6	0.38	0.15	E-SG-8

TABLE 4-13C. Summary Statistics for 2008 and 2013 Soil Gas Data (5 ft bgs) – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
Vinyl chloride	$\mu g/m^3$	3	0	0	0.12	0.15	--	--	--	--	--	--	--
o-Xylene	$\mu g/m^3$	1	1	100	--	--	1.4	1.4	1.4	1.4	--	--	SG45
m,p-Xylene	$\mu g/m^3$	1	1	100	--	--	3.7	3.7	3.7	3.7	--	--	SG45
Xylenes (total)	$\mu g/m^3$	2	2	100	--	--	3.7	4.3	4.0	4.0	0.42	0.11	E-SG-8
Ethyl tert-butyl ether	$\mu g/m^3$	3	0	0	0.084	0.75	--	--	--	--	--	--	--
alpha-Methylstyrene	$\mu g/m^3$	1	0	0	0.75	0.75	--	--	--	--	--	--	--
tert Butyl alcohol	$\mu g/m^3$	3	3	100	--	--	0.30	1.7	1.4	1.1	0.74	0.65	E-SG-8
1,1,2-Trichloro-1,2,2-trifluoroethane	$\mu g/m^3$	3	1	30	1.6	1.6	0.46	0.46	0.46	0.46	--	--	SG45

Notes:

-- = not available

bgs = below ground surface

ft = feet

$\mu g/m^3$ = microgram per cubic meter

SQL = sample quantitation limit

TABLE 4-14A: Evaluation of Sample Quantitation Limits for Shallow Groundwater – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of Screen
Acenaphthene	1.8E+05	µg/L	49	2	4.1	0.047	10	0
Acenaphthylene	1.2E+05	µg/L	49	0	0	0.047	10	0
Acetophenone	1.8E+08	µg/L	51	5	9.8	1.9	200	0
Aniline	--	µg/L	51	0	0	2.1	250	--
Anthracene	2.6E+05	µg/L	49	1	2.0	0.047	10	0
Diphenyl sulfone	--	µg/L	51	0	0	2.8	330	--
Diphenyl sulfide	--	µg/L	51	1	2.0	2.8	330	--
Benzo(a)anthracene	1.2E+04	µg/L	49	0	0	0.047	10	0
Benzo(a)pyrene	--	µg/L	49	0	0	0.047	10	--
Benzo(b)fluoranthene	--	µg/L	49	0	0	0.047	10	--
Benzo(g,h,i)perylene	--	µg/L	49	0	0	0.047	10	--
Benzo(k)fluoranthene	--	µg/L	49	0	0	0.047	10	--
Benzoic acid	--	µg/L	51	0	0	5.1	600	--
Benzyl alcohol	--	µg/L	51	0	0	1.7	200	--
bis(2-Ethylhexyl)phthalate	--	µg/L	60	4	6.7	1.7	200	--
bis(2-Chloroethoxy)methane	--	µg/L	51	0	0	2.5	300	--
bis(2-Chloroethyl) ether	2.1E+03	µg/L	51	0	0	1.7	200	0
4-Bromophenyl-phenyl ether	--	µg/L	51	0	0	1.7	200	--
Butylbenzylphthalate	--	µg/L	60	1	1.7	1.7	200	--
Carbazole	--	µg/L	51	0	0	0.17	20	--
4-Chloro-3-methylphenol	--	µg/L	51	0	0	1.7	200	--
4-Chloroaniline	--	µg/L	51	0	0	1.7	200	--
2-Chloronaphthalene	2.0E+04	µg/L	51	1	2.0	0.30	35	0
2-Chlorophenol	1.8E+05	µg/L	51	12	24	1.9	200	0
4-Chlorophenyl-phenyl ether	--	µg/L	51	0	0	1.7	200	--
4-Chlorothioanisole	--	µg/L	51	6	12	2.8	330	--
4-Chlorothiophenol	--	µg/L	51	21	41	2.8	330	--
Chrysene	--	µg/L	49	0	0	0.047	10	--
Diphenyl disulfide	--	µg/L	51	21	41	2.8	330	--
Di-n-butylphthalate	--	µg/L	60	0	0	1.7	200	--
Di-n-octylphthalate	--	µg/L	60	0	0	2.5	300	--

TABLE 4-14A: Evaluation of Sample Quantitation Limits for Shallow Groundwater – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of Screen
Dibenz(a,h)anthracene	--	µg/L	49	0	0	0.047	10	--
Dibenzofuran	--	µg/L	51	0	0	1.7	200	--
3,3'-Dichlorobenzidine	--	µg/L	51	0	0	0.85	190	--
2,4-Dichlorophenol	--	µg/L	51	20	39	1.9	200	--
Diethylphthalate	--	µg/L	60	1	1.7	1.7	200	--
2,4-Dimethylphenol	--	µg/L	51	0	0	1.7	200	--
Dimethylphthalate	--	µg/L	60	0	0	1.7	200	--
2,4-Dinitrophenol	--	µg/L	51	0	0	4.7	1000	--
2,4-Dinitrotoluene	--	µg/L	51	0	0	1.7	200	--
2,6-Dinitrotoluene	--	µg/L	51	0	0	1.7	200	--
1,2-Diphenylhydrazine	--	µg/L	51	0	0	1.7	200	--
Fluoranthene	--	µg/L	60	0	0	0.17	20	--
Fluorene	2.5E+05	µg/L	60	0	0	0.17	20	0
Hexachlorobenzene	7.9E+01	µg/L	9	0	0	0.19	10	44
Hexachlorobutadiene	3.4E+02	µg/L	72	1	1.4	0.25	250	11
Hexachloroethane	3.3E+03	µg/L	51	0	0	1.7	200	0
Hydroxymethyl phthalimide	--	µg/L	51	0	0	2.8	330	--
Indeno(1,2,3-cd)pyrene	--	µg/L	49	0	0	0.047	10	--
Isophorone	--	µg/L	51	0	0	1.7	200	--
2-Methylnaphthalene	2.9E+05	µg/L	60	15	25	0.19	30	0
2-Methylphenol	--	µg/L	51	0	0	1.7	200	--
3&4-Methylphenol	7.9E+08	µg/L	51	0	0	2.5	300	0
Naphthalene	1.3E+03	µg/L	72	22	31	0.19	30	0
2-Nitroaniline	--	µg/L	51	0	0	1.7	200	--
3-Nitroaniline	--	µg/L	51	0	0	1.7	200	--
4-Nitroaniline	--	µg/L	51	0	0	2.5	300	--
Nitrobenzene	1.2E+04	µg/L	60	0	0	0.19	300	0
2-Nitrophenol	--	µg/L	51	0	0	1.7	200	--
4-Nitrophenol	--	µg/L	51	0	0	1.7	200	--
n-Nitroso-di-n-propylamine	--	µg/L	51	0	0	1.7	200	--
Octachlorostyrene	--	µg/L	60	0	0	0.19	330	--

TABLE 4-14A: Evaluation of Sample Quantitation Limits for Shallow Groundwater – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of Screen
Pentachlorobenzene	--	µg/L	51	4	7.8	1.7	200	--
Phenanthrene	--	µg/L	49	1	2.0	0.047	10	--
Phenol	--	µg/L	66	9	14	0.94	190	--
Pyrene	3.1E+06	µg/L	49	0	0	0.047	10	0
Pyridine	2.0E+07	µg/L	57	0	0	0.85	190	0
bis(4-Chlorophenyl) sulfone	--	µg/L	51	0	0	2.8	330	--
1,2,4,5-Tetrachlorobenzene	--	µg/L	51	2	3.9	1.7	200	--
bis(4-Chlorophenyl) disulfide	--	µg/L	50	9	18	2.8	330	--
bis(2-Chloro-1-methylethyl) ether	8.6E+03	µg/L	51	0	0	1.7	200	0
Acetone	1.7E+09	µg/L	52	7	13	0.34	1000	0
Acetonitrile	6.0E+06	µg/L	44	0	0	2.0	2100	0
t-Amyl methyl ether	4.6E+04	µg/L	9	0	0	1.0	50	0
Benzene	7.1E+13	µg/L	65	41	63	0.032	5.0	0
Bromobenzene	9.5E+04	µg/L	65	8	12	0.074	100	0
Bromochloromethane	1.2E+05	µg/L	65	1	1.5	0.098	100	0
Bromodichloromethane	6.3E+02	µg/L	65	5	7.7	0.082	50	0
Bromoform	4.7E+04	µg/L	65	1	1.5	0.094	76	0
Bromomethane	6.1E+00	µg/L	65	3	4.6	0.084	500	52
2-Butanone	5.4E+08	µg/L	57	2	3.5	0.52	500	0
n-Butylbenzene	3.2E+05	µg/L	65	4	6.2	0.041	250	0
sec-Butylbenzene	9.4E+06	µg/L	65	2	3.1	0.053	100	0
tert-Butylbenzene	2.0E+05	µg/L	65	1	1.5	0.039	100	0
Carbon tetrachloride	1.3E+02	µg/L	65	2	3.1	0.042	50	16
Chlorobenzene	1.2E+05	µg/L	65	44	68	0.060	5.0	0
Chloroethane	5.3E+06	µg/L	65	16	25	0.085	100	0
Chloroform	1.9E+02	µg/L	65	58	89	0.64	16	0
Chloromethane	3.6E+02	µg/L	65	10	15	0.036	100	15
2-Chlorotoluene	8.4E+04	µg/L	65	13	20	0.053	250	0
4-Chlorotoluene	7.8E+04	µg/L	65	13	20	0.065	250	0
Cumene	3.8E+03	µg/L	65	8	12	0.032	100	0
p-Cymene	2.1E+03	µg/L	65	3	4.6	0.035	100	0

TABLE 4-14A: Evaluation of Sample Quantitation Limits for Shallow Groundwater – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of Screen
2,3-Dimethylpentane	4.3E+03	µg/L	44	0	0	0.11	90	0
2,4-Dimethylpentane	3.9E+03	µg/L	44	0	0	0.14	93	0
Dimethyl disulfide	--	µg/L	51	2	3.9	0.089	130	--
1,2-Dibromo-3-chloropropane	9.1E+00	µg/L	65	1	1.5	0.20	250	55
Dibromochloromethane	1.8E+03	µg/L	64	3	4.7	0.057	110	0
1,2-Dibromoethane	7.7E+01	µg/L	21	1	4.8	0.25	50	5
Dibromomethane	2.7E+04	µg/L	65	1	1.5	0.095	50	0
1,2-Dichlorobenzene	9.3E+05	µg/L	65	41	63	0.11	5.0	0
1,3-Dichlorobenzene	9.2E+05	µg/L	65	25	38	0.045	100	0
1,4-Dichlorobenzene	9.6E+02	µg/L	65	41	63	0.10	5.0	0
Dichlorodifluoromethane	1.8E+04	µg/L	65	1	1.5	0.058	62	0
1,1-Dichloroethane	2.5E+03	µg/L	65	52	80	0.25	44	0
1,2-Dichloroethane	5.3E+02	µg/L	65	42	65	0.10	180	8.7
1,1-Dichloroethene	5.4E+04	µg/L	65	12	18	0.051	85	0
1,2-Dichloroethene	2.8E+05	µg/L	44	5	11	0.13	100	0
cis-1,2-Dichloroethene	1.1E+05	µg/L	65	6	9.2	0.083	68	0
trans-1,2-Dichloroethene	5.5E+04	µg/L	65	10	15	0.081	50	0
1,2-Dichloropropane	7.5E+02	µg/L	65	7	11	0.054	50	0
1,3-Dichloropropane	7.6E+03	µg/L	64	1	1.6	0.053	100	0
2,2-Dichloropropane	1.5E+03	µg/L	62	1	1.6	0.084	100	0
1,1-Dichloropropene	1.1E+02	µg/L	65	1	1.5	0.043	100	16
cis-1,3-Dichloropropene	4.4E+02	µg/L	65	1	1.5	0.073	50	3.1
trans-1,3-Dichloropropene	4.4E+02	µg/L	64	1	1.6	0.080	110	3.2
2,2-Dimethylpentane	2.4E+03	µg/L	44	0	0	0.093	82	0
3,3-Dimethylpentane	4.0E+03	µg/L	44	5	11	0.15	100	0
1,4-Dioxane	1.3E+05	µg/L	64	17	27	0.50	190	0
Ethanol	2.6E+10	µg/L	44	0	0	36	43000	0
Ethyl benzene	1.3E+03	µg/L	64	3	4.7	0.061	54	0
3-Ethylpentane	3.3E+03	µg/L	44	5	11	0.089	44	0
n-Heptane	2.7E+04	µg/L	44	2	4.6	0.080	62	0
2-Hexanone	9.5E+05	µg/L	52	0	0	0.080	640	0

TABLE 4-14A: Evaluation of Sample Quantitation Limits for Shallow Groundwater – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of Screen
Iodomethane	1.2E+05	µg/L	44	0	0	0.091	330	0
3-Methylhexane	3.2E+03	µg/L	44	5	11	0.10	84	0
Methyl tert-butyl ether	8.9E+04	µg/L	53	0	0	0.098	50	0
4-Methyl-2-pentanone	9.5E+07	µg/L	52	0	0	0.12	500	0
Methylene Chloride	1.4E+04	µg/L	65	12	18	0.10	100	0
2-Methylhexane	1.5E+03	µg/L	44	5	11	0.12	76	0
2-Nitropropane	2.2E+01	µg/L	43	0	0	0.034	550	53
n-Nonyl aldehyde	5.5E+04	µg/L	44	3	6.8	0.0070	610	0
Diisopropyl ether	7.3E+06	µg/L	9	0	0	1.0	50	0
n-Propylbenzene	3.2E+05	µg/L	65	9	14	0.029	100	0
Styrene	3.2E+06	µg/L	63	1	1.6	0.036	50	0
2,2,3-Trimethylbutane	3.3E+03	µg/L	44	0	0	0.14	120	0
1,1,1,2-Tetrachloroethane	6.3E+03	µg/L	64	1	1.6	0.090	82	0
1,1,2,2-Tetrachloroethane	7.8E+02	µg/L	65	1	1.5	0.098	56	0
Tetrachloroethene	2.5E+02	µg/L	65	38	58	0.065	50	7.4
Toluene	5.9E+06	µg/L	65	19	29	0.029	50	0
1,2,3-Trichlorobenzene	1.3E+04	µg/L	65	18	28	0.063	80	0
1,2,4-Trichlorobenzene	2.3E+04	µg/L	63	23	37	0.052	790	0
1,3,5-Trichlorobenzene	5.7E+03	µg/L	44	12	27	0.12	64	0
1,1,1-Trichloroethane	2.5E+06	µg/L	65	1	1.5	0.067	50	0
1,1,2-Trichloroethane	1.2E+03	µg/L	65	12	18	0.063	54	0
Trichloroethene	1.2E+03	µg/L	65	31	48	0.091	46	0
Trichlorofluoromethane	5.3E+04	µg/L	65	1	1.5	0.041	58	0
1,2,3-Trichloropropane	1.2E+02	µg/L	65	4	6.2	0.0025	120	18
1,2,4-Trimethylbenzene	1.0E+05	µg/L	65	16	25	0.041	100	0
1,3,5-Trimethylbenzene	7.9E+04	µg/L	65	10	15	0.046	100	0
Vinyl acetate	1.9E+06	µg/L	43	0	0	0.17	190	0
Vinyl chloride	1.4E+02	µg/L	65	13	20	0.032	80	17
o-Xylene	1.5E+05	µg/L	61	15	25	0.044	50	0
m,p-Xylene	7.8E+04	µg/L	60	3	5.0	0.071	100	0
Xylenes (total)	1.4E+05	µg/L	48	8	17	0.11	110	0

TABLE 4-14A: Evaluation of Sample Quantitation Limits for Shallow Groundwater – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of Screen
Ethyl tert-butyl ether	3.8E+04	µg/L	13	0	0	0.25	50	0
tert Butyl alcohol	6.2E+09	µg/L	9	2	22	5.0	5000	0
1,1,2-Trichloro-1,2,2-trifluoroethane	1.3E+06	µg/L	44	0	0	0.072	84	0

Notes:

-- = not available

µg/L = microgram per liter

RBC = Risk-Based Concentration

SQL = sample quantitation limit

[1] Risk-Based Concentrations (RBCs) used in this evaluation are the lowest groundwater RBCs for indoor workers, outdoor workers and construction workers for Parcel C.

TABLE 4-14B: Evaluation of Sample Quantitation Limits for Shallow Groundwater – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of Screen
Acenaphthene	1.5E+05	µg/L	6	0	0	0.19	10	0
Acenaphthylene	1.1E+05	µg/L	6	0	0	0.19	10	0
Anthracene	2.2E+05	µg/L	6	0	0	0.19	10	0
Benzo(a)anthracene	1.0E+04	µg/L	6	0	0	0.19	10	0
Benzo(a)pyrene	--	µg/L	5	0	0	0.19	10	--
Benzo(b)fluoranthene	--	µg/L	5	0	0	0.19	10	--
Benzo(g,h,i)perylene	--	µg/L	5	0	0	0.19	10	--
Benzo(k)fluoranthene	--	µg/L	5	0	0	0.19	10	--
bis(2-Ethylhexyl)phthalate	--	µg/L	6	0	0	4.7	24	--
Butylbenzylphthalate	--	µg/L	6	1	17	4.7	24	--
Chrysene	--	µg/L	6	0	0	0.19	10	--
Di-n-butylphthalate	--	µg/L	6	0	0	4.7	24	--
Di-n-octylphthalate	--	µg/L	5	0	0	4.7	24	--
Dibenz(a,h)anthracene	--	µg/L	5	0	0	0.19	10	--
Diethylphthalate	--	µg/L	6	0	0	4.7	24	--
Dimethylphthalate	--	µg/L	6	0	0	4.7	24	--
Fluoranthene	--	µg/L	6	0	0	0.19	10	--
Fluorene	2.1E+05	µg/L	6	0	0	0.19	10	0
Hexachlorobenzene	7.0E+01	µg/L	6	0	0	0.19	10	17
Hexachlorobutadiene	3.1E+02	µg/L	101	1	0.99	0.25	80	4
Indeno(1,2,3-cd)pyrene	--	µg/L	5	0	0	0.19	10	--
2-Methylnaphthalene	2.6E+05	µg/L	6	0	0	0.19	10	0
Naphthalene	1.1E+03	µg/L	101	4	4.0	0.25	80	0
Nitrobenzene	1.0E+04	µg/L	6	0	0	0.19	10	0
Octachlorostyrene	--	µg/L	6	0	0	0.19	10	--
Phenanthrene	--	µg/L	6	1	17	0.19	10	--
Pyrene	2.6E+06	µg/L	6	0	0	0.19	10	0
Pyridine	1.7E+07	µg/L	2	0	0	1.9	20	0
Acetone	1.5E+09	µg/L	14	4	29	10	20	0
t-Amyl methyl ether	4.2E+04	µg/L	6	0	0	1.0	5.0	0
Benzene	6.4E+13	µg/L	101	53	52	0.25	2.0	0
Bromobenzene	8.9E+04	µg/L	101	1	0.99	0.25	50	0

TABLE 4-14B: Evaluation of Sample Quantitation Limits for Shallow Groundwater – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of Screen
Bromochloromethane	1.1E+05	µg/L	101	1	0.99	0.25	50	0
Bromodichloromethane	5.6E+02	µg/L	101	2	2.0	0.25	20	0
Bromoform	4.1E+04	µg/L	101	3	3.0	0.25	50	0
Bromomethane	5.6E+00	µg/L	101	1	0.99	0.25	80	80
2-Butanone	4.6E+08	µg/L	22	0	0	2.5	13	0
n-Butylbenzene	3.0E+05	µg/L	101	1	0.99	0.25	50	0
sec-Butylbenzene	8.2E+06	µg/L	101	1	0.99	0.25	50	0
tert-Butylbenzene	1.9E+05	µg/L	101	3	3.0	0.22	50	0
Carbon tetrachloride	1.3E+02	µg/L	101	3	3.0	0.25	50	5.1
Chlorobenzene	1.1E+05	µg/L	101	57	56	0.25	5.0	0
Chloroethane	4.9E+06	µg/L	101	14	14	0.25	50	0
Chloroform	1.8E+02	µg/L	101	89	88	0.25	20	25
Chloromethane	3.3E+02	µg/L	101	2	2.0	0.25	50	3.03
2-Chlorotoluene	7.9E+04	µg/L	101	3	3.0	0.25	50	0
4-Chlorotoluene	7.3E+04	µg/L	101	1	0.99	0.25	50	0
Cumene	3.6E+03	µg/L	101	1	0.99	0.25	20	0
p-Cymene	2.0E+03	µg/L	101	1	0.99	0.25	20	0
2,3-Dimethylpentane	4.0E+03	µg/L	8	0	0	2.0	2.0	0
2,4-Dimethylpentane	3.7E+03	µg/L	8	0	0	2.0	2.0	0
Dimethyl disulfide	--	µg/L	87	5	5.8	0.50	200	--
1,2-Dibromo-3-chloropropane	7.9E+00	µg/L	93	1	1.1	0.50	120	85
Dibromochloromethane	1.6E+03	µg/L	101	2	2.0	0.25	20	0
1,2-Dibromoethane	6.8E+01	µg/L	93	1	1.1	0.25	80	12
Dibromomethane	2.4E+04	µg/L	101	1	0.99	0.25	20	0
1,2-Dichlorobenzene	8.6E+05	µg/L	101	65	64	0.25	3.0	0
1,3-Dichlorobenzene	8.4E+05	µg/L	101	18	18	0.25	20	0
1,4-Dichlorobenzene	8.8E+02	µg/L	101	67	66	0.25	3.0	0
Dichlorodifluoromethane	1.6E+04	µg/L	101	1	0.99	0.25	50	0
1,1-Dichloroethane	2.3E+03	µg/L	101	60	59	0.25	20	0
1,2-Dichloroethane	4.8E+02	µg/L	101	26	26	0.25	20	0
1,1-Dichloroethene	5.1E+04	µg/L	101	3	3.0	0.25	50	0
cis-1,2-Dichloroethene	1.1E+05	µg/L	101	1	0.99	0.25	20	0

TABLE 4-14B: Evaluation of Sample Quantitation Limits for Shallow Groundwater – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of Screen
trans-1,2-Dichloroethene	5.1E+04	µg/L	101	1	0.99	0.25	20	0
1,2-Dichloropropane	7.0E+02	µg/L	101	1	0.99	0.25	20	0
1,3-Dichloropropane	7.1E+03	µg/L	101	1	0.99	0.25	20	0
2,2-Dichloropropane	1.4E+03	µg/L	101	1	0.99	0.25	20	0
1,1-Dichloropropene	1.0E+02	µg/L	101	1	0.99	0.25	20	5
cis-1,3-Dichloropropene	4.1E+02	µg/L	101	1	0.99	0.22	20	0
trans-1,3-Dichloropropene	4.1E+02	µg/L	101	1	0.99	0.25	20	0
2,2-Dimethylpentane	2.2E+03	µg/L	8	0	0	2.0	2.0	0
3,3-Dimethylpentane	3.8E+03	µg/L	8	0	0	2.0	2.0	0
1,4-Dioxane	1.1E+05	µg/L	14	12	86	0.50	10	0
Ethyl benzene	1.3E+03	µg/L	101	1	0.99	0.25	20	0
3-Ethylpentane	3.1E+03	µg/L	8	0	0	2.0	2.0	0
n-Heptane	2.6E+04	µg/L	8	0	0	5.0	5.0	0
2-Hexanone	8.2E+05	µg/L	14	0	0	10	10	0
3-Methylhexane	3.0E+03	µg/L	8	0	0	2.0	2.0	0
Methyl tert-butyl ether	8.0E+04	µg/L	14	0	0	1.0	5.0	0
4-Methyl-2-pentanone	8.2E+07	µg/L	14	0	0	10	10	0
Methylene Chloride	1.3E+04	µg/L	101	4	4.0	0.88	80	0
2-Methylhexane	1.4E+03	µg/L	8	0	0	2.0	2.0	0
n-Nonyl aldehyde	5.0E+04	µg/L	8	1	13	5.0	5.0	0
Diisopropyl ether	6.8E+06	µg/L	6	0	0	1.0	5.0	0
n-Propylbenzene	2.9E+05	µg/L	101	1	0.99	0.25	20	0
Styrene	3.0E+06	µg/L	99	1	1.0	0.20	20	0
2,2,3-Trimethylbutane	3.1E+03	µg/L	8	0	0	2.0	2.0	0
1,1,1,2-Tetrachloroethane	5.6E+03	µg/L	101	1	0.99	0.25	50	0
1,1,2,2-Tetrachloroethane	6.9E+02	µg/L	101	1	0.99	0.25	20	0
Tetrachloroethene	2.3E+02	µg/L	101	43	43	0.25	20	0
Toluene	5.5E+06	µg/L	101	6	5.9	0.25	20	0
1,2,3-Trichlorobenzene	1.2E+04	µg/L	101	32	32	0.25	80	0
1,2,4-Trichlorobenzene	2.0E+04	µg/L	101	53	52	0.25	80	0
1,3,5-Trichlorobenzene	5.3E+03	µg/L	8	1	12	2.0	2.0	0
1,1,1-Trichloroethane	2.3E+06	µg/L	101	1	0.99	0.25	20	0

TABLE 4-14B: Evaluation of Sample Quantitation Limits for Shallow Groundwater – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of Screen
1,1,2-Trichloroethane	1.1E+03	µg/L	101	1	0.99	0.25	20	0
Trichloroethene	1.1E+03	µg/L	101	27	27	0.25	20	0
Trichlorofluoromethane	5.0E+04	µg/L	101	1	0.99	0.25	50	0
1,2,3-Trichloropropane	1.1E+02	µg/L	101	5	5.0	0.0025	100	14
1,2,4-Trimethylbenzene	9.7E+04	µg/L	101	1	0.99	0.23	20	0
1,3,5-Trimethylbenzene	7.4E+04	µg/L	101	1	0.99	0.25	20	0
Vinyl chloride	1.3E+02	µg/L	101	1	0.99	0.25	50	5
o-Xylene	1.4E+05	µg/L	100	1	1.0	0.25	20	0
m,p-Xylene	7.3E+04	µg/L	100	1	1.0	0.50	20	0
Xylenes (total)	1.3E+05	µg/L	1	0	0	10	10	0
Ethyl tert-butyl ether	3.6E+04	µg/L	14	0	0	0.25	5.0	0
tert Butyl alcohol	5.2E+09	µg/L	6	0	0	5.0	100	0

Notes:

-- = not available

µg/L = microgram per liter

RBC = Risk-Based Concentration

SQL = sample quantitation limit

[1] Risk-Based Concentrations (RBCs) used in this evaluation are the lowest groundwater RBCs for indoor workers, outdoor workers and construction workers for Parcel D.

TABLE 4-14C: Evaluation of Sample Quantitation Limits for Shallow Groundwater – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of RBC
Acenaphthene	2.40E+05	µg/L	3	0	0	0.19	9.5	0
Acenaphthylene	1.60E+05	µg/L	3	0	0	0.19	9.5	0
Aniline	--	µg/L	2	0	0	9.5	9.5	--
Anthracene	3.40E+05	µg/L	3	0	0	0.19	9.5	0
Azobenzene	4.20E+04	µg/L	2	0	0	19	19	0
Diphenyl sulfone	--	µg/L	2	0	0	9.5	9.5	--
Diphenyl sulfide	--	µg/L	2	0	0	9.5	9.5	--
Benzo(a)anthracene	1.60E+04	µg/L	3	0	0	0.19	9.5	0
Benzo(a)pyrene	--	µg/L	3	0	0	0.19	9.5	--
Benzo(b)fluoranthene	--	µg/L	3	0	0	0.19	9.5	--
Benzo(g,h,i)perylene	--	µg/L	3	0	0	0.19	9.5	--
Benzo(k)fluoranthene	--	µg/L	3	0	0	0.19	9.5	--
Benzoic acid	--	µg/L	2	0	0	19	19	--
Benzyl alcohol	--	µg/L	2	0	0	19	19	--
bis(2-Ethylhexyl)phthalate	--	µg/L	3	1	33	4.7	48	--
bis(2-Chloroethoxy)methane	--	µg/L	2	0	0	9.5	9.5	--
bis(2-Chloroethyl) ether	2.80E+03	µg/L	2	0	0	9.5	9.5	0
4-Bromophenyl-phenyl ether	--	µg/L	2	0	0	9.5	9.5	--
Butylbenzylphthalate	--	µg/L	3	0	0	4.7	19	--
4-Chloro-3-methylphenol	--	µg/L	2	0	0	19	19	--
4-Chloroaniline	--	µg/L	2	0	0	9.5	9.5	--
2-Chloronaphthalene	2.60E+04	µg/L	2	0	0	9.5	9.5	0
2-Chlorophenol	2.10E+05	µg/L	2	0	0	9.5	9.5	0
4-Chlorophenyl methyl sulfone	--	µg/L	2	0	0	9.5	9.5	--
4-Chlorophenyl-phenyl ether	--	µg/L	2	0	0	9.5	9.5	--
4-Chlorothioanisole	--	µg/L	3	0	0	9.5	9.6	--
4-Chlorothiophenol	--	µg/L	2	0	0	190	190	--
Chrysene	--	µg/L	3	0	0	0.19	9.5	--
Diphenyl disulfide	--	µg/L	2	0	0	9.5	9.5	--
Di-n-butylphthalate	--	µg/L	3	0	0	4.7	19	--
Di-n-octylphthalate	--	µg/L	3	0	0	4.7	19	--
Dibenz(a,h)anthracene	--	µg/L	3	0	0	0.19	19	--
Dibenzofuran	--	µg/L	2	0	0	9.5	9.5	--
3,3'-Dichlorobenzidine	--	µg/L	2	0	0	19	19	--

TABLE 4-14C: Evaluation of Sample Quantitation Limits for Shallow Groundwater – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of RBC
2,2'-/4,4'-Dichlorobenzil	--	µg/L	2	0	0	9.5	9.5	--
4,4'-Dichlorobenzophenone	--	µg/L	2	0	0	9.5	9.5	--
2,4-Dichlorophenol	--	µg/L	2	0	0	9.5	9.5	--
Diethylphthalate	--	µg/L	3	0	0	4.7	9.5	--
2,4-Dimethylphenol	--	µg/L	2	0	0	19	19	--
Dimethylphthalate	--	µg/L	3	0	0	4.7	9.5	--
4,6-Dinitro-2-methylphenol	--	µg/L	2	0	0	19	19	--
2,4-Dinitrophenol	--	µg/L	2	0	0	19	19	--
2,4-Dinitrotoluene	--	µg/L	2	0	0	9.5	9.5	--
2,6-Dinitrotoluene	--	µg/L	2	0	0	9.5	9.5	--
Fluoranthene	--	µg/L	3	0	0	0.19	9.5	--
Fluorene	3.30E+05	µg/L	3	0	0	0.19	9.5	0
Hexachlorobenzene	9.80E+01	µg/L	1	0	0	0.19	0.19	0
Hexachlorobutadiene	3.90E+02	µg/L	7	0	0	0.25	10	0
Hexachloroethane	3.80E+03	µg/L	2	0	0	9.5	9.5	0
Hydroxymethyl phthalimide	--	µg/L	2	0	0	190	190	--
Indeno(1,2,3-cd)pyrene	--	µg/L	3	0	0	0.19	19	--
Isophorone	--	µg/L	2	0	0	9.5	9.5	--
Benzophenone	--	µg/L	2	0	0	9.5	9.5	--
2-Methylnaphthalene	3.70E+05	µg/L	3	0	0	0.19	9.5	0
2-Methylphenol	--	µg/L	2	0	0	9.5	9.5	--
4-Methylphenol	--	µg/L	2	0	0	9.5	9.5	--
Naphthalene	1.60E+03	µg/L	7	0	0	0.19	5	0
2-Nitroaniline	--	µg/L	2	0	0	19	19	--
3-Nitroaniline	--	µg/L	2	0	0	19	19	--
4-Nitroaniline	--	µg/L	2	0	0	19	19	--
Nitrobenzene	1.60E+04	µg/L	3	0	0	0.19	19	0
2-Nitrophenol	--	µg/L	2	0	0	9.5	9.5	--
4-Nitrophenol	--	µg/L	2	0	0	19	19	--
n-Nitrosodimethylamine	1.80E+02	µg/L	2	0	0	19	19	100
n-Nitrosodiphenylamine	--	µg/L	2	0	0	9.5	9.5	--
n-Nitroso-di-n-propylamine	--	µg/L	2	0	0	9.5	9.5	--
Octachlorostyrene	--	µg/L	3	0	0	0.19	19	--
Pentachlorobenzene	--	µg/L	2	0	0	9.5	9.5	--

TABLE 4-14C: Evaluation of Sample Quantitation Limits for Shallow Groundwater – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of RBC
Phenanthrene	--	µg/L	3	0	0	0.19	9.5	--
Phenol	--	µg/L	2	0	0	9.5	9.5	--
Pyrene	4.20E+06	µg/L	3	0	0	0.19	9.5	0
Pyridine	2.70E+07	µg/L	3	0	0	1.9	19	0
bis(4-Chlorophenyl) sulfone	--	µg/L	2	0	0	9.5	9.5	--
1,2,4,5-Tetrachlorobenzene	--	µg/L	2	0	0	9.5	9.5	--
bis(4-Chlorophenyl) disulfide	--	µg/L	2	0	0	9.5	9.5	--
bis(2-Chloro-1-methylethyl) ether	1.10E+04	µg/L	2	0	0	9.5	9.5	0
Acetone	2.30E+09	µg/L	5	1	20	10	10	0
t-Amyl methyl ether	5.30E+04	µg/L	3	0	0	1	5	0
Benzene	8.40E+13	µg/L	7	0	0	0.25	5	0
Bromobenzene	1.10E+05	µg/L	7	0	0	0.25	5	0
Bromochloromethane	1.40E+05	µg/L	7	0	0	0.25	5	0
Bromodichloromethane	7.70E+02	µg/L	7	1	14	0.25	5	0
Bromoform	6.00E+04	µg/L	7	0	0	0.4	5	0
Bromomethane	6.90E+00	µg/L	7	0	0	0.25	10	85.71
2-Butanone	7.10E+08	µg/L	6	0	0	2.5	10	0
n-Butylbenzene	3.60E+05	µg/L	7	0	0	0.4	5	0
sec-Butylbenzene	1.20E+07	µg/L	7	0	0	0.25	5	0
tert-Butylbenzene	2.20E+05	µg/L	7	0	0	0.25	5	0
Carbon tetrachloride	1.50E+02	µg/L	7	4	57	5	5	0
Chlorobenzene	1.40E+05	µg/L	7	1	14	1	5	0
Chloroethane	6.00E+06	µg/L	7	0	0	0.4	5	0
Chloroform	2.20E+02	µg/L	7	7	100	--	--	--
1-Chlorohexane	8.00E+04	µg/L	2	0	0	5	5	0
Chloromethane	4.00E+02	µg/L	7	0	0	0.25	5	0
2-Chlorotoluene	9.60E+04	µg/L	7	0	0	0.25	5	0
4-Chlorotoluene	8.90E+04	µg/L	7	0	0	0.25	5	0
Cumene	4.30E+03	µg/L	7	0	0	0.25	5	0
p-Cymene	2.40E+03	µg/L	7	0	0	0.25	5	0
2,3-Dimethylpentane	4.80E+03	µg/L	2	0	0	2	2	0
2,4-Dimethylpentane	4.40E+03	µg/L	2	0	0	2	2	0
Dimethyl disulfide	--	µg/L	3	0	0	2	2	--
1,2-Dibromo-3-chloropropane	1.10E+01	µg/L	5	0	0	0.5	5	80

TABLE 4-14C: Evaluation of Sample Quantitation Limits for Shallow Groundwater – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of RBC
Dibromochloromethane	2.30E+03	µg/L	7	0	0	0.25	5	0
1,2-Dibromoethane	9.60E+01	µg/L	5	0	0	0.25	5	0
Dibromomethane	3.20E+04	µg/L	7	0	0	0.25	5	0
1,2-Dichlorobenzene	1.10E+06	µg/L	7	0	0	0.25	5	0
1,3-Dichlorobenzene	1.10E+06	µg/L	7	0	0	0.25	5	0
1,4-Dichlorobenzene	1.10E+03	µg/L	7	0	0	0.25	5	0
Dichlorodifluoromethane	2.00E+04	µg/L	7	0	0	0.25	5	0
1,1-Dichloroethane	2.90E+03	µg/L	7	0	0	0.25	5	0
1,2-Dichloroethane	6.20E+02	µg/L	7	0	0	0.25	5	0
1,1-Dichloroethene	6.10E+04	µg/L	7	4	57	5	5	0
cis-1,2-Dichloroethene	1.30E+05	µg/L	7	0	0	0.25	5	0
trans-1,2-Dichloroethene	6.30E+04	µg/L	7	0	0	0.25	5	0
1,2-Dichloropropane	8.70E+02	µg/L	7	0	0	0.25	5	0
1,3-Dichloropropane	8.70E+03	µg/L	7	0	0	0.25	5	0
2,2-Dichloropropane	1.70E+03	µg/L	7	0	0	0.4	5	0
1,1-Dichloropropene	1.20E+02	µg/L	7	0	0	0.25	5	0
cis-1,3-Dichloropropene	5.00E+02	µg/L	7	0	0	0.25	5	0
trans-1,3-Dichloropropene	5.00E+02	µg/L	7	0	0	0.25	5	0
2,2-Dimethylpentane	2.60E+03	µg/L	2	0	0	2	2	0
3,3-Dimethylpentane	4.50E+03	µg/L	2	0	0	2	2	0
1,4-Dioxane	1.80E+05	µg/L	2	0	0	0.5	1.9	0
Ethanol	3.40E+10	µg/L	2	0	0	1000	1000	0
Ethyl benzene	1.50E+03	µg/L	7	0	0	0.25	5	0
3-Ethylpentane	3.70E+03	µg/L	2	0	0	2	2	0
n-Heptane	3.10E+04	µg/L	2	0	0	5	5	0
2-Hexanone	1.20E+06	µg/L	5	0	0	10	10	0
3-Methylhexane	3.60E+03	µg/L	2	0	0	2	2	0
Methanol	5.90E+09	µg/L	2	0	0	1000	1000	0
Methyl tert-butyl ether	1.10E+05	µg/L	5	0	0	1	5	0
4-Methyl-2-pentanone	1.20E+08	µg/L	5	0	0	10	10	0
Methylene Chloride	1.70E+04	µg/L	7	0	0	0.88	10	0
2-Methylhexane	1.70E+03	µg/L	2	0	0	2	2	0
n-Nonyl aldehyde	6.40E+04	µg/L	2	0	0	5	5	0
Diisopropyl ether	8.40E+06	µg/L	3	0	0	1	5	0

TABLE 4-14C: Evaluation of Sample Quantitation Limits for Shallow Groundwater – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Risk-Based Concentration [1]	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		
						Minimum SQL	Maximum SQL	% Above 10% of RBC
n-Propylbenzene	3.60E+05	µg/L	7	0	0	0.25	5	0
Styrene	3.70E+06	µg/L	7	0	0	0.25	5	0
2,2,3-Trimethylbutane	3.70E+03	µg/L	2	0	0	2	2	0
1,1,1,2-Tetrachloroethane	7.90E+03	µg/L	7	0	0	0.25	5	0
1,1,2,2-Tetrachloroethane	9.70E+02	µg/L	7	0	0	0.25	5	0
Tetrachloroethene	2.80E+02	µg/L	7	0	0	0.25	5	0
Toluene	6.60E+06	µg/L	7	0	0	0.25	5	0
1,2,3-Trichlorobenzene	1.50E+04	µg/L	7	0	0	0.4	5	0
1,2,4-Trichlorobenzene	2.80E+04	µg/L	7	0	0	0.4	5	0
1,3,5-Trichlorobenzene	6.60E+03	µg/L	2	0	0	2	2	0
1,1,1-Trichloroethane	2.80E+06	µg/L	7	0	0	0.25	5	0
1,1,2-Trichloroethane	1.40E+03	µg/L	7	0	0	0.25	5	0
Trichloroethene	1.30E+03	µg/L	7	6	86	2	2	0
Trichlorofluoromethane	5.90E+04	µg/L	7	0	0	0.25	5	0
1,2,3-Trichloropropane	1.30E+02	µg/L	7	0	0	0.0025	10	0
1,2,4-Trimethylbenzene	1.20E+05	µg/L	7	0	0	0.25	5	0
1,3,5-Trimethylbenzene	9.00E+04	µg/L	7	0	0	0.25	5	0
Vinyl chloride	1.50E+02	µg/L	7	0	0	0.25	5	0
o-Xylene	1.70E+05	µg/L	5	0	0	0.25	2	0
m,p-Xylene	8.80E+04	µg/L	5	0	0	0.5	2	0
Xylenes (total)	1.60E+05	µg/L	2	0	0	10	10	0
Ethyl tert-butyl ether	4.40E+04	µg/L	4	0	0	0.25	5	0
tert Butyl alcohol	8.20E+09	µg/L	1	0	0	100	100	0

Notes:

-- = not available

µg/L = microgram per liter

RBC = Risk-Based Concentration

SQL = sample quantitation limit

[1] Risk-Based Concentrations (RBCs) used in this evaluation are the lowest groundwater RBCs for indoor workers, outdoor workers and construction workers for Parcel G.

TABLE 4-15A. Shallow Groundwater Summary Statistics – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetecs		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
Acenaphthene	µg/L	49	2	4	0.047	10	0.054	8.4	4.2	4.2	5.9	1.4	AA-BW-05A
Acenaphthylene	µg/L	49	0	0	0.047	10	--	--	--	--	--	--	--
Acetophenone	µg/L	51	5	9.8	1.9	200	2.3	3.4	2.8	2.9	0.46	0.16	AA-BW-04A
Aniline	µg/L	51	0	0	2.1	250	--	--	--	--	--	--	--
Anthracene	µg/L	49	1	2.0	0.047	10	0.020	0.020	0.020	0.020	--	--	M-6A
Diphenyl sulfone	µg/L	51	0	0	2.8	330	--	--	--	--	--	--	--
Diphenyl sulfide	µg/L	51	1	2.0	2.8	330	4.6	4.6	4.6	4.6	--	--	AA-BW-04A
Benzo(a)anthracene	µg/L	49	0	0	0.047	10	--	--	--	--	--	--	--
Benzo(a)pyrene	µg/L	49	0	0	0.047	10	--	--	--	--	--	--	--
Benzo(b)fluoranthene	µg/L	49	0	0	0.047	10	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	µg/L	49	0	0	0.047	10	--	--	--	--	--	--	--
Benzo(k)fluoranthene	µg/L	49	0	0	0.047	10	--	--	--	--	--	--	--
Benzoic acid	µg/L	51	0	0	5.1	600	--	--	--	--	--	--	--
Benzyl alcohol	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	µg/L	60	4	6.7	1.7	200	3.4	16	5.0	7.4	6.0	0.81	AA-BW-05A
bis(2-Chloroethoxy)methane	µg/L	51	0	0	2.5	300	--	--	--	--	--	--	--
bis(2-Chloroethyl) ether	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
4-Bromophenyl-phenyl ether	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
Butylbenzylphthalate	µg/L	60	1	1.7	1.7	200	0.12	0.12	0.12	0.12	--	--	H-28A
Carbazole	µg/L	51	0	0	0.17	20	--	--	--	--	--	--	--
4-Chloro-3-methylphenol	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
4-Chloroaniline	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
2-Chloronaphthalene	µg/L	51	1	2.0	0.30	35	3.0	3.0	3.0	3.0	--	--	AA-BW-04A
2-Chlorophenol	µg/L	51	12	24	1.9	200	8.1	30	16	19	7.3	0.39	AA-BW-04A
4-Chlorophenyl-phenyl ether	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
4-Chlorothioanisole	µg/L	51	6	12	2.8	330	3.5	6.9	4.8	4.9	1.3	0.27	AA-BW-05A
4-Chlorothiophenol	µg/L	51	21	41	2.8	330	5.2	101	15	22	25	1.1	AA-BW-05A
Chrysene	µg/L	49	0	0	0.047	10	--	--	--	--	--	--	--
Diphenyl disulfide	µg/L	51	21	41	2.8	330	4.4	197	41	60	58	0.95	AA-BW-05A
Di-n-butylphthalate	µg/L	60	0	0	1.7	200	--	--	--	--	--	--	--
Di-n-octylphthalate	µg/L	60	0	0	2.5	300	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	µg/L	49	0	0	0.047	10	--	--	--	--	--	--	--
Dibenzofuran	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
3,3'-Dichlorobenzidine	µg/L	51	0	0	0.85	190	--	--	--	--	--	--	--
2,4-Dichlorophenol	µg/L	51	20	39	1.9	200	1.9	23	16	12	8.4	0.72	AA-BW-04A
Diethylphthalate	µg/L	60	1	1.7	1.7	200	2.1	2.1	2.1	2.1	--	--	M-7B
2,4-Dimethylphenol	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
Dimethylphthalate	µg/L	60	0	0	1.7	200	--	--	--	--	--	--	--

TABLE 4-15A. Shallow Groundwater Summary Statistics – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetecs		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
2,4-Dinitrophenol	µg/L	51	0	0	4.7	1000	--	--	--	--	--	--	--
2,4-Dinitrotoluene	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
2,6-Dinitrotoluene	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
1,2-Diphenylhydrazine	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
Fluoranthene	µg/L	60	0	0	0.17	20	--	--	--	--	--	--	--
Fluorene	µg/L	60	0	0	0.17	20	--	--	--	--	--	--	--
Hexachlorobenzene	µg/L	9	0	0	0.19	10	--	--	--	--	--	--	--
Hexachlorobutadiene	µg/L	72	1	1.4	0.25	250	0.38	0.38	0.38	0.38	--	--	M-99
Hexachloroethane	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
Hydroxymethyl phthalimide	µg/L	51	0	0	2.8	330	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	µg/L	49	0	0	0.047	10	--	--	--	--	--	--	--
Isophorone	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
2-Methylnaphthalene	µg/L	60	15	25	0.19	30	0.30	0.70	0.48	0.50	0.12	0.24	AA-BW-04A
2-Methylphenol	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
3&4-Methylphenol	µg/L	51	0	0	2.5	300	--	--	--	--	--	--	--
Naphthalene	µg/L	72	22	31	0.19	30	0.19	3.4	2.2	1.8	1.1	0.63	AA-BW-04A
2-Nitroaniline	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
3-Nitroaniline	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
4-Nitroaniline	µg/L	51	0	0	2.5	300	--	--	--	--	--	--	--
Nitrobenzene	µg/L	60	0	0	0.19	300	--	--	--	--	--	--	--
2-Nitrophenol	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
4-Nitrophenol	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
n-Nitroso-di-n-propylamine	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
Octachlorostyrene	µg/L	60	0	0	0.19	330	--	--	--	--	--	--	--
Pentachlorobenzene	µg/L	51	4	7.8	1.7	200	2.2	3.3	2.5	2.6	0.47	0.18	M-7B
Phenanthrene	µg/L	49	1	2.0	0.047	10	0.040	0.04	0.04	0.040	--	--	M-6A
Phenol	µg/L	66	9	14	0.94	190	1.9	9.2	3.2	3.9	2.2	0.57	AA-BW-04A
Pyrene	µg/L	49	0	0	0.047	10	--	--	--	--	--	--	--
Pyridine	µg/L	57	0	0	0.85	190	--	--	--	--	--	--	--
bis(4-Chlorophenyl) sulfone	µg/L	51	0	0	2.8	330	--	--	--	--	--	--	--
1,2,4,5-Tetrachlorobenzene	µg/L	51	2	3.9	1.7	200	3.1	4.2	3.6	3.6	0.81	0.22	AA-BW-04A
bis(4-Chlorophenyl) disulfide	µg/L	50	9	18	2.8	330	3.9	75	20	32	24	0.75	AA-BW-05A
bis(2-Chloro-1-methylethyl) ether	µg/L	51	0	0	1.7	200	--	--	--	--	--	--	--
Acetone	µg/L	52	7	13	0.34	1000	1.2	430	2.4	67	160	2.4	AA-BW-04A
Acetonitrile	µg/L	44	0	0	2.0	2100	--	--	--	--	--	--	--
t-Amyl methyl ether	µg/L	9	0	0	1.0	50	--	--	--	--	--	--	--

TABLE 4-15A. Shallow Groundwater Summary Statistics – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetecs		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
Benzene	µg/L	65	41	63	0.032	5.0	0.078	120000	880	28500	37000	1.3	AA-BW-04A
Bromobenzene	µg/L	65	8	12	0.074	100	0.27	1.1	0.52	0.56	0.25	0.44	AA-BW-04A
Bromochloromethane	µg/L	65	1	1.5	0.098	100	0.40	0.40	0.40	0.40	--	--	M-99
Bromodichloromethane	µg/L	65	5	7.7	0.082	50	0.35	1.1	0.6	0.69	0.30	0.44	AA-BW-04A
Bromoform	µg/L	65	1	1.5	0.094	76	0.85	0.85	0.85	0.85	--	--	M-99
Bromomethane	µg/L	65	3	4.6	0.084	500	0.42	0.79	0.56	0.59	0.19	0.32	AA-BW-04A
2-Butanone	µg/L	57	2	3.5	0.52	500	17	24	20	20	5.0	0.24	AA-BW-05A
n-Butylbenzene	µg/L	65	4	6.2	0.041	250	0.062	0.37	0.11	0.16	0.14	0.87	M-99
sec-Butylbenzene	µg/L	65	2	3.1	0.053	100	0.099	0.25	0.17	0.17	0.11	0.61	M-99
tert-Butylbenzene	µg/L	65	1	1.5	0.039	100	0.22	0.22	0.22	0.22	--	--	M-99
Carbon tetrachloride	µg/L	65	2	3.1	0.042	50	1.1	9.6	5.3	5.3	6.0	1.1	M-98
Chlorobenzene	µg/L	65	44	67.7	0.06	5.0	0.29	160000	3950	21900	33600	1.5	AA-BW-04A
Chloroethane	µg/L	65	16	24.6	0.085	100	0.16	2.6	1.1	1.2	0.9	0.74	AA-BW-05A
Chloroform	µg/L	65	58	89.2	0.64	16	0.32	4000	2.2	279	702	2.5	AA-BW-04A
Chloromethane	µg/L	65	10	15.4	0.036	100	0.086	0.61	0.38	0.37	0.16	0.43	AA-BW-04A
2-Chlorotoluene	µg/L	65	13	20.0	0.053	250	0.18	3.3	1.5	1.4	1.2	0.84	AA-BW-04A
4-Chlorotoluene	µg/L	65	13	20.0	0.065	250	0.14	3.1	1.4	1.2	1	0.85	AA-BW-04A
Cumene	µg/L	65	8	12.3	0.032	100	0.10	0.27	0.15	0.16	0.063	0.38	AA-BW-04A
p-Cymene	µg/L	65	3	4.6	0.035	100	0.038	0.28	0.045	0.12	0.14	1.1	M-99
2,3-Dimethylpentane	µg/L	44	0	0	0.11	90	--	--	--	--	--	--	--
2,4-Dimethylpentane	µg/L	44	0	0	0.14	93	--	--	--	--	--	--	--
Dimethyl disulfide	µg/L	51	2	3.9	0.089	130	0.50	5.3	2.9	2.9	3.4	1.2	AA-BW-05A
1,2-Dibromo-3-chloropropane	µg/L	65	1	1.5	0.20	250	0.97	0.97	0.97	0.97	--	--	M-99
Dibromochloromethane	µg/L	64	3	4.7	0.057	110	0.40	1.1	0.87	0.79	0.36	0.45	AA-BW-04A
1,2-Dibromoethane	µg/L	21	1	4.8	0.25	50	0.40	0.40	0.40	0.40	--	--	M-99
Dibromomethane	µg/L	65	1	1.5	0.095	50	0.36	0.36	0.36	0.36	--	--	M-99
1,2-Dichlorobenzene	µg/L	65	41	63.1	0.11	5	0.094	1900	160	498	650	1.3	AA-BW-04A
1,3-Dichlorobenzene	µg/L	65	25	38.5	0.045	100	0.34	190	37	49	49	0.98	AA-BW-05A
1,4-Dichlorobenzene	µg/L	65	41	63.1	0.10	5	0.13	3600	240	907	1220	1.3	AA-BW-04A
Dichlorodifluoromethane	µg/L	65	1	1.5	0.058	62	0.26	0.26	0.26	0.26	--	--	M-99
1,1-Dichloroethane	µg/L	65	52	80.0	0.25	44	0.40	46	4.4	9.8	11	1.2	AA-BW-04A
1,2-Dichloroethane	µg/L	65	42	64.6	0.10	180	0.28	760	7.0	28	120	4.2	AA-BW-05A
1,1-Dichloroethene	µg/L	65	12	18.5	0.051	85	0.06	1.6	0.47	0.59	0.45	0.76	AA-BW-05A
1,2-Dichloroethene	µg/L	44	5	11.4	0.13	100	0.34	0.58	0.49	0.48	0.09	0.19	AA-BW-05A
cis-1,2-Dichloroethene	µg/L	65	6	9.2	0.083	68	0.22	0.35	0.31	0.30	0.049	0.16	AA-BW-05A
trans-1,2-Dichloroethene	µg/L	65	10	15.4	0.081	50	0.094	0.3	0.15	0.17	0.069	0.42	M-99
1,2-Dichloropropane	µg/L	65	7	10.8	0.054	50	0.068	0.35	0.11	0.15	0.095	0.64	M-99

TABLE 4-15A. Shallow Groundwater Summary Statistics – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetecs		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
1,3-Dichloropropane	µg/L	64	1	1.6	0.053	100	0.32	0.32	0.32	0.32	--	--	M-99
2,2-Dichloropropane	µg/L	62	1	1.6	0.084	100	0.34	0.34	0.34	0.34	--	--	M-99
1,1-Dichloropropene	µg/L	65	1	1.5	0.043	100	0.28	0.28	0.28	0.28	--	--	M-99
cis-1,3-Dichloropropene	µg/L	65	1	1.5	0.073	50	0.22	0.22	0.22	0.22	--	--	M-99
trans-1,3-Dichloropropene	µg/L	64	1	1.6	0.08	110	0.32	0.32	0.32	0.32	--	--	M-99
2,2-Dimethylpentane	µg/L	44	0	0	0.093	82	--	--	--	--	--	--	--
3,3-Dimethylpentane	µg/L	44	5	11.4	0.15	100	0.44	0.84	0.52	0.58	0.16	0.27	AA-BW-05A
1,4-Dioxane	µg/L	64	17	26.6	0.50	190	0.36	7.0	1.6	2.8	2.3	0.85	AA-BW-04A
Ethanol	µg/L	44	0	0	36	43000	--	--	--	--	--	--	--
Ethyl benzene	µg/L	64	3	4.7	0.061	54	0.25	0.34	0.33	0.31	0.049	0.16	MC-111
3-Ethylpentane	µg/L	44	5	11.4	0.089	44	0.64	1.3	0.9	0.94	0.24	0.26	AA-BW-05A
n-Heptane	µg/L	44	2	4.6	0.08	62	0.30	0.35	0.32	0.32	0.035	0.11	AA-BW-05A
2-Hexanone	µg/L	52	0	0	0.08	640	--	--	--	--	--	--	--
Iodomethane	µg/L	44	0	0	0.091	330	--	--	--	--	--	--	--
3-Methylhexane	µg/L	44	5	11.4	0.10	84	0.93	1.8	1.1	1.2	0.35	0.29	AA-BW-05A
Methyl tert-butyl ether	µg/L	53	0	0	0.098	50	--	--	--	--	--	--	--
4-Methyl-2-pentanone	µg/L	52	0	0	0.12	500	--	--	--	--	--	--	--
Methylene Chloride	µg/L	65	12	18.5	0.10	100	0.096	32	1.1	4.2	8.9	2.1	AA-BW-05A
2-Methylhexane	µg/L	44	5	11.4	0.12	76	1.1	2.3	1.5	1.6	0.46	0.29	AA-BW-05A
2-Nitropropane	µg/L	43	0	0	0.034	550	--	--	--	--	--	--	--
n-Nonyl aldehyde	µg/L	44	3	6.8	0.007	610	6.3	330	260	200	170	0.86	AA-BW-04A
Diisopropyl ether	µg/L	9	0	0	1.0	50	--	--	--	--	--	--	--
n-Propylbenzene	µg/L	65	9	13.9	0.029	100	0.044	0.33	0.18	0.19	0.084	0.45	AA-BW-04A
Styrene	µg/L	63	1	1.6	0.036	50	0.20	0.20	0.20	0.20	--	--	M-99
2,2,3-Trimethylbutane	µg/L	44	0	0	0.14	120	--	--	--	--	--	--	--
1,1,1,2-Tetrachloroethane	µg/L	64	1	1.6	0.090	82	0.27	0.27	0.27	0.27	--	--	M-99
1,1,2,2-Tetrachloroethane	µg/L	65	1	1.5	0.098	56	0.30	0.30	0.30	0.30	--	--	M-99
Tetrachloroethene	µg/L	65	38	58	0.065	50	0.13	230	5.0	37	53	1.4	AA-BW-04A
Toluene	µg/L	65	19	29	0.029	50	0.36	32	4.1	7.5	8.7	1.2	AA-BW-04A
1,2,3-Trichlorobenzene	µg/L	65	18	28	0.063	80	0.30	160	28	41	47	1.1	AA-BW-04A
1,2,4-Trichlorobenzene	µg/L	63	23	37	0.052	790	0.24	300	160	150	76	0.52	AA-BW-04A
1,3,5-Trichlorobenzene	µg/L	44	12	27	0.12	64	0.56	2.4	1.3	1.3	0.6	0.47	AA-BW-04A
1,1,1-Trichloroethane	µg/L	65	1	1.5	0.067	50	0.30	0.30	0.30	0.30	--	--	M-99
1,1,2-Trichloroethane	µg/L	65	12	18	0.063	54	0.16	20	2.5	6.5	7.4	1.1	AA-BW-04A
Trichloroethene	µg/L	65	31	48	0.091	46	0.22	34	9.7	10	8.1	0.8	AA-BW-05A
Trichlorofluoromethane	µg/L	65	1	1.5	0.041	58	0.34	0.34	0.34	0.34	--	--	M-99
1,2,3-Trichloropropane	µg/L	65	4	6.2	0.0025	120	0.010	0.40	0.02	0.11	0.19	1.7	M-99

TABLE 4-15A. Shallow Groundwater Summary Statistics – Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetecs		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
1,2,4-Trimethylbenzene	µg/L	65	16	25	0.041	100	0.093	1.0	0.36	0.45	0.32	0.72	AA-BW-05A
1,3,5-Trimethylbenzene	µg/L	65	10	15	0.046	100	0.13	0.31	0.17	0.2	0.067	0.33	AA-BW-04A
Vinyl acetate	µg/L	43	0	0	0.17	190	--	--	--	--	--	--	--
Vinyl chloride	µg/L	65	13	20	0.032	80	0.20	1.2	0.46	0.55	0.33	0.6	AA-BW-04A
o-Xylene	µg/L	61	15	25	0.044	50	0.071	8.8	0.61	1.5	2.3	1.6	AA-BW-04A
m,p-Xylene	µg/L	60	3	5.0	0.071	100	0.60	1.5	1.4	1.2	0.49	0.42	MC-111
Xylenes (total)	µg/L	48	8	17	0.11	110	0.11	8.8	2.4	2.9	2.6	0.91	AA-BW-04A
Ethyl tert-butyl ether	µg/L	13	0	0	0.25	50	--	--	--	--	--	--	--
tert Butyl alcohol	µg/L	9	2	22	5.00	5000	100	100	100	100	0.0	0.0	M-6A
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/L	44	0	0	0.072	84	--	--	--	--	--	--	--

Notes:

-- = not available

µg/L = microgram per liter

SQL = sample quantitation limit

TABLE 4-15B. Shallow Groundwater Summary Statistics – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
Acenaphthene	µg/L	6	0	0	0.19	10	--	--	--	--	--	--	--
Acenaphthylene	µg/L	6	0	0	0.19	10	--	--	--	--	--	--	--
Anthracene	µg/L	6	0	0	0.19	10	--	--	--	--	--	--	--
Benzo(a)anthracene	µg/L	6	0	0	0.19	10	--	--	--	--	--	--	--
Benzo(a)pyrene	µg/L	5	0	0	0.19	10	--	--	--	--	--	--	--
Benzo(b)fluoranthene	µg/L	5	0	0	0.19	10	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	µg/L	5	0	0	0.19	10	--	--	--	--	--	--	--
Benzo(k)fluoranthene	µg/L	5	0	0	0.19	10	--	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	µg/L	6	0	0	4.7	24	--	--	--	--	--	--	--
Butylbenzylphthalate	µg/L	6	1	17	4.7	24	14	14	14	14	--	--	MC-53
Chrysene	µg/L	6	0	0	0.19	10	--	--	--	--	--	--	--
Di-n-butylphthalate	µg/L	6	0	0	4.7	24	--	--	--	--	--	--	--
Di-n-octylphthalate	µg/L	5	0	0	4.7	24	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	µg/L	5	0	0	0.19	10	--	--	--	--	--	--	--
Diethylphthalate	µg/L	6	0	0	4.7	24	--	--	--	--	--	--	--
Dimethylphthalate	µg/L	6	0	0	4.7	24	--	--	--	--	--	--	--
Fluoranthene	µg/L	6	0	0	0.19	10	--	--	--	--	--	--	--
Fluorene	µg/L	6	0	0	0.19	10	--	--	--	--	--	--	--
Hexachlorobenzene	µg/L	6	0	0	0.19	10	--	--	--	--	--	--	--
Hexachlorobutadiene	µg/L	101	1	0.99	0.25	80	0.38	0.38	0.38	0.38	--	--	MC-09R
Indeno(1,2,3-cd)pyrene	µg/L	5	0	0	0.19	10	--	--	--	--	--	--	--
2-Methylnaphthalene	µg/L	6	0	0	0.19	10	--	--	--	--	--	--	--
Naphthalene	µg/L	101	4	4	0.25	80	0.15	0.41	0.19	0.23	0.12	0.50	MC-09R
Nitrobenzene	µg/L	6	0	0	0.19	10	--	--	--	--	--	--	--
Octachlorostyrene	µg/L	6	0	0	0.19	10	--	--	--	--	--	--	--
Phenanthrene	µg/L	6	1	17	0.19	10	0.028	0.028	0.028	0.028	--	--	M-23
Pyrene	µg/L	6	0	0	0.19	10	--	--	--	--	--	--	--
Pyridine	µg/L	2	0	0	1.9	20	--	--	--	--	--	--	--
Acetone	µg/L	14	4	29	10	20	20	20	20	20	0	0	M-23
t-Amyl methyl ether	µg/L	6	0	0	1.0	5.0	--	--	--	--	--	--	--
Benzene	µg/L	101	53	52	0.25	2.0	0.22	2000	6.9	270	490	1.8	MC-114
Bromobenzene	µg/L	101	1	0.99	0.25	50	0.27	0.27	0.27	0.27	--	--	MC-09R
Bromochloromethane	µg/L	101	1	0.99	0.25	50	0.40	0.40	0.40	0.40	--	--	MC-09R
Bromodichloromethane	µg/L	101	2	2	0.25	20	0.3	0.45	0.38	0.38	0.11	0.28	M-23
Bromoform	µg/L	101	3	3	0.25	50	0.35	1.2	0.4	0.65	0.48	0.73	M-23
Bromomethane	µg/L	101	1	0.99	0.25	80	0.42	0.42	0.42	0.42	--	--	MC-09R
2-Butanone	µg/L	22	0	0	2.5	13	--	--	--	--	--	--	--
n-Butylbenzene	µg/L	101	1	0.99	0.25	50	0.37	0.37	0.37	0.37	--	--	MC-09R
sec-Butylbenzene	µg/L	101	1	0.99	0.25	50	0.25	0.25	0.25	0.25	--	--	MC-09R

TABLE 4-15B. Shallow Groundwater Summary Statistics – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
tert-Butylbenzene	µg/L	101	3	3	0.22	50	0.22	0.53	0.26	0.34	0.17	0.5	MC-49
Carbon tetrachloride	µg/L	101	3	3	0.25	50	0.28	2.9	1.5	1.6	1.3	0.84	M-23
Chlorobenzene	µg/L	101	57	56	0.25	5.0	0.31	1800	150	350	480	1.4	MC-49
Chloroethane	µg/L	101	14	14	0.25	50	0.30	1.8	0.53	0.69	0.41	0.59	MC-51
Chloroform	µg/L	101	89	88	0.25	20	0.34	460	5.4	24	65	2.7	M-23
Chloromethane	µg/L	101	2	2	0.25	50	0.40	0.58	0.49	0.49	0.13	0.26	MC-09R
2-Chlorotoluene	µg/L	101	3	3	0.25	50	0.26	0.33	0.28	0.29	0.036	0.12	MC-49
4-Chlorotoluene	µg/L	101	1	0.99	0.25	50	0.29	0.29	0.29	0.29	--	--	MC-09R
Cumene	µg/L	101	1	0.99	0.25	20	0.25	0.25	0.25	0.25	--	--	MC-09R
p-Cymene	µg/L	101	1	0.99	0.25	20	0.28	0.28	0.28	0.28	--	--	MC-09R
2,3-Dimethylpentane	µg/L	8	0	0	2.0	2.0	--	--	--	--	--	--	--
2,4-Dimethylpentane	µg/L	8	0	0	2.0	2.0	--	--	--	--	--	--	--
Dimethyl disulfide	µg/L	87	5	5.8	0.50	200	0.50	5.4	2.0	2.4	1.8	0.74	MC-49
1,2-Dibromo-3-chloropropane	µg/L	93	1	1.1	0.50	120	1.0	1.0	1.0	1.0	--	--	MC-09R
Dibromochloromethane	µg/L	101	2	2	0.25	20	0.25	0.4	0.33	0.33	0.11	0.33	MC-09R
1,2-Dibromoethane	µg/L	93	1	1.1	0.25	80	0.40	0.40	0.40	0.40	--	--	MC-09R
Dibromomethane	µg/L	101	1	0.99	0.25	20	0.36	0.36	0.36	0.36	--	--	MC-09R
1,2-Dichlorobenzene	µg/L	101	65	64	0.25	3.0	0.46	84	14	21	21	1	MC-49
1,3-Dichlorobenzene	µg/L	101	18	18	0.25	20	0.32	3.4	1.2	1.4	0.86	0.64	MC-113
1,4-Dichlorobenzene	µg/L	101	67	66	0.25	3.0	0.26	130	17	29	31	1.1	MC-49
Dichlorodifluoromethane	µg/L	101	1	0.99	0.25	50	0.26	0.26	0.26	0.26	--	--	MC-09R
1,1-Dichloroethane	µg/L	101	60	59	0.25	20	0.22	34	3	5.3	7.1	1.3	MC-114
1,2-Dichloroethane	µg/L	101	26	26	0.25	20	0.28	4.3	0.77	1.3	1.2	0.93	MC-53
1,1-Dichloroethene	µg/L	101	3	3	0.25	50	0.42	4.8	2	2.4	2.2	0.92	MC-53
cis-1,2-Dichloroethene	µg/L	101	1	0.99	0.25	20	0.32	0.32	0.32	0.32	--	--	MC-09R
trans-1,2-Dichloroethene	µg/L	101	1	0.99	0.25	20	0.30	0.30	0.30	0.30	--	--	MC-09R
1,2-Dichloropropane	µg/L	101	1	0.99	0.25	20	0.35	0.35	0.35	0.35	--	--	MC-09R
1,3-Dichloropropane	µg/L	101	1	0.99	0.25	20	0.32	0.32	0.32	0.32	--	--	MC-09R
2,2-Dichloropropane	µg/L	101	1	0.99	0.25	20	0.34	0.34	0.34	0.34	--	--	MC-09R
1,1-Dichloropropene	µg/L	101	1	0.99	0.25	20	0.28	0.28	0.28	0.28	--	--	MC-09R
cis-1,3-Dichloropropene	µg/L	101	1	0.99	0.22	20	0.22	0.22	0.22	0.22	--	--	MC-09R
trans-1,3-Dichloropropene	µg/L	101	1	0.99	0.25	20	0.32	0.32	0.32	0.32	--	--	MC-09R
2,2-Dimethylpentane	µg/L	8	0	0	2.0	2.0	--	--	--	--	--	--	--
3,3-Dimethylpentane	µg/L	8	0	0	2.0	2.0	--	--	--	--	--	--	--
1,4-Dioxane	µg/L	14	12	86	0.50	10	0.17	4.1	2.4	2.3	1.3	0.55	MC-51

TABLE 4-15B. Shallow Groundwater Summary Statistics – Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
Ethyl benzene	µg/L	101	1	0.99	0.25	20	0.25	0.25	0.25	0.25	--	--	MC-09R
3-Ethylpentane	µg/L	8	0	0	2.0	2.0	--	--	--	--	--	--	--
n-Heptane	µg/L	8	0	0	5.0	5.0	--	--	--	--	--	--	--
2-Hexanone	µg/L	14	0	0	10	10	--	--	--	--	--	--	--
3-Methylhexane	µg/L	8	0	0	2.0	2.0	--	--	--	--	--	--	--
Methyl tert-butyl ether	µg/L	14	0	0	1.0	5.0	--	--	--	--	--	--	--
4-Methyl-2-pentanone	µg/L	14	0	0	10	10	--	--	--	--	--	--	--
Methylene Chloride	µg/L	101	4	4	0.88	80	0.26	1.2	0.84	0.78	0.40	0.51	MC-51
2-Methylhexane	µg/L	8	0	0	2.0	2.0	--	--	--	--	--	--	--
n-Nonyl aldehyde	µg/L	8	1	12	5.0	5.0	2.6	2.6	2.6	2.6	--	--	MC-49
Diisopropyl ether	µg/L	6	0	0	1.0	5.0	--	--	--	--	--	--	--
n-Propylbenzene	µg/L	101	1	0.99	0.25	20	0.27	0.27	0.27	0.27	--	--	MC-09R
Styrene	µg/L	99	1	1	0.20	20	0.20	0.20	0.20	0.20	--	--	MC-09R
2,2,3-Trimethylbutane	µg/L	8	0	0	2.0	2.0	--	--	--	--	--	--	--
1,1,1,2-Tetrachloroethane	µg/L	101	1	0.99	0.25	50	0.27	0.27	0.27	0.27	--	--	MC-09R
1,1,2,2-Tetrachloroethane	µg/L	101	1	0.99	0.25	20	0.30	0.30	0.30	0.30	--	--	MC-09R
Tetrachloroethene	µg/L	101	43	43	0.25	20	0.25	20	2.0	2.9	3.5	1.2	MC-114
Toluene	µg/L	101	6	5.9	0.25	20	0.25	1.5	0.69	0.83	0.55	0.66	MC-51
1,2,3-Trichlorobenzene	µg/L	101	32	32	0.25	80	0.73	9.4	2.1	3.2	2.5	0.78	MC-50
1,2,4-Trichlorobenzene	µg/L	101	53	52	0.25	80	0.35	40	11	13	11	0.84	MC-49
1,3,5-Trichlorobenzene	µg/L	8	1	12	2.0	2.0	0.16	0.16	0.16	0.16	--	--	MC-49
1,1,1-Trichloroethane	µg/L	101	1	0.99	0.25	20	0.30	0.30	0.30	0.30	--	--	MC-09R
1,1,2-Trichloroethane	µg/L	101	1	0.99	0.25	20	0.30	0.30	0.30	0.30	--	--	MC-09R
Trichloroethene	µg/L	101	27	27	0.25	20	0.22	20	0.75	2.9	5.1	1.7	MC-114
Trichlorofluoromethane	µg/L	101	1	0.99	0.25	50	0.34	0.34	0.34	0.34	--	--	MC-09R
1,2,3-Trichloropropane	µg/L	101	5	5	0.0	100	0.0027	0.43	0.0032	0.17	0.23	1.3	M-23
1,2,4-Trimethylbenzene	µg/L	101	1	0.99	0.23	20	0.23	0.23	0.23	0.23	--	--	MC-09R
1,3,5-Trimethylbenzene	µg/L	101	1	0.99	0.25	20	0.26	0.26	0.26	0.26	--	--	MC-09R
Vinyl chloride	µg/L	101	1	0.99	0.25	50	0.40	0.40	0.40	0.40	--	--	MC-09R
o-Xylene	µg/L	100	1	1	0.25	20	0.30	0.30	0.30	0.30	--	--	MC-09R
m,p-Xylene	µg/L	100	1	1	0.50	20	0.60	0.60	0.60	0.60	--	--	MC-09R
Xylenes (total)	µg/L	1	0	0	10	10	--	--	--	--	--	--	--
Ethyl tert-butyl ether	µg/L	14	0	0	0.25	5.0	--	--	--	--	--	--	--
tert Butyl alcohol	µg/L	6	0	0	5.0	100	--	--	--	--	--	--	--

Notes:

-- = not available

µg/L = microgram per liter

SQL = sample quantitation limit

TABLE 4-15C. Shallow Groundwater Summary Statistics – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
Acenaphthene	µg/L	3	0	0	0.19	9.5	--	--	--	--	--	--	--
Acenaphthylene	µg/L	3	0	0	0.19	9.5	--	--	--	--	--	--	--
Aniline	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
Anthracene	µg/L	3	0	0	0.19	9.5	--	--	--	--	--	--	--
Azobenzene	µg/L	2	0	0	19	19	--	--	--	--	--	--	--
Diphenyl sulfone	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
Diphenyl sulfide	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
Benzo(a)anthracene	µg/L	3	0	0	0.19	9.5	--	--	--	--	--	--	--
Benzo(a)pyrene	µg/L	3	0	0	0.19	9.5	--	--	--	--	--	--	--
Benzo(b)fluoranthene	µg/L	3	0	0	0.19	9.5	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	µg/L	3	0	0	0.19	9.5	--	--	--	--	--	--	--
Benzo(k)fluoranthene	µg/L	3	0	0	0.19	9.5	--	--	--	--	--	--	--
Benzoic acid	µg/L	2	0	0	19	19	--	--	--	--	--	--	--
Benzyl alcohol	µg/L	2	0	0	19	19	--	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	µg/L	3	1	33	4.7	48	10	10	10	10	--	--	AA-MW-23
bis(2-Chloroethoxy)methane	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
bis(2-Chloroethyl) ether	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
4-Bromophenyl-phenyl ether	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
Butylbenzylphthalate	µg/L	3	0	0	4.7	19	--	--	--	--	--	--	--
4-Chloro-3-methylphenol	µg/L	2	0	0	19	19	--	--	--	--	--	--	--
4-Chloroaniline	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
2-Chloronaphthalene	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
2-Chlorophenol	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
4-Chlorophenyl methyl sulfone	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
4-Chlorophenyl-phenyl ether	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
4-Chlorothioanisole	µg/L	3	0	0	9.5	9.6	--	--	--	--	--	--	--
4-Chlorothiophenol	µg/L	2	0	0	190	190	--	--	--	--	--	--	--
Chrysene	µg/L	3	0	0	0.19	9.5	--	--	--	--	--	--	--
Diphenyl disulfide	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
Di-n-butylphthalate	µg/L	3	0	0	4.7	19	--	--	--	--	--	--	--
Di-n-octylphthalate	µg/L	3	0	0	4.7	19	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	µg/L	3	0	0	0.19	19	--	--	--	--	--	--	--
Dibenzofuran	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
3,3'-Dichlorobenzidine	µg/L	2	0	0	19	19	--	--	--	--	--	--	--
2,2'-/4,4'-Dichlorobenzil	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
4,4'-Dichlorobenzophenone	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
2,4-Dichlorophenol	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--

TABLE 4-15C. Shallow Groundwater Summary Statistics – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
Diethylphthalate	µg/L	3	0	0	4.7	9.5	--	--	--	--	--	--	--
2,4-Dimethylphenol	µg/L	2	0	0	19	19	--	--	--	--	--	--	--
Dimethylphthalate	µg/L	3	0	0	4.7	9.5	--	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	µg/L	2	0	0	19	19	--	--	--	--	--	--	--
2,4-Dinitrophenol	µg/L	2	0	0	19	19	--	--	--	--	--	--	--
2,4-Dinitrotoluene	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
2,6-Dinitrotoluene	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
Fluoranthene	µg/L	3	0	0	0.19	9.5	--	--	--	--	--	--	--
Fluorene	µg/L	3	0	0	0.19	9.5	--	--	--	--	--	--	--
Hexachlorobenzene	µg/L	1	0	0	0.19	0.19	--	--	--	--	--	--	--
Hexachlorobutadiene	µg/L	7	0	0	0.25	10	--	--	--	--	--	--	--
Hexachloroethane	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
Hydroxymethyl phthalimide	µg/L	2	0	0	190	190	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	µg/L	3	0	0	0.19	19	--	--	--	--	--	--	--
Isophorone	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
Benzophenone	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
2-Methylnaphthalene	µg/L	3	0	0	0.19	9.5	--	--	--	--	--	--	--
2-Methylphenol	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
4-Methylphenol	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
Naphthalene	µg/L	7	0	0	0.19	5	--	--	--	--	--	--	--
2-Nitroaniline	µg/L	2	0	0	19	19	--	--	--	--	--	--	--
3-Nitroaniline	µg/L	2	0	0	19	19	--	--	--	--	--	--	--
4-Nitroaniline	µg/L	2	0	0	19	19	--	--	--	--	--	--	--
Nitrobenzene	µg/L	3	0	0	0.19	19	--	--	--	--	--	--	--
2-Nitrophenol	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
4-Nitrophenol	µg/L	2	0	0	19	19	--	--	--	--	--	--	--
n-Nitrosodimethylamine	µg/L	2	0	0	19	19	--	--	--	--	--	--	--
n-Nitrosodiphenylamine	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
n-Nitroso-di-n-propylamine	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
Octachlorostyrene	µg/L	3	0	0	0.19	19	--	--	--	--	--	--	--
Pentachlorobenzene	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
Phenanthrene	µg/L	3	0	0	0.19	9.5	--	--	--	--	--	--	--
Phenol	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
Pyrene	µg/L	3	0	0	0.19	9.5	--	--	--	--	--	--	--
Pyridine	µg/L	3	0	0	1.9	19	--	--	--	--	--	--	--
bis(4-Chlorophenyl) sulfone	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
1,2,4,5-Tetrachlorobenzene	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--

TABLE 4-15C. Shallow Groundwater Summary Statistics – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
bis(4-Chlorophenyl) disulfide	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
bis(2-Chloro-1-methylethyl) ether	µg/L	2	0	0	9.5	9.5	--	--	--	--	--	--	--
Acetone	µg/L	5	1	20	10	10	3.7	3.7	3.7	3.7	--	--	TR-8
t-Amyl methyl ether	µg/L	3	0	0	1	5	--	--	--	--	--	--	--
Benzene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
Bromobenzene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
Bromochloromethane	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
Bromodichloromethane	µg/L	7	1	14	0.25	5	0.22	0.22	0.22	0.22	--	--	TR-8
Bromoform	µg/L	7	0	0	0.4	5	--	--	--	--	--	--	--
Bromomethane	µg/L	7	0	0	0.25	10	--	--	--	--	--	--	--
2-Butanone	µg/L	6	0	0	2.5	10	--	--	--	--	--	--	--
n-Butylbenzene	µg/L	7	0	0	0.4	5	--	--	--	--	--	--	--
sec-Butylbenzene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
tert-Butylbenzene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
Carbon tetrachloride	µg/L	7	4	57	5	5	0.28	1	0.6	0.62	0.35	0.56	AA-MW-23
Chlorobenzene	µg/L	7	1	14	1	5	0.91	0.91	0.91	0.91	--	--	TR-8
Chloroethane	µg/L	7	0	0	0.4	5	--	--	--	--	--	--	--
Chloroform	µg/L	7	7	100	--	--	8.8	28	14	17	7.8	0.45	AA-MW-23
1-Chlorohexane	µg/L	2	0	0	5	5	--	--	--	--	--	--	--
Chloromethane	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
2-Chlorotoluene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
4-Chlorotoluene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
Cumene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
p-Cymene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
2,3-Dimethylpentane	µg/L	2	0	0	2	2	--	--	--	--	--	--	--
2,4-Dimethylpentane	µg/L	2	0	0	2	2	--	--	--	--	--	--	--
Dimethyl disulfide	µg/L	3	0	0	2	2	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	µg/L	5	0	0	0.5	5	--	--	--	--	--	--	--
Dibromochloromethane	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
1,2-Dibromoethane	µg/L	5	0	0	0.25	5	--	--	--	--	--	--	--
Dibromomethane	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
1,2-Dichlorobenzene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
1,3-Dichlorobenzene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
1,4-Dichlorobenzene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
Dichlorodifluoromethane	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
1,1-Dichloroethane	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--

TABLE 4-15C. Shallow Groundwater Summary Statistics – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
1,2-Dichloroethane	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
1,1-Dichloroethene	µg/L	7	4	57	5	5	0.31	0.97	0.69	0.66	0.28	0.42	AA-MW-23
cis-1,2-Dichloroethene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
1,2-Dichloropropane	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
1,3-Dichloropropane	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
2,2-Dichloropropane	µg/L	7	0	0	0.4	5	--	--	--	--	--	--	--
1,1-Dichloropropene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
2,2-Dimethylpentane	µg/L	2	0	0	2	2	--	--	--	--	--	--	--
3,3-Dimethylpentane	µg/L	2	0	0	2	2	--	--	--	--	--	--	--
1,4-Dioxane	µg/L	2	0	0	0.5	1.9	--	--	--	--	--	--	--
Ethanol	µg/L	2	0	0	1000	1000	--	--	--	--	--	--	--
Ethyl benzene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
3-Ethylpentane	µg/L	2	0	0	2	2	--	--	--	--	--	--	--
n-Heptane	µg/L	2	0	0	5	5	--	--	--	--	--	--	--
2-Hexanone	µg/L	5	0	0	10	10	--	--	--	--	--	--	--
3-Methylhexane	µg/L	2	0	0	2	2	--	--	--	--	--	--	--
Methanol	µg/L	2	0	0	1000	1000	--	--	--	--	--	--	--
Methyl tert-butyl ether	µg/L	5	0	0	1	5	--	--	--	--	--	--	--
4-Methyl-2-pentanone	µg/L	5	0	0	10	10	--	--	--	--	--	--	--
Methylene Chloride	µg/L	7	0	0	0.88	10	--	--	--	--	--	--	--
2-Methylhexane	µg/L	2	0	0	2	2	--	--	--	--	--	--	--
n-Nonyl aldehyde	µg/L	2	0	0	5	5	--	--	--	--	--	--	--
Diisopropyl ether	µg/L	3	0	0	1	5	--	--	--	--	--	--	--
n-Propylbenzene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
Styrene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
2,2,3-Trimethylbutane	µg/L	2	0	0	2	2	--	--	--	--	--	--	--
1,1,1,2-Tetrachloroethane	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
Tetrachloroethene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
Toluene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
1,2,3-Trichlorobenzene	µg/L	7	0	0	0.4	5	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	µg/L	7	0	0	0.4	5	--	--	--	--	--	--	--
1,3,5-Trichlorobenzene	µg/L	2	0	0	2	2	--	--	--	--	--	--	--
1,1,1-Trichloroethane	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--

TABLE 4-15C. Shallow Groundwater Summary Statistics – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum SQL	Maximum SQL	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum Detect
1,1,2-Trichloroethane	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
Trichloroethene	µg/L	7	6	86	2	2	0.5	2.2	1.2	1.2	0.67	0.54	AA-MW-23
Trichlorofluoromethane	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
1,2,3-Trichloropropane	µg/L	7	0	0	0.0025	10	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
Vinyl chloride	µg/L	7	0	0	0.25	5	--	--	--	--	--	--	--
o-Xylene	µg/L	5	0	0	0.25	2	--	--	--	--	--	--	--
m,p-Xylene	µg/L	5	0	0	0.5	2	--	--	--	--	--	--	--
Xylenes (total)	µg/L	2	0	0	10	10	--	--	--	--	--	--	--
Ethyl tert-butyl ether	µg/L	4	0	0	0.25	5	--	--	--	--	--	--	--
tert Butyl alcohol	µg/L	1	0	0	100	100	--	--	--	--	--	--	--

Notes:

-- = not available

µg/L = microgram per liter

SQL = sample quantitation limit

TABLE 5-1. Concentration/Toxicity Screen – Parcel C Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Detects		Screening Level [1]	Screening Level Note	No. of Samples > 0.1 x Screening Level	Concentration/ Toxicity Screen Result
						Maximum	Location of Maximum				
Chlorine Oxyanions	Chlorate	mg/kg	50	19	38	16	TSB-CJ-09	38,900	--	0	Pass
	Perchlorate	mg/kg	50	49	98	21	TSB-CJ-09	908	--	0	Pass
Metals	Aluminum	mg/kg	50	50	100	14,000	RISB-38	1,240,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Antimony	mg/kg	50	33	66	0.32	TSB-CR-07	519	--	0	Pass
	Arsenic	mg/kg	74	74	100	11	TSB-CJ-09	7.2	Maximum BRC/TIMET background	--	Fail
	Barium	mg/kg	50	50	100	340	TSB-CJ-08	238,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Beryllium	mg/kg	37	37	100	0.59	TSB-CR-06	2,540	--	0	Pass
	Boron	mg/kg	50	31	62	13	RISB-38	259,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Cadmium	mg/kg	50	27	54	0.27	RISB-38	1,270	--	0	Pass
	Calcium	mg/kg	37	37	100	91,900	TSB-CJ-03	N/A	--	N/A	N/A
	Chromium (total)	mg/kg	50	50	100	19	RISB-42	1,950,000	Use chromium III as a surrogate, use health-based BCL instead of non-health based upper-limit	0	Pass
	Chromium VI	mg/kg	50	2	4.0	0.52	RISB-42	1,230	--	0	Pass
	Cobalt	mg/kg	50	50	100	9.3	RISB-42	385	--	0	Pass
	Copper	mg/kg	50	50	100	27	TSB-CJ-03	48,200	--	0	Pass
	Iron	mg/kg	50	50	100	22,000	RISB-42	908,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Lead	mg/kg	50	50	100	29	TSB-CR-07	800	--	--	Pass
	Lithium	mg/kg	35	32	91	24	TSB-CJ-08	2,600	--	0	Pass
	Magnesium	mg/kg	50	50	100	14,600	TSB-CR-03	5,200,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Manganese	mg/kg	50	50	100	840	TSB-CR-07	28,100	--	0	Pass
	Mercury	mg/kg	50	17	34	0.092	RISB-46	389	Use BCL for mercury compounds	0	Pass
	Molybdenum	mg/kg	50	20	40	0.92	TSB-CJ-01	6,490	--	0	Pass
	Nickel	mg/kg	50	50	100	20	RISB-42	24,700	--	0	Pass
	Palladium	mg/kg	46	33	72	0.90	TSB-CR-04	N/A	--	N/A	N/A
	Phosphorus (total)	mg/kg	48	48	100	1,440	TSB-CR-07	31,600	Use phosphoric acid as a surrogate, adjust BCL based on molecular weight	0	Pass
	Platinum	mg/kg	37	2	5.4	0.014	SA22	649	--	0	Pass
	Potassium	mg/kg	37	37	100	3,660	TSB-CJ-01	N/A	--	N/A	N/A
	Silicon	mg/kg	48	48	100	520	TSB-CJ-09	N/A	--	N/A	N/A
	Silver	mg/kg	50	37	74	0.18	TSB-CR-01	6,490	--	0	Pass
	Sodium	mg/kg	37	37	100	2,300	TSB-CJ-04	N/A	--	N/A	N/A
	Strontium	mg/kg	50	50	100	450	TSB-CR-04	779,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Sulfur	mg/kg	45	29	64	24,800	TSB-CR-04	N/A	--	N/A	N/A
	Thallium	mg/kg	50	4	8.0	0.24	TSB-CR-01	86	--	0	Pass
	Tin	mg/kg	37	21	57	1.2	TSB-CJ-02	779,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Titanium	mg/kg	37	37	100	700	TSB-CR-06	5,190,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Tungsten	mg/kg	50	2	4.0	0.87	SA22	9,730	--	0	Pass
	Uranium (total)	mg/kg	50	50	100	2.7	TSB-CR-04	3,880	--	0	Pass
	Vanadium	mg/kg	37	37	100	49	TSB-CR-06	6,490	--	0	Pass
	Zinc	mg/kg	50	50	100	50	TSB-CJ-05	389,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Zirconium	mg/kg	48	48	100	30	RISB-38	104	--	48	Fail
Other Inorganics	Ammonia	mg/kg	15	3	20	3.9	RISB-42	526,000,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Bromide	mg/kg	50	7	14	15	TSB-CR-04	441,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Chloride	mg/kg	50	50	100	2,910	TSB-CR-04	113,000	Use health-based BCL instead of non-health based upper-limit	0	Pass

TABLE 5-1. Concentration/Toxicity Screen – Parcel C Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Detects		Screening Level [1]	Screening Level Note	No. of Samples > 0.1 x Screening Level	Concentration/ Toxicity Screen Result
						Maximum	Location of Maximum				
Other Inorganics	Fluoride	mg/kg	35	11	31	8.2	TSB-CJ-09	55,000	--	0	Pass
	Nitrate	mg/kg	50	42	84	160	RISB-45	2,080,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Nitrate/Nitrite	mg/kg	13	11	85	37	RISB-45	130,000	Minimum BCL of nitrate and nitrite, use health-based BCL instead of non-health based upper-limit	0	Pass
	Nitrite	mg/kg	44	3	6.8	1.4	RISB-46	130,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	ortho-Phosphate	mg/kg	50	1	2.0	6.3	SA22	52,600,000	Use phosphoric acid as a surrogate, use health-based BCL instead of non-health based upper-limit	0	Pass
	Sulfate	mg/kg	50	50	100	16,700	TSB-CR-04	N/A	--	N/A	N/A
Radionuclides	Radium-226	pCi/g	50	50	100	1.8	TSB-CJ-09	0.023	--	50	Fail
	Radium-228	pCi/g	50	50	100	3.2	TSB-CJ-09	0.041	--	50	Fail
	Thorium-228	pCi/g	50	50	100	4.9	TSB-CJ-09	0.025	--	50	Fail
	Thorium-230	pCi/g	50	50	100	3.4	TSB-CJ-09	8.4	--	49	Fail
	Thorium-232	pCi/g	50	50	100	2.2	TSB-CJ-09	7.4	--	50	Fail
	Uranium-234	pCi/g	37	37	100	2.1	TSB-CR-05	11	--	30	Fail
	Uranium-235	pCi/g	37	37	100	0.33	TSB-CJ-09	0.35	--	21	Fail
	Uranium-238	pCi/g	50	50	100	1.9	TSB-CR-02	1.4	--	50	Fail
Dioxin/Furans	2,3,7,8-TCDD TEQ*	mg/kg	50	41	82	0.0039	TSB-CJ-09	0.0027	Site-specific action level	--	Fail
Other Organics	Phthalic acid	mg/kg	48	1	2.1	0.40	TSB-CJ-09	2,600,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
PAHs	BaPEq*	mg/kg	50	1	2.0	0.0093	RISB-43	0.32	--	0	Pass
	Benzo(g,h,i)perylene	mg/kg	50	1	2.0	0.0050	RISB-43	38,900	--	0	Pass
	Fluoranthene	mg/kg	50	1	2.0	0.0070	RISB-43	33,700	--	0	Pass
	Pyrene	mg/kg	50	1	2.0	0.0060	RISB-43	20,800	--	0	Pass
Pesticides - OCPs	alpha-BHC	mg/kg	49	5	10	0.046	TSB-CJ-05	334	--	0	Pass
	beta-BHC	mg/kg	49	25	51	0.18	TSB-CR-07	67	--	0	Pass
	gamma-BHC	mg/kg	49	1	2.0	0.013	TSB-CJ-05	11	--	0	Pass
	gamma-Chlordane	mg/kg	49	3	6.1	0.0053	TSB-CJ-09	8.9	Use chlordane as a surrogate	0	Pass
	2,4'-DDD	mg/kg	35	3	8.6	0.0066	TSB-CR-07	14	Use 4,4'-DDD as a surrogate	0	Pass
	2,4'-DDE	mg/kg	48	11	23	0.085	TSB-CJ-05	9.5	Use 4,4'-DDE as a surrogate	0	Pass
	4,4'-DDE	mg/kg	49	16	33	0.20	TSB-CJ-05	9.5	--	0	Pass
	4,4'-DDT	mg/kg	49	14	29	0.096	TSB-CJ-05	9.5	--	0	Pass
	Endrin aldehyde	mg/kg	49	1	2.0	0.0029	TSB-CR-07	275	Use endrin as a surrogate	0	Pass
	Hexachlorobenzene	mg/kg	50	6	12	0.37	TSB-CJ-05	1.6	--	2	Fail
	Methoxychlor	mg/kg	49	4	8.2	0.0078	TSB-CJ-06	4,580	--	0	Pass
	Toxaphene	mg/kg	49	1	2.0	0.12	RISB-42	2.3	--	0	Pass
SVOCs	Octachlorostyrene	mg/kg	50	2	4.0	0.065	TSB-CJ-05	N/A	--	N/A	N/A
VOCs	Acetone	mg/kg	50	6	12	0.32	TSB-CR-01	723,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	2-Butanone	mg/kg	49	2	4.1	0.011	TSB-CJ-06	34,100	--	0	Pass
	Chloroform	mg/kg	50	5	10	0.0023	TSB-CJ-01	1.6	--	0	Pass
	Cumene	mg/kg	50	1	2.0	0.00029	TSB-CR-01	647	--	0	Pass
	1,2-Dichlorobenzene	mg/kg	50	1	2.0	0.00036	TSB-CJ-01	373	--	0	Pass
	1,3-Dichlorobenzene	mg/kg	50	2	4.0	0.00080	TSB-CR-01	373	--	0	Pass
	1,4-Dichlorobenzene	mg/kg	50	3	6.0	0.00051	TSB-CR-01	14	--	0	Pass
	Ethyl benzene	mg/kg	50	2	4.0	0.0022	TSB-CR-01	20	--	0	Pass
	n-Propylbenzene	mg/kg	50	1	2.0	0.0010	TSB-CR-01	237	--	0	Pass

TABLE 5-1. Concentration/Toxicity Screen – Parcel C Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Detects		Screening Level [1]	Screening Level Note	No. of Samples > 0.1 x Screening Level	Concentration/ Toxicity Screen Result
						Maximum	Location of Maximum				
VOCs	Tetrachloroethene	mg/kg	50	2	4.0	0.0027	TSB-CR-01	3.5	--	0	Pass
	Toluene	mg/kg	50	2	4.0	0.00056	TSB-CR-06	521	--	0	Pass
	1,2,3-Trichlorobenzene	mg/kg	50	2	4.0	0.0017	TSB-CR-01	360	Use 1,2,4-trichlorobenzene as a surrogate (noncancer endpoint)	0	Pass
	1,2,4-Trichlorobenzene	mg/kg	50	4	8.0	0.014	TSB-CR-01	125	--	0	Pass
	1,2,4-Trimethylbenzene	mg/kg	50	3	6.0	0.0045	TSB-CR-01	604	--	0	Pass
	1,3,5-Trimethylbenzene	mg/kg	50	3	6.0	0.0019	TSB-CR-01	246	--	0	Pass
	m,p-Xylene	mg/kg	48	5	10	0.011	TSB-CR-01	214	Minimum BCL of m-xylene and p-xylene	0	Pass
	o-Xylene	mg/kg	48	2	4.2	0.0041	TSB-CR-01	282	--	0	Pass
	Xylenes (total)	mg/kg	37	4	11	0.015	TSB-CR-01	214	--	0	Pass

Notes:

-- = Not applicable
mg/kg = milligram per kilogram
pCi/g = picocurie per gram
BaPEq = Benzo(a)pyrene equivalent
BCL = Basic Comparison Level
BHC = Hexachlorocyclohexane
COPC = Chemical of Potential Concern
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethylene
DDT = Dichlorodiphenyltrichloroethane
N/A = BCL (other screening value) not available for screen
NDEP = Neveda Department of Environmental Protection
OCP = Organochlorine pesticide
PAH = Polycyclic aromatic hydrocarbon
SVOC = Semivolatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
VOC = Volatile organic compound
* Methodology for equivalent calculations explained in text
[1] Screening levels are the lowest level among the indoor worker and outdoor worker BCLs (NDEP 2015), unless noted.

indicates analyte is carried forward to COPC identification Step 2. For arsenic, lead, and 2,3,7,8-TCDD TEQ, the maximum detected concentration is compared directly to the screening level. For all other analytes, the maximum detected concentration is compared to 0.1 x screening level. If the maximum detected concentration is greater than or equal to the 0.1 x screening level, the analyte "fails" and is carried forward to Step 2. If less than the 0.1 x screening level, the analyte "passes" and is eliminated as a COPC. By default, analytes for which screening levels are not available are retained for Step 2 (metals) and Step 3 (organics).

Source:

NDEP. 2015. User's Guide and Background Technical Document for NDEP Basic Comparison Levels (BCLs) for Human Health for the BMI Complex and Common Areas. Revision 13, February.

TABLE 5-2. ConcentrationToxicity Screen – Parcel D Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Detects		Screening Level [1]	Screening Level Note	No. of Samples > 0.1 x Screening Level	Concentration/ Toxicity Screen Result
						Maximum	Location of Maximum				
Chlorine Oxyanions	Chlorate	mg/kg	16	3	19	12	TSB-DR-06	38,900	--	0	Pass
	Perchlorate	mg/kg	16	16	100	28	TSB-DR-06	908	--	0	Pass
Metals	Aluminum	mg/kg	16	16	100	10,800	TSB-DR-05	1,240,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Antimony	mg/kg	16	16	100	0.28	TSB-DR-04	519	--	0	Pass
	Arsenic	mg/kg	16	16	100	6.1	TSB-DR-04	7.2	Maximum BRC/TIMET background	--	Pass
	Barium	mg/kg	16	16	100	240	TSB-DR-04	238,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Beryllium	mg/kg	16	16	100	0.68	TSB-DR-05	2,540	--	0	Pass
	Boron	mg/kg	16	8	50	23	TSB-DR-05	259,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Cadmium	mg/kg	16	9	56	0.13	TSB-DR-04	1,270	--	0	Pass
	Calcium	mg/kg	16	16	100	43,400	TSB-DR-01	N/A	--	N/A	N/A
	Chromium (total)	mg/kg	16	16	100	18	TSB-DR-04	1,950,000	Use chromium III as a surrogate, use health-based BCL instead of non-health based upper-limit	0	Pass
	Chromium VI	mg/kg	16	1	6.3	1.3	TSB-DR-05	1,230	--	0	Pass
	Cobalt	mg/kg	16	16	100	7.5	TSB-DR-05	385	--	0	Pass
	Copper	mg/kg	16	16	100	15	TSB-DJ-01	48,200	--	0	Pass
	Iron	mg/kg	16	16	100	14,400	TSB-DR-05	908,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Lead	mg/kg	16	16	100	20	TSB-DR-04	800	--	--	Pass
	Lithium	mg/kg	16	16	100	21	TSB-DJ-01	2,600	--	0	Pass
	Magnesium	mg/kg	16	16	100	14,300	TSB-DR-05	5,200,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Manganese	mg/kg	16	16	100	450	TSB-DR-04	28,100	--	0	Pass
	Mercury	mg/kg	16	16	100	0.021	TSB-DR-06	389	Use BCL for mercury compounds	0	Pass
	Molybdenum	mg/kg	16	8	50	1.1	TSB-DR-06	6,490	--	0	Pass
	Nickel	mg/kg	16	16	100	16	TSB-DR-04	24,700	--	0	Pass
	Niobium	mg/kg	16	2	13	5.3	TSB-DR-06	130	--	0	Pass
	Palladium	mg/kg	16	16	100	0.63	TSB-DJ-01	N/A	--	N/A	N/A
	Phosphorus (total)	mg/kg	16	16	100	1,640	TSB-DR-04	31,600	Use phosphoric acid as a surrogate, adjust BCL based on molecular weight	0	Pass
	Potassium	mg/kg	16	16	100	4,480	TSB-DR-05	N/A	--	N/A	N/A
	Silicon	mg/kg	16	16	100	384	TSB-DR-05	N/A	--	N/A	N/A
	Silver	mg/kg	16	16	100	0.12	TSB-DR-05	6,490	--	0	Pass
	Sodium	mg/kg	16	16	100	2,100	TSB-DR-05	N/A	--	N/A	N/A
	Strontium	mg/kg	16	16	100	330	TSB-DJ-01	779,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Sulfur	mg/kg	16	11	69	5,670	TSB-DJ-01	N/A	--	N/A	N/A
	Thallium	mg/kg	16	2	13	0.45	TSB-DR-04	86	--	0	Pass
	Tin	mg/kg	16	15	94	0.67	TSB-DR-05	779,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Titanium	mg/kg	16	16	100	720	TSB-DR-05	5,190,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Tungsten	mg/kg	16	2	13	1.1	TSB-DR-06	9,730	--	0	Pass
	Uranium (total)	mg/kg	16	16	100	2.5	TSB-DR-05	3,880	--	0	Pass
	Vanadium	mg/kg	16	16	100	47	TSB-DR-04	6,490	--	0	Pass
	Zinc	mg/kg	16	16	100	33	TSB-DR-02	389,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Zirconium	mg/kg	16	14	88	28	TSB-DR-05	104	--	12	Fail
Other Inorganics	Bromide	mg/kg	16	5	31	10	TSB-DR-01	441,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Chloride	mg/kg	16	16	100	3,730	TSB-DR-03	113,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Fluoride	mg/kg	16	6	38	2.3	TSB-DR-04	55,000	--	0	Pass
	Nitrate	mg/kg	16	14	88	32	TSB-DR-03	2,080,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Sulfate	mg/kg	16	16	100	6,660	TSB-DJ-01	N/A	--	N/A	N/A
Radionuclides	Radium-226	pCi/g	16	16	100	1.5	TSB-DR-01	0.023	--	16	Fail
	Radium-228	pCi/g	16	16	100	2.0	TSB-DR-03	0.041	--	16	Fail
	Thorium-228	pCi/g	15	15	100	1.9	TSB-DR-05	0.025	--	15	Fail
	Thorium-230	pCi/g	15	15	100	2.0	TSB-DR-01	8.4	--	15	Fail

TABLE 5-2. ConcentrationToxicity Screen – Parcel D Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Detects		Screening Level [1]	Screening Level Note	No. of Samples > 0.1 x Screening Level	Concentration/ Toxicity Screen Result
						Maximum	Location of Maximum				
Radionuclides	Thorium-232	pCi/g	15	15	100	1.7	TSB-DR-05	7.4	--	15	Fail
	Uranium-234	pCi/g	16	16	100	2.3	TSB-DR-01	11	--	11	Fail
	Uranium-235	pCi/g	16	16	100	0.070	TSB-DJ-01	0.35	--	9	Fail
	Uranium-238	pCi/g	16	16	100	1.6	TSB-DR-01	1.4	--	16	Fail
Dioxin/Furans	2,3,7,8-TCDD TEQ*	mg/kg	16	13	81	0.00077	TSB-DJ-01	0.0027	Site-specific action level	--	Pass
Pesticides - OCPs	beta-BHC	mg/kg	16	7	44	0.10	TSB-DR-04	67	--	0	Pass
	2,4'-DDD	mg/kg	16	1	6.3	0.0026	TSB-DR-04	14	Use 4,4'-DDD as a surrogate	0	Pass
	4,4'-DDD	mg/kg	16	1	6.3	0.0019	TSB-DR-04	14	--	0	Pass
	2,4'-DDE	mg/kg	16	3	19	0.037	TSB-DR-04	9.5	Use 4,4'-DDE as a surrogate	0	Pass
	4,4'-DDE	mg/kg	16	6	38	0.10	TSB-DR-04	9.5	--	0	Pass
	4,4'-DDT	mg/kg	16	3	19	0.028	TSB-DR-04	9.5	--	0	Pass
	Methoxychlor	mg/kg	16	1	6.3	0.0020	TSB-DR-03	4,580	--	0	Pass
SVOCs	bis(2-Ethylhexyl)phthalate	mg/kg	16	1	6.3	0.040	TSB-DR-03	183	--	0	Pass
VOCs	Acetone	mg/kg	16	4	25	0.79	TSB-DR-01	723,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	1,3-Dichlorobenzene	mg/kg	16	1	6.3	0.00034	TSB-DR-03	373	--	0	Pass
	Ethyl benzene	mg/kg	16	1	6.3	0.0014	TSB-DR-01	20	--	0	Pass
	n-Propylbenzene	mg/kg	16	1	6.3	0.0010	TSB-DR-01	237	--	0	Pass
	Toluene	mg/kg	16	1	6.3	0.00051	TSB-DR-05	521	--	0	Pass
	1,2,4-Trimethylbenzene	mg/kg	16	1	6.3	0.0038	TSB-DR-01	604	--	0	Pass
	1,3,5-Trimethylbenzene	mg/kg	16	2	13	0.0015	TSB-DR-01	246	--	0	Pass
	m,p-Xylene	mg/kg	16	2	13	0.0079	TSB-DR-01	214	Minimum BCL of m-xylene and p-xylene	0	Pass
	o-Xylene	mg/kg	16	1	6.3	0.0026	TSB-DR-01	282	--	0	Pass
	Xylenes (total)	mg/kg	16	1	6.3	0.010	TSB-DR-01	214	--	0	Pass

Notes:

-- = Not applicable
mg/kg = milligram per kilogram
pCi/g = picocurie per gram
BCL = Basic Comparison Level
BHC = Hexachlorocyclohexane
COPC = Chemical of Potential Concern
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethylene
DDT = Dichlorodiphenyltrichloroethane
N/A = BCL (other screening value) not available for screen
NDEP = Neveda Department of Environmental Protection
OCP = Organochlorine pesticide
SVOC = Semivolatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
VOC = Volatile organic compound
* Methodology for equivalent calculations explained in text
[1] Screening levels are the lowest level among the indoor worker and outdoor worker BCLs (NDEP 2015), unless noted.

indicates analyte is carried forward to COPC identification Step 2. For arsenic, lead, and 2,3,7,8-TCDD TEQ, the maximum detected concentration is compared directly to the screening level. For all other analytes, the maximum detected concentration is compared to 0.1 x screening level. If the maximum detected concentration is greater than or equal to the 0.1 x screening level, the analyte "fails" and is carried forward to Step 2. If less than the 0.1 x screening level, the analyte "passes" and is eliminated as a COPC. By default, analytes for which screening levels are not available are retained for Step 2 (metals) and Step 3 (organics).

Source:

NDEP. 2015. User's Guide and Background Technical Document for NDEP Basic Comparison Levels (BCLs) for Human Health for the BMI Complex and Common Areas. Revision 13, February.

TABLE 5-3. ConcentrationToxicity Screen – Parcel G Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Detects		Screening Level [1]	Screening Level Note	No. of Samples > 0.1 x Screening Level	Concentration/ Toxicity Screen Result
						Maximum	Location of Maximum				
Chlorine Oxyanions	Chlorate	mg/kg	16	8	50	250	TSB-GJ-09	38,900	--	0	Pass
	Perchlorate	mg/kg	16	16	100	138	TSB-GJ-09	908	--	2	Fail
Metals	Aluminum	mg/kg	16	16	100	8,870	TSB-GJ-08	1,240,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Antimony	mg/kg	16	11	69	0.22	TSB-GJ-06	519	--	0	Pass
	Arsenic	mg/kg	16	16	100	6.1	TSB-GJ-08	7.2	Maximum BRC/TIMET background	--	Pass
	Barium	mg/kg	16	16	100	230	TSB-GJ-09	238,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Beryllium	mg/kg	16	16	100	0.65	TSB-GJ-08	2,540	--	0	Pass
	Boron	mg/kg	16	4	25	14	TSB-GJ-08	259,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Cadmium	mg/kg	16	7	44	0.17	TSB-GJ-08	1,270	--	0	Pass
	Calcium	mg/kg	16	16	100	50,900	TSB-GJ-06	N/A	--	N/A	N/A
	Chromium (total)	mg/kg	16	16	100	12	TSB-GJ-07	1,950,000	Use chromium III as a surrogate, use health-based BCL instead of non-health based upper-limit	0	Pass
	Chromium VI	mg/kg	16	1	6.3	0.49	TSB-GJ-08	1,230	--	0	Pass
	Cobalt	mg/kg	16	16	100	8.1	TSB-GJ-01	385	--	0	Pass
	Copper	mg/kg	16	16	100	18	TSB-GJ-08	48,200	--	0	Pass
	Iron	mg/kg	16	16	100	14,300	TSB-GJ-06	908,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Lead	mg/kg	16	16	100	39	TSB-GJ-08	800	--	--	Pass
	Lithium	mg/kg	16	14	88	24	TSB-GJ-09	2,600	--	0	Pass
	Magnesium	mg/kg	16	16	100	25,000	TSB-GJ-08	5,200,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Manganese	mg/kg	16	16	100	710	TSB-GJ-06	28,100	--	0	Pass
	Mercury	mg/kg	16	1	6.3	0.016	TSB-GJ-08	389	Use BCL for mercury compounds	0	Pass
	Molybdenum	mg/kg	16	11	69	1.1	TSB-GJ-08	6,490	--	0	Pass
	Nickel	mg/kg	16	16	100	17	TSB-GJ-02	24,700	--	0	Pass
	Palladium	mg/kg	15	15	100	0.79	TSB-GJ-07	N/A	--	N/A	N/A
	Phosphorus (total)	mg/kg	16	16	100	1,140	TSB-GJ-02	31,600	Use phosphoric acid as a surrogate, adjust BCL based on molecular weight	0	Pass
	Potassium	mg/kg	16	16	100	2,630	TSB-GJ-06	N/A	--	N/A	N/A
	Silicon	mg/kg	16	16	100	380	TSB-GJ-09	N/A	--	N/A	N/A
	Silver	mg/kg	16	16	100	0.18	TSB-GJ-09	6,490	--	0	Pass
	Sodium	mg/kg	16	16	100	1,810	TSB-GJ-09	N/A	--	N/A	N/A
	Strontium	mg/kg	16	16	100	480	TSB-GJ-09	779,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Sulfur	mg/kg	16	12	75	1,740	TSB-GJ-09	N/A	--	N/A	N/A
	Tin	mg/kg	16	16	100	0.66	TSB-GJ-08	779,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Titanium	mg/kg	16	16	100	680	TSB-GJ-06	5,190,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Uranium (total)	mg/kg	16	16	100	3.9	TSB-GJ-08	3,880	--	0	Pass
	Vanadium	mg/kg	16	16	100	50	TSB-GJ-06	6,490	--	0	Pass
	Zinc	mg/kg	16	16	100	52	TSB-GJ-08	389,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Zirconium	mg/kg	16	16	100	26	TSB-GJ-06	104	--	16	Fail
Other Inorganics	Bromide	mg/kg	16	3	19	17	TSB-GJ-09	441,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Chloride	mg/kg	16	16	100	15,900	TSB-GJ-09	113,000	Use health-based BCL instead of non-health based upper-limit	1	Fail
	Fluoride	mg/kg	16	8	50	2.2	TSB-GR-01	55,000	--	0	Pass
	Nitrate	mg/kg	16	16	100	160	TSB-GJ-09	2,080,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	Sulfate	mg/kg	16	16	100	3,310	TSB-GJ-09	N/A	--	N/A	N/A
Radionuclides	Radium-226	pCi/g	16	16	100	1.3	TSB-GJ-02	0.023	--	16	Fail
	Radium-228	pCi/g	16	16	100	2.7	TSB-GJ-08	0.041	--	16	Fail
	Thorium-228	pCi/g	16	16	100	2.3	TSB-GJ-06	0.025	--	16	Fail
	Thorium-230	pCi/g	16	16	100	1.8	TSB-GJ-02	8.4	--	16	Fail
	Thorium-232	pCi/g	16	16	100	2.0	TSB-GR-01	7.4	--	16	Fail

TABLE 5-3. ConcentrationToxicity Screen – Parcel G Soil
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Detects		Screening Level [1]	Screening Level Note	No. of Samples > 0.1 x Screening Level	Concentration/ Toxicity Screen Result
						Maximum	Location of Maximum				
Radionuclides	Uranium-234	pCi/g	14	14	100	2.0	TSB-GJ-02	11	--	9	Fail
	Uranium-235	pCi/g	14	14	100	0.17	TSB-GJ-09	0.35	--	13	Fail
	Uranium-238	pCi/g	14	14	100	1.6	TSB-GJ-02	1.4	--	14	Fail
Dioxin/Furans	2,3,7,8-TCDD TEQ*	mg/kg	11	6	55	0.0017	TSB-GR-01	0.0027	Site-specific action level	--	Pass
PAHs	Acenaphthene	mg/kg	16	1	6.3	0.41	TSB-GJ-08	2,360	--	0	Pass
	Acenaphthylene	mg/kg	16	1	6.3	0.17	TSB-GJ-08	147	--	0	Pass
	BaPEq*	mg/kg	16	3	19	0.25	TSB-GJ-08	0.32	--	1	Fail
	Benzo(g,h,i)perylene	mg/kg	16	3	19	0.37	TSB-GJ-08	38,900	--	0	Pass
	Phenanthrene	mg/kg	16	2	13	0.055	TSB-GJ-08	24	--	0	Pass
	Pyrene	mg/kg	16	2	13	0.16	TSB-GJ-08	20,800	--	0	Pass
OCPs	beta-BHC	mg/kg	16	7	44	0.045	TSB-GJ-09	67	--	0	Pass
	4,4'-DDD	mg/kg	16	1	6.3	0.0020	TSB-GR-01	14	--	0	Pass
	2,4'-DDE	mg/kg	16	1	6.3	0.0056	TSB-GR-01	9.5	Use 4,4'-DDE as a surrogate	0	Pass
	4,4'-DDE	mg/kg	16	9	56	0.20	TSB-GJ-08	9.5	--	0	Pass
	4,4'-DDT	mg/kg	16	8	50	0.16	TSB-GR-01	9.5	--	0	Pass
SVOCs	Carbazole	mg/kg	16	1	6.3	0.059	TSB-GJ-06	128	--	0	Pass
VOCs	Acetone	mg/kg	16	10	63	0.046	TSB-GR-01	723,000	Use health-based BCL instead of non-health based upper-limit	0	Pass
	2-Butanone	mg/kg	16	1	6.3	0.0038	TSB-GJ-06	34,100	--	0	Pass
	Methylene Chloride	mg/kg	16	3	19	0.016	TSB-GJ-09	59	--	0	Pass
	Toluene	mg/kg	16	1	6.3	0.00059	TSB-GJ-06	521	--	0	Pass
	1,2,4-Trimethylbenzene	mg/kg	16	1	6.3	0.00045	TSB-GJ-02	604	--	0	Pass

Notes:

-- = Not applicable
mg/kg = milligram per kilogram
pCi/g = picocurie per gram
BaPEq = Benzo(a)pyrene equivalent
BCL = Basic Comparison Level
BHC = Hexachlorocyclohexane
COPC = Chemical of Potential Concern
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethylene
DDT = Dichlorodiphenyltrichloroethane
N/A = BCL (other screening value) not available for screen
NDEP = Neveda Department of Environmental Protection
OCP = Organochlorine pesticide
PAH = Polycyclic aromatic hydrocarbon
SVOC = Semivolatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
VOC = Volatile organic compound
* Methodology for equivalent calculations explained in text
[1] Screening levels are the lowest level among the indoor worker and outdoor worker BCLs (NDEP 2015), unless noted.

indicates analyte is carried forward to COPC identification Step 2. For arsenic, lead, and 2,3,7,8-TCDD TEQ, the maximum detected concentration is compared directly to the screening level. For all other analytes, the maximum detected concentration is compared to 0.1 x screening level. If the maximum detected concentration is greater than or equal to the 0.1 x screening level, the analyte "fails" and is carried forward to Step 2. If less than the 0.1 x screening level, the analyte "passes" and is eliminated as a COPC. By default, analytes for which screening levels are not available are retained for Step 2 (metals) and Step 3 (organics).

Source:

NDEP. 2015. User's Guide and Background Technical Document for NDEP Basic Comparison Levels (BCLs) for Human Health for the BMI Complex and Common Areas. Revision 13, February.

TABLE 5-4. Results of the Background Evaluation for Metals Carried Forward from the Concentration/Toxicity Screen
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Chemical Name	Fail Statistical Testing for Background Consistency?[1]
C	Arsenic	Yes
	Calcium	No
	Palladium	NA
	Potassium	Yes
	Silicon	NA
	Sodium	Yes
	Sulfur	NA
	Zirconium	NA
D	Calcium	No
	Palladium	NA
	Potassium	No
	Silicon	NA
	Sodium	Yes
	Sulfur	NA
	Zirconium	NA
G	Calcium	No
	Palladium	NA
	Potassium	No
	Silicon	NA
	Sodium	No
	Sulfur	NA
	Zirconium	NA

Notes:

NA = Background data are not available

element is present at concentrations greater than background or background data are not available.

[1] Based on background evaluation presented in Appendix H.

TABLE 5-5. Results of the Background Evaluation for Radionuclides Carried Forward from the Concentration/Toxicity Screen
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Chain	Secular Equilibrium?	Radionuclide	Fail Statistical Testing for Background Consistency?[1]	Hydrofluoric Acid Digestion?
C	Uranium-238	in Secular Equilibrium	Uranium-238	Yes	Yes
			Uranium-234	Yes	
			Thorium-230	Yes	
			Radium-226	Yes	
	Thorium-232	In Secular Equilibrium	Thorium-232	Yes	Yes
			Radium-228	Yes	
			Thorium-228	No	
	Uranium-235	--	Uranium-235	No	Yes
D	Uranium-238	in Secular Equilibrium	Uranium-238	No	Yes
			Uranium-234	Yes	
			Thorium-230	Yes	
			Radium-226	Yes	
	Thorium-232	In Secular Equilibrium	Thorium-232	No	Yes
			Radium-228	Yes	
			Thorium-228	No	
	Uranium-235	--	Uranium-235	No	Yes
G	Uranium-238	in Secular Equilibrium	Uranium-238	No	Yes
			Uranium-234	Yes	
			Thorium-230	Yes	
			Radium-226	No	
	Thorium-232	In Secular Equilibrium	Thorium-232	No	Yes
			Radium-228	Yes	
			Thorium-228	No	
	Uranium-235	--	Uranium-235	No	Yes

Notes:
-- = Not evaluated
radionuclide is present at concentrations greater than background.
[1] Based on background analysis presented in Appendix H.

TABLE 5-6. Comparison of Cancer Risks for Radionuclides between Parcels C, D, and G Soils and Background Soils
Nevada Environmental Response Trust Site
Henderson, Nevada

Chain	Radionuclide	Commercial/Industrial BCL (pCi/g)	Parcel C		Parcel D		Parcel G		RZ-A Background		BRC/TIMET Background	
			95% UCL (pCi/g)	Cancer Risk	95% UCL (pCi/g)	Cancer Risk	95% UCL (pCi/g)	Cancer Risk	95% UCL (pCi/g)	Cancer Risk	95% UCL (pCi/g)	Cancer Risk
Uranium-238	Uranium-238	1.4	1.2	8.8E-07	1.2	8.7E-07	1.2	8.8E-07	1.1	7.8E-07	1.1	8.2E-07
	Uranium-234	11	1.5	1.3E-07	1.5	1.4E-07	1.5	1.3E-07	1.2	1.0E-07	1.2	1.1E-07
	Thorium-230	8.4	1.6	1.8E-07	1.4	1.7E-07	1.4	1.6E-07	1.2	1.4E-07	1.3	1.6E-07
	Radium-226	0.023	0.91	4.0E-05	0.92	4.0E-05	1.1	4.7E-05	1.1	4.6E-05	1.2	5.1E-05
Thorium-232	Thorium-232	7.4	1.7	2.3E-07	1.5	2.0E-07	1.7	2.2E-07	1.6	2.1E-07	1.7	2.2E-07
	Radium-228	0.041	1.7	4.2E-05	1.8	4.5E-05	2.0	4.8E-05	1.4	3.5E-05	2.0	4.9E-05
	Thorium-228	0.025	2.0	7.9E-05	1.6	6.3E-05	1.9	7.7E-05	1.8	7.3E-05	1.7	6.9E-05
Uranium-235	Uranium-235	0.35	0.16	4.6E-07	0.051	1.4E-07	0.18	5.2E-07	0.065	1.9E-07	0.072	2.1E-07
Total Cancer Risk			--	**2E-04**	--	**1E-04**	--	**2E-04**	--	**2E-04**	--	**2E-04**

Notes:

-- = Not applicable

pCi/g = picocurie per gram

BCL = Basic Comparison Level

UCL = Upper Confidence Limit

TABLE 5-7. Soil COPCs Identified for Parcels C, D, and G (0-10 feet bgs)

Nevada Environmental Response Trust Site

Henderson, Nevada

Chemical Group	COPC	Parcel C	Parcel D	Parcel G
Chlorine Oxyanions	Perchlorate			X
Metals	Palladium [1] [2]	X	X	X
	Zirconium [2]	X	X	X
Other Inorganics	Chloride			X
Dioxin/Furans	2,3,7,8-TCDD TEQ	X		
PAHs	BaPEq			X
Pesticides - OCPs	Hexachlorobenzene	X		
SVOCs	Octachlorostyrene [1]	X		
Asbestos	Long amphibole fibers	X	X	X
	Long chrysotile fibers	X	X	X

Notes:

bgs = below ground surface

BaPEq = Benzo(a)pyrene equivalent

BCL = Basic Comparison Level

COPC = Chemical of Potential Concern

OCP = Organochlorine pesticides

PAH = Polycyclic aromatic hydrocarbons

SVOC = Semivolatile organic compound

TCDD = Tetrachlorodibenzo-p-dioxin

TEQ = Toxicity equivalent

[1] Retained as a COPC in the absence of a BCL or other screening level. This COPC is discussed qualitatively in the uncertainty section.

[2] RZ-A background data are not available for this chemical. The parcel data are compared to BRC/TIMET regional background data in the uncertainty section.

TABLE 5-8. Soil Gas and Shallow Groundwater COPCs Identified for Parcels C, D, and G
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	COPC [1]	Soil Gas					Shallow Groundwater			Volatile Compounds? [3]
		Parcel C		Parcel D		Parcel G [2]	Parcel C	Parcel D	Parcel G	
		5 ft bgs	10 ft bgs	5 ft bgs	10 ft bgs	5 ft bgs				
VOCs	Acetone	X	X	X	X	X	X		X	V
VOCs	Acrylonitrile	X		X						V
VOCs	Benzene	X	X	X	X	X	X	X		V
VOCs	Bromobenzene						X			V
VOCs	Bromochloromethane						X			V
VOCs	Bromodichloromethane	X	X	X		X	X			V
VOCs	Bromoform						X	X		V
VOCs	Bromomethane	X	X	X	X		X			V
VOCs	2-Butanone	X	X	X	X	X	X			V
VOCs	n-Butylbenzene	X		X		X	X			V
VOCs	sec-Butylbenzene	X		X			X			V
VOCs	tert-Butylbenzene						X	X		V
VOCs	Carbon disulfide	X	X	X		X				V
VOCs	Carbon tetrachloride	X	X	X	X	X	X	X	X	V
VOCs	Chlorobenzene	X	X	X		X	X	X	X	V
VOCs	Chloroethane	X	X	X	X		X	X		V
VOCs	Chloroform	X	X	X	X	X	X	X	X	V
VOCs	Chloromethane		X		X		X			V
VOCs	2-Chlorotoluene						X	X		V
VOCs	4-Chlorotoluene						X			V
VOCs	Cumene	X					X			V
VOCs	Cyclohexane	X		X						V
VOCs	p-Cymene	X		X		X	X			V
VOCs	1,2-Dibromo-3-chloropropane						X			V
VOCs	Dibromochloromethane						X			V
VOCs	1,2-Dibromoethane						X			V
VOCs	Dibromomethane						X			V
VOCs	1,2-Dichlorobenzene	X		X		X	X	X		V
VOCs	1,3-Dichlorobenzene	X	X	X	X		X	X		V
VOCs	1,4-Dichlorobenzene	X		X		X	X	X		V
VOCs	Dichlorodifluoromethane	X		X		X	X			V
VOCs	1,1-Dichloroethane	X	X	X	X		X	X		V
VOCs	1,2-Dichloroethane	X	X	X	X		X	X		V
VOCs	1,1-Dichloroethene	X	X	X			X		X	V
VOCs	1,2-Dichloroethene						X			V
VOCs	cis-1,2-Dichloroethene	X				X	X			V
VOCs	trans-1,2-Dichloroethene	X					X			V
VOCs	1,2-Dichloropropane	X		X			X			V
VOCs	1,3-Dichloropropane						X			V
VOCs	2,2-Dichloropropane						X			V
VOCs	1,1-Dichloropropene						X			V
VOCs	cis-1,3-Dichloropropene						X			V
VOCs	trans-1,3-Dichloropropene						X			V
VOCs	3,3-Dimethylpentane						X			V
VOCs	1,4-Dioxane	X		X			X	X		V
VOCs	Dimethyl disulfide						X	X		V
VOCs	Ethanol	X		X		X				V
VOCs	Ethyl acetate	X		X		X				V
VOCs	Ethyl benzene	X	X	X		X	X			V

TABLE 5-8. Soil Gas and Shallow Groundwater COPCs Identified for Parcels C, D, and G
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	COPC [1]	Soil Gas					Shallow Groundwater			Volatile Compounds? [3]
		Parcel C		Parcel D		Parcel G [2]	Parcel C	Parcel D	Parcel G	
		5 ft bgs	10 ft bgs	5 ft bgs	10 ft bgs	5 ft bgs				
VOCs	3-Ethylpentane						X			V
VOCs	4-Ethyltoluene	X	X	X		X				V
VOCs	Freon 114	X		X		X				V
VOCs	n-Heptane	X		X		X				V
VOCs	n-Hexane	X		X		X				V
VOCs	2-Hexanone	X		X		X				V
VOCs	Methyl tert-butyl ether			X						V
VOCs	4-Methyl-2-pentanone	X		X		X				V
VOCs	Methylene Chloride	X	X	X	X	X	X	X		V
VOCs	2-Methylhexane						X			V
VOCs	3-Methylhexane						X			V
VOCs	n-Nonyl aldehyde						X	X		V
VOCs	n-Octane	X		X		X				V
VOCs	n-Propylbenzene	X		X		X	X			V
VOCs	Styrene	X		X		X	X			V
VOCs	alpha-Methylstyrene	X		X						V
VOCs	tert Butyl alcohol	X		X		X				V
VOCs	1,1,1,2-Tetrachloroethane						X			V
VOCs	1,1,2,2-Tetrachloroethane						X			V
VOCs	Tetrachloroethene	X	X	X	X	X	X	X		V
VOCs	Toluene	X	X	X	X	X	X	X		V
VOCs	1,2,3-Trichlorobenzene						X	X		V
VOCs	1,2,4-Trichlorobenzene	X		X			X	X		V
VOCs	1,3,5-Trichlorobenzene						X	X		V
VOCs	1,1,1-Trichloroethane						X			V
VOCs	1,1,2-Trichloroethane	X	X	X			X			V
VOCs	Trichloroethene	X	X	X	X	X	X	X	X	V
VOCs	Trichlorofluoromethane	X		X		X	X			V
VOCs	1,2,3-Trichloropropane						X	X		V
VOCs	1,1,2-Trichloro-1,2,2-trifluoroethane	X		X		X				V
VOCs	1,2,4-Trimethylbenzene	X	X	X		X	X			V
VOCs	1,3,5-Trimethylbenzene	X		X		X	X			V
VOCs	Vinyl acetate	X		X		X				V
VOCs	Vinyl chloride	X	X	X			X			V
VOCs	o-Xylene	X	X	X		X	X			V
VOCs	m,p-Xylene	X	X	X		X	X			V
VOCs	Xylenes (total)	X	X	X		X	X			V
SVOCs	Acenaphthene						X			V
SVOCs	Anthracene						X			V
SVOCs	Diphenyl sulfide						X			
SVOCs	bis(2-Ethylhexyl)phthalate								X	
SVOCs	bis(4-Chlorophenyl) disulfide						X			
SVOCs	Butylbenzylphthalate						X			
SVOCs	2-Chlorophenol						X			V
SVOCs	4-Chlorothioanisole						X			
SVOCs	4-Chlorothiophenol						X			
SVOCs	2,4-Dichlorophenol						X			

TABLE 5-8. Soil Gas and Shallow Groundwater COPCs Identified for Parcels C, D, and G
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	COPC [1]	Soil Gas					Shallow Groundwater			Volatile Compounds? [3]
		Parcel C		Parcel D		Parcel G [2]	Parcel C	Parcel D	Parcel G	
		5 ft bgs	10 ft bgs	5 ft bgs	10 ft bgs	5 ft bgs				
SVOCs	Diphenyl disulfide						X			
SVOCs	Hexachlorobutadiene	X		X	X		X			V
SVOCs	2-Methylnaphthalene						X			V
SVOCs	Naphthalene	X		X		X	X	X		V
SVOCs	Pentachlorobenzene						X			V
SVOCs	Phenanthrene						X	X		
SVOCs	Phenol						X			

Notes:
X = Indicate a constituent was detected in a specific meium and depth.
bgs = below ground surface
COPC = chemical of potential concern
ft = feet
m^3 = cubic meter
mm Hg = millimeter mercury
SVOC = Semivolatile organic compound
V = Indicate a constituent is a volatile compound.
VOC = Volatile organic compound
USEPA = United States Environmental Protection Agency

[1] Based on detected constituents in soil gas and the most recent two years of groundwater sampling data collected within or near Parcels C, D and G after January 1, 2006.
[2] Only 5 feet soil gas samples were collected within or near Parcel G.
[3] The volatile compounds were identified using the following criteria consistent with recommendation from the USEPA Regional Screening Levels Table (USEPA 2016): 1) vapor pressure greater than 1 mm Hg or 2) Henry's Law constant greater than 0.00001 atm-m3/mole.

Source:
USEPA. 2016. Regional Screening Levels. May.

TABLE 5-9A. Soil EPCs and EPCs of Airborne Particulates for Parcels C, D, and G_0-2 feet bgs

Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Chemical Group	COPC	Soil EPC [1] (mg/kg)	Airborne Particulate EPC [1] (µg/m^3) Indoor and Outdoor Commercial/ Industrial Worker
Parcel C	Metal	Palladium	0.37	0.00000039
		Zirconium	22	0.000023
	Dioxin/Furan	2,3,7,8-TCDD TEQ	0.00083	0.0000000009
	Pesticides - OCP	Hexachlorobenzene	0.088	0.000000092
	SVOC	Octachlorostyrene	0.016	0.000000017
Parcel D	Metal	Palladium	0.27	0.00000027
		Zirconium	20	0.000021
Parcel G	Chlorine Oxyanion	Perchlorate	77	0.000057
	Metal	Palladium	0.51	0.00000038
		Zirconium	23	0.000017
	Other Inorganic	Chloride	7,471	0.0055
	PAH	BaPEq	0.12	0.000000086

Notes:

-- = Not applicable
bgs = below ground surface
mg/kg = milligram per kilogram
µg/m^3 = microgram per cubic meter
BaPEq = Benzo[a]pyrene equivalent
COPC = Constituent of potential concern
EPC = Exposure point concentration
OCP = Organochlorine pesticide
PAH = Polycyclic aromatic hydrocarbon
SVOC = Semi volatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
UCL = Upper confidence limit

[1] The 95% UCL on the mean concentration over 0-2 feet bgs was used as EPC.

TABLE 5-9B. Soil EPCs and EPCs of Airborne Particulates for Parcels C, D, and G_0-10 feet bgs

Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Chemical Group	COPC	Soil EPC [1] (mg/kg)	Airborne Particulate EPC [1] (µg/m^3)	
				Indoor and Outdoor Commercial/ Industrial Worker	Construction Worker
Parcel C	Metal	Palladium	0.46	0.00000048	0.00011
		Zirconium	23	0.000024	0.0054
	Dioxin/Furan	2,3,7,8-TCDD TEQ	0.00045	0.00000000046	0.00000010
	Pesticides - OCP	Hexachlorobenzene	0.049	0.000000051	0.000011
	SVOC	Octachlorostyrene	0.0091	0.0000000094	0.0000021
Parcel D	Metal	Palladium	0.38	0.00000038	0.000087
		Zirconium	21	0.000021	0.0049
Parcel G	Chlorine Oxyanion	Perchlorate	47	0.000035	0.0088
	Metal	Palladium	0.52	0.00000038	0.000097
		Zirconium	23	0.000017	0.0044
	Other Inorganic	Chloride	4,716	0.0035	0.88
	PAH	BaPEq	0.068	0.000000050	0.000013

Notes:

-- = Not applicable
bgs = below ground surface
mg/kg = milligram per kilogram
µg/m^3 = microgram per cubic meter
BaPEq = Benzo[a]pyrene equivalent
COPC = Constituent of potential concern
EPC = Exposure point concentration
OCP = Organochlorine pesticide
PAH = Polycyclic aromatic hydrocarbon
SVOC = Semi volatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
UCL = Upper confidence limit

[1] The 95% UCL on the mean concentration over 0-10 feet bgs was used as EPC.

TABLE 5-10. Calculation of Particulate Emission Factors
Nevada Environmental Response Trust Site
Henderson, Nevada

Parameter	Symbol	Value			Unit	Reference
		Parcel C	Parcel D	Parcel G		
Indoor and Outdoor Commercial/Industrial Worker						
Fraction of vegetative cover	V	0.5	0.5	0.5	unitless	USEPA 2002
Mean annual wind speed	U_m	4.1	4.1	4.1	m/s	[1]
Equivalent threshold value of wind speed	U_t	11.32	11.32	11.32	m/s	USEPA 2002
Function dependent on U/U_t	F(x)	0.19	0.19	0.19	unitless	USEPA 2002
Air dispersion factor for area source (calculated)	Q/C_{wind}	44.24	45.24	62.45	g/m^2-s per kg/m^3	USEPA 2002
Dispersion factor for area source - Constant A (Las Vegas, NV)	A	13.31	13.31	13.31	unitless	USEPA 2002
Dispersion factor for area source - Constant B (Las Vegas, NV)	B	19.84	19.84	19.84	unitless	USEPA 2002
Dispersion factor for area source - Constant C (Las Vegas, NV)	C	230.17	230.17	230.17	unitless	USEPA 2002
Areal extent of site surface contamination	A_{surf}	24.8	21.3	2.7	acre	Area of parcel
Particulate emission factor (calculated)	**PEF**	**9.6E+08**	**9.8E+08**	**1.4E+09**	**m^3/kg**	**Neptune 2015**
Construction Worker						
Fraction of vegetative cover	V	0	0	0	unitless	USEPA 2002
Mean annual wind speed	U_m	4.1	4.1	4.1	m/s	[1]
Equivalent threshold value of wind speed	U_t	11.32	11.32	11.32	m/s	USEPA 2002
Function dependent on U/U_t	F(x)	0.19	0.19	0.19	unitless	USEPA 2002
Areal extent of site surface contamination	A_{surf}	24.8	21.3	2.7	acre	Area of parcel
Wet soil bulk density	r_{soil}	1.87	1.87	1.87	g/cm^3	[2]
Percent of soil moisture content	M	14.8	14.8	14.8	%	[2]
Areal extent of site excavation	A_{excav}	20,079	17,213	2,147	m^2	[3]
Depth of site excavation	d_{excav}	1.0	1.0	1.0	m	USEPA 2002
Number of times soil is dumped	N_A	2	2	2	unitless	USEPA 2002
Percent of soil silt content	s	10	10	10	%	[4]
Average dozing speed	S_{doz}	11.4	11.4	11.4	km/hr	USEPA 2002
Number of times area is dozed	N_{doze}	3	3	3	unitless	USEPA 2002
Length of dozer blade	B_d	2.44	2.44	2.44	m	USEPA 2002
Average grading speed	S_{grade}	11.4	11.4	11.4	km/hr	USEPA 2002
Number of times area is graded	N_{grade}	3	3	3	unitless	USEPA 2002
Length of dozer blade	B_g	2.44	2.44	2.44	m	USEPA 2002
Areal extent of site tilling	A_{till}	4.96	4.25	0.53	acre	[3]
Number of times soil is tilled	N_A	2	2	2	unitless	USEPA 2002
Subchronic dispersion factor for area source-Constant A	A	2.45	2.45	2.45	unitless	USEPA 2002
Subchronic dispersion factor for area source-Constant B	B	17.57	17.57	17.57	unitless	USEPA 2002
Subchronic dispersion factor for area source-Constant C	C	189.04	189.04	189.04	unitless	USEPA 2002
Length of road segment	L_R	316.86	293.37	103.61	m	[5]
Width of road segment	W_R	6.1	6.1	6.1	m	USEPA 2002
Mean vehicle weight	W	8.0	8.0	8.0	ton	USEPA 2002
Percent of moisture in dry road surface	M_{dry}	0.20	0.20	0.20	%	USEPA 2002
Number of days/year with at least 0.01 inches of precipitation	p	27	27	27	day	Neptune 2015
Number of vehicles for duration of construction	N_V	30	30	30	unitless	USEPA 2002
Length of road traveled per day	L_D	316.86	293.37	103.61	m/day	[5]
Subchronic dispersion factor for road segment-Constant A	A	12.94	12.94	12.94	unitless	USEPA 2002
Subchronic dispersion factor for road segment-Constant B	B	5.74	5.74	5.74	unitless	USEPA 2002
Subchronic dispersion factor for road segment-Constant C	C	71.77	71.77	71.77	unitless	USEPA 2002
Particulate emission factor (calculated)	**PEF**	**4.3E+06**	**4.3E+06**	**5.4E+06**	**m^3/kg**	**Neptune 2015**

Notes:
g/cm^3 = gram per cubic centimeter
g/m^2-s per kg/m^3 = (gram per square meter per second) per (koligram per cubic meter)
km/hr = kilometer per hour
m = meter
m/day = meter per day
m/s = meter per second
m^2 = square meter
m^3/kg = cubic meter per kilogram
USEPA = United States Environmental Protection Agency
WRCC = Western Regional Climate Center

[1] Average wind speeds for Las Vegas derived from WRCC (2010).
[2] Average value of top 10-foot samples reported in (Northgate 2010).
[3] Assumed one fifth of the parcel area based upon USEPA (2002).
[4] Soil silt content varied from 5% to 10% among soil boring logs from multiple investigations at the Site. The value of 10% was selected to be conservative.
[5] Assumed the square root of the parcel area, based upon USEPA (2002).

Sources:
Neptune. 2015. Technical Guidance for the Calculation of Asbestos Related Risk in Soils for the Basic Management Incorporated (BMI) Complex and Common Areas. February.

Northgate. 2010. Site-Wide Soil Gas Human Health Risk Assessment, Tronox LLC, Henderson, Nevada. November.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites.

WRCC (2010). Desert Research Institute: http://www.wrcc.dri.edu/htmlfiles/westwind.final.html#NEVADA.

TABLE 5-11. Physical/Chemical Properties of Chemicals of Potential Concern
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Constituent [a, b]	Molecular Weight	Organic Carbon Partition Coefficient	Diffusivity in Air	Diffusivity in Water	Pure Component Water Solubility	Henry's Law Constant at 25° C	Normal Boiling Point	Critical Temperature	Enthalpy of Vaporization at the Normal Boiling Point	Source
		MW	K_{oc}	D_a	D_w	S	H	T_B	T_C	ΔHv,b	
		(g/mol)	(cm^3/g)	(cm^2/s)	(cm^2/s)	(mg/L)	(atm-m^3/mol)	(^oK)	(^oK)	(cal/mol)	
VOCs	Acetone	58.00	5.75E-01	1.24E-01	1.14E-05	1.00E+06	3.88E-05	329.20	508.10	6955.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Acrylonitrile	53.00	8.50E-01	1.08E-01	1.34E-05	7.90E+04	8.84E-05	350.30	519.00	7786.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Benzene	78.10	6.20E+01	8.80E-02	9.80E-06	1.75E+03	5.55E-03	353.24	562.16	7342.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Bromobenzene	157.00	2.24E+02	7.30E-02	8.70E-06	4.72E+02	3.70E-03	NA	NA	NA	NDEP
VOCs	Bromochloromethane	129.38	2.17E+01	7.87E-02	1.22E-05	1.67E+04	1.46E-03	NA	NA	NA	RSL
VOCs	Bromodichloromethane	164.00	1.00E+02	2.98E-02	1.06E-05	6.74E+03	1.60E-03	363.15	585.85	7800.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Bromoform	252.73	3.18E+01	3.57E-02	1.04E-05	3.10E+03	5.35E-04	422.35	696.00	9479.00	RSL + USEPA 2004 for Tb, Tc, and ΔH
VOCs	Bromomethane	94.95	9.00E+00	7.28E-02	1.21E-05	1.52E+04	6.24E-03	276.71	467.00	5714.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	2-Butanone	72.00	4.50E+00	8.95E-02	9.80E-06	2.68E+05	2.74E-05	352.50	536.78	7480.70	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	n-Butylbenzene	134.22	2.83E+03	7.50E-02	7.80E-06	1.38E+01	1.31E-02	456.46	660.50	9289.93	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	sec-Butylbenzene	134.22	2.15E+03	7.50E-02	7.80E-06	1.70E+01	1.87E-02	446.50	679.00	88730.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	tert-Butylbenzene	134.22	2.15E+03	7.50E-02	7.80E-06	3.00E+01	1.26E-02	NA	NA	NA	NDEP
VOCs	Carbon disulfide	76.00	4.57E+01	1.04E-01	1.00E-05	1.19E+03	3.03E-02	319.00	552.00	6391.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Carbon tetrachloride	154.00	1.52E+02	7.80E-02	8.80E-06	7.93E+02	3.04E-02	349.90	556.60	7127.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Chlorobenzene	113.00	2.24E+02	7.30E-02	8.70E-06	4.72E+02	3.70E-03	404.87	632.40	8410.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Chloroethane	65.00	1.47E+01	1.04E-01	1.15E-05	5.70E+03	1.10E-02	285.30	460.40	5879.40	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Chloroform	119.00	5.30E+01	1.04E-01	1.00E-05	7.92E+03	3.67E-03	334.32	536.40	6988.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Chloromethane	51.00	3.50E+01	1.09E-01	6.50E-06	8.20E+03	2.40E-02	249.00	416.25	5114.60	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	2-Chlorotoluene	127.00	1.60E+02	7.20E-02	8.65E-06	4.70E+02	3.50E-03	NA	NA	NA	NDEP
VOCs	4-Chlorotoluene	126.59	3.75E+02	6.26E-02	8.66E-06	1.06E+02	4.38E-03	NA	NA	NA	RSL
VOCs	Cumene	120.00	2.20E+02	7.50E-02	7.10E-06	6.10E+01	1.20E+00	425.56	631.10	10335.30	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Cyclohexane	84.00	1.60E+02	8.00E-02	9.00E-06	5.50E+01	1.98E-01	NA	NA	NA	NDEP
VOCs	p-Cymene	134.00	2.20E+02	7.50E-02	7.10E-06	6.10E+01	1.20E+00	NA	NA	NA	NDEP
VOCs	1,2-Dibromo-3-chloropropane	236.33	1.70E+02	8.00E-02	8.00E-06	1.23E+03	1.50E-04	NA	NA	NA	R
VOCs	Dibromochloromethane	208.28	6.31E+01	1.96E-02	1.05E-05	2.70E+03	8.50E-04	416.14	678.20	5900.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,2-Dibromoethane	188.00	2.81E+01	7.33E-02	8.06E-06	3.40E+03	3.20E-04	404.60	583.00	8310.03	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Dibromomethane	174.00	1.82E+02	8.00E-02	8.00E-06	1.19E+04	9.00E-04	370.00	583.00	7867.88	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,2-Dichlorobenzene	147.00	3.79E+02	6.90E-02	7.90E-06	1.56E+02	1.90E-03	453.57	705.00	9700.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,3-Dichlorobenzene	147.00	3.79E+02	6.90E-02	7.90E-06	1.56E+02	1.90E-03	446.00	684.00	9230.18	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,4-Dichlorobenzene	147.00	6.16E+02	6.90E-02	7.90E-06	7.38E+01	2.43E-03	447.21	684.75	9271.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Dichlorodifluoromethane	120.92	5.80E+01	8.00E-02	1.05E-05	2.80E+02	1.00E-01	243.20	384.95	9421.36	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,1-Dichloroethane	99.00	5.30E+01	7.42E-02	1.05E-05	5.06E+03	5.62E-03	330.55	523.00	6895.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,2-Dichloroethane	99.00	3.80E+01	1.04E-01	9.90E-06	8.52E+03	9.79E-04	356.65	561.00	7643.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,1-Dichloroethene	97.00	6.50E+01	9.00E-02	1.04E-05	2.25E+03	2.61E-02	304.75	576.05	6247.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,2-Dichloroethene	96.90	3.96E+01	7.36E-02	1.13E-05	3.61E-02	4.08E-03	NA	NA	NA	EPISUITE + Cis-1,2-dichloroethene for diffusivities
VOCs	cis-1,2-Dichloroethene	97.00	3.55E+01	7.36E-02	1.13E-05	3.50E+03	4.08E-03	333.65	544.00	7192.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	trans-1,2-Dichloroethene	97.00	3.80E+01	7.07E-02	1.19E-05	6.30E+03	9.38E-03	320.85	516.50	6717.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,2-Dichloropropane	113.00	4.70E+01	7.82E-02	8.73E-06	2.80E+03	2.80E-03	369.52	572.00	7590.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,3-Dichloropropane	113.00	4.70E+01	7.82E-02	8.73E-06	2.80E+03	2.80E-03	NA	NA	NA	NDEP
VOCs	2,2-Dichloropropane	112.99	4.39E+01	7.82E-02	8.73E-06	3.44E+02	1.61E-02	NA	NA	NA	EPISUITE + 1,3-Dichloropropane for diffusivities
VOCs	1,1-Dichloropropene	110.97	6.07E+01	6.26E-02	1.00E-05	7.49E+02	5.00E-02	NA	NA	NA	EPISUITE + cis-1,3-Dichloropropene for diffusivities
VOCs	cis-1,3-Dichloropropene	110.97	4.57E+01	6.26E-02	1.00E-05	2.80E+03	1.77E-02	381.15	587.38	7900.00	1,3-Dichloropropene (total) used as surrogate for all properties
VOCs	trans-1,3-Dichloropropene	110.97	4.57E+01	6.26E-02	1.00E-05	2.80E+03	1.77E-02	381.15	587.38	7900.00	1,3-Dichloropropene (total) used as surrogate for all properties
VOCs	3,3-Dimethylpentane	100.21	1.69E+02	6.50E-02	7.80E-06	5.92E+00	1.84E+00	NA	NA	NA	EPISUITE + diisopropyl ether for diffusivities
VOCs	1,4-Dioxane	88.11	2.63E+00	8.74E-02	1.05E-05	1.00E+06	4.80E-06	NA	NA	NA	RSL

TABLE 5-11. Physical/Chemical Properties of Chemicals of Potential Concern
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Constituent [a, b]	Molecular Weight	Organic Carbon Partition Coefficient	Diffusivity in Air	Diffusivity in Water	Pure Component Water Solubility	Henry's Law Constant at 25° C	Normal Boiling Point	Critical Temperature	Enthalpy of Vaporization at the Normal Boiling Point	Source
		MW	K_{oc}	D_a	D_w	S	H	T_B	T_C	ΔHv,b	
		(g/mol)	(cm^3/g)	(cm^2/s)	(cm^2/s)	(mg/L)	(atm-m^3/mol)	(^oK)	(^oK)	(cal/mol)	
VOCs	Dimethyl disulfide	94.19	3.96E+01	8.00E-02	1.00E-05	3.00E+03	1.21E-03	NA	NA	NA	EPISUITE + Methyl tert-butyl ether for diffusivities
VOCs	Ethanol	46.00	1.00E+00	1.24E-01	1.37E-05	1.00E+06	5.00E-06	NA	NA	NA	NDEP
VOCs	Ethyl acetate	88.00	5.94E+01	7.32E-02	9.66E-06	8.00E+04	1.40E-04	NA	NA	NA	NDEP
VOCs	Ethyl benzene	106.20	2.04E+02	7.50E-02	7.80E-06	1.69E+02	7.88E-03	409.34	617.20	8501.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	3-Ethylpentane	100.21	2.21E+02	6.50E-02	7.80E-06	2.32E+01	2.27E+00	NA	NA	NA	EPISUITE + diisopropyl ether for diffusivities
VOCs	4-Ethyltoluene	120.19	2.20E+02	7.50E-02	7.10E-06	6.10E+01	1.20E+00	NA	NA	NA	NDEP
VOCs	Freon 114	170.92	1.97E+02	7.80E-02	8.20E-06	4.31E+01	1.51E+00	NA	NA	NA	EPISUITE + 1,1,2-Trichloro-1,2,2-trifluoroethane for diffusivities
VOCs	n-Heptane	100.00	8.20E+03	6.16E-02	6.45E-06	3.40E+00	2.00E+00	NA	NA	NA	NDEP
VOCs	n-Hexane	86.00	8.90E+02	2.00E-01	7.77E-06	1.80E+01	1.22E-01	341.70	508.00	6895.15	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	2-Hexanone	100.16	1.50E+01	7.00E-02	8.40E-06	1.72E+04	9.32E-05	NA	NA	NA	NDEP
VOCs	Methyl tert-butyl ether	85.00	6.00E+00	8.00E-02	1.00E-05	1.50E+05	5.90E-04	328.30	497.10	6677.66	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	4-Methyl-2-pentanone	100.00	1.34E+02	7.50E-02	7.80E-06	1.90E+04	1.40E-04	389.50	571.00	8243.11	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Methylene Chloride	85.00	1.00E+01	1.01E-01	1.17E-05	1.32E+04	2.19E-03	313.00	510.00	6706.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	2-Methylhexane	100.21	2.02E+02	6.50E-02	7.80E-06	2.54E+00	3.43E+00	NA	NA	NA	EPISUITE + diisopropyl ether for diffusivities
VOCs	3-Methylhexane	100.21	2.11E+02	6.50E-02	7.80E-06	4.95E+00	1.64E+00	NA	NA	NA	EPISUITE + diisopropyl ether for diffusivities
VOCs	n-Nonyl aldehyde	142.24	3.61E+01	7.50E-02	7.80E-06	9.60E+01	7.34E-04	NA	NA	NA	EPISUITE + n-Butylbenzene for diffusivities
VOCs	n-Octane	114.00	1.60E+04	7.09E-02	7.34E-06	6.60E-01	3.20E+00	NA	NA	NA	NDEP
VOCs	n-Propylbenzene	120.00	2.83E+03	7.50E-02	7.80E-06	1.38E+01	1.31E-02	432.20	630.00	9123.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Styrene	104.20	9.12E+02	7.10E-02	8.00E-06	3.10E+02	2.75E-03	418.31	636.00	8737.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	alpha-Methylstyrene	118.00	3.60E+02	7.12E-02	8.00E-06	3.00E+02	2.30E-03	NA	NA	NA	NDEP
VOCs	tert Butyl alcohol	74.12	2.92E+00	9.00E-02	1.00E-05	1.81E+05	9.05E-06	NA	NA	NA	NDEP
VOCs	1,1,1,2-Tetrachloroethane	168.00	7.90E+01	7.10E-02	7.90E-06	2.97E+03	3.45E-04	403.50	624.00	9768.28	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,1,2,2-Tetrachloroethane	168.00	7.90E+01	7.10E-02	7.90E-06	2.97E+03	3.45E-04	419.60	661.15	8996.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Tetrachloroethene	165.83	2.65E+02	7.20E-02	8.20E-06	2.00E+02	1.84E-02	394.40	620.20	8288.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Toluene	92.00	1.40E+02	8.70E-02	8.60E-06	5.26E+02	6.64E-03	383.78	591.79	7930.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,2,3-Trichlorobenzene	181.45	1.38E+03	3.95E-02	8.38E-06	1.80E+01	1.25E-03	NA	NA	NA	RSL
VOCs	1,2,4-Trichlorobenzene	181.00	1.66E+03	3.00E-02	8.23E-06	3.00E+02	1.42E-03	486.15	725.00	10471.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,3,5-Trichlorobenzene	181.45	1.33E+03	7.50E-02	7.10E-06	3.00E+01	1.89E-03	NA	NA	NA	EPISUITE + 1,2,4-Trimethylbenzene for diffusivities
VOCs	1,1,1-Trichloroethane	133.00	1.35E+02	7.80E-02	8.80E-06	1.33E+03	1.72E-02	347.24	545.00	7136.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,1,2-Trichloroethane	133.00	7.50E+01	7.80E-02	8.80E-06	4.42E+03	9.13E-04	386.15	602.00	8322.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Trichloroethene	131.00	9.43E+01	7.90E-02	9.10E-06	1.10E+03	1.03E-02	360.36	544.20	7505.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Trichlorofluoromethane	137.40	1.60E+02	8.70E-02	1.30E-05	1.10E+03	9.70E-02	296.70	471.00	5998.90	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,2,3-Trichloropropane	147.43	5.10E+01	7.10E-02	7.90E-06	2.70E+03	2.80E-02	430.00	652.00	9171.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,1,2-Trichloro-1,2,2-trifluoroethane	187.38	1.60E+02	2.88E-02	8.07E-06	1.10E+03	5.21E-01	320.70	487.30	6462.56	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,2,4-Trimethylbenzene	120.19	3.72E+03	7.50E-02	7.10E-06	2.55E-01	5.70E-03	442.30	649.17	9368.80	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	1,3,5-Trimethylbenzene	120.19	8.19E+02	7.50E-02	7.10E-06	5.00E+01	7.71E-03	437.89	637.25	9321.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Vinyl acetate	86.00	5.25E+00	8.50E-02	9.20E-06	2.00E+04	5.11E-04	345.65	519.13	7800.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	Vinyl chloride	63.00	1.86E+01	1.06E-01	1.23E-06	2.76E+03	2.70E-02	259.25	432.00	5250.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	o-Xylene	106.20	2.41E+02	8.70E-02	1.00E-05	1.78E+02	5.19E-03	417.60	630.30	8661.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
VOCs	m,p-Xylene	106.17	3.89E+02	7.69E-02	8.44E-06	1.85E+02	7.64E-03	NA	NA	NA	USEPA 2004
VOCs	Xylenes (total)	106.20	1.96E+02	7.00E-02	7.80E-06	1.61E+02	7.34E-03	411.52	616.20	8525.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
SVOCs	Acenaphthene	154.21	4.90E+03	4.21E-02	7.69E-06	4.24E+00	1.55E-04	550.54	803.15	12155.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
SVOCs	Anthracene	178.00	2.35E+04	3.24E-02	7.74E-06	4.34E-02	6.50E-05	NA	999.00	NA	NDEP + USEPA 2004 for Tb, Tc, ΔH
SVOCs	2-Chlorophenol	130.00	3.98E+02	5.01E-01	9.46E-06	2.20E+04	3.91E-04	447.53	675.00	9572.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
SVOCs	Hexachlorobutadiene	260.76	8.45E+02	2.67E-02	7.03E-06	3.20E+00	1.03E-02	486.15	738.00	10206.00	RSL + USEPA 2004 for Tb, Tc, and ΔH
SVOCs	2-Methylnaphthalene	142.20	2.48E+03	5.24E-02	7.78E-06	2.46E+01	5.18E-04	514.26	761.00	12600.00	RSL + USEPA 2004 for Tb, Tc, and ΔH
SVOCs	Naphthalene	128.16	1.19E+03	5.90E-02	7.50E-06	3.10E+01	4.83E-04	491.14	748.40	10373.00	NDEP + USEPA 2004 for Tb, Tc, ΔH
SVOCs	Pentachlorobenzene	250.34	3.71E+03	2.94E-02	7.95E-06	8.31E-01	7.03E-04	NA	NA	NA	RSL

TABLE 5-11. Physical/Chemical Properties of Chemicals of Potential Concern
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Constituent [a, b]	Molecular Weight	Organic Carbon Partition Coefficient	Diffusivity in Air	Diffusivity in Water	Pure Component Water Solubility	Henry's Law Constant at 25° C	Normal Boiling Point	Critical Temperature	Enthalpy of Vaporization at the Normal Boiling Point	Source
		MW	K_{oc}	D_a	D_w	S	H	T_B	T_C	ΔHv,b	
		(g/mol)	(cm^3/g)	(cm^2/s)	(cm^2/s)	(mg/L)	(atm-m^3/mol)	(^oK)	(^oK)	(cal/mol)	

Notes:

NA = Not available
atm-m^3/mol = atmosphere-cubic meter per mole
cal/mol = calorie per mole
cm^3/g = cubic centimeter per gram
cm^2/s = square centimeter per second
g/mol = gram per mole
^oK = degrees Kelvin
mg/L = milligram per liter
NDEP = Nevada Division of Environmental Protection
RSL = Regional Screening Level
SVOC = Semivolatile organic compound
USEPA = United States Environmental Protection Agency
VOC = Volatile organic compound

a. Volatile compounds defined by USEPA (2016) as Constituents with vapor pressure greater than 1 millimeter (mm) Hg or Henry's Law constant greater than 0.00001 atm-m^3/mole.

Sources:

United States Environmental Protection Agency (USEPA). 2004. User's Guide for Evaluating Subsurface Vapor Intrusion Into Buildings Office of Emergency and Remedial Response. February.

EPISUITE: United States Environmental Protection Agency (USEPA). 2012. Estimation Programs Interface Suite™ for Microsoft® Windows, v 4.11. Washington, DC, USA.
Nevada Division of Environmental Protection (NDEP). 2008. Basic Screening Levels (BCLs) Version 1.0. December.
RSL: United States Environmental Protection Agency (USEPA). 2016. Regional Screening Level (RSL) Table, May 2016.

TABLE 5-12. Johnson and Ettinger Modeling Parameters
Johnson and Ettinger Modeling Parameters
Nevada Environmental Response Trust Site
Henderson, Nevada

Parameter	Value	Units	Notes
Source/Receptor Parameters - Indoor and Outdoor Scenarios			
Depth to groundwater: Parcel C	30	feet	Site-specific estimate
Depth to groundwater: Parcel D	25	feet	Site-specific estimate
Depth to groundwater: Parcel G	40	feet	Site-specific estimate
Soil gas sampling depth (shallow)	5	feet	Site-specific estimated based on sampling depth
Soil gas sampling depth (deep)	10	feet	Site-specific estimated based on sampling depth
Soil temperature at source	17	Celsius	Site-specific measurement
Soil Parameters			
USDA soil type	Loamy Sand	--	Site-specific estimate based on soil boring logs and site measurements. See text for further discussion.
Bulk density	1.722	g/cm^3	Site-specific measurement
Total porosity	0.358	unitless	Site-specific measurement
Water-filled porosity	0.158	unitless	Site-specific measurement
Parameters used for benzene degradation			
Fraction organic carbon	0.006	unitless	Default value (USEPA 2002)
Minimum oxygen content for aerobic respiration	1	percentage	Default value (API 2012)
First order biodegradation rate for benzene	0.79	1/hr	Default value (API 2012)
USDA soil type in layer B (30 cm, indoor scenarios only)	Fill	--	Lower Layer of Engineered Fill
Bulk density	1.8	g/cm^3	Default value (Cal/EPA 2005)
Total porosity	0.300	unitless	Default value (Cal/EPA 2005)
Water-filled porosity	0.15	unitless	Default value (Cal/EPA 2005)
USDA soil type in layer C (remaining 97-147 cm)	Loamy Sand	--	Site-specific estimate of subsurface materials
Bulk density	1.62	g/cm^3	Default value (USEPA 2004)
Total porosity	0.390	unitless	Default value (USEPA 2004)
Water-filled porosity	0.076	unitless	Default value (USEPA 2004)
Building Foundation Parameters			
Depth to Bottom of Foundation, Slab-on-grade	15	cm	Default value (Cal/EPA 2011)
Foundation crack ratio	0.005	unitless	Default value (Cal/EPA 2011)
Average vapor flow rate into building	5	$L/min/m^2$	Default value (USEPA 2004)
Foundation thickness	10	cm	Default value (Cal/EPA 2011)
Air Dispersion Parameters **- Indoor Scenario**			
Residential Indoor Air Scenarios			
Air exchange rate	0.5	1/hour	Residential default value (Cal/EPA 2011)
Length of building	1000	cm	Default value (USEPA 2004)
Width of building	1000	cm	Default value (USEPA 2004)
Mixing height of building, Slab-on-grade	244	cm	Residential default value (Cal/EPA 2011)
Commercial Indoor Air Scenarios			
Air exchange rate	1	1/hour	Default value for commercial buildings (Cal/EPA 2011)
Length of building	1000	cm	Default value for commercial buildings (USEPA 2004)
Width of building	1000	cm	Default value for commercial buildings (USEPA 2004)
Mixing height of building, Slab-on-grade	305	cm	Engineering estimate.
Air Dispersion Parameters **- Outdoor Scenario**			
Residential Indoor Air Scenarios			
Air exchange rate	0.5	1/hour	Residential default value (Cal/EPA 2011)
Length of building	1000	cm	Default value (USEPA 2004)
Width of building	1000	cm	Default value (USEPA 2004)
Mixing height of building, Slab-on-grade	244	cm	Residential default value (Cal/EPA 2011)
Commercial Outdoor Air Scenarios			
Site specific dispersion factor (Q/C): Parcel C	44.24	g/m^2-s per kg/m^3	Site-specific estimate based on parcel area of 24.81 acres.
Site specific dispersion factor (Q/C): Parcel D	45.24	g/m^2-s per kg/m^3	Site-specific estimate based on parcel area of 21.27 acres.
Site specific dispersion factor (Q/C): Parcel G	62.45	g/m^2-s per kg/m^3	Site-specific estimate based on parcel area of 2.65 acres.
Source/Receptor Parameters - 20 foot Construction Trench Scenario			
Depth to groundwater: Parcel C	20	feet	Site-specific estimate
Depth to groundwater: Parcel D	15	feet	Site-specific estimate
Depth to groundwater: Parcel G	30	feet	Site-specific estimate
Soil gas sampling depth	1	cm	Site-specific estimate for depth between trench and soil gas sample
Length of construction trench	609.6	cm	Assumed (20 feet)
Width of construction trench	152	cm	Assumed (5 feet)
Depth of construction trench	10	feet	Assumed
Windspeed	0.41	m/s	Conservative Estimate (1/10 of site-specific windspeed)
Depth of pooled water (wet scenario only)	1	cm	Conservative Estimate
Site specific dispersion factor (Q/C_{vol})	34.17	g/m^2-s per kg/m^3	Site-specific estimate based on box model.

TABLE 5-12. Johnson and Ettinger Modeling Parameters
Johnson and Ettinger Modeling Parameters
Nevada Environmental Response Trust Site
Henderson, Nevada

Parameter	Value	Units	Notes
Residential Indoor Air Scenarios			
Air exchange rate	0.5	1/hour	Default value for residential buildings (Cal/EPA 2011)
Length of building	1000	cm	Default value for residential buildings (USEPA 2004)
Width of building	1000	cm	Default value for residential buildings (USEPA 2004)
Mixing height of building, Slab-on-grade	244	cm	Default value for residential buildings (Cal/EPA 2011)

Notes:
-- =Not applicable
cm = centimeter
g/cm^3 = gram per cubic centimeter
$L/min/m^2$ = liter per minute per 100 square meter
Cal/EPA = California Environmental Protection Agency
USDA = United States Department of Agriculture
USEPA = United States Environmental Protection Agency

Sources:
California Environmental Protection Agency (Cal/EPA). 2005. Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil. January.

California Environmental Protection Agency (CalEPA). 2011. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). Final. Department of Toxic Substances Control. October.

United States Environmental Protection Agency (USEPA). 2004. User's Guide for Evaluating Subsurface Vapor Intrusion Into Buildings Office of Emergency and Remedial Response. February.

United States Environmental Protection Agency (USEPA). 2002. Supplemental Guidance for Developing. Soil Screening Levels for Superfund Sites. December

American Petroleum Institute (API) 2012. BIOVAPOR – A 1-D Vapor Intrusion Model with Oxygen-Limited Aerobic Biodegradation. Version 2.1. November

TABLE 5-13. Soil Properties Data [a]
Nevada Environmental Response Trust Site
Henderson, Nevada

Sample ID	Depth (ft)	Volumetric Water Content[b]	Dry Bulk Density[c] (g/cm^3)	Grain Density[d] (g/cm^3)	Soil Total Porosity[e] (g/cm^3)	Soil Type
SA56-10BSPLP	10	0.134	1.689	2.719	0.379	Loamy Sand
RSAM3-10BSPLP	10	0.145	1.593	2.674	0.404	Loamy Sand
SA166-10BSPLP	10	0.100	1.721	2.681	0.358	Loamy Sand
SA182-10BSPLP	10	0.182	1.740	2.601	0.331	Sandy Loam
RSAJ3-10BSPLP	10	0.154	1.770	2.682	0.340	Loamy Sand
RSAI7-10B	10	0.138	1.661	2.682	0.381	Sand
SA34-10BSPLP	10	0.169	1.738	2.696	0.355	Loamy Sand
SA52-15BSPLP[f]	15	0.239	1.405	2.710	0.481	Sand
RSAQ8-10BSPLP	10	0.148	1.697	2.695	0.370	Sand
RSAN8-10BSPLP	10	0.189	1.679	2.683	0.374	Loamy Sand
RSAQ4-10BSPLP	10	0.141	1.841	2.705	0.319	Sand
SA148-10BSPLP	10	0.119	1.762	2.732	0.355	Sand
SA30-9BSPLP	9	0.160	1.805	2.711	0.334	Sand
SA128-10BSPLP	10	0.156	1.654	2.654	0.377	Loamy Sand
SA102-10BSPLP	10	0.135	1.769	2.696	0.344	Sand
SA64-10BSPLP	10	0.148	1.717	2.651	0.352	Sand
Mean	9.93	0.148	1.722	2.684	0.358	Loamy Sand
Mininum	9	0.100	1.593	2.601	0.319	NA
Maximum	10	0.189	1.841	2.732	0.404	NA
Median	10	0.148	1.721	2.683	0.355	NA

Notes:

NA = not applicable

g/cm^3 = grams per cubic centimeter

[a] The soil properties were reported in Northgate (2010). Soil type is discussed in the main text in both section 2.3 and section 5.2.2.3.

[b] As measured according to ASTM D 2216 and adjusted to convert from mass-based water moisture to volumetric water content.

[c] As measured according to ASTM D 2937.

[d] As measured according to ASTM D 854.

[e] Calculated from dry bulk density and grain density.

[f] Sample not included in evaluation.

Reference:

Northgate Environmental Management, Inc. (Northgate), 2010. Site-Wide Soil Gas Human Health Risk Assessment, Tronox LLC, Henderson, Nevada. November 22.

TABLE 5-14A. Transfer Factors for Volatile Compounds Migrating from Soil Gas to Indoor Air, Outdoor Air, and Trench Air – Parcels C, D, and G

Nevada Environmental Response Trust Site

Henderson, Nevada

Chemical Group	Soil Gas COPC	TF - Soil Gas to Indoor Air ($\mu g/m^3$ per $\mu g/m^3$)		TF - Soil Gas to Outdoor Air ($\mu g/m^3$ per $\mu g/m^3$)					TF - Soil Gas to Construction Trench Air ($\mu g/m^3$ per $\mu g/m^3$)		
		5 ft bgs	10 ft bgs	5 ft bgs			5 - 10 ft bgs		All Depth		
		All Parcels	All Parcels	Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel C	Parcel D	Parcel G
VOCs	Acetone	3.3E-04	1.9E-04	8.1E-06	8.0E-06	5.8E-06	4.1E-06	4.0E-06	1.6E-03	1.6E-03	1.6E-03
VOCs	Acrylonitrile	3.0E-04	1.7E-04	7.0E-06	6.9E-06	5.0E-06	3.5E-06	3.4E-06	1.4E-03	1.4E-03	1.4E-03
VOCs	Benzene	5.5E-15	1.4E-15	1.2E-16	1.2E-16	8.5E-17	2.7E-17	2.6E-17	1.1E-03	1.1E-03	1.1E-03
VOCs	Bromodichloromethane	1.0E-04	5.3E-05	1.9E-06	1.9E-06	1.4E-06	9.6E-07	9.4E-07	3.8E-04	3.8E-04	3.8E-04
VOCs	Bromomethane	2.2E-04	1.2E-04	4.7E-06	4.6E-06	3.3E-06	2.3E-06	2.3E-06	9.2E-04	9.2E-04	9.2E-04
VOCs	2-Butanone	2.7E-04	1.5E-04	6.0E-06	5.9E-06	4.2E-06	3.0E-06	2.9E-06	1.2E-03	1.2E-03	1.2E-03
VOCs	n-Butylbenzene	2.3E-04	1.2E-04	4.8E-06	4.7E-06	3.4E-06	2.4E-06	2.3E-06	9.5E-04	9.5E-04	9.5E-04
VOCs	sec-Butylbenzene	2.3E-04	1.2E-04	4.8E-06	4.7E-06	3.4E-06	2.4E-06	2.4E-06	9.5E-04	9.5E-04	9.5E-04
VOCs	Carbon disulfide	2.9E-04	1.6E-04	6.7E-06	6.5E-06	4.7E-06	3.3E-06	3.3E-06	1.3E-03	1.3E-03	1.3E-03
VOCs	Carbon tetrachloride	2.3E-04	1.3E-04	5.0E-06	4.9E-06	3.5E-06	2.5E-06	2.4E-06	9.9E-04	9.9E-04	9.9E-04
VOCs	Chlorobenzene	2.2E-04	1.2E-04	4.7E-06	4.6E-06	3.3E-06	2.3E-06	2.3E-06	9.2E-04	9.2E-04	9.2E-04
VOCs	Chloroethane	2.9E-04	1.6E-04	6.7E-06	6.5E-06	4.7E-06	3.3E-06	3.3E-06	1.3E-03	1.3E-03	1.3E-03
VOCs	Chloroform	2.9E-04	1.6E-04	6.7E-06	6.5E-06	4.7E-06	3.3E-06	3.3E-06	1.3E-03	1.3E-03	1.3E-03
VOCs	Chloromethane	3.0E-04	1.7E-04	7.0E-06	6.8E-06	4.9E-06	3.5E-06	3.4E-06	1.4E-03	1.4E-03	1.4E-03
VOCs	Cumene	2.3E-04	1.2E-04	4.8E-06	4.7E-06	3.4E-06	2.4E-06	2.3E-06	9.5E-04	9.5E-04	9.5E-04
VOCs	Cyclohexane	2.4E-04	1.3E-04	5.1E-06	5.0E-06	3.6E-06	2.6E-06	2.5E-06	1.0E-03	1.0E-03	1.0E-03
VOCs	p-Cymene	2.3E-04	1.2E-04	4.8E-06	4.7E-06	3.4E-06	2.4E-06	2.3E-06	9.5E-04	9.5E-04	9.5E-04
VOCs	1,2-Dichlorobenzene	2.1E-04	1.1E-04	4.4E-06	4.3E-06	3.1E-06	2.2E-06	2.2E-06	8.7E-04	8.7E-04	8.7E-04
VOCs	1,3-Dichlorobenzene	2.1E-04	1.1E-04	4.4E-06	4.3E-06	3.1E-06	2.2E-06	2.2E-06	8.7E-04	8.7E-04	8.7E-04
VOCs	1,4-Dichlorobenzene	2.1E-04	1.1E-04	4.4E-06	4.3E-06	3.1E-06	2.2E-06	2.2E-06	8.7E-04	8.7E-04	8.7E-04
VOCs	Dichlorodifluoromethane	2.4E-04	1.3E-04	5.1E-06	5.0E-06	3.6E-06	2.6E-06	2.5E-06	1.0E-03	1.0E-03	1.0E-03
VOCs	1,1-Dichloroethane	2.3E-04	1.2E-04	4.8E-06	4.6E-06	3.4E-06	2.4E-06	2.3E-06	9.4E-04	9.4E-04	9.4E-04
VOCs	1,2-Dichloroethane	2.9E-04	1.6E-04	6.7E-06	6.5E-06	4.7E-06	3.3E-06	3.3E-06	1.3E-03	1.3E-03	1.3E-03
VOCs	1,1-Dichloroethene	2.6E-04	1.4E-04	5.8E-06	5.6E-06	4.1E-06	2.9E-06	2.8E-06	1.1E-03	1.1E-03	1.1E-03
VOCs	cis-1,2-Dichloroethene	2.2E-04	1.2E-04	4.7E-06	4.6E-06	3.3E-06	2.4E-06	2.3E-06	9.3E-04	9.3E-04	9.3E-04
VOCs	trans-1,2-Dichloroethene	2.2E-04	1.2E-04	4.5E-06	4.4E-06	3.2E-06	2.3E-06	2.2E-06	8.9E-04	8.9E-04	8.9E-04
VOCs	1,2-Dichloropropane	2.3E-04	1.3E-04	5.0E-06	4.9E-06	3.5E-06	2.5E-06	2.4E-06	9.9E-04	9.9E-04	9.9E-04
VOCs	1,4-Dioxane	2.9E-04	1.6E-04	6.6E-06	6.5E-06	4.7E-06	3.3E-06	3.2E-06	1.3E-03	1.3E-03	1.3E-03
VOCs	Ethanol	3.6E-04	2.1E-04	9.2E-06	9.0E-06	6.5E-06	4.6E-06	4.5E-06	1.8E-03	1.8E-03	1.8E-03
VOCs	Ethyl acetate	2.2E-04	1.2E-04	4.7E-06	4.6E-06	3.3E-06	2.4E-06	2.3E-06	9.3E-04	9.3E-04	9.3E-04
VOCs	Ethyl benzene	2.3E-04	1.2E-04	4.8E-06	4.7E-06	3.4E-06	2.4E-06	2.3E-06	9.5E-04	9.5E-04	9.5E-04
VOCs	4-Ethyltoluene	2.3E-04	1.2E-04	4.8E-06	4.7E-06	3.4E-06	2.4E-06	2.3E-06	9.5E-04	9.5E-04	9.5E-04
VOCs	n-Heptane	1.9E-04	1.0E-04	3.9E-06	3.9E-06	2.8E-06	2.0E-06	1.9E-06	7.8E-04	7.8E-04	7.8E-04
VOCs	n-Hexane	4.4E-04	2.7E-04	1.3E-05	1.3E-05	9.1E-06	6.4E-06	6.3E-06	2.5E-03	2.5E-03	2.5E-03
VOCs	2-Hexanone	2.2E-04	1.2E-04	4.5E-06	4.4E-06	3.2E-06	2.3E-06	2.2E-06	8.9E-04	8.9E-04	8.9E-04
VOCs	Methyl tert-butyl ether	2.4E-04	1.3E-04	5.1E-06	5.0E-06	3.6E-06	2.6E-06	2.5E-06	1.0E-03	1.0E-03	1.0E-03
VOCs	4-Methyl-2-pentanone	2.3E-04	1.2E-04	4.8E-06	4.7E-06	3.4E-06	2.4E-06	2.4E-06	9.6E-04	9.6E-04	9.6E-04
VOCs	Methylene Chloride	2.8E-04	1.6E-04	6.5E-06	6.3E-06	4.6E-06	3.2E-06	3.2E-06	1.3E-03	1.3E-03	1.3E-03

TABLE 5-14A. Transfer Factors for Volatile Compounds Migrating from Soil Gas to Indoor Air, Outdoor Air, and Trench Air – Parcels C, D, and G

Nevada Environmental Response Trust Site

Henderson, Nevada

Chemical Group	Soil Gas COPC	TF - Soil Gas to Indoor Air ($\mu g/m^3$ per $\mu g/m^3$)		TF - Soil Gas to Outdoor Air ($\mu g/m^3$ per $\mu g/m^3$)					TF - Soil Gas to Construction Trench Air ($\mu g/m^3$ per $\mu g/m^3$)		
		5 ft bgs	10 ft bgs	5 ft bgs			5 - 10 ft bgs		All Depth		
		All Parcels	All Parcels	Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel C	Parcel D	Parcel G
VOCs	n-Octane	2.2E-04	1.2E-04	4.5E-06	4.4E-06	3.2E-06	2.3E-06	2.2E-06	9.0E-04	9.0E-04	9.0E-04
VOCs	n-Propylbenzene	2.3E-04	1.2E-04	4.8E-06	4.7E-06	3.4E-06	2.4E-06	2.3E-06	9.5E-04	9.5E-04	9.5E-04
VOCs	Styrene	2.2E-04	1.2E-04	4.5E-06	4.4E-06	3.2E-06	2.3E-06	2.2E-06	9.0E-04	9.0E-04	9.0E-04
VOCs	alpha-Methylstyrene	2.2E-04	1.2E-04	4.6E-06	4.5E-06	3.2E-06	2.3E-06	2.2E-06	9.0E-04	9.0E-04	9.0E-04
VOCs	tert Butyl alcohol	2.8E-04	1.5E-04	6.3E-06	6.1E-06	4.5E-06	3.1E-06	3.1E-06	1.2E-03	1.2E-03	1.2E-03
VOCs	Tetrachloroethene	2.2E-04	1.2E-04	4.6E-06	4.5E-06	3.3E-06	2.3E-06	2.3E-06	9.1E-04	9.1E-04	9.1E-04
VOCs	Toluene	2.5E-04	1.4E-04	5.6E-06	5.4E-06	3.9E-06	2.8E-06	2.7E-06	1.1E-03	1.1E-03	1.1E-03
VOCs	1,2,4-Trichlorobenzene	1.1E-04	5.3E-05	1.9E-06	1.9E-06	1.4E-06	9.6E-07	9.4E-07	3.8E-04	3.8E-04	3.8E-04
VOCs	1,1,2-Trichloroethane	2.3E-04	1.3E-04	5.0E-06	4.9E-06	3.5E-06	2.5E-06	2.4E-06	9.9E-04	9.9E-04	9.9E-04
VOCs	Trichlorofluoromethane	2.5E-04	1.4E-04	5.6E-06	5.4E-06	3.9E-06	2.8E-06	2.7E-06	1.1E-03	1.1E-03	1.1E-03
VOCs	1,3,5-Trimethylbenzene	2.3E-04	1.2E-04	4.8E-06	4.7E-06	3.4E-06	2.4E-06	2.3E-06	9.5E-04	9.5E-04	9.5E-04
VOCs	Vinyl acetate	2.5E-04	1.4E-04	5.5E-06	5.3E-06	3.9E-06	2.7E-06	2.7E-06	1.1E-03	1.1E-03	1.1E-03
VOCs	Vinyl chloride	2.9E-04	1.6E-04	6.8E-06	6.6E-06	4.8E-06	3.4E-06	3.3E-06	1.3E-03	1.3E-03	1.3E-03
VOCs	o-Xylene	2.5E-04	1.4E-04	5.6E-06	5.4E-06	3.9E-06	2.8E-06	2.7E-06	1.1E-03	1.1E-03	1.1E-03
VOCs	m,p-Xylene	2.2E-04	1.2E-04	4.5E-06	4.4E-06	3.2E-06	2.2E-06	2.2E-06	8.8E-04	8.8E-04	8.8E-04
VOCs	Xylenes (total)	2.2E-04	1.2E-04	4.5E-06	4.4E-06	3.2E-06	2.2E-06	2.2E-06	8.8E-04	8.8E-04	8.8E-04
SVOCs	Hexachlorobutadiene	9.5E-05	4.7E-05	1.7E-06	1.7E-06	1.2E-06	8.6E-07	8.4E-07	3.4E-04	3.4E-04	3.4E-04
SVOCs	Naphthalene	1.9E-04	9.9E-05	3.8E-06	3.7E-06	2.7E-06	1.9E-06	1.9E-06	7.5E-04	7.5E-04	7.5E-04

Notes:

COPC = chemical of potential concern

ft = feet

bgs = below ground surface

$\mu g/m^3$ = microgram per cubic meter

TF = Transfer Factor

SVOC = Semi-Volatile Organic Compound

VOC = Volatile Organic Compound

TABLE 5-14B. Transfer Factors for Volatile Compounds Migrating from Shallow Groundwater to Indoor Air, Outdoor Air, and Trench Air – Parcels C, D, and G

Nevada Environmental Response Trust Site

Henderson, Nevada

Chemical Group	Shallow Groundwater COPC	TF - Shallow Groundwater to Indoor Air ($\mu g/m^3$ per $\mu g/L$)			TF - Shallow Groundwater to Outdoor Air ($\mu g/m^3$ per $\mu g/L$)			TF - Shallow Groundwater to Construction Trench Air ($\mu g/m^3$ per $\mu g/L$)		
		Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel G
VOCs	Acetone	7.8E-05	9.1E-05	6.0E-05	1.5E-06	1.7E-06	8.0E-07	2.8E-06	3.6E-06	1.9E-06
VOCs	Benzene	2.2E-14	2.5E-14	1.9E-14	4.1E-16	4.4E-16	2.4E-16	6.7E-16	7.9E-16	5.3E-16
VOCs	Bromobenzene	2.8E-03	3.0E-03	2.4E-03	5.0E-05	5.3E-05	3.1E-05	7.6E-05	8.2E-05	6.5E-05
VOCs	Bromochloromethane	1.4E-03	1.5E-03	1.2E-03	2.6E-05	2.8E-05	1.6E-05	4.0E-05	4.5E-05	3.4E-05
VOCs	Bromodichloromethane	5.2E-04	5.9E-04	4.3E-04	9.5E-06	1.0E-05	5.5E-06	1.6E-05	1.8E-05	1.2E-05
VOCs	Bromoform	2.3E-04	2.7E-04	1.8E-04	4.3E-06	4.8E-06	2.4E-06	7.6E-06	9.3E-06	5.5E-06
VOCs	Bromomethane	3.6E-03	3.9E-03	3.2E-03	6.6E-05	6.9E-05	4.1E-05	9.9E-05	1.1E-04	8.5E-05
VOCs	2-Butanone	4.1E-05	4.8E-05	3.1E-05	7.6E-07	8.9E-07	4.1E-07	1.5E-06	1.9E-06	9.8E-07
VOCs	n-Butylbenzene	5.4E-03	5.8E-03	4.8E-03	9.9E-05	1.0E-04	6.2E-05	1.5E-04	1.6E-04	1.3E-04
VOCs	sec-Butylbenzene	1.9E-04	2.1E-04	1.5E-04	3.4E-06	3.9E-06	1.9E-06	6.1E-06	7.4E-06	4.5E-06
VOCs	tert-Butylbenzene	8.9E-03	9.5E-03	7.9E-03	1.6E-04	1.7E-04	1.0E-04	2.4E-04	2.6E-04	2.1E-04
VOCs	Carbon tetrachloride	1.5E-02	1.6E-02	1.4E-02	2.8E-04	2.9E-04	1.8E-04	4.1E-04	4.5E-04	3.6E-04
VOCs	Chlorobenzene	1.9E-03	2.0E-03	1.6E-03	3.4E-05	3.6E-05	2.1E-05	5.2E-05	5.6E-05	4.4E-05
VOCs	Chloroethane	8.3E-03	8.9E-03	7.4E-03	1.5E-04	1.6E-04	9.6E-05	2.3E-04	2.4E-04	2.0E-04
VOCs	Chloroform	2.8E-03	3.0E-03	2.4E-03	5.1E-05	5.4E-05	3.2E-05	7.7E-05	8.4E-05	6.6E-05
VOCs	Chloromethane	1.9E-02	2.0E-02	1.7E-02	3.5E-04	3.7E-04	2.2E-04	5.2E-04	5.6E-04	4.6E-04
VOCs	2-Chlorotoluene	2.6E-03	2.8E-03	2.3E-03	4.7E-05	5.0E-05	2.9E-05	7.1E-05	7.8E-05	6.1E-05
VOCs	4-Chlorotoluene	2.8E-03	3.0E-03	2.5E-03	5.1E-05	5.4E-05	3.2E-05	7.7E-05	8.3E-05	6.6E-05
VOCs	Cumene	4.6E-01	4.8E-01	4.1E-01	8.3E-03	8.7E-03	5.2E-03	1.2E-02	1.3E-02	1.1E-02
VOCs	p-Cymene	8.2E-01	8.7E-01	7.3E-01	1.5E-02	1.6E-02	9.4E-03	2.2E-02	2.4E-02	1.9E-02
VOCs	1,2-Dibromo-3-chloropropane	2.3E-04	2.6E-04	1.8E-04	4.2E-06	4.7E-06	2.4E-06	7.3E-06	8.8E-06	5.4E-06
VOCs	Dibromochloromethane	2.5E-04	2.9E-04	1.9E-04	4.5E-06	5.0E-06	2.5E-06	7.9E-06	9.7E-06	5.8E-06
VOCs	1,2-Dibromoethane	2.7E-04	3.0E-04	2.1E-04	4.9E-06	5.5E-06	2.8E-06	8.4E-06	1.0E-05	6.3E-06
VOCs	Dibromomethane	6.5E-04	7.2E-04	5.5E-04	1.2E-05	1.3E-05	7.2E-06	1.9E-05	2.2E-05	1.6E-05
VOCs	1,2-Dichlorobenzene	9.4E-04	1.0E-03	8.1E-04	1.7E-05	1.8E-05	1.0E-05	2.7E-05	3.0E-05	2.2E-05
VOCs	1,3-Dichlorobenzene	9.6E-04	1.0E-03	8.2E-04	1.7E-05	1.9E-05	1.1E-05	2.7E-05	3.0E-05	2.3E-05
VOCs	1,4-Dichlorobenzene	1.2E-03	1.3E-03	1.0E-03	2.1E-05	2.3E-05	1.3E-05	3.3E-05	3.6E-05	2.7E-05
VOCs	Dichlorodifluoromethane	5.0E-02	5.3E-02	4.4E-02	9.1E-04	9.5E-04	5.7E-04	1.3E-03	1.4E-03	1.2E-03
VOCs	1,1-Dichloroethane	3.1E-03	3.3E-03	2.7E-03	5.6E-05	5.9E-05	3.5E-05	8.4E-05	9.2E-05	7.2E-05
VOCs	1,2-Dichloroethane	9.0E-04	9.8E-04	7.6E-04	1.7E-05	1.8E-05	1.0E-05	2.6E-05	2.9E-05	2.2E-05
VOCs	1,1-Dichloroethene	1.6E-02	1.7E-02	1.4E-02	3.0E-04	3.1E-04	1.9E-04	4.4E-04	4.7E-04	3.8E-04
VOCs	1,2-Dichloroethene	3.1E-03	3.4E-03	2.7E-03	5.7E-05	6.0E-05	3.5E-05	8.6E-05	9.4E-05	7.4E-05
VOCs	cis-1,2-Dichloroethene	2.3E-03	2.5E-03	2.0E-03	4.2E-05	4.4E-05	2.6E-05	6.4E-05	7.0E-05	5.4E-05
VOCs	trans-1,2-Dichloroethene	4.8E-03	5.1E-03	4.2E-03	8.7E-05	9.1E-05	5.4E-05	1.3E-04	1.4E-04	1.1E-04
VOCs	1,2-Dichloropropane	1.6E-03	1.8E-03	1.4E-03	3.0E-05	3.1E-05	1.8E-05	4.5E-05	5.0E-05	3.9E-05
VOCs	1,3-Dichloropropane	2.3E-03	2.5E-03	2.0E-03	4.2E-05	4.4E-05	2.6E-05	6.3E-05	6.9E-05	5.4E-05
VOCs	2,2-Dichloropropane	1.2E-02	1.3E-02	1.0E-02	2.1E-04	2.2E-04	1.3E-04	3.2E-04	3.4E-04	2.8E-04
VOCs	1,1-Dichloropropene	2.9E-02	3.1E-02	2.6E-02	5.2E-04	5.5E-04	3.3E-04	7.8E-04	8.4E-04	6.8E-04
VOCs	cis-1,3-Dichloropropene	7.0E-03	7.5E-03	6.2E-03	1.3E-04	1.3E-04	8.0E-05	1.9E-04	2.0E-04	1.6E-04
VOCs	trans-1,3-Dichloropropene	7.0E-03	7.5E-03	6.2E-03	1.3E-04	1.3E-04	8.0E-05	1.9E-04	2.0E-04	1.6E-04
VOCs	3,3-Dimethylpentane	1.1E+00	1.2E+00	9.7E-01	2.0E-02	2.1E-02	1.2E-02	2.9E-02	3.1E-02	2.6E-02
VOCs	1,4-Dioxane	1.2E-05	1.4E-05	9.0E-06	2.2E-07	2.6E-07	1.2E-07	4.4E-07	5.9E-07	2.9E-07

TABLE 5-14B. Transfer Factors for Volatile Compounds Migrating from Shallow Groundwater to Indoor Air, Outdoor Air, and Trench Air – Parcels C, D, and G

Nevada Environmental Response Trust Site

Henderson, Nevada

Chemical Group	Shallow Groundwater COPC	TF - Shallow Groundwater to Indoor Air ($\mu g/m^3$ per $\mu g/L$)			TF - Shallow Groundwater to Outdoor Air ($\mu g/m^3$ per $\mu g/L$)			TF - Shallow Groundwater to Construction Trench Air ($\mu g/m^3$ per $\mu g/L$)		
		Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel G
VOCs	Dimethyl disulfide	1.2E-03	1.3E-03	1.0E-03	2.2E-05	2.3E-05	1.3E-05	3.4E-05	3.8E-05	2.8E-05
VOCs	Ethyl benzene	3.6E-03	3.9E-03	3.2E-03	6.6E-05	7.0E-05	4.2E-05	9.9E-05	1.1E-04	8.6E-05
VOCs	3-Ethylpentane	1.3E+00	1.4E+00	1.2E+00	2.4E-02	2.5E-02	1.5E-02	3.6E-02	3.9E-02	3.2E-02
VOCs	Methylene Chloride	1.8E-03	2.0E-03	1.6E-03	3.4E-05	3.6E-05	2.1E-05	5.1E-05	5.7E-05	4.3E-05
VOCs	2-Methylhexane	2.0E+00	2.2E+00	1.8E+00	3.7E-02	3.8E-02	2.3E-02	5.4E-02	5.9E-02	4.8E-02
VOCs	3-Methylhexane	9.7E-01	1.0E+00	8.6E-01	1.8E-02	1.8E-02	1.1E-02	2.6E-02	2.8E-02	2.3E-02
VOCs	n-Nonyl aldehyde	7.2E-04	7.9E-04	6.1E-04	1.3E-05	1.4E-05	8.0E-06	2.1E-05	2.3E-05	1.7E-05
VOCs	n-Propylbenzene	5.6E-03	5.9E-03	4.9E-03	1.0E-04	1.1E-04	6.4E-05	1.5E-04	1.6E-04	1.3E-04
VOCs	Styrene	1.4E-03	1.5E-03	1.2E-03	2.5E-05	2.6E-05	1.5E-05	3.8E-05	4.2E-05	3.2E-05
VOCs	1,1,1,2-Tetrachloroethane	2.6E-04	3.0E-04	2.1E-04	4.8E-06	5.4E-06	2.7E-06	8.3E-06	9.9E-06	6.2E-06
VOCs	1,1,2,2-Tetrachloroethane	2.7E-04	3.1E-04	2.2E-04	5.0E-06	5.5E-06	2.8E-06	8.5E-06	1.0E-05	6.4E-06
VOCs	Tetrachloroethene	8.0E-03	8.6E-03	7.1E-03	1.5E-04	1.5E-04	9.2E-05	2.2E-04	2.3E-04	1.9E-04
VOCs	Toluene	3.7E-03	4.0E-03	3.3E-03	6.8E-05	7.2E-05	4.3E-05	1.0E-04	1.1E-04	8.9E-05
VOCs	1,2,3-Trichlorobenzene	6.9E-04	7.6E-04	5.8E-04	1.2E-05	1.3E-05	7.4E-06	2.0E-05	2.2E-05	1.6E-05
VOCs	1,2,4-Trichlorobenzene	3.9E-04	4.3E-04	3.2E-04	7.0E-06	7.7E-06	4.0E-06	1.2E-05	1.4E-05	9.0E-06
VOCs	1,3,5-Trichlorobenzene	1.5E-03	1.6E-03	1.3E-03	2.8E-05	3.0E-05	1.7E-05	4.2E-05	4.6E-05	3.6E-05
VOCs	1,1,1-Trichloroethane	8.8E-03	9.4E-03	7.8E-03	1.6E-04	1.7E-04	1.0E-04	2.4E-04	2.6E-04	2.1E-04
VOCs	1,1,2-Trichloroethane	6.5E-04	7.1E-04	5.4E-04	1.2E-05	1.3E-05	7.0E-06	1.9E-05	2.2E-05	1.5E-05
VOCs	Trichloroethene	5.3E-03	5.7E-03	4.7E-03	9.7E-05	1.0E-04	6.1E-05	1.4E-04	1.6E-04	1.3E-04
VOCs	Trichlorofluoromethane	5.8E-02	6.2E-02	5.2E-02	1.1E-03	1.1E-03	6.7E-04	1.6E-03	1.7E-03	1.4E-03
VOCs	1,2,3-Trichloropropane	1.1E-02	1.2E-02	9.9E-03	2.0E-04	2.1E-04	1.3E-04	3.0E-04	3.2E-04	2.6E-04
VOCs	1,2,4-Trimethylbenzene	2.5E-03	2.7E-03	2.2E-03	4.6E-05	4.8E-05	2.9E-05	6.9E-05	7.5E-05	5.9E-05
VOCs	1,3,5-Trimethylbenzene	3.3E-03	3.6E-03	2.9E-03	6.1E-05	6.3E-05	3.8E-05	9.1E-05	9.8E-05	7.8E-05
VOCs	Vinyl chloride	2.1E-02	2.2E-02	1.8E-02	3.8E-04	3.9E-04	2.4E-04	5.6E-04	6.0E-04	4.9E-04
VOCs	o-Xylene	2.9E-03	3.1E-03	2.5E-03	5.3E-05	5.5E-05	3.3E-05	7.9E-05	8.7E-05	6.8E-05
VOCs	m,p-Xylene	5.6E-03	6.0E-03	5.0E-03	1.0E-04	1.1E-04	6.5E-05	1.5E-04	1.7E-04	1.3E-04
VOCs	Xylenes (total)	3.2E-03	3.4E-03	2.8E-03	5.8E-05	6.1E-05	3.6E-05	8.7E-05	9.5E-05	7.5E-05
SVOCs	Acenaphthene	7.2E-05	8.5E-05	5.5E-05	1.3E-06	1.5E-06	7.1E-07	2.5E-06	3.2E-06	1.7E-06
SVOCs	Anthracene	5.1E-05	6.1E-05	3.9E-05	9.3E-07	1.1E-06	5.0E-07	1.8E-06	2.3E-06	1.2E-06
SVOCs	2-Chlorophenol	1.2E-03	1.3E-03	1.0E-03	2.4E-05	2.6E-05	1.5E-05	3.8E-05	4.2E-05	3.2E-05
SVOCs	Hexachlorobutadiene	1.7E-03	1.8E-03	1.4E-03	3.0E-05	3.1E-05	1.8E-05	4.5E-05	4.9E-05	3.9E-05
SVOCs	2-Methylnaphthalene	2.4E-04	2.7E-04	1.9E-04	4.4E-06	4.9E-06	2.5E-06	7.6E-06	9.1E-06	5.7E-06
SVOCs	Naphthalene	2.8E-04	3.1E-04	2.2E-04	5.1E-06	5.6E-06	2.9E-06	8.7E-06	1.0E-05	6.6E-06
SVOCs	Pentachlorobenzene	3.5E-04	4.0E-04	2.9E-04	6.4E-06	7.0E-06	3.7E-06	1.1E-05	1.3E-05	8.2E-06

Notes:

µg/L = microgram per liter

$\mu g/m^3$ = microgram per cubic meter

TF = Transfer Factor

SVOC = Semivolatile organic compound

VOC = Volatile Organic Compound

TABLE 5-15A. Air EPCs Due to Volatile Compounds Migrating from 10 ft bgs Soil Gas to Indoor Air, Outdoor Air, and Trench Air – Parcels C and D

Nevada Environmental Response Trust Site

Henderson, Nevada

Chemical Group	Constituent	10 ft bgs Maximum Soil Gas Concentration ($\mu g/m^3$)		Predicted Indoor Air Concentration ($\mu g/m^3$)		Predicted Outdoor Air Concentration ($\mu g/m^3$)		Predicted Trench Air Concentration ($\mu g/m^3$)	
		Parcel C	Parcel D	Parcel C	Parcel D	Parcel C	Parcel D	Parcel C	Parcel D
VOCs	Acetone	2.3E+02	1.4E+02	4.5E-02	2.9E-02	9.6E-04	5.7E-04	3.8E-01	2.3E-01
VOCs	Acrylonitrile	ND	ND	--	--	--	--	--	--
VOCs	Benzene	1.5E+01	1.0E+01	2.1E-14	1.1E-03	4.1E-16	2.7E-16	1.7E-02	1.1E-02
VOCs	Bromodichloromethane	2.7E+02	ND	1.4E-02	--	2.6E-04	--	1.0E-01	--
VOCs	Bromomethane	9.1E+00	9.9E+00	1.1E-03	1.5E-03	2.1E-05	2.3E-05	8.4E-03	9.1E-03
VOCs	2-Butanone	2.3E+01	1.9E+01	3.4E-03	2.3E-03	6.8E-05	5.5E-05	2.7E-02	2.2E-02
VOCs	n-Butylbenzene	ND	ND	--	--	--	--	--	--
VOCs	sec-Butylbenzene	ND	ND	--	--	--	--	--	--
VOCs	Carbon disulfide	1.2E+01	ND	2.0E-03	--	4.1E-05	--	1.6E-02	--
VOCs	Carbon tetrachloride	2.1E+01	9.6E+00	2.7E-03	1.4E-03	5.3E-05	2.3E-05	2.1E-02	9.5E-03
VOCs	Chlorobenzene	1.2E+01	ND	1.4E-03	--	2.7E-05	--	1.1E-02	--
VOCs	Chloroethane	1.3E+02	7.3E+01	2.2E-02	1.2E-02	4.5E-04	2.4E-04	1.8E-01	9.5E-02
VOCs	Chloroform	1.2E+05	3.2E+03	1.9E+01	8.7E-01	4.0E-01	1.1E-02	1.6E+02	4.3E+00
VOCs	Chloromethane	4.2E+00	3.4E+00	7.1E-04	4.0E-04	1.5E-05	1.1E-05	5.8E-03	4.6E-03
VOCs	Cumene	ND	ND	--	--	--	--	--	--
VOCs	Cyclohexane	ND	ND	--	--	--	--	--	--
VOCs	p-Cymene	ND	ND	--	--	--	--	--	--
VOCs	1,2-Dichlorobenzene	ND	ND	--	--	--	--	--	--
VOCs	1,3-Dichlorobenzene	1.0E+01	6.1E+00	1.2E-03	7.0E-04	2.3E-05	1.3E-05	9.1E-03	5.3E-03
VOCs	1,4-Dichlorobenzene	ND	ND	--	--	--	--	--	--
VOCs	Dichlorodifluoromethane	ND	ND	--	--	--	--	--	--
VOCs	1,1-Dichloroethane	1.4E+03	3.0E+01	1.7E-01	4.8E-03	3.2E-03	6.9E-05	1.3E+00	2.8E-02
VOCs	1,2-Dichloroethane	1.4E+02	7.0E+00	2.3E-02	1.0E-03	4.7E-04	2.3E-05	1.8E-01	9.2E-03
VOCs	1,1-Dichloroethene	2.4E+01	ND	3.5E-03	--	7.0E-05	--	2.8E-02	--
VOCs	cis-1,2-Dichloroethene	ND	ND	--	--	--	--	--	--
VOCs	trans-1,2-Dichloroethene	ND	ND	--	--	--	--	--	--
VOCs	1,2-Dichloropropane	ND	ND	--	--	--	--	--	--
VOCs	1,4-Dioxane	ND	ND	--	--	--	--	--	--
VOCs	Ethanol	ND	ND	--	--	--	--	--	--
VOCs	Ethyl acetate	ND	ND	--	--	--	--	--	--
VOCs	Ethyl benzene	4.4E+00	ND	5.4E-04	--	1.1E-05	--	4.2E-03	--
VOCs	4-Ethyltoluene	7.4E+00	ND	9.0E-04	--	1.8E-05	--	7.0E-03	--
VOCs	n-Heptane	ND	ND	--	--	--	--	--	--
VOCs	n-Hexane	ND	ND	--	--	--	--	--	--
VOCs	2-Hexanone	ND	ND	--	--	--	--	--	--
VOCs	Methyl tert-butyl ether	ND	ND	--	--	--	--	--	--
VOCs	4-Methyl-2-pentanone	ND	ND	--	--	--	--	--	--
VOCs	Methylene Chloride	3.5E+01	3.9E+01	5.6E-03	4.2E-03	1.1E-04	1.2E-04	4.5E-02	5.0E-02
VOCs	n-Octane	ND	ND	--	--	--	--	--	--

TABLE 5-15A. Air EPCs Due to Volatiles Compounds Migrating from 10 ft bgs Soil Gas to Indoor Air, Outdoor Air, and Trench Air – Parcels C and D

Nevada Environmental Response Trust Site

Henderson, Nevada

Chemical Group	Constituent	10 ft bgs Maximum Soil Gas Concentration ($\mu g/m^3$)		Predicted Indoor Air Concentration ($\mu g/m^3$)		Predicted Outdoor Air Concentration ($\mu g/m^3$)		Predicted Trench Air Concentration ($\mu g/m^3$)	
		Parcel C	Parcel D	Parcel C	Parcel D	Parcel C	Parcel D	Parcel C	Parcel D
VOCs	n-Propylbenzene	ND	ND	--	--	--	--	--	--
VOCs	Styrene	ND	ND	--	--	--	--	--	--
VOCs	alpha-Methylstyrene	ND	ND	--	--	--	--	--	--
VOCs	tert Butyl alcohol	ND	ND	--	--	--	--	--	--
VOCs	Tetrachloroethene	1.6E+03	3.1E+02	1.9E-01	4.8E-02	3.7E-03	7.0E-04	1.4E+00	2.8E-01
VOCs	Toluene	2.7E+01	1.2E+01	3.8E-03	8.2E-04	7.6E-05	3.2E-05	3.0E-02	1.3E-02
VOCs	1,2,4-Trichlorobenzene	ND	ND	--	--	--	--	--	--
VOCs	1,1,2-Trichloroethane	3.6E+01	ND	4.5E-03	--	8.9E-05	--	3.5E-02	--
VOCs	Trichlorofluoromethane	ND	ND	--	--	--	--	--	--
VOCs	1,3,5-Trimethylbenzene	ND	ND	--	--	--	--	--	--
VOCs	Vinyl acetate	ND	ND	--	--	--	--	--	--
VOCs	Vinyl chloride	1.5E+02	ND	2.5E-02	--	5.2E-04	--	2.1E-01	--
VOCs	o-Xylene	4.4E+00	ND	6.2E-04	--	1.2E-05	--	4.9E-03	--
VOCs	m,p-Xylene	1.6E+01	ND	1.8E-03	--	3.6E-05	--	1.4E-02	--
VOCs	Xylenes (total)	2.0E+01	ND	2.3E-03	--	4.6E-05	--	1.8E-02	--
SVOCs	Hexachlorobutadiene	ND	1.6E+01	--	9.2E-04	--	1.4E-05	--	5.5E-03
SVOCs	Naphthalene	ND	ND	--	--	--	--	--	--

Notes:

-- = not calculated

bgs = below ground surface

EPC = Exposure Point Concentration

ft = feet

$\mu g/m^3$ = microgram per cubic meter

ND = Non Detect

SVOC = Semi-Volatile Organic Compound

VOC = Volatile Organic Compound

TABLE 5-15B. Air EPCs Due to Volatile Compounds Migrating from 5 ft bgs Soil Gas to Indoor Air, Outdoor Air, and Trench Air – Parcels C, D, and G

Nevada Environmental Response Trust Site

Henderson, Nevada

Chemical Group	Constituent	5 ft bgs Maximum Soil Gas Concentration (µg/m^3)			Predicted Indoor Air Concentration (µg/m^3)			Predicted Outdoor Air Concentration (µg/m^3)			Predicted Trench Air Concentration (µg/m^3)		
		Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel G
VOCs	Acetone	2.5E+01	1.9E+01	1.3E+01	8.3E-03	6.3E-03	4.3E-03	2.0E-04	1.5E-04	7.5E-05	4.0E-02	3.1E-02	2.1E-02
VOCs	Acrylonitrile	1.5E-01	1.5E-01	ND	4.5E-05	4.5E-05	--	1.1E-06	1.0E-06	--	2.1E-04	2.1E-04	--
VOCs	Benzene	1.2E+01	2.2E+00	2.4E+00	6.5E-14	1.2E-14	1.3E-14	1.4E-15	2.6E-16	2.0E-16	1.3E-02	2.4E-03	2.6E-03
VOCs	Bromodichloromethane	8.6E-01	6.9E-01	1.3E+00	9.0E-05	7.2E-05	1.4E-04	1.6E-06	1.3E-06	1.8E-06	3.2E-04	2.6E-04	4.9E-04
VOCs	Bromomethane	3.6E-01	3.6E-01	ND	8.0E-05	8.0E-05	--	1.7E-06	1.6E-06	--	3.3E-04	3.3E-04	--
VOCs	2-Butanone	1.3E+01	5.5E+00	4.6E+00	3.5E-03	1.5E-03	1.2E-03	7.8E-05	3.2E-05	1.9E-05	1.5E-02	6.5E-03	5.4E-03
VOCs	n-Butylbenzene	2.4E+00	2.4E+00	2.4E-01	5.4E-04	5.4E-04	5.4E-05	1.2E-05	1.1E-05	8.2E-07	2.3E-03	2.3E-03	2.3E-04
VOCs	sec-Butylbenzene	2.4E-01	2.4E-01	ND	5.5E-05	5.5E-05	--	1.2E-06	1.1E-06	--	2.3E-04	2.3E-04	--
VOCs	Carbon disulfide	1.3E+01	1.3E+01	1.0E+01	3.8E-03	3.8E-03	2.9E-03	8.7E-05	8.5E-05	4.7E-05	1.7E-02	1.7E-02	1.3E-02
VOCs	Carbon tetrachloride	2.6E+02	1.1E+02	6.3E+01	6.1E-02	2.6E-02	1.5E-02	1.3E-03	5.4E-04	2.2E-04	2.6E-01	1.1E-01	6.2E-02
VOCs	Chlorobenzene	1.7E+01	1.5E+00	4.3E-01	3.8E-03	3.3E-04	9.6E-05	7.9E-05	6.9E-06	1.4E-06	1.6E-02	1.4E-03	4.0E-04
VOCs	Chloroethane	1.4E+02	2.7E+01	ND	4.0E-02	7.8E-03	--	9.3E-04	1.8E-04	--	1.8E-01	3.6E-02	--
VOCs	Chloroform	3.9E+03	1.8E+03	1.4E+02	1.1E+00	5.2E-01	4.0E-02	2.6E-02	1.2E-02	6.6E-04	5.1E+00	2.4E+00	1.8E-01
VOCs	Chloromethane	ND	ND	ND	--	--	--	--	--	--	--	--	--
VOCs	Cumene	5.5E-01	ND	ND	1.2E-04	--	--	2.6E-06	--	--	5.2E-04	--	--
VOCs	Cyclohexane	4.9E+00	4.9E+00	ND	1.2E-03	1.2E-03	--	2.5E-05	2.5E-05	--	5.0E-03	5.0E-03	--
VOCs	p-Cymene	9.2E-01	6.2E-01	1.5E+00	2.1E-04	1.4E-04	3.4E-04	4.4E-06	2.9E-06	5.1E-06	8.7E-04	5.9E-04	1.4E-03
VOCs	1,2-Dichlorobenzene	1.6E+01	7.1E-01	3.4E+00	3.4E-03	1.5E-04	7.2E-04	7.1E-05	3.1E-06	1.1E-05	1.4E-02	6.2E-04	3.0E-03
VOCs	1,3-Dichlorobenzene	3.8E+01	6.5E-01	ND	8.1E-03	1.4E-04	--	1.7E-04	2.8E-06	--	3.3E-02	5.7E-04	--
VOCs	1,4-Dichlorobenzene	2.9E+01	8.3E-01	4.2E+00	6.2E-03	1.8E-04	8.9E-04	1.3E-04	3.6E-06	1.3E-05	2.5E-02	7.2E-04	3.7E-03
VOCs	Dichlorodifluoromethane	2.6E+00	2.3E+00	2.1E+00	6.2E-04	5.5E-04	5.0E-04	1.3E-05	1.2E-05	7.6E-06	2.6E-03	2.3E-03	2.1E-03
VOCs	1,1-Dichloroethane	3.3E+02	3.7E+00	ND	7.4E-02	8.3E-04	--	1.6E-03	1.7E-05	--	3.1E-01	3.5E-03	--
VOCs	1,2-Dichloroethane	3.3E+01	2.3E+00	ND	9.5E-03	6.7E-04	--	2.2E-04	1.5E-05	--	4.3E-02	3.0E-03	--
VOCs	1,1-Dichloroethene	3.3E+01	1.0E-01	ND	8.6E-03	2.6E-05	--	1.9E-04	5.6E-07	--	3.8E-02	1.1E-04	--
VOCs	cis-1,2-Dichloroethene	2.3E+00	ND	1.4E-01	5.1E-04	--	3.1E-05	1.1E-05	--	4.7E-07	2.1E-03	--	1.3E-04
VOCs	trans-1,2-Dichloroethene	2.2E+00	ND	ND	4.8E-04	--	--	1.0E-05	--	--	2.0E-03	--	--
VOCs	1,2-Dichloropropane	1.4E+00	3.6E-01	ND	3.3E-04	8.4E-05	--	7.0E-06	1.8E-06	--	1.4E-03	3.6E-04	--
VOCs	1,4-Dioxane	5.1E-01	5.1E-01	ND	1.5E-04	1.5E-04	--	3.4E-06	3.3E-06	--	6.7E-04	6.7E-04	--
VOCs	Ethanol	7.3E+00	7.3E+00	2.2E+00	2.6E-03	2.6E-03	7.9E-04	6.7E-05	6.6E-05	1.4E-05	1.3E-02	1.3E-02	4.0E-03
VOCs	Ethyl acetate	1.4E+01	1.4E+01	2.0E+00	3.1E-03	3.1E-03	4.5E-04	6.6E-05	6.5E-05	6.7E-06	1.3E-02	1.3E-02	1.9E-03
VOCs	Ethyl benzene	8.9E+00	1.3E+00	8.5E-01	2.0E-03	3.0E-04	1.9E-04	4.3E-05	6.1E-06	2.9E-06	8.4E-03	1.2E-03	8.1E-04
VOCs	4-Ethyltoluene	5.1E+00	1.9E+00	1.2E+00	1.2E-03	4.3E-04	2.7E-04	2.4E-05	8.9E-06	4.1E-06	4.8E-03	1.8E-03	1.1E-03
VOCs	n-Heptane	2.4E+00	2.3E+00	9.5E-01	4.7E-04	4.5E-04	1.8E-04	9.5E-06	8.9E-06	2.7E-06	1.9E-03	1.8E-03	7.4E-04
VOCs	n-Hexane	3.4E+00	2.3E+00	1.7E+00	1.5E-03	1.0E-03	7.4E-04	4.4E-05	2.9E-05	1.5E-05	8.6E-03	5.8E-03	4.3E-03
VOCs	2-Hexanone	1.2E+00	8.3E-01	4.2E-01	2.6E-04	1.8E-04	9.1E-05	5.4E-06	3.7E-06	1.3E-06	1.1E-03	7.4E-04	3.8E-04
VOCs	Methyl tert-butyl ether	ND	1.3E-01	ND	--	3.1E-05	--	--	6.5E-07	--	--	1.3E-04	--
VOCs	4-Methyl-2-pentanone	7.2E+00	2.1E+00	4.2E+00	1.6E-03	4.8E-04	9.6E-04	3.5E-05	9.9E-06	1.4E-05	6.9E-03	2.0E-03	4.0E-03
VOCs	Methylene Chloride	1.9E+01	6.4E+00	9.7E-02	5.4E-03	1.8E-03	2.7E-05	1.2E-04	4.0E-05	4.4E-07	2.4E-02	8.2E-03	1.2E-04
VOCs	n-Octane	1.1E+01	3.6E-01	4.3E-01	2.4E-03	7.8E-05	9.3E-05	5.0E-05	1.6E-06	1.4E-06	9.9E-03	3.2E-04	3.9E-04
VOCs	n-Propylbenzene	3.0E+00	6.9E-01	2.4E-01	6.8E-04	1.6E-04	5.4E-05	1.4E-05	3.2E-06	8.2E-07	2.8E-03	6.5E-04	2.3E-04
VOCs	Styrene	4.6E-01	4.6E-01	1.3E-01	1.0E-04	1.0E-04	2.8E-05	2.1E-06	2.0E-06	4.2E-07	4.1E-04	4.1E-04	1.2E-04
VOCs	alpha-Methylstyrene	3.0E-01	5.4E-01	ND	6.5E-05	1.2E-04	--	1.4E-06	2.4E-06	--	2.7E-04	4.9E-04	--
VOCs	tert Butyl alcohol	3.1E+00	2.0E+00	1.7E+00	8.6E-04	5.5E-04	4.7E-04	1.9E-05	1.2E-05	7.6E-06	3.8E-03	2.5E-03	2.1E-03
VOCs	Tetrachloroethene	1.1E+03	8.7E+01	9.1E+00	2.4E-01	1.9E-02	2.0E-03	5.1E-03	3.9E-04	3.0E-05	1.0E+00	7.9E-02	8.3E-03

TABLE 5-15B. Air EPCs Due to Volatiles Compounds Migrating from 5 ft bgs Soil Gas to Indoor Air, Outdoor Air, and Trench Air – Parcels C, D, and G

Nevada Environmental Response Trust Site

Henderson, Nevada

Chemical Group	Constituent	5 ft bgs Maximum Soil Gas Concentration (µg/m^3)			Predicted Indoor Air Concentration (µg/m^3)			Predicted Outdoor Air Concentration (µg/m^3)			Predicted Trench Air Concentration (µg/m^3)		
		Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel G
VOCs	Toluene	2.4E+01	1.5E+01	3.1E+00	6.1E-03	3.8E-03	7.9E-04	1.3E-04	8.2E-05	1.2E-05	2.6E-02	1.6E-02	3.4E-03
VOCs	1,2,4-Trichlorobenzene	7.9E+01	1.6E+00	ND	8.3E-03	1.7E-04	--	1.5E-04	3.0E-06	--	3.0E-02	6.1E-04	--
VOCs	1,1,2-Trichloroethane	2.1E+01	1.2E+00	ND	4.9E-03	2.8E-04	--	1.1E-04	5.9E-06	--	2.1E-02	1.2E-03	--
VOCs	Trichlorofluoromethane	1.6E+00	1.1E+00	1.3E+00	4.1E-04	2.8E-04	3.3E-04	8.9E-06	6.0E-06	5.1E-06	1.8E-03	1.2E-03	1.4E-03
VOCs	1,3,5-Trimethylbenzene	4.5E+00	3.3E+00	6.7E-01	1.0E-03	7.5E-04	1.5E-04	2.2E-05	1.6E-05	2.3E-06	4.3E-03	3.1E-03	6.4E-04
VOCs	Vinyl acetate	6.3E+00	5.1E+00	3.0E+00	1.6E-03	1.3E-03	7.5E-04	3.4E-05	2.7E-05	1.2E-05	6.8E-03	5.5E-03	3.2E-03
VOCs	Vinyl chloride	4.4E+00	9.4E-02	ND	1.3E-03	2.8E-05	--	3.0E-05	6.2E-07	--	5.9E-03	1.3E-04	--
VOCs	o-Xylene	1.6E+01	6.4E-01	1.4E+00	4.1E-03	1.6E-04	3.6E-04	8.9E-05	3.5E-06	5.5E-06	1.8E-02	7.0E-04	1.5E-03
VOCs	m,p-Xylene	4.7E+01	6.9E-01	3.7E+00	1.0E-02	1.5E-04	8.0E-04	2.1E-04	3.0E-06	1.2E-05	4.2E-02	6.1E-04	3.3E-03
VOCs	Xylenes (total)	3.9E+00	3.7E+00	4.3E+00	8.4E-04	8.0E-04	9.3E-04	1.7E-05	1.6E-05	1.4E-05	3.5E-03	3.3E-03	3.8E-03
SVOCs	Hexachlorobutadiene	5.6E+01	7.1E+00	ND	5.3E-03	6.8E-04	--	9.6E-05	1.2E-05	--	1.9E-02	2.4E-03	--
SVOCs	Naphthalene	1.8E+01	1.8E+01	1.3E+00	3.4E-03	3.4E-03	2.4E-04	6.8E-05	6.7E-05	3.5E-06	1.3E-02	1.3E-02	9.7E-04

Notes:

-- = not calculated
bgs = below ground surface
EPC = Exposure Point Concentration
ft = feet
µg/m^3 = microgram per cubic meter
ND = Non Detect
SVOC = Semi-Volatile Organic Compound
VOC = Volatile Organic Compound

TABLE 5-16. Air EPCs Due to Volatile Compounds Migrating from Shallow Groundwater to Indoor Air, Outdoor Air, and Trench Air – Parcels C, D, and G

Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Constituent	Maximum Shallow Groundwater Concentration (µg/L) [1]			Predicted Indoor Air Concentration (µg/m^3)			Predicted Outdoor Air Concentration (µg/m^3)			Predicted Trench Air Concentration (µg/m^3)		
		Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel G
VOCs	Acetone	4.3E+02	ND	3.7E+00	1.9E-02	--	1.2E-04	3.6E-04	--	1.7E-06	7.0E-04	--	4.0E-06
VOCs	Benzene	1.2E+05	1.3E+03	ND	9.2E+00	1.2E-01	--	1.7E-01	2.1E-03	--	3.2E-01	4.4E-03	--
VOCs	Bromobenzene	1.1E+00	ND	ND	1.6E-03	--	--	2.9E-05	--	--	4.4E-05	--	--
VOCs	Bromochloromethane	4.0E-01	ND	ND	2.1E-04	--	--	3.8E-06	--	--	6.3E-06	--	--
VOCs	Bromodichloromethane	5.1E-01	ND	ND	1.2E-04	--	--	2.2E-06	--	--	3.9E-06	--	--
VOCs	Bromoform	8.5E-01	3.5E-01	ND	3.1E-03	1.4E-03	--	5.6E-05	2.4E-05	--	8.4E-05	3.8E-05	--
VOCs	Bromomethane	4.2E-01	ND	ND	6.6E-02	--	--	1.2E-03	--	--	1.8E-03	--	--
VOCs	2-Butanone	1.7E+01	ND	ND	9.3E-02	--	--	1.7E-03	--	--	2.5E-03	--	--
VOCs	n-Butylbenzene	3.7E-01	ND	ND	6.9E-05	--	--	1.3E-06	--	--	2.2E-06	--	--
VOCs	sec-Butylbenzene	2.5E-01	ND	ND	2.2E-03	--	--	4.0E-05	--	--	6.0E-05	--	--
VOCs	tert-Butylbenzene	2.2E-01	5.3E-01	ND	4.7E-03	1.2E-02	--	8.6E-05	2.2E-04	--	1.3E-04	3.3E-04	--
VOCs	Carbon tetrachloride	9.6E+00	1.5E+00	1.0E+00	9.3E-02	1.6E-02	8.6E-03	1.7E-03	2.8E-04	1.1E-04	2.5E-03	4.3E-04	2.3E-04
VOCs	Chlorobenzene	1.6E+05	1.5E+03	9.1E-01	1.3E+03	1.3E+01	6.7E-03	2.4E+01	2.4E-01	8.7E-05	3.6E+01	3.7E-01	1.8E-04
VOCs	Chloroethane	2.6E+00	9.8E-01	ND	7.2E-03	2.9E-03	--	1.3E-04	5.3E-05	--	2.0E-04	8.2E-05	--
VOCs	Chloroform	8.1E+02	4.6E+02	2.8E+01	3.5E+01	2.1E+01	1.1E+00	6.5E-01	3.9E-01	1.4E-02	9.6E-01	5.9E-01	2.9E-02
VOCs	Chloromethane	4.0E-01	ND	ND	1.0E-03	--	--	1.9E-05	--	--	2.9E-05	--	--
VOCs	2-Chlorotoluene	3.3E+00	2.6E-01	ND	9.3E-03	7.8E-04	--	1.7E-04	1.4E-05	--	2.5E-04	2.2E-05	--
VOCs	4-Chlorotoluene	3.1E+00	ND	ND	1.4E+00	--	--	2.6E-02	--	--	3.8E-02	--	--
VOCs	Cumene	2.7E-01	ND	ND	3.9E-02	--	--	7.1E-04	--	--	1.0E-03	--	--
VOCs	p-Cymene	2.8E-01	ND	ND	6.3E-05	--	--	1.2E-06	--	--	2.0E-06	--	--
VOCs	1,2-Dibromo-3-chloropropane	9.7E-01	ND	ND	2.4E-04	--	--	4.3E-06	--	--	7.7E-06	--	--
VOCs	Dibromochloromethane	4.0E-01	ND	ND	1.1E-04	--	--	2.0E-06	--	--	3.4E-06	--	--
VOCs	1,2-Dibromoethane	4.0E-01	ND	ND	2.6E-04	--	--	4.8E-06	--	--	7.6E-06	--	--
VOCs	Dibromomethane	3.6E-01	ND	ND	3.4E-04	--	--	6.2E-06	--	--	9.6E-06	--	--
VOCs	1,2-Dichlorobenzene	1.9E+03	2.2E+01	ND	1.8E+00	2.3E-02	--	3.3E-02	4.1E-04	--	5.2E-02	6.6E-04	--
VOCs	1,3-Dichlorobenzene	1.9E+02	1.1E+00	ND	2.2E-01	1.4E-03	--	4.0E-03	2.5E-05	--	6.2E-03	4.0E-05	--
VOCs	1,4-Dichlorobenzene	3.6E+03	3.2E+01	ND	1.8E+02	1.7E+00	--	3.3E+00	3.0E-02	--	4.8E+00	4.6E-02	--
VOCs	Dichlorodifluoromethane	2.6E-01	ND	ND	7.9E-04	--	--	1.5E-05	--	--	2.2E-05	--	--
VOCs	1,1-Dichloroethane	2.0E+01	2.5E+01	ND	1.8E-02	2.5E-02	--	3.3E-04	4.5E-04	--	5.2E-04	7.4E-04	--
VOCs	1,2-Dichloroethane	7.6E+02	4.2E+00	ND	1.2E+01	7.2E-02	--	2.3E-01	1.3E-03	--	3.3E-01	2.0E-03	--
VOCs	1,1-Dichloroethene	1.6E+00	ND	9.7E-01	5.0E-03	--	2.7E-03	9.1E-05	--	3.4E-05	1.4E-04	--	7.2E-05
VOCs	1,2-Dichloroethene	5.3E-01	ND	ND	1.2E-03	--	--	2.2E-05	--	--	3.4E-05	--	--
VOCs	cis-1,2-Dichloroethene	3.5E-01	ND	ND	1.7E-03	--	--	3.0E-05	--	--	4.6E-05	--	--
VOCs	trans-1,2-Dichloroethene	3.0E-01	ND	ND	4.9E-04	--	--	8.9E-06	--	--	1.4E-05	--	--
VOCs	1,2-Dichloropropane	3.5E-01	ND	ND	8.0E-04	--	--	1.5E-05	--	--	2.2E-05	--	--
VOCs	1,3-Dichloropropane	3.2E-01	ND	ND	3.8E-03	--	--	6.9E-05	--	--	1.0E-04	--	--
VOCs	2,2-Dichloropropane	3.4E-01	ND	ND	9.8E-03	--	--	1.8E-04	--	--	2.6E-04	--	--
VOCs	1,1-Dichloropropene	2.8E-01	ND	ND	2.0E-03	--	--	3.6E-05	--	--	5.3E-05	--	--
VOCs	cis-1,3-Dichloropropene	2.2E-01	ND	ND	1.5E-03	--	--	2.8E-05	--	--	4.2E-05	--	--
VOCs	trans-1,3-Dichloropropene	3.2E-01	ND	ND	6.0E-01	--	--	1.1E-02	--	--	1.6E-02	--	--
VOCs	3,3-Dimethylpentane	5.0E-01	ND	ND	6.0E-06	--	--	1.1E-07	--	--	2.2E-07	--	--
VOCs	1,4-Dioxane	2.4E+00	4.1E+00	ND	2.8E-03	5.3E-03	--	5.2E-05	9.5E-05	--	8.1E-05	1.5E-04	--
VOCs	Dimethyl disulfide	5.0E-01	5.4E+00	ND	8.4E-06	1.1E-04	--	1.6E-07	2.1E-06	--	3.2E-07	4.6E-06	--

TABLE 5-16. Air EPCs Due to Volatiles Compounds Migrating from Shallow Groundwater to Indoor Air, Outdoor Air, and Trench Air – Parcels C, D, and G

Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Constituent	Maximum Shallow Groundwater Concentration (µg/L) [1]			Predicted Indoor Air Concentration (µg/m^3)			Predicted Outdoor Air Concentration (µg/m^3)			Predicted Trench Air Concentration (µg/m^3)		
		Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel G	Parcel C	Parcel D	Parcel G
VOCs	Ethyl benzene	2.5E-01	ND	ND	3.4E-01	--	--	6.1E-03	--	--	9.0E-03	--	--
VOCs	3-Ethylpentane	8.5E-01	ND	ND	6.9E-01	--	--	1.3E-02	--	--	1.9E-02	--	--
VOCs	Methylene Chloride	3.2E+01	2.6E-01	ND	6.5E+01	5.6E-01	--	1.2E+00	1.0E-02	--	1.7E+00	1.5E-02	--
VOCs	2-Methylhexane	1.3E+00	ND	ND	1.3E+00	--	--	2.3E-02	--	--	3.4E-02	--	--
VOCs	3-Methylhexane	1.0E+00	ND	ND	2.9E-04	--	--	5.4E-06	--	--	9.2E-06	--	--
VOCs	n-Nonyl aldehyde	3.3E+02	2.6E+00	ND	6.8E+02	5.7E+00	--	1.2E+01	1.0E-01	--	1.8E+01	1.5E-01	--
VOCs	n-Propylbenzene	3.3E-01	ND	ND	4.5E-04	--	--	8.2E-06	--	--	1.3E-05	--	--
VOCs	Styrene	2.0E-01	ND	ND	3.5E-04	--	--	6.4E-06	--	--	9.8E-06	--	--
VOCs	1,1,1,2-Tetrachloroethane	2.7E-01	ND	ND	7.3E-05	--	--	1.3E-06	--	--	2.3E-06	--	--
VOCs	1,1,2,2-Tetrachloroethane	3.0E-01	ND	ND	2.4E-03	--	--	4.4E-05	--	--	6.5E-05	--	--
VOCs	Tetrachloroethene	9.0E+01	1.8E+00	ND	1.3E-02	3.1E-04	--	2.5E-04	5.7E-06	--	4.6E-04	1.2E-05	--
VOCs	Toluene	1.2E+01	1.5E+00	ND	8.2E-03	1.1E-03	--	1.5E-04	2.0E-05	--	2.4E-04	3.4E-05	--
VOCs	1,2,3-Trichlorobenzene	1.6E+02	1.6E+00	ND	6.2E-02	7.0E-04	--	1.1E-03	1.2E-05	--	1.9E-03	2.2E-05	--
VOCs	1,2,4-Trichlorobenzene	3.0E+02	7.8E+00	ND	4.6E-01	1.3E-02	--	8.4E-03	2.3E-04	--	1.3E-02	3.6E-04	--
VOCs	1,3,5-Trichlorobenzene	2.4E+00	1.6E-01	ND	2.1E-02	1.5E-03	--	3.8E-04	2.7E-05	--	5.7E-04	4.1E-05	--
VOCs	1,1,1-Trichloroethane	3.0E-01	ND	ND	1.9E-04	--	--	3.6E-06	--	--	5.7E-06	--	--
VOCs	1,1,2-Trichloroethane	1.4E+01	ND	ND	7.4E-02	--	--	1.4E-03	--	--	2.0E-03	--	--
VOCs	Trichloroethene	3.4E+01	2.0E+01	2.2E+00	2.0E+00	1.2E+00	1.1E-01	3.6E-02	2.2E-02	1.5E-03	5.3E-02	3.4E-02	3.0E-03
VOCs	Trichlorofluoromethane	3.4E-01	ND	ND	3.8E-03	--	--	6.9E-05	--	--	1.0E-04	--	--
VOCs	1,2,3-Trichloropropane	4.0E-01	4.3E-01	ND	4.0E-02	4.6E-02	--	7.2E-04	8.1E-04	--	1.1E-03	1.2E-03	--
VOCs	1,2,4-Trimethylbenzene	1.0E+00	ND	ND	3.3E-03	--	--	6.1E-05	--	--	9.1E-05	--	--
VOCs	1,3,5-Trimethylbenzene	3.1E-01	ND	ND	4.2E-01	--	--	7.6E-03	--	--	1.1E-02	--	--
VOCs	Vinyl chloride	9.4E-01	ND	ND	2.7E-03	--	--	5.0E-05	--	--	7.5E-05	--	--
VOCs	o-Xylene	8.8E+00	ND	ND	5.0E-02	--	--	9.1E-04	--	--	1.3E-03	--	--
VOCs	m,p-Xylene	6.0E-01	ND	ND	1.9E-03	--	--	3.5E-05	--	--	5.2E-05	--	--
VOCs	Xylenes (total)	8.8E+00	ND	ND	6.3E-04	--	--	1.2E-05	--	--	2.2E-05	--	--
SVOCs	Acenaphthene	8.4E+00	ND	ND	8.9E-04	--	--	1.6E-05	--	--	3.0E-05	--	--
SVOCs	Anthracene	2.0E-02	ND	ND	2.5E-07	--	--	4.6E-09	--	--	8.9E-09	--	--
SVOCs	2-Chlorophenol	1.6E+01	ND	ND	1.0E-03	--	--	1.9E-05	--	--	3.5E-05	--	--
SVOCs	Hexachlorobutadiene	3.8E-01	ND	ND	3.6E-04	--	--	6.4E-06	--	--	1.0E-05	--	--
SVOCs	2-Methylnaphthalene	7.0E-01	ND	ND	2.3E-06	--	--	4.5E-08	--	--	8.8E-08	--	--
SVOCs	Naphthalene	2.8E+00	1.5E-01	ND	7.0E-05	4.4E-06	--	1.3E-06	8.1E-08	--	2.5E-06	1.8E-07	--
SVOCs	Pentachlorobenzene	2.2E+00	ND	ND	9.1E-06	--	--	1.7E-07	--	--	3.2E-07	--	--

Notes:
-- = not calculated
EPC = Exposure Point Concentration
µg/L = microgram per liter
µg/m^3 = microgram per cubic meter
ND = Non Detect
SVOC = Semi-Volatile Organic Compound
VOC = Volatile Organic Compound
[1] maximum chemical concentrations from the most recent two years of shallow groundwater data in each Parcel.

TABLE 5-17. Exposure Assumptions
Nevada Environmental Response Trust Site
Henderson, Nevada

Exposure Factors	Units	Symbol	Indoor Commercial/ Industrial Worker		Outdoor Commercial/ Industrial Worker		Construction Worker	
			Value	Source	Value	Source	Value	Source
Population-Specific Exposure Assumptions								
Exposure Time	hours/day	ET	8	NDEP 2015	8	NDEP 2015	8	USEPA 2016
Exposure Time_Trench	hours/day	ET	--	--	--	--	4	VDEQ 2016
Exposure Frequency	days/year	EF	250	NDEP 2015	225	NDEP 2015	250	USEPA 2016
Exposure Frequency_Trench	days/year	EF	--	--	--	--	30	[1]
Exposure Duration	years	ED	25	NDEP 2015	25	NDEP 2015	1	USEPA 2016
Body Weight	kg_{BW}	BW	80	NDEP 2015	80	NDEP 2015	80	USEPA 2016
Averaging Time for Cancinogens	days	AT_c	25,550	NDEP 2015	25,550	NDEP 2015	25,550	USEPA 2016
Averaging Time for Noncarcinogens	days	AT_{nc}	9,125	NDEP 2015	9,125	NDEP 2015	365	USEPA 2016
Soil Ingestion								
Soil Ingestion Rate	mg_{soil}/day	IR_s	50	NDEP 2015	100	NDEP 2015	330	USEPA 2016
Conversion Factor	kg_{soil}/mg_{soil}	CF	1E-06	--	1E-06	--	1E-06	--
Intake Factor for Soil Ingestion, cancer	kg_{soil}/kg_{BW}/day	$IF_{soil.ing\_c}$	1.5E-07	USEPA 1989	2.8E-07	USEPA 1989	4.0E-08	USEPA 1989
Intake Factor for Soil Ingestion, noncancer	kg_{soil}/kg_{BW}/day	$IF_{soil.ing\_nc}$	4.3E-07	USEPA 1989	7.7E-07	USEPA 1989	2.8E-06	USEPA 1989
Soil Dermal Contact								
Skin Surface Area for Soil Contact	cm^2/day	SAs	--	--	3,527	USEPA 2016	3,527	USEPA 2016
Adherence Factor	mg_{soil}/cm^2	AF	--	--	0.12	NDEP 2015	0.3	USEPA 2016
Conversion Factor	kg_{soil}/mg_{soil}	CF	--	--	1E-06	--	1E-06	--
Intake Factor for Soil Dermal Contact, cancer	kg_{soil}/kg_{BW}/day	$IF_{soil.derm\_c}$	--	--	1.2E-06	USEPA 2004	1.3E-07	USEPA 2004
Intake Factor for Soil Dermal Contact, noncancer	kg_{soil}/kg_{BW}/day	$IF_{soil.derm\_nc}$	--	--	3.3E-06	USEPA 2004	9.1E-06	USEPA 2004
Inhalation of Airborne Particulates								
Conversion Factor	hour/day	CF	24	--	24	--	24	--
Intake Factor for Particulate Inhalation, cancer	unitless	$IF_{part.inh\_c}$	8.2E-02	USEPA 2009	7.3E-02	USEPA 2009	3.3E-03	USEPA 2009
Intake Factor for Particulate Inhalation, noncancer	unitless	$IF_{part.inh\_nc}$	2.3E-01	USEPA 2009	2.1E-01	USEPA 2009	2.3E-01	USEPA 2009
Inhalation of Vapor Migrating from Soil Gas or Groundwater to Air								
Conversion Factor	hour/day	CF	24	--	24	--	24	--
Intake Factor for Vapor Inhalation, cancer	unitless	$IF_{vapor.inh\_c}$	8.2E-02	USEPA 2009	7.3E-02	USEPA 2009	2.0E-04	USEPA 2009
Intake Factor for Vapor Inhalation, noncancer	unitless	$IF_{vapor.inh\_nc}$	2.3E-01	USEPA 2009	2.1E-01	USEPA 2009	1.4E-02	USEPA 2009

Notes:

-- = Not applicable

cm^2/day = square centimeter per day

kg_{BW} = kilogram of body weight

kg_{soil}/kg_{BW}/day = kilogram of soil per kilogram of body weight per day

kg_{soil}/mg_{soil} = kilogram of soil per milligram of soil

mg_{soil}/cm^2 = milligram of soil per square centimeter

mg_{soil}/day = milligram of soil per day

NDEP = Nevada Divisoin of Environmental Protection

USEPA = United States Environmental Protection Agency

VDEQ = Virginia Department of Environmental Quality

[1]. Recommended exposure frequency in NDEP's January 12, 2017 comment letter (NDEP 2017).

Sources:

NDEP 2015. User's Guide and Background Technical Docuentation for the Nevada Divisoin of Environmental Protection (NDEP) Basic Comparison Levels (BCLs) for Human Health and for the BMI Complex and Common Areas. Las Vegas, NV. February.

VDEQ. 2016. Virginia Unified Risk Assessment Model - VURAM User's Guide. Appendix 3.

USEPA. 1989. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1-89/002. Office of Emergency and Remedial Response. Washington, D.C. December.

USEPA. 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Final. July.

USEPA. 2009. Risk Assessment Guidance for Superfund. Vol. 1: Part F, Supplemental Guidance for Inhalation Risk Assessment. Final. January.

USEPA 2016. User's Guide for Regional Screening Levels for Chemical Contaminants at Superfund Sites. May.

TABLE 5-18. Toxicity Criteria and Dermal Absorption Factors for Soil COPCs
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Chemical	Oral Cancer Slope Factor (mg/kg-day)$^{-1}$		Inhalation Unit Risk ($\mu g/m^3$)$^{-1}$		USEPA Weight-of-Evidence Carcinogen Classification	Oral Chronic RfD (mg/kg-day)		Inhalation Chronic RfC ($\mu g/m^3$)		Oral Subchronic RfD (mg/kg-day)		Inhalation Subchronic RfC ($\mu g/m^3$)		Soil Dermal Absorption Factor ABS_{soil}	
Chlorine Oxyanion	Perchlorate	--	--	--	--	--	0.0007	IRIS	--	--	0.0007	IRIS [1]	--	--	--	--
Metal	Palladium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metal	Zirconium	--	--	--	--	--	0.00008	PPRTV Appendix	--	--	0.00008	PPRTV Appendix [1]	--	--	--	--
Other Inorganic	Chloride	--	--	--	--	--	0.1	IRIS	0.15	ATSDR	0.1	IRIS [1]	5.8	ATSDR	--	--
PAH	BaPEq	1	IRIS	0.0006	IRIS	B2	0.0003	IRIS	0.002	IRIS	0.0003	IRIS [1]	0.002	IRIS [1]	0.13	NDEP 2015
Pesticide - OCP	Hexachlorobenzene	1.6	IRIS	0.00046	IRIS	B2	0.0008	IRIS	--	--	0.00001	PPRTV	--	--	0.1	NDEP 2015
SVOC	Octachlorostyrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dioxin/Furan	2,3,7,8-TCDD TEQ	130000	Cal/EPA	38	Cal/EPA	B2	0.0000000007	IRIS	0.00004	Cal/EPA	0.00000002	ATSDR	0.00004	Cal/EPA [1]	0.03	NDEP 2015

Notes:
-- = Not available
mg/kg-day = milligram per kilogram per day
$\mu g/m^3$ = microgram per cubic meter
ABS_{soil} = Soil dermal absorption factor
ATSDR = Agency for Toxic Substances and Disease Registry (ATSDR 2017)
B2 = Probable carcinogen, sufficient evidence in animals (USEPA 2014)
BaPEq = Benzo(a)pyrene equivalent
Cal/EPA = California Environmental Protection Agency (Cal/EPA 2017)
COPC = Chemical of potential concern
IRIS = Integrated Risk Information System (USEPA 2017a)
NDEP = Nevada Department of Environmental Protection
OCP = Organochlorine pesticide
PAH = Polycyclic aromatic hydrocarbon
PPRTV = Provisional Peer Reviewed Toxicity Values for Superfund (USEPA 2017b)
RfD = Reference dose
RfC = Reference concentration
SVOC = Semi volatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
USEPA = United States Environmental Protection Agency
[1] Use chronic value as surrogate

Sources:
ATSDR. 2017. Minimal Risk Levels. June.
Cal/EPA. 2017. Toxicity Criteria Database. Available online at https://data.ca.gov/dataset/toxicity-criteria-database. Accessed on October 11, 2017.
NDEP. 2015. Basic Comparison Level (BCL) Table. February.
USEPA. 2014. Prioritized Chronic Dose-Response Values. May.
USEPA. 2017a. Integreated Risk Information System (IRIS). Available online at https://www.epa.gov/iris. Accessed on May 5, 2017.
USEPA. 2017b. Provisional Peer Reviewed Toxicity Values for Superfund (PPRTV). Available online at https://hhpprtv.ornl.gov/. Accessed on May 5, 2017.

TABLE 5-19A. Chronic Inhalation Toxicity Criteria for Soil Gas and Shallow Groundwater COPCs
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Constituent	Inhalation Unit Risk $(\mu g/m^3)^{-1}$		Inhalation RfC $(\mu g/m^3)$	
VOCs	Acetone	--	--	31000	ATSDR
VOCs	Acrylonitrile	0.000068	IRIS	2	IRIS
VOCs	Benzene	0.0000078	IRIS	30	IRIS
VOCs	Bromobenzene	--	--	60	IRIS
VOCs	Bromochloromethane	--	--	40	PPRTV Apendix
VOCs	Bromodichloromethane	--	--	1000	NDEP 2015, Sur
VOCs	Bromoform	0.0000011	IRIS	--	--
VOCs	Bromomethane	--	--	0.005	IRIS
VOCs	2-Butanone	--	--	5000	IRIS
VOCs	n-Butylbenzene	--	--	400	NEDP 2015, Sur
VOCs	sec-Butylbenzene	--	--	400	NEDP 2015, Sur
VOCs	tert-Butylbenzene	--	--	400	NEDP 2015, Sur
VOCs	Carbon disulfide	--	--	700	IRIS
VOCs	Carbon tetrachloride	0.000006	IRIS	100	IRIS
VOCs	Chlorobenzene	--	--	50	PPRTV
VOCs	Chloroethane	--	--	10000	IRIS
VOCs	Chloroform	0.000023	IRIS	98	ATSDR
VOCs	Chloromethane	0.0000018	HEAST	90	IRIS
VOCs	2-Chlorotoluene	--	--	50	NDEP 2015, Sur
VOCs	4-Chlorotoluene	--	--	50	NDEP 2015, Sur
VOCs	Cumene	--	--	400	IRIS
VOCs	Cyclohexane	--	--	6000	IRIS
VOCs	p-Cymene	--	--	400	NDEP 2015, Sur
VOCs	1,2-Dibromo-3-chloropropane	0.006	PPRTV	0.2	IRIS
VOCs	Dibromochloromethane	0.000027	Cal/EPA	--	--
VOCs	1,2-Dibromoethane	0.0006	IRIS	9	IRIS
VOCs	Dibromomethane	--	--	4	NDEP 2015, Sur
VOCs	1,2-Dichlorobenzene	--	--	200	HEAST
VOCs	1,3-Dichlorobenzene	--	--	200	NDEP 2015, Sur
VOCs	1,4-Dichlorobenzene	0.000011	Cal/EPA 2016a	800	IRIS
VOCs	Dichlorodifluoromethane	--	--	200	HEAST
VOCs	1,1-Dichloroethane	0.0000016	Cal/EPA 2016a	--	--
VOCs	1,2-Dichloroethane	0.000026	IRIS	2400	ATSDR
VOCs	1,1-Dichloroethene	--	--	200	IRIS
VOCs	1,2-Dichloroethene	--	--	200	NDEP 2015, Sur
VOCs	cis-1,2-Dichloroethene	--	--	60	NDEP 2015, Sur
VOCs	trans-1,2-Dichloroethene	--	--	60	PPRTV
VOCs	1,2-Dichloropropane	0.00001	Cal/EPA 2016a	4	IRIS
VOCs	1,3-Dichloropropane	--	--	4	NDEP 2015, Sur
VOCs	2,2-Dichloropropane	--	--	4	NDEP 2015, Sur
VOCs	1,1-Dichloropropene	--	--	20	IRIS, Sur, [1]
VOCs	cis-1,3-Dichloropropene	0.000004	IRIS, [1]	20	IRIS, Sur, [1]
VOCs	trans-1,3-Dichloropropene	0.000004	IRIS, [1]	20	IRIS, Sur, [1]
VOCs	3,3-Dimethylpentane	--	--	1000	PPRTV, Sur, [2]
VOCs	1,4-Dioxane	0.0000077	Cal/EPA 2016a	30	IRIS
VOCs	Dimethyl disulfide	--	--	--	--
VOCs	Ethanol	--	--	100000	NDEP 2015, Sur
VOCs	Ethyl acetate	--	--	700	NDEP 2015, Sur
VOCs	Ethyl benzene	0.0000025	Cal/EPA 2016a	1000	IRIS
VOCs	3-Ethylpentane	--	--	1000	PPRTV, Sur, [2]
VOCs	4-Ethyltoluene	--	--	400	NDEP 2015, Sur
VOCs	Freon 114	--	--	30000	HEAST, Sur, [3]
VOCs	n-Heptane	--	--	7000	NDEP 2015, Sur
VOCs	n-Hexane	--	--	700	IRIS
VOCs	2-Hexanone	--	--	30	IRIS
VOCs	Methyl tert-butyl ether	0.00000026	Cal/EPA 2016a	3000	IRIS
VOCs	4-Methyl-2-pentanone	--	--	3000	IRIS
VOCs	Methylene Chloride	0.00000047	IRIS	1100	ATSDR
VOCs	2-Methylhexane	--	--	700	IRIS, Sur, [4]
VOCs	3-Methylhexane	--	--	700	IRIS, Sur, [4]
VOCs	n-Nonyl aldehyde	--	--	9	IRIS, Sur, [5]

TABLE 5-19A. Chronic Inhalation Toxicity Criteria for Soil Gas and Shallow Groundwater COPCs
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Constituent	Inhalation Unit Risk ($\mu g/m^3)^{-1}$		Inhalation RfC ($\mu g/m^3$)	
VOCs	n-Octane	--	--	18400	NDEP 2015, Sur
VOCs	n-Propylbenzene	--	--	400	NDEP 2015, Sur
VOCs	Styrene	--	--	1000	IRIS
VOCs	alpha-Methylstyrene	--	--	1000	NDEP 2015, Sur
VOCs	tert Butyl alcohol	--	--	30000	NDEP 2015, Sur
VOCs	1,1,1,2-Tetrachloroethane	0.0000074	IRIS	--	--
VOCs	1,1,2,2-Tetrachloroethane	0.000058	IRIS	--	--
VOCs	Tetrachloroethene	0.0000061	Cal/EPA 2016b	270	ATSDR
VOCs	Toluene	--	--	5000	IRIS
VOCs	1,2,3-Trichlorobenzene	--	--	2	PPRTV, Sur, [6]
VOCs	1,2,4-Trichlorobenzene	--	--	2	PPRTV
VOCs	1,3,5-Trichlorobenzene	--	--	2	PPRTV, Sur, [6]
VOCs	1,1,1-Trichloroethane	--	--	5000	IRIS
VOCs	1,1,2-Trichloroethane	0.000016	IRIS	0.2	PPRTV Apendix
VOCs	Trichloroethene	0.000002	Cal/EPA 2016a	2	IRIS
VOCs	Trichlorofluoromethane	--	--	700	HEAST
VOCs	1,2,3-Trichloropropane	--	--	0.30	IRIS
VOCs	1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	30000	HEAST
VOCs	1,2,4-Trimethylbenzene	--	--	60	IRIS
VOCs	1,3,5-Trimethylbenzene	--	--	60	IRIS
VOCs	Vinyl acetate	--	--	200	IRIS
VOCs	Vinyl chloride	0.0000044	IRIS	100	IRIS
VOCs	o-Xylene	--	--	100	IRIS
VOCs	m,p-Xylene	--	--	100	IRIS
VOCs	Xylenes (total)	--	--	100	IRIS
SVOCs	Acenaphthene	--	--	3.0	NDEP 2015, Sur
SVOCs	Anthracene	--	--	3.0	NDEP 2015, Sur
SVOCs	2-Chlorophenol	--	--	50	NDEP 2015, Sur
SVOCs	Hexachlorobutadiene	0.000022	IRIS	--	--
SVOCs	2-Methylnaphthalene	--	--	16	Cal/EPA 2016a
SVOCs	Naphthalene	0.000034	Cal/EPA 2016a	3	IRIS
SVOCs	Pentachlorobenzene	--	--	--	--

Notes:

-- = Not available
ATSDR = Agency for Toxic Substances and Disease Registry
Cal/EPA = California Environmental Protection Agency
COPC = chemical of potential concern
HEAST = Health Effects Summary Tables
IRIS = Integrated Risk Information System
$\mu g/m^3$ = microgram per cubic meter
PPRTV = Provisional Peer Reviewed Toxicity Values for Superfund
SVOC = Semivolatile Organic Compound
RfC = Reference Concentration
Sur = Surrogate
USEPA = United States Environmental Protection Agency
VOC = Volatile Organic Compound

[1] Used toxicity values for 1,3-dichloropropene as surrogate.
[2] Used the toxicity value for pentane as surrogate.
[3] Used toxicity value for Freon 113 as surrogate.
[4] Used the toxicity value for hexane as surrogate.
[5] Used toxicity value for acetaldehyde as surrogate.
[6] Used the toxicity value for 1,2,4-trichlorobenzene as surrogate.

Sources:

ATSDR. 2016. Minimal Risk Levels. March.
Cal/EPA. 2016a. Office of Environmental Health Hazard Assessment (OEHHA). OEHHA Chemical Database Meta Data. Accessed in May 2017.
Cal/EPA. 2016b. Human and Ecological Risk Office (HERO) Human Health Risk assessment (HHRA) Note Number 7, Issue: Updated OEHHA Inhalation Cancer Toxicity Criteria for Tetrachloroethylene (PCE) and DTSC Recommended Ambient Air and Soil Gas Screening Levels (DTSC-SLs). October.
Health Effects Assessment Summary Tables (HEAST). Accessed May 2017.
Integrated Risk Information System (IRIS). 2017. Online database Maintained by the USEPA. Accessed May 10, 2017.
Nevada Division of Environmental Protection (NDEP) 2015. Basic Comparison Levels. February.
Provisional Peer Reviewed Toxicity Values for Superfund (PPRTV). 2017. Available online at https://hhpprtv.ornl.gov/. Accessed in May 2017.

TABLE 5-19B. Subchronic Inhalation Toxicity Criteria for Soil Gas and Shallow Groundwater COPCs

Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Constituent	Subchronic Inhalation RfC ($\mu g/m^3$)	
VOCs	Acetone	30882	ATSDR
VOCs	Acrylonitrile	2.0	IRIS [1]
VOCs	Benzene	80	PPRTV
VOCs	Bromobenzene	60	IRIS [1]
VOCs	Bromochloromethane	100	PPRTV
VOCs	Bromodichloromethane	20	PPRTV
VOCs	Bromoform	--	--
VOCs	Bromomethane	100	PPRTV
VOCs	2-Butanone	5000	IRIS [1]
VOCs	n-Butylbenzene	400	NEDP 2015, Sur [1]
VOCs	sec-Butylbenzene	400	NEDP 2015, Sur [1]
VOCs	tert-Butylbenzene	400	NEDP 2015, Sur [1]
VOCs	Carbon disulfide	700	HEAST
VOCs	Carbon tetrachloride	189	ATSDR
VOCs	Chlorobenzene	2302	PPRTV
VOCs	Chloroethane	4000	PPRTV
VOCs	Chloroform	244	ATSDR
VOCs	Chloromethane	3000	PPRTV
VOCs	2-Chlorotoluene	800	PPRTV 2016
VOCs	4-Chlorotoluene	50	NDEP 2015, Sur [1]
VOCs	Cumene	400	IRIS [1]
VOCs	Cyclohexane	18000	PPRTV
VOCs	p-Cymene	400	Sur [1]
VOCs	1,2-Dibromo-3-chloropropane	2.0	PPRTV
VOCs	Dibromochloromethane	--	--
VOCs	1,2-Dibromoethane	9.0	IRIS [1]
VOCs	Dibromomethane	40	PPRTV
VOCs	1,2-Dichlorobenzene	2000	HEAST
VOCs	1,3-Dichlorobenzene	200	NDEP 2015, Sur [1]
VOCs	1,4-Dichlorobenzene	1202	ATSDR
VOCs	Dichlorodifluoromethane	1000	PPRTV
VOCs	1,1-Dichloroethane	5000	HEAST
VOCs	1,2-Dichloroethane	70	PPRTV
VOCs	1,1-Dichloroethene	79	ATSDR
VOCs	1,2-Dichloroethene	200	NDEP 2015, Sur [1]
VOCs	cis-1,2-Dichloroethene	60	NDEP 2015, Sur [1]
VOCs	trans-1,2-Dichloroethene	793	ATSDR
VOCs	1,2-Dichloropropane	4.0	PPRTV
VOCs	1,3-Dichloropropane	4.0	PPRTV, Sur
VOCs	2,2-Dichloropropane	4.0	PPRTV, Sur
VOCs	1,1-Dichloropropene	36	MRL 2016, Sur, [2]
VOCs	cis-1,3-Dichloropropene	36	MRL 2016, Sur, [2]
VOCs	trans-1,3-Dichloropropene	36	MRL 2016, Sur, [2]
VOCs	3,3-Dimethylpentane	1000	PPRTV, Sur, [1], [3]

TABLE 5-19B. Subchronic Inhalation Toxicity Criteria for Soil Gas and Shallow Groundwater COPCs

Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Constituent	Subchronic Inhalation RfC ($\mu g/m^3$)	
VOCs	1,4-Dioxane	721	ATSDR
VOCs	Dimethyl disulfide	--	--
VOCs	Ethanol	100000	NDEP 2015, Sur [1]
VOCs	Ethyl acetate	700	PPRTV
VOCs	Ethyl benzene	9000	PPRTV
VOCs	3-Ethylpentane	1000	PPRTV, Sur, [1], [3]
VOCs	4-Ethyltoluene	400	Sur [1]
VOCs	Freon 114	30000	HEAST, Sur [1], [4]
VOCs	n-Heptane	4000	PPRTV
VOCs	n-Hexane	2000	PPRTV
VOCs	2-Hexanone	30	IRIS [1]
VOCs	Methyl tert-butyl ether	2524	ATSDR
VOCs	4-Methyl-2-pentanone	3000	IRIS [1]
VOCs	Methylene Chloride	1042	ATSDR
VOCs	2-Methylhexane	700	IRIS, Sur [1],[5]
VOCs	3-Methylhexane	700	IRIS, Sur [1],[5]
VOCs	n-Nonyl aldehyde	9.0	IRIS, Sur [1], [6]
VOCs	n-Octane	18400	NDEP 2015, Sur [1]
VOCs	n-Propylbenzene	1000	PPRTV
VOCs	Styrene	3000	HEAST
VOCs	alpha-Methylstyrene	1000	NDEP 2015, Sur [1]
VOCs	tert Butyl alcohol	30000	NDEP 2015, Sur [1]
VOCs	1,1,1,2-Tetrachloroethane	--	--
VOCs	1,1,2,2-Tetrachloroethane	--	--
VOCs	Tetrachloroethene	41	ATSDR
VOCs	Toluene	5000	PPRTV
VOCs	1,2,3-Trichlorobenzene	20	PPRTV, Sur [1], [7]
VOCs	1,2,4-Trichlorobenzene	20	PPRTV [1]
VOCs	1,3,5-Trichlorobenzene	20	PPRTV, Sur [1], [7]
VOCs	1,1,1-Trichloroethane	3820	ATSDR
VOCs	1,1,2-Trichloroethane	2.0	PPRTV
VOCs	Trichloroethene	2.1	ATSDR
VOCs	Trichlorofluoromethane	1000	PPRTV
VOCs	1,2,3-Trichloropropane	0.30	IRIS [1]
VOCs	1,1,2-Trichloro-1,2,2-trifluoroethane	50000	PPRTV
VOCs	1,2,4-Trimethylbenzene	60	IRIS [1]
VOCs	1,3,5-Trimethylbenzene	60	IRIS [1]
VOCs	Vinyl acetate	35	ATSDR
VOCs	Vinyl chloride	77	ATSDR
VOCs	o-Xylene	400	PPRTV, Sur [8]
VOCs	m,p-Xylene	400	PPRTV, Sur [8]
VOCs	Xylenes (total)	400	PPRTV
SVOCs	Acenaphthene	3.0	NDEP 2015, Sur [1]
SVOCs	Anthracene	3.0	NDEP 2015, Sur [1]

TABLE 5-19B. Subchronic Inhalation Toxicity Criteria for Soil Gas and Shallow Groundwater COPCs

Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Constituent	Subchronic Inhalation RfC ($\mu g/m^3$)	
SVOCs	2-Chlorophenol	50	NDEP 2015, Sur [1]
SVOCs	Hexachlorobutadiene	4.0	Cal/EPA 2016a [1]
SVOCs	2-Methylnaphthalene	16	Cal/EPA 2016a [1]
SVOCs	Naphthalene	3.0	IRIS [1]
SVOCs	Pentachlorobenzene	3.2	Cal/EPA 2016a [1]

Notes:

-- = Not available
$\mu g/m^3$ = microgram per cubic meter
ATSDR = Agency for Toxic Substances and Disease Registry
HEAST = Health Effects Summary Tables
IRIS = Integrated Risk Information System
PPRTV = Provisional Peer Reviewed Toxicity Values for Superfund
RfC = Reference Concentration
Sur = Surrogate
SVOC = Semi-Volatile Organic Compound
USEPA = United States Environmental Protection Agency
VOC = Volatile Organic Compound
[1] Chornic toxicity value was used when subchronic toxicity value was not available.
[2] Used toxicity value for 1,3-dichloropropene as surrogate.
[3] Used the toxicity value for pentane as surrogate.
[4] Used toxicity value for Freon 113 as surrogate.
[5] Used the toxicity value for hexane as surrogate.
[6] Used toxicity value for acetaldehyde as surrogate.
[7] Used the toxicity value for 1,2,4-trichlorobenzene as surrogate.
[7] Used the toxicity value for xylenes(total) as surrogate.

Sources:

ATSDR. 2016. Minimal Risk Levels. March.

Cal/EPA. 2016a. Human and Ecological Risk Office (HERO) Human Health Risk assessment (HHRA) Note Number 3, Issue: DTSC-Modified Screening Levels (DTSC-SLs). June.

California Environmental Protection Agency (Cal/EPA). 2016b. Human and Ecological Risk Office (HERO) Human Health Risk assessment (HHRA) Note Number 7, Issue: Updated OEHHA Inhalation Cancer Toxicity Criteria for Tetrachloroethylene (PCE) and DTSC Recommended Ambient Air and Soil Gas Screening Levels (DTSC-SLs). October.

Integrated Risk Information System (IRIS). 2017. Online database Maintained by the USEPA. Accessed May 10, 2017.

Nevada Division of Environmental Protection (NDEP) 2015. Basic Comparison Levels. February.

Provisional Peer Reviewed Toxicity Values for Superfund (PPRTV). 2017. Available online at https://hhpprtv.ornl.gov/. Ac 2017.

TABLE 5-20. Soil Cancer Risks and Non-Cancer Hazard Indices – Parcels C, D, and G
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Indoor Commercial/Industrial Worker (0-2 feet bgs)		Indoor Commercial/Industrial Worker (0-10 feet bgs)		Outdoor Commercial/Industrial Worker (0-2 feet bgs)		Outdoor Commercial/Industrial Worker (0-10 feet bgs)		Construction Worker (0-10 feet bgs)	
	Cancer Risk	Non-Cancer HI	Cancer Risk	Non-Cancer HI	Cancer Risk	Non-Cancer HI	Cancer Risk	Non-Cancer HI	Cancer Risk	Non-Cancer HI
C	4E-06	0.2	2E-06	0.2	1E-05	0.6	6E-06	0.4	8E-07	0.9
D	--	0.1	--	0.1	--	0.2	--	0.2	--	0.7
G	2E-08	0.2	1E-08	0.2	5E-08	0.4	3E-08	0.3	4E-09	1

Note:
-- = Not applicable (no carcinogen identified as COPC)
bgs = below ground surface
COPC = Chemical of potential concern
HI = Hazard index

TABLE 5-21. Asbestos Cancer Risks– Parcels C, D, and G
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Risk Type	Indoor Commercial/Industrial Worker			Outdoor Commercial/Industrial Worker			Construction Worker		
		Amphibole Risk	Chrysotile Risk	Total Asbestos Risk	Amphibole Risk	Chrysotile Risk	Total Asbestos Risk	Amphibole Risk	Chrysotile Risk	Total Asbestos Risk
C	Best Estimate	0E+00	3E-09	3E-09	0E+00	6E-09	6E-09	0E+00	6E-08	6E-08
	Upper-Bound Estimate	1E-07	5E-09	1E-07	2E-07	1E-08	2E-07	2E-06	1E-07	2E-06
D	Best Estimate	0E+00	4E-09	4E-09	0E+00	8E-09	8E-09	0E+00	8E-08	8E-08
	Upper-Bound Estimate	2E-07	7E-09	2E-07	4E-07	2E-08	4E-07	4E-06	2E-07	4E-06
G	Best Estimate	0E+00	5E-10	5E-10	0E+00	1E-09	1E-09	0E+00	1E-08	1E-08
	Upper-Bound Estimate	2E-07	2E-09	2E-07	4E-07	5E-09	4E-07	4E-06	6E-08	4E-06

Notes:
Best Estimate = Calculated based on the number of long fibers observed in soil samples.
Upper-Bound Estimate = Calculated based on the 95% upper confidence limit (UCL) of the number of long fibers observed in soil samples from a Poisson distribution.

TABLE 5-22. Estimated Cancer Risks and Non-Cancer Hazard Indices for 2007 Soil Gas (10 ft bgs) – Parcels C and D
Nevada Environmental Response Trust Site
Henderson, Nevada

Population	Soil Gas (10 ft bgs)			
	Parcel C		Parcel D	
	Cancer Risk	HI	Cancer Risk	HI
Indoor Worker	4E-05	0.1	1E-06	0.06
Outdoor Worker	7E-07	0.002	2E-08	0.001
Construction Worker (Trench Scenario)	7E-07	0.01	2E-08	0.0005

Notes:
bgs = below ground surface
ft = feet
HI = Hazard Index

TABLE 5-23. Estimated Cancer Risks and Non-Cancer Hazard Indices for 2008 and 2013 Soil Gas (5 ft bgs) – Parcels C, D, and G

Nevada Environmental Response Trust Site
Henderson, Nevada

Population	Soil Gas (< 5 ft bgs)					
	Parcel C		Parcel D		Parcel G	
	Cancer Risk	HI	Cancer Risk	HI	Cancer Risk	HI
Indoor Worker	2E-06	0.03	1E-06	0.006	9E-08	0.004
Outdoor Worker	5E-08	0.0006	2E-08	0.0001	1E-09	0.00005
Construction Worker (Trench Scenario)	3E-08	0.005	1E-08	0.0003	1E-09	0.0009

Notes:
bgs = below ground surface
ft = feet
HI = Hazard Index

TABLE 5-24. Estimated Cancer Risks and Non-Cancer Hazard Indices for Shallow Groundwater – Parcels C, D, and G
Nevada Environmental Response Trust Site
Henderson, Nevada

Population	Shallow Groundwater					
	Parcel C		Parcel D		Parcel G	
	Cancer Risk	HI	Cancer Risk	HI	Cancer Risk	HI
Indoor Worker	1E-05	2	3E-06	0.03	1E-07	0.001
Outdoor Worker	2E-07	0.02	4E-08	0.001	2E-09	0.00002
Construction Worker (Trench Scenario)	7E-10	0.0001	2E-10	0.00003	9E-12	0.000002

Notes:
HI = Hazard Index

TABLE 6-1. Uncertainty Analysis of J Qualified Soil Data
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Analyte	Maximum Concentration of Qualified Data	Qualifier	Maximum Detected Concentration in Soil HRA Data Set	Screening Level	Unit
C	1,2,3-Trichlorobenzene	0.0017	J	0.0017	360	mg/kg
C	1,2,4-Trichlorobenzene	0.0013	J	0.014	125	mg/kg
C	1,2,4-Trimethylbenzene	0.0045	J	0.0045	604	mg/kg
C	1,2-Dichlorobenzene	0.00036	J	0.00036	373	mg/kg
C	1,3,5-Trimethylbenzene	0.0019	J	0.0019	246	mg/kg
C	1,3-Dichlorobenzene	0.00080	J	0.00080	373	mg/kg
C	1,4-Dichlorobenzene	0.00051	J	0.00051	14	mg/kg
C	2,3,7,8-TCDD TEQ	0.0011	J	0.0039	0.0027	mg/kg
C	2,4'-DDD	0.0066	J	0.0066	14	mg/kg
C	2,4'-DDE	0.085	J	0.085	9.5	mg/kg
C	2,4'-DDE	0.0097	J+	0.085	9.5	mg/kg
C	2-Butanone	0.011	J	0.011	34,100	mg/kg
C	4,4'-DDE	0.20	J	0.20	9.5	mg/kg
C	4,4'-DDE	0.079	J-	0.20	9.5	mg/kg
C	4,4'-DDE	0.016	J+	0.20	9.5	mg/kg
C	4,4'-DDT	0.096	J	0.096	9.5	mg/kg
C	4,4'-DDT	0.0027	J-	0.096	9.5	mg/kg
C	4,4'-DDT	0.0066	J+	0.096	9.5	mg/kg
C	Acetone	0.32	J	0.32	723,034	mg/kg
C	alpha-BHC	0.046	J	0.046	334	mg/kg
C	alpha-BHC	0.0043	J-	0.046	334	mg/kg
C	Aluminum	9,300	J	14,000	1,242,553	mg/kg
C	Ammonia	3.9	J	3.9	525,600,000	mg/kg
C	Antimony	0.32	J-	0.32	519	mg/kg
C	Arsenic	4.5	J	11	7.2	mg/kg
C	Barium	240	J	340	238,367	mg/kg
C	Barium	277	J-	340	238,367	mg/kg
C	Barium	213	J+	340	238,367	mg/kg
C	Benzo(g,h,i)perylene	0.0050	J	0.0050	38,900	mg/kg
C	beta-BHC	0.14	J	0.18	67	mg/kg
C	beta-BHC	0.18	J-	0.18	67	mg/kg
C	Boron	12	J	13	258,980	mg/kg
C	Boron	8.4	J-	13	258,980	mg/kg
C	Bromide	2.7	J	15	441,244	mg/kg
C	Cadmium	0.27	J	0.27	1,270	mg/kg
C	Calcium	61,100	J	91,900	NA	mg/kg
C	Chlorate	2.9	J	16	38,900	mg/kg
C	Chlorate	4.5	J-	16	38,900	mg/kg
C	Chloride	15	J	2,910	113,032	mg/kg
C	Chloride	10	J-	2,910	113,032	mg/kg
C	Chloroform	0.0023	J	0.0023	1.6	mg/kg
C	Chromium (total)	10	J-	19	1,946,667	mg/kg
C	Chromium VI	0.52	J	0.52	1,230	mg/kg
C	Cobalt	6.2	J	9.3	385	mg/kg
C	Cobalt	7.0	J-	9.3	385	mg/kg
C	Copper	14	J-	27	48,200	mg/kg
C	Cumene	0.00029	J	0.00029	647	mg/kg
C	Endrin aldehyde	0.0029	J	0.0029	275	mg/kg
C	Ethyl benzene	0.0022	J	0.0022	20	mg/kg
C	Fluoranthene	0.0070	J	0.0070	33,700	mg/kg
C	Fluoride	0.80	J	8.2	55,000	mg/kg
C	gamma-BHC	0.013	J+	0.013	11	mg/kg
C	gamma-Chlordane	0.0053	J	0.0053	8.9	mg/kg
C	gamma-Chlordane	0.0024	J+	0.0053	8.9	mg/kg
C	Hexachlorobenzene	0.33	J	0.37	1.6	mg/kg
C	Iron	13,000	J	22,000	908,444	mg/kg

TABLE 6-1. Uncertainty Analysis of J Qualified Soil Data
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Analyte	Maximum Concentration of Qualified Data	Qualifier	Maximum Detected Concentration in Soil HRA Data Set	Screening Level	Unit
C	Lead	13	J	29	800	mg/kg
C	Lithium	10	J	24	2,600	mg/kg
C	m,p-Xylene	0.0015	J	0.011	214	mg/kg
C	Magnesium	13,900	J	14,600	5,195,143	mg/kg
C	Magnesium	10,800	J-	14,600	5,195,143	mg/kg
C	Manganese	460	J	840	28,100	mg/kg
C	Mercury	0.067	J	0.092	389	mg/kg
C	Methoxychlor	0.0078	J	0.0078	4,580	mg/kg
C	Molybdenum	0.92	J	0.92	6,490	mg/kg
C	Nickel	13	J-	20	24,700	mg/kg
C	Nitrate	0.17	J	160	2,076,444	mg/kg
C	Nitrate	17	J-	160	2,076,444	mg/kg
C	Nitrate	5.7	J+	160	2,076,444	mg/kg
C	Nitrite	1.4	J	1.4	129,778	mg/kg
C	Nitrite	1.1	J-	1.4	129,778	mg/kg
C	n-Propylbenzene	0.0010	J	0.0010	237	mg/kg
C	Octachlorostyrene	0.065	J	0.065	NA	mg/kg
C	o-Xylene	0.0041	J	0.0041	282	mg/kg
C	Perchlorate	0.11	J	21	908	mg/kg
C	Phosphorus (total)	1,440	J	1,440	31,605	mg/kg
C	Phthalic acid	0.40	J	0.40	2,595,556	mg/kg
C	Platinum	0.014	J	0.014	649	mg/kg
C	Potassium	3,510	J	3,660	NA	mg/kg
C	Potassium	2,710	J+	3,660	NA	mg/kg
C	Pyrene	0.0060	J	0.0060	20,800	mg/kg
C	Radium-226	1.4	J	1.8	0.023	pCi/g
C	Radium-226	1.4	J-	1.8	0.023	pCi/g
C	Radium-228	1.6	J	3.2	0.041	pCi/g
C	Radium-228	1.8	J-	3.2	0.041	pCi/g
C	Silicon	520	J	520	NA	mg/kg
C	Silicon	407	J+	520	NA	mg/kg
C	Silver	0.18	J	0.18	6,490	mg/kg
C	Sodium	794	J	2,300	NA	mg/kg
C	Sodium	1,460	J-	2,300	NA	mg/kg
C	Strontium	446	J	450	778,667	mg/kg
C	Strontium	199	J-	450	778,667	mg/kg
C	Strontium	390	J+	450	778,667	mg/kg
C	Sulfate	1,390	J	16,700	NA	mg/kg
C	Sulfate	7,040	J-	16,700	NA	mg/kg
C	Sulfate	112	J+	16,700	NA	mg/kg
C	Sulfur	2,200	J	24,800	NA	mg/kg
C	Sulfur	24,800	J+	24,800	NA	mg/kg
C	Tetrachloroethene	0.0027	J	0.0027	3.5	mg/kg
C	Thallium	0.24	J	0.24	86	mg/kg
C	Thorium-228	4.9	J	4.9	0.025	pCi/g
C	Thorium-230	3.4	J	3.4	8.4	pCi/g
C	Tin	0.41	J	1.2	778,667	mg/kg
C	Titanium	695	J	700	5,191,111	mg/kg
C	Titanium	593	J+	700	5,191,111	mg/kg
C	Toluene	0.00056	J	0.00056	521	mg/kg
C	Toxaphene	0.12	J	0.12	2.3	mg/kg
C	Tungsten	0.87	J-	0.87	9,730	mg/kg
C	Uranium-234	1.0	J	2.1	11	pCi/g
C	Uranium-235	0.078	J	0.078	0.35	pCi/g
C	Uranium-238	0.98	J	1.9	1.4	pCi/g
C	Vanadium	49	J	49	6,490	mg/kg

TABLE 6-1. Uncertainty Analysis of J Qualified Soil Data
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Analyte	Maximum Concentration of Qualified Data	Qualifier	Maximum Detected Concentration in Soil HRA Data Set	Screening Level	Unit
C	Vanadium	33	J-	49	6,490	mg/kg
C	Xylenes (total)	0.0016	J	0.015	214	mg/kg
C	Zinc	47	J-	50	389,333	mg/kg
C	Zinc	33	J+	50	389,333	mg/kg
C	Zirconium	30	J	30	104	mg/kg
D	1,2,4-Trimethylbenzene	0.0038	J	0.0038	604	mg/kg
D	1,3,5-Trimethylbenzene	0.0015	J	0.0015	246	mg/kg
D	1,3-Dichlorobenzene	0.00034	J	0.00034	373	mg/kg
D	2,3,7,8-TCDD TEQ	0.00054	J	0.00077	0.0027	mg/kg
D	2,4'-DDD	0.0026	J+	0.0026	14	mg/kg
D	2,4'-DDE	0.037	J	0.037	9.5	mg/kg
D	4,4'-DDE	0.10	J	0.10	9.5	mg/kg
D	4,4'-DDT	0.019	J	0.028	9.5	mg/kg
D	4,4'-DDT	0.028	J+	0.028	9.5	mg/kg
D	Acetone	0.79	J	0.79	723,034	mg/kg
D	Aluminum	10,800	J	10,800	1,242,553	mg/kg
D	Antimony	0.28	J-	0.28	519	mg/kg
D	Barium	171	J	240	238,367	mg/kg
D	beta-BHC	0.096	J	0.096	67	mg/kg
D	bis(2-Ethylhexyl)phthalate	0.040	J	0.040	183	mg/kg
D	Boron	21	J	23	258,980	mg/kg
D	Bromide	1.8	J	9.7	441,244	mg/kg
D	Cadmium	0.11	J	0.13	1,270	mg/kg
D	Calcium	41,400	J	43,400	NA	mg/kg
D	Chlorate	12	J-	12	38,900	mg/kg
D	Chromium (total)	11	J-	18	1,946,667	mg/kg
D	Cobalt	6.7	J-	7.5	385	mg/kg
D	Copper	14	J-	15	48,200	mg/kg
D	Ethyl benzene	0.0014	J	0.0014	20	mg/kg
D	Fluoride	0.86	J	2.3	55,000	mg/kg
D	Lithium	9.8	J	21	2,600	mg/kg
D	m,p-Xylene	0.0011	J	0.0079	214	mg/kg
D	Magnesium	14,300	J	14,300	5,195,143	mg/kg
D	Manganese	450	J	450	28,100	mg/kg
D	Mercury	0.021	J	0.021	389	mg/kg
D	Methoxychlor	0.0020	J	0.0020	4,580	mg/kg
D	Molybdenum	1.1	J	1.1	6,490	mg/kg
D	Nickel	16	J-	16	24,700	mg/kg
D	Niobium	5.3	J	5.3	130	mg/kg
D	Niobium	4.2	J+	5.3	130	mg/kg
D	Nitrate	2.9	J	32	2,076,444	mg/kg
D	Nitrate	2.2	J+	32	2,076,444	mg/kg
D	n-Propylbenzene	0.0010	J	0.0010	237	mg/kg
D	o-Xylene	0.0026	J	0.0026	282	mg/kg
D	Palladium	0.090	J	0.63	NA	mg/kg
D	Perchlorate	1.5	J	28	908	mg/kg
D	Phosphorus (total)	1,640	J	1,640	31,605	mg/kg
D	Phosphorus (total)	1,030	J-	1,640	31,605	mg/kg
D	Potassium	4,480	J	4,480	NA	mg/kg
D	Potassium	3,540	J-	4,480	NA	mg/kg
D	Silicon	259	J-	384	NA	mg/kg
D	Silicon	384	J+	384	NA	mg/kg
D	Silver	0.12	J	0.12	6,490	mg/kg
D	Sodium	533	J	2,100	NA	mg/kg
D	Sodium	1,100	J-	2,100	NA	mg/kg
D	Strontium	330	J	330	778,667	mg/kg

TABLE 6-1. Uncertainty Analysis of J Qualified Soil Data
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Analyte	Maximum Concentration of Qualified Data	Qualifier	Maximum Detected Concentration in Soil HRA Data Set	Screening Level	Unit
D	Sulfate	233	J	6,660	NA	mg/kg
D	Sulfate	3,280	J+	6,660	NA	mg/kg
D	Sulfur	5,670	J+	5,670	NA	mg/kg
D	Thallium	0.40	J	0.45	86	mg/kg
D	Titanium	719	J	720	5,191,111	mg/kg
D	Toluene	0.00051	J	0.00051	521	mg/kg
D	Tungsten	1.1	J	1.1	9,730	mg/kg
D	Uranium-234	0.99	J	2.3	11	pCi/g
D	Uranium-235	0.070	J	0.070	0.35	pCi/g
D	Uranium-238	0.98	J	1.6	1.4	pCi/g
D	Vanadium	47	J	47	6,490	mg/kg
D	Zinc	33	J-	33	389,333	mg/kg
D	Zirconium	20	J	28	104	mg/kg
D	Zirconium	23	J-	28	104	mg/kg
G	1,2,4-Trimethylbenzene	0.00045	J	0.00045	604	mg/kg
G	2,3,7,8-TCDD TEQ	0.0017	J	0.0017	0.0027	mg/kg
G	2,4'-DDE	0.0056	J-	0.0056	9.5	mg/kg
G	2-Butanone	0.0038	J	0.0038	34,100	mg/kg
G	4,4'-DDD	0.0020	J-	0.0020	14	mg/kg
G	4,4'-DDE	0.11	J-	0.20	9.5	mg/kg
G	4,4'-DDE	0.016	J+	0.20	9.5	mg/kg
G	4,4'-DDT	0.16	J-	0.16	9.5	mg/kg
G	Acetone	0.020	J	0.046	723,034	mg/kg
G	Aluminum	8,790	J	8,870	1,242,553	mg/kg
G	Antimony	0.22	J-	0.22	519	mg/kg
G	Barium	230	J-	230	238,367	mg/kg
G	Barium	203	J+	230	238,367	mg/kg
G	Benzo(g,h,i)perylene	0.075	J	0.37	38,900	mg/kg
G	beta-BHC	0.029	J-	0.045	67	mg/kg
G	Boron	14	J	14	258,980	mg/kg
G	Bromide	17	J	17	441,244	mg/kg
G	Cadmium	0.074	J	0.17	1,270	mg/kg
G	Calcium	50,900	J	50,900	NA	mg/kg
G	Calcium	34,000	J-	50,900	NA	mg/kg
G	Carbazole	0.059	J	0.059	128	mg/kg
G	Chlorate	250	J	250	38,900	mg/kg
G	Chloride	27	J	15,900	113,032	mg/kg
G	Chromium (total)	10	J-	12	1,946,667	mg/kg
G	Chromium VI	0.49	J	0.49	1,230	mg/kg
G	Cobalt	8.1	J	8.1	385	mg/kg
G	Cobalt	7.9	J-	8.1	385	mg/kg
G	Copper	18	J-	18	48,200	mg/kg
G	Fluoride	0.75	J	2.2	55,000	mg/kg
G	Iron	14,300	J	14,300	908,444	mg/kg
G	Lithium	24	J	24	2,600	mg/kg
G	Magnesium	13,400	J	25,000	5,195,143	mg/kg
G	Manganese	710	J	710	28,100	mg/kg
G	Mercury	0.016	J	0.016	389	mg/kg
G	Methylene Chloride	0.011	J	0.016	59	mg/kg
G	Molybdenum	0.98	J	1.1	6,490	mg/kg
G	Nickel	16	J-	17	24,700	mg/kg
G	Nitrate	1.7	J	160	2,076,444	mg/kg
G	Phenanthrene	0.021	J	0.055	25	mg/kg
G	Phosphorus (total)	1,100	J	1,140	31,605	mg/kg
G	Phosphorus (total)	984	J+	1,140	31,605	mg/kg
G	Potassium	2,630	J	2,630	NA	mg/kg

TABLE 6-1. Uncertainty Analysis of J Qualified Soil Data
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Analyte	Maximum Concentration of Qualified Data	Qualifier	Maximum Detected Concentration in Soil HRA Data Set	Screening Level	Unit
G	Potassium	1,900	J-	2,630	NA	mg/kg
G	Pyrene	0.025	J	0.16	20,800	mg/kg
G	Radium-226	1.1	J	1.3	0.023	pCi/g
G	Radium-228	2.7	J	2.7	0.041	pCi/g
G	Silicon	147	J	380	NA	mg/kg
G	Silicon	380	J-	380	NA	mg/kg
G	Silicon	223	J+	380	NA	mg/kg
G	Silver	0.18	J	0.18	6,490	mg/kg
G	Strontium	287	J	480	778,667	mg/kg
G	Sulfate	80	J	3,310	NA	mg/kg
G	Sulfur	554	J	1,740	NA	mg/kg
G	Sulfur	1,740	J-	1,740	NA	mg/kg
G	Sulfur	1,740	J+	1,740	NA	mg/kg
G	Tin	0.42	J	0.66	778,667	mg/kg
G	Titanium	675	J	680	5,191,111	mg/kg
G	Toluene	0.00059	J	0.00059	521	mg/kg
G	Uranium-234	0.85	J	2.0	11	pCi/g
G	Uranium-235	0.090	J	0.17	0.35	pCi/g
G	Uranium-238	0.94	J	1.6	1.4	pCi/g
G	Vanadium	50	J	50	6,490	mg/kg
G	Vanadium	39	J-	50	6,490	mg/kg
G	Zinc	52	J	52	389,333	mg/kg
G	Zinc	35	J-	52	389,333	mg/kg
G	Zirconium	24	J	26	104	mg/kg
G	Zirconium	26	J-	26	104	mg/kg

Notes:
mg/kg = milligram per kilogram
pCi/g = picocurie per gram
BHC = Hexachlorocyclohexane
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethylene
DDT = Dichlorodiphenyltrichloroethane
HRA = Health risk assessment
J = Estimated value
J- = Estimate value, biased low
J+ = Estimate value, biased high
NA = Not available
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent

TABLE 6-2. Uncertainty Analysis of Soil Data with Blank Contamination
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Analyte	Maximum Reported Concentration in 2012 Blank Contamination Amended Table (Northgate 2014) (mg/kg)	Maximum Detected Concentration in Soil HRA Data Set (mg/kg)	Screening Level (mg/kg)
C	1,2,4-Trimethylbenzene	0.0013	0.0045	604
C	Acetone	0.32	0.32	723,034
C	Boron	15	13	258,980
C	Cadmium	0.11	0.27	1,270
C	Lithium	10	24	2,600
C	Mercury	0.033	0.092	389
C	Molybdenum	0.86	0.92	6,490
C	Niobium	5.3	ND	130
C	Thallium	0.36	0.24	86
C	Tin	0.43	1.2	778,667
C	Tungsten	0.95	0.87	9,730
D	1,2,4-Trimethylbenzene	0.0017	0.0038	604
D	Boron	17	23	258,980
D	2-Butanone	0.0030	ND	34,100
D	Cadmium	0.10	0.13	1,270
D	Methylene Chloride	0.0036	ND	59
D	Molybdenum	1.0	1.1	6,490
D	Niobium	1.9	5.3	130
D	ortho-Phosphate	4.5	ND	52,560,000
D	Thallium	0.32	0.45	86
D	Tin	0.41	0.67	778,667
D	Tungsten	1.0	1.1	9,730
D	Zirconium	19	28	104
G	Boron	10	14	258,980
G	Cadmium	0.10	0.17	1,270
G	Mercury	0.024	0.016	389
G	Molybdenum	0.53	1.1	6,490
G	Niobium	2.8	ND	130
G	Thallium	0.24	ND	86
G	Tungsten	0.53	ND	9,730

Notes:
mg/kg = milligram per kilogram
HRA = Health risk assessment
ND = Not detected

Source:

Northgate. 2014. Post-remediation Screening Health Risk Assessment Report for Parcels C, D, F, G, and H, Revision 3, Henderson, Nevada. June 19. NDEP responded May 6, 2015.

TABLE 7-1. Soil Data Quality Assessment
Nevada Environmental Response Trust Site
Henderson, Nevada

Depth Interval	0-10 ft bgs					0-2 ft bgs				
Parcel	C		D	G		C		D	G	
Cancer Risk or HQ	Cancer Risk	HQ	HQ	Cancer Risk	HQ	Cancer Risk	HQ	HQ	Cancer Risk	HQ
Target Cancer Risk or Target HQ [1]	1.49×10^{-4}	1.49	1.49	1.49×10^{-6}	1.49	1.49×10^{-4}	1.49	1.49	1.49×10^{-6}	1.49
Population with Maximum Cancer Risk/HI	Outdoor Commercial/ Industrial Worker	Construction Worker	Construction Worker	Outdoor Commercial/ Industrial Worker	Construction Worker	Outdoor Commercial/ Industrial Worker	Outdoor Commercial/ Industrial Worker	Outdoor Commercial/ Industrial Worker	Outdoor Commercial/ Industrial Worker	Outdoor Commercial/ Industrial Worker
Cancer Risk/HI based on 95% UCL [2]	6E-06	0.9	0.7	3E-08	1	1E-05	0.6	0.2	5E-08	0.4
Cancer Risk/HI Driver	2,3,7,8-TCDD TEQ	Zirconium	Zirconium	BaPEq	Zirconium	2,3,7,8-TCDD TEQ	2,3,7,8-TCDD TEQ	Zirconium	BaPEq	Zirconium
95% UCL of Driver Chemical Concentration (mg/kg)	0.00045	23	21	0.068	23	0.00083	0.00083	20	0.12	23
Cancer Risk/HQ based on 95%UCL of Driver Chemical	6E-06	0.8	0.7	3E-08	0.8	1E-05	0.3	0.2	5E-08	0.2
SD of Driver Chemical Concentration (mg/kg) [3]	0.0025	3.4	8.3	0.060	2.8	0.00078	0.00078	7.2	0.077	2.8
SD of Cancer Risk/HQ from Driver Chemical [4]	3E-05	0.1	0.3	3E-08	0.1	1E-05	0.3	0.07	3E-08	0.03
Number of Sample Required [5]	3	3	4	2	4	2	4	2	2	2
Sample Size	50	48	16	16	16	26	26	9	9	9

Notes:
bgs = below ground surface
ft = feet
mg/kg = milligram per kilogram
BaPEq = Benzo(a)pyrene equivalent
HQ = Hazard quotient
HI = Hazard index
SD = Standard deviation
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
UCL = Upper confidence limit

[1] Target cancer risk is set as 1.49×10^{-6} or 1.49×10^{-4} (2,3,7,8-TCDD TEQ in Parcel C only), which can be rounded to 1×10^{-6} or 1×10^{-4}. Target HQ is set as 1.49, which can be rounded to 1. These values were input as $Mean_1$ in G*Power, indicating an alternative hypothesis that the mean of population cancer risk or HQ is greater than target cancer risk or target HQ.

[2] The values were input as $Mean_0$ in G*Power, indicating a null hypothesis that the mean of population cancer risk or non-cancer HI is the same as the cancer risk or non-cancer HI based on the 95% UCL of sample results.

[3] SD of driver chemical concentration was calculated using Kaplan–Meier method in ProUCL.
[4] It was assumed that the SD of total cancer risk/HI is similar to the SD of cancer risk/HQ from the driver chemical. These values were input as SD in G*Power to calculate corresponding effect size.
[5] Calculations were conducted using the t tests - Means: difference from constant (one sample case) in the software program G*Power.

TABLE 7-2. Soil Gas Data Quality Assessment

Nevada Environmental Response Trust Site

Henderson, Nevada

Medium	Soil Gas (10 ft bgs)				Soil Gas (5ft bgs)					
Parcel	C		D		C		D		G	
Number of Samples	16		9		9		5		3	
P_1 [1]	0	0	0	0	0	0	0	0	0	0
Sample count for effect size	1	2	1	2	1	2	1	2	1	2
Effect size [2]	0.063	0.13	0.11	0.22	0.11	0.22	0.20	0.40	0.33	0.67
P_2 [3]	0.063	0.13	0.11	0.22	0.11	0.22	0.20	0.40	0.33	0.67
	Number of samples required [4]									
β=15%	30	15	17	8	17	8	9	4	5	2
β=20%	25	13	14	7	14	7	8	4	4	2
β=25%	22	11	12	6	12	6	7	3	4	2

Notes:

bgs = below ground surface

ft = feet

[1] P_1 is the theoretical proportion of concentrations exceeding a threshold as specified in the null hypothesis. Input 0.000001 in G*Power, because the minimum input is 0.000001 in Gpower.

[2] Effect size is population proportion, set to defined number of samples over total number of samples.

[3] P_2 is P_1 plus effect size.

[4] Calculations were done using the Exact – Generic binomial test in the software program G*Power.

TABLE 7-3. Groundwater Data Quality Assessment
Nevada Environmental Response Trust Site
Henderson, Nevada

Medium	Groundwater					
Parcel	C		D		G	
Number of Samples	27		21		4	
P_1 [1]	0	0	0	0	0	0
Sample count for effect size	1	2	1	2	1	2
Effect size [2]	0.037	0.074	0.048	0.095	0.25	0.50
P_2 [3]	0.037	0.074	0.048	0.095	0.25	0.50
	Number of samples required [4]					
β=15%	51	25	39	19	7	3
β=20%	43	21	34	17	6	3
β=25%	37	19	29	14	5	2

Notes:

[1] P_1 is the theoretical proportion of concentrations exceeding a threshold as specified in the null hypothesis. Input 0.000001 in G*Power, because the minimum input is 0.000001 in Gpower.

[2] Effect size is population proportion, set to defined number of samples over total number of samples.

[3] P_2 is P_1 plus effect size.

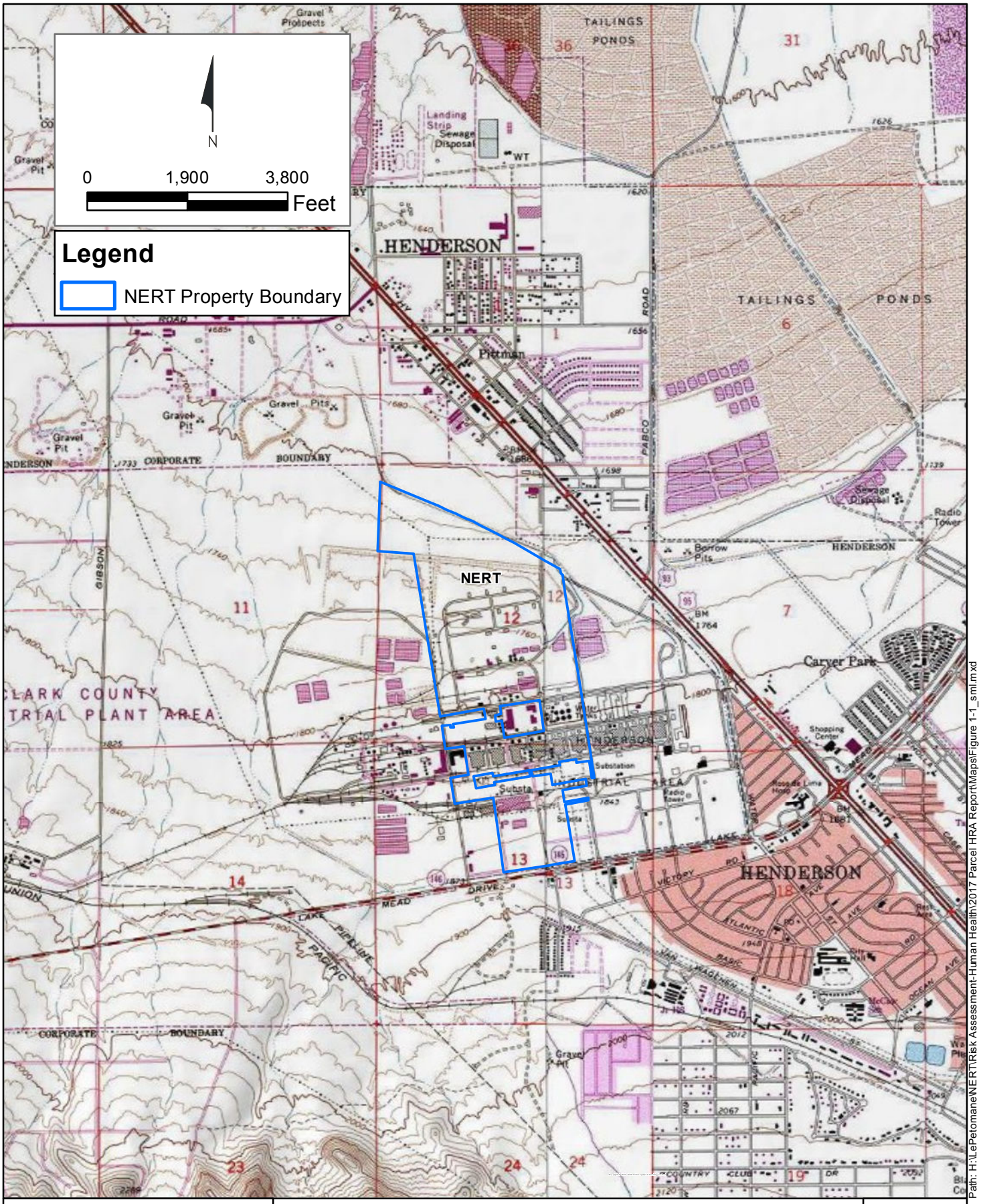
[4] Calculations were done using the Exact – Generic binomial test in the software program G*Power.

TABLE 8-1. Summary of Cumulative Risks for Soil and Soil Gas – Parcels C, D, and G
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Exposure [1]	Indoor Commercial/Industrial Worker		Outdoor Commercial/Industrial Worker		Construction Worker	
		Cancer Risk	Non-Cancer HI	Cancer Risk	Non-Cancer HI	Cancer Risk	Non-Cancer HI
C	Cumulative Risk for Soil (0-2 ft) and Soil Gas (10 ft)	4E-05	0.3	1E-05	0.6	--	--
	Cumulative Risk for Soil (0-2 ft) and Soil Gas (5 ft)	6E-06	0.3	1E-05	0.6	--	--
	Cumulative Risk for Soil (0-10 ft) and Soil Gas (10 ft)	4E-05	0.3	7E-06	0.4	2E-06	0.9
	Cumulative Risk for Soil (0-10 ft) and Soil Gas (5 ft)	4E-06	0.2	6E-06	0.4	8E-07	0.9
	Asbestos - Best Estimate	3E-09	--	6E-09	--	6E-08	--
	Asbestos - Upper-Bound Estimate	1E-07	--	2E-07	--	2E-06	--
D	Cumulative Risk for Soil (0-2 ft) and Soil Gas (10 ft)	1E-06	0.2	2E-08	0.2	--	--
	Cumulative Risk for Soil (0-2 ft) and Soil Gas (5 ft)	1E-06	0.1	2E-08	0.2	--	--
	Cumulative Risk for Soil (0-10 ft) and Soil Gas (10 ft)	1E-06	0.2	2E-08	0.2	2E-08	0.7
	Cumulative Risk for Soil (0-10 ft) and Soil Gas (5 ft)	1E-06	0.1	2E-08	0.2	1E-08	0.7
	Asbestos - Best Estimate	4E-09	--	8E-09	--	8E-08	--
	Asbestos - Upper-Bound Estimate	2E-07	--	4E-07	--	4E-06	--
G	Cumulative Risk for Soil (0-2 ft) and Soil Gas (10 ft)	2E-08	0.2	5E-08	0.4	--	--
	Cumulative Risk for Soil (0-2 ft) and Soil Gas (5 ft)	1E-07	0.2	5E-08	0.4	--	--
	Cumulative Risk for Soil (0-10 ft) and Soil Gas (10 ft)	1E-08	0.2	3E-08	0.3	4E-09	1
	Cumulative Risk for Soil (0-10 ft) and Soil Gas (5 ft)	1E-07	0.2	3E-08	0.3	5E-09	1
	Asbestos - Best Estimate	5E-10	--	1E-09	--	1E-08	--
	Asbestos - Upper-Bound Estimate	2E-07	--	4E-07	--	4E-06	--

Notes:
-- = Not applicable
ft = feet
HI = Hazard index

FIGURES



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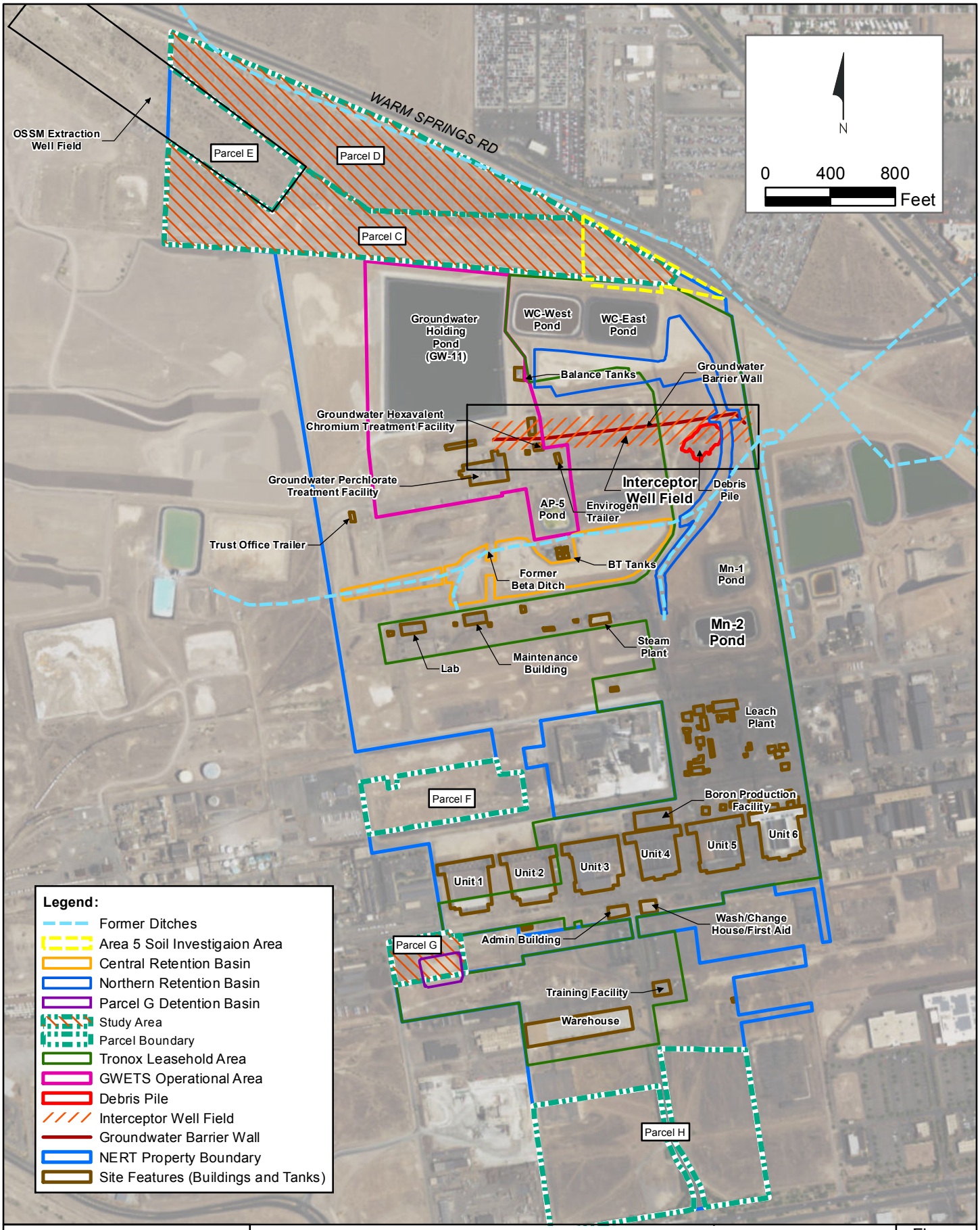
Site Location Map

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **1-1**

Drafter: EF	Date: 7/13/2017	Contract Number: 21-41400A	Approved by:	Revised:

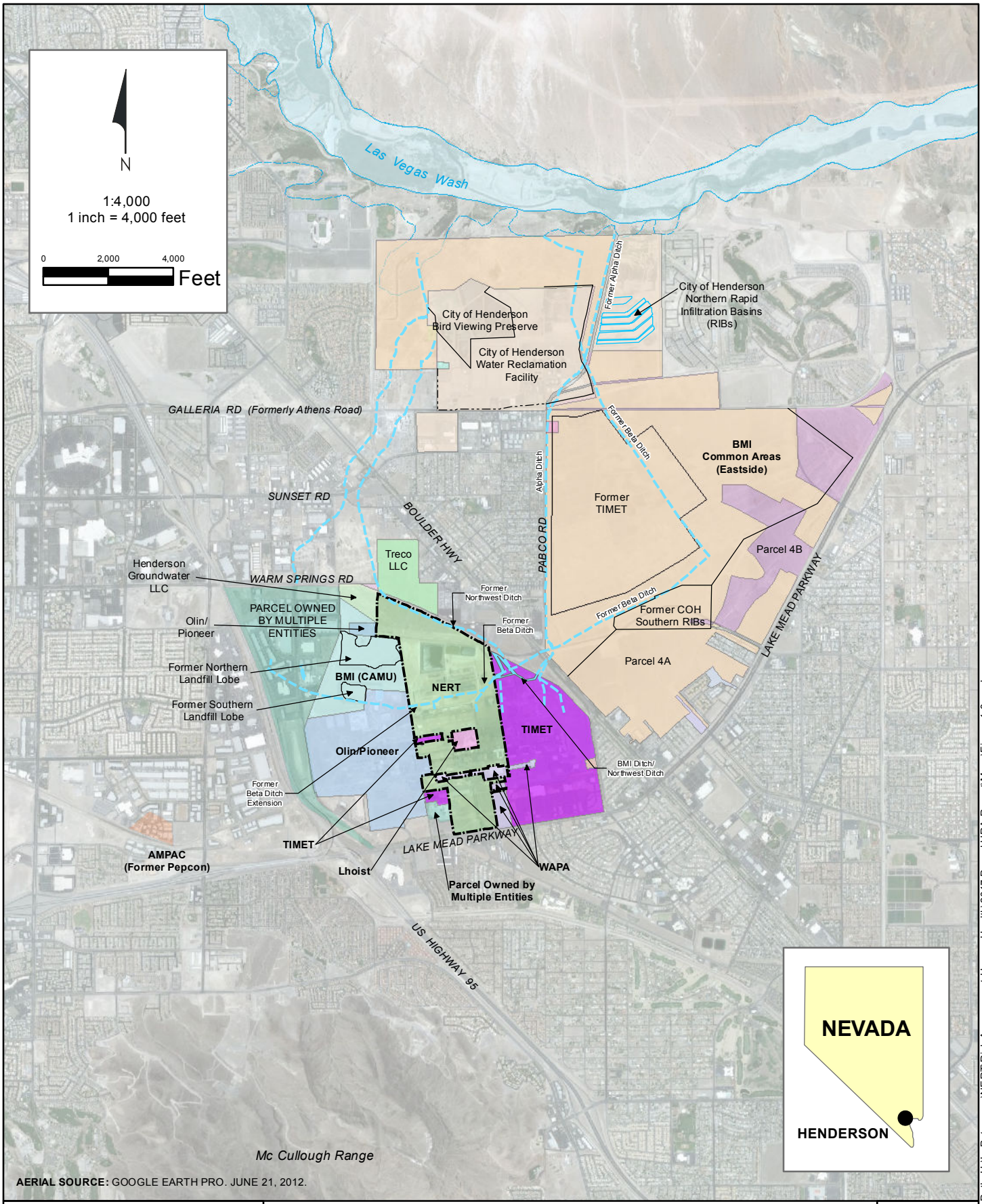


RAMBOLL ENVIRON

Study Area and Site Features
Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **1-2**

Drafter: RS/EF | Date: 6/30/2017 | Contract Number: 21-41400A | Approved by: | Revised:



AERIAL SOURCE: GOOGLE EARTH PRO. JUNE 21, 2012.

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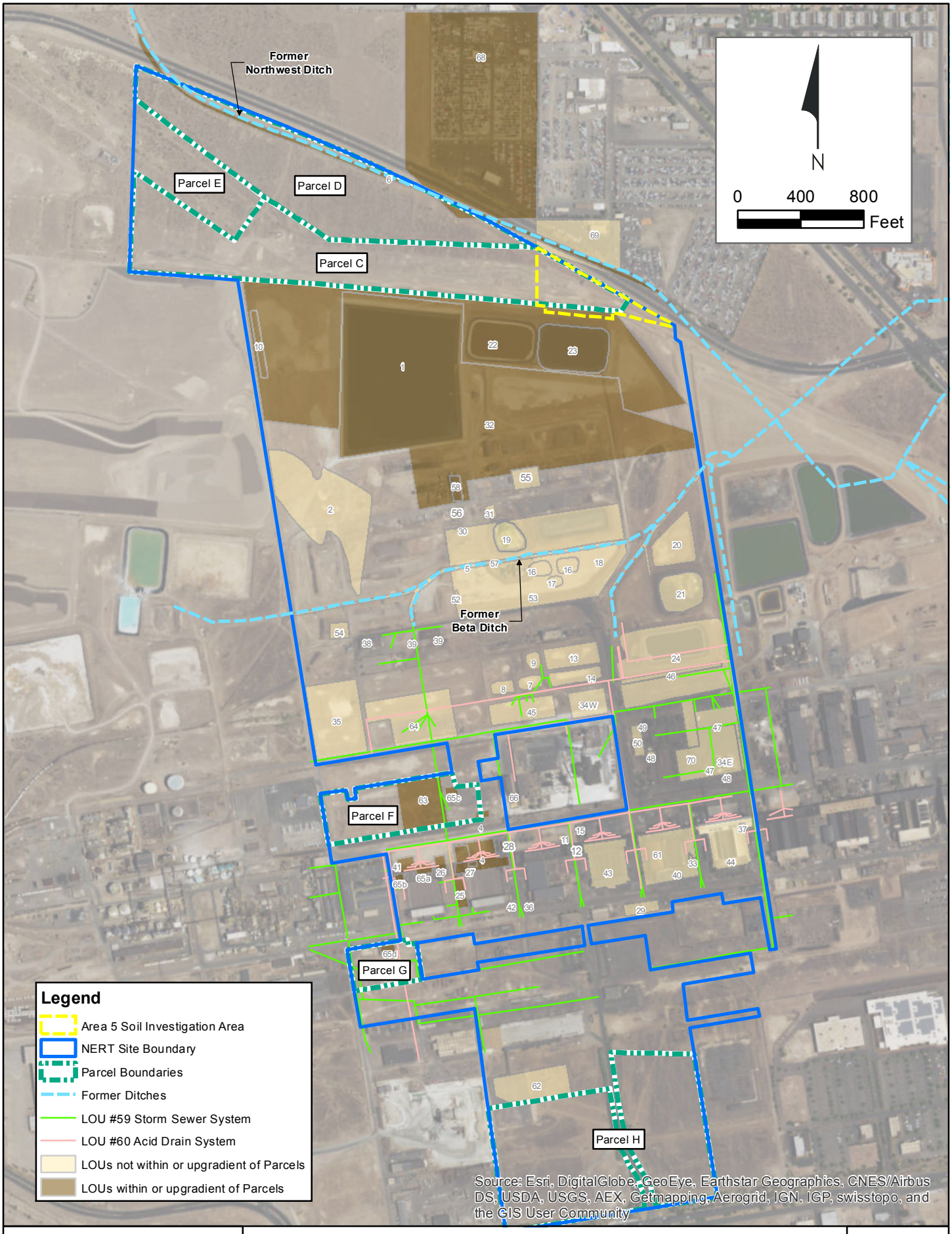
Surrounding Facilities

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **1-3**

Drafter: EF Date: 6/29/2017 Contract Number: 21-41400A Approved by: Revised:



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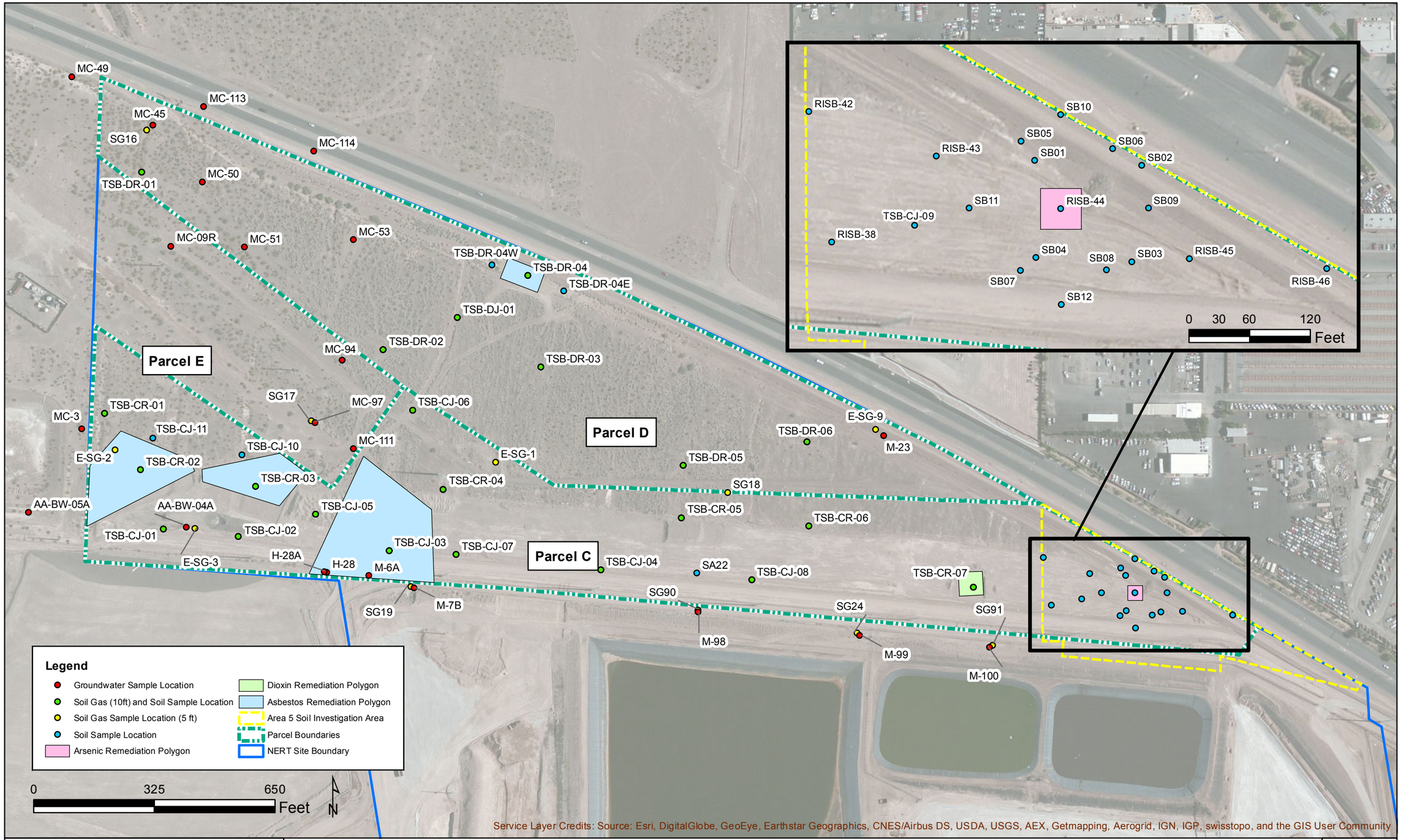
Parcels, Operations Area, and LOU Map
Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **2-1**

Drafter: EF | Date: 7/13/2017 | Contract Number: 21-41400A | Approved by: | Revised:



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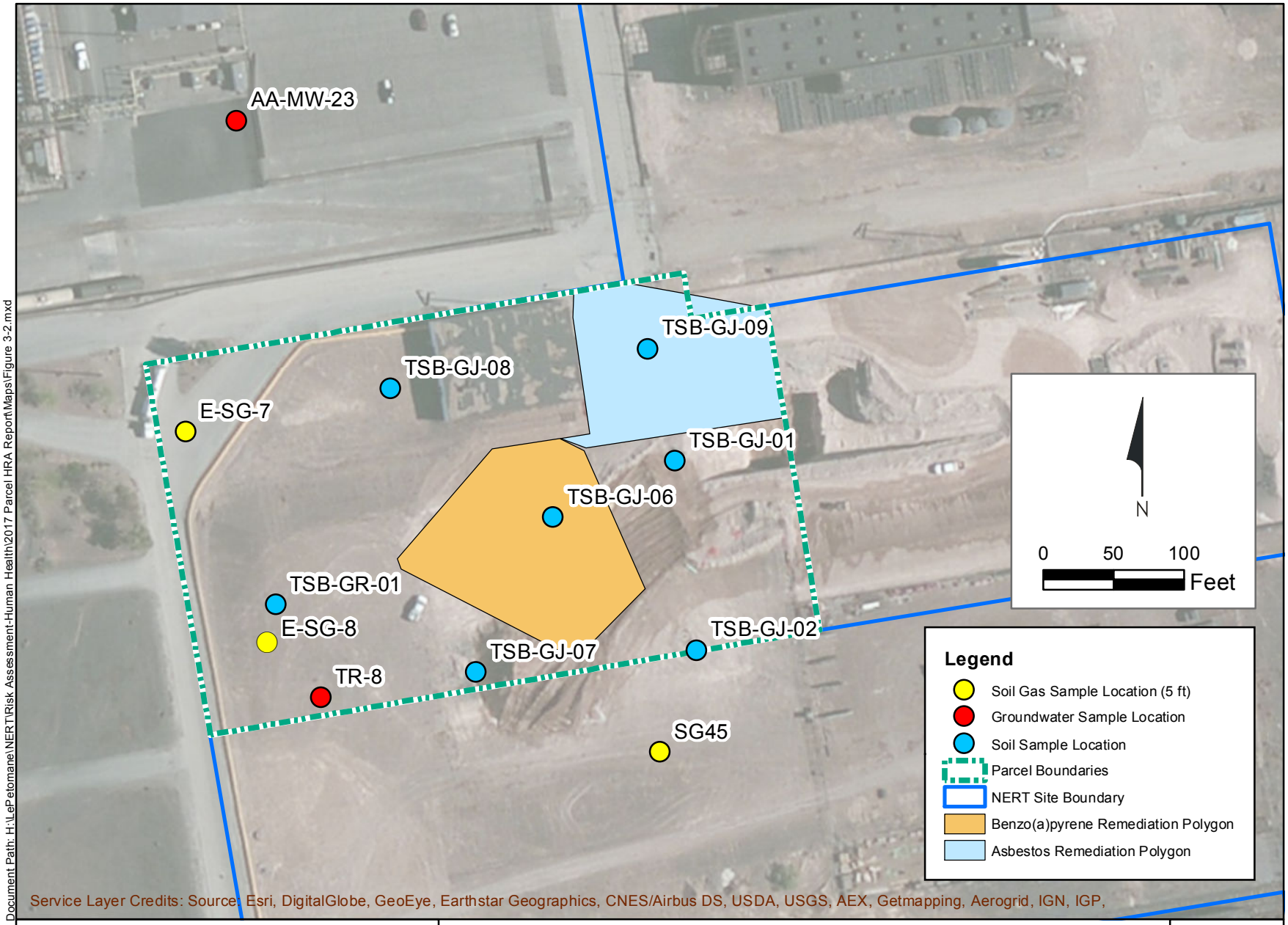
Remediation Polygons and Soil, Groundwater, and Soil Gas Sample Locations for Parcels C and D

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **3-1**

Drafter: EF	Date: 7/13/2017	Contract Number: 21-41400A	Approved by:	Revised:



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RAMBOLL ENVIRON

Remediation Polygons and Soil, Groundwater, and Soil Gas Sample Locations for Parcel G

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **3-2**

Drafter: EF | Date: 7/20/2017 | Contract Number: 21-41400A | Approved by: | Revised:

Legend

- Soil Gas Sample Location (5 ft bgs)
- Soil Gas Sample Location (10 ft bgs)
- Groundwater Sample Locations
- Site Features (Buildings and Tanks)
- Parcel Boundary
- NERT Property Boundary
- Former Ditches

Chloroform Concentration (µg/L)

- > 10,000
- 1,000-10,000
- 70-1,000
- <70
- Approximate Groundwater Flow Direction

N

0 300 600 Feet

MC-49, MC-45, MC-113, MC-50, MC-114, SG16, MC-53, TSB-DJ-01, TSB-DR-01, MC-51, TSB-DR-04, TSB-DR-03, MC-09R, TSB-DR-02, TSB-DR-06, E-SG-9, MC-94, Parcel D, TSB-CR-01, SG17, TSB-CJ-06, MC-3, TSB-DR-05, M-23, MC-111, E-SG-1, SG18, E-SG-2, TSB-CR-03, TSB-CJ-05, TSB-CR-04, TSB-CR-06, TSB-CR-02, AA-BW-05A, TSB-CJ-07, TSB-CJ-08, TSB-CR-07, M-7B, Parcel C, TSB-CJ-01, M-98, M-99, M-100, E-SG-3, SG19, TSB-CJ-04, H-28A, H-28, TSB-CJ-03, SG90, SG24, SG91, AA-BW-04A, TSB-CR-05, TSB-CJ-02, M-6A

AA-MW-23, E-SG-7, Parcel G, E-SG-8, TR-8, SG45

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RAMBOLL ENVIRON	**Soil Gas and Groundwater Sampling Locations for Parcels C, D, and G (Chloroform Plume as Depicted in 2015)** Nevada Environmental Response Trust Site, Henderson, Nevada	Figure **3-3**
	Drafter: RS/EF Date: 7/28/2017 Contract Number: 21-41400A Approved by: Revised:	

Legend

Soil Gas Chemicals:
- 1,1 Dichloroethane
- Carbon Tetrachloride
- Chloroform
- Tetrachloroethene
- Trichloroethene
- Former Ditches
- Site Features (Buildings and Tanks)
- Parcel Boundary
- NERT Property Boundary

Chloroform Concentration (µg/L)
- > 10000
- 1,000 - 10,000
- 70 - 1,000
- < 70
- Approximate Groundwater Flow Direction
- Circle Size Reflects Log Total Soil Gas Concentration (µg/m^3)

TSB-DR-05 Sample ID
(480) Soil Gas Concentration (µg/m^3)

N

0 300 600 Feet

TSB-DR-01 (324)
TSB-DJ-01 (1297)
Parcel D
TSB-DR-04 (1135)
TSB-DR-02 (3521)
TSB-DR-03 (415)
TSB-DR-05 (480)
TSB-CR-01 (16144)
Parcel E
TSB-CJ-06 (74)
TSB-DR-06 (416)
TSB-CR-06 (670)
TSB-CR-03 (120759)
TSB-CR-04 (169)
TSB-CR-02 (2044)
TSB-CR-07 (377)
Parcel C
TSB-CJ-01 (20286)
TSB-CJ-04 (28)
TSB-CJ-08 (1842)
TSB-CR-05 (1564)
TSB-CJ-02 (91247)
TSB-CJ-03 (64)
TSB-CJ-07 (32)
TSB-CJ-05 (196)
Parcel G

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RAMBOLL ENVIRON

Spatial Distribution of Primary VOCs Parcels C and D (Soil Gas 10 ft bgs)
(Chloroform Plume as Depicted in 2015)
Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **4-1**

Drafter: RS/EF Date: 6/30/2017 Contract Number: 21-41400A Approved by: Revised:

Legend

Soil Gas Chemicals:
- 1,1 Dichloroethane
- Carbon Tetrachloride
- Chloroform
- Tetrachloroethene
- Trichloroethene
- Former Ditches
- Site Features (Buildings and Tanks)
- Parcel Boundary
- NERT Property Boundary
- Approximate Groundwater Flow Direction

Chloroform Concentration (µg/L)
- > 10,000
- 1,000-10,000
- 70-1,000
- <70

Circle Size Reflects Log Total Soil Gas Concentration (µg/m^3)

TSB-DR-05 (480) Sample ID
Soil Gas Concentration (µg/m^3)

N

0 300 600 Feet

SG16 (179)
Parcel E
Parcel D
SG17 (191)
E-SG-2 (1780)
E-SG-1 (5)
E-SG-9 (139)
SG18 (1964)
Parcel C
SG24 (1392)
SG91 (601)
E-SG-3 (4462)
SG19 (86)
SG90 (4253)
E-SG-7 (106)
Parcel G
E-SG-8 (336)
SG45 (67)

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RAMBOLL ENVIRON

Spatial Distribution of Primary VOCs, Parcels C, D and G (Soil Gas 5 ft bgs) (Chloroform Plume as Depicted in 2015)
Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **4-2**

Drafter: RS/EF Date: 6/30/2017 Contract Number: 21-41400A Approved by: Revised:

Legend

Chloroform Concentration (µg/L)

- < 70
- 70 - 1,000
- 1,001 - 10,000
- Former Ditches
- Site Features (Buildings and Tanks)
- Parcel Boundary
- NERT Property Boundary

Chloroform Concentration (µg/L)

- > 10,000
- 1,000 - 10,000
- 70 - 1,000
- < 70
- Approximate Groundwater Flow Direction

N

0 300 600 Feet

MC-45
MC-113
MC-49
MC-50
MC-114
MC-51
MC-53
MC-09R
MC-94
Parcel D
MC-3
MC-97
MC-111
M-23
AA-BW-05A
AA-BW-04A
M-7B
Parcel C
M-98
M-99
M-100
H-28
M-6A
AA-MW-23
Parcel G
TR-8

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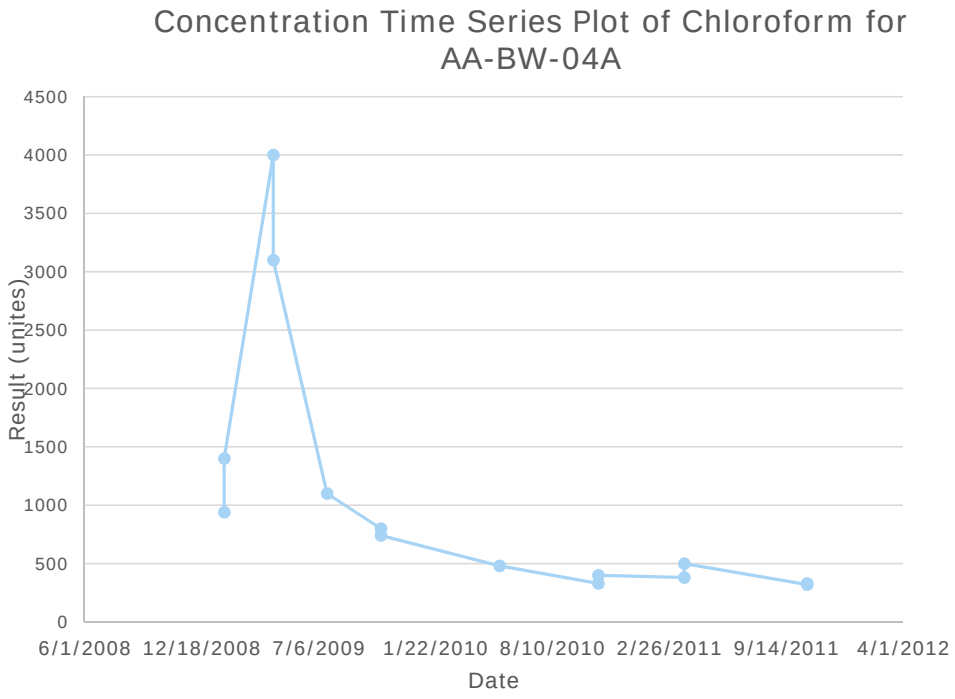
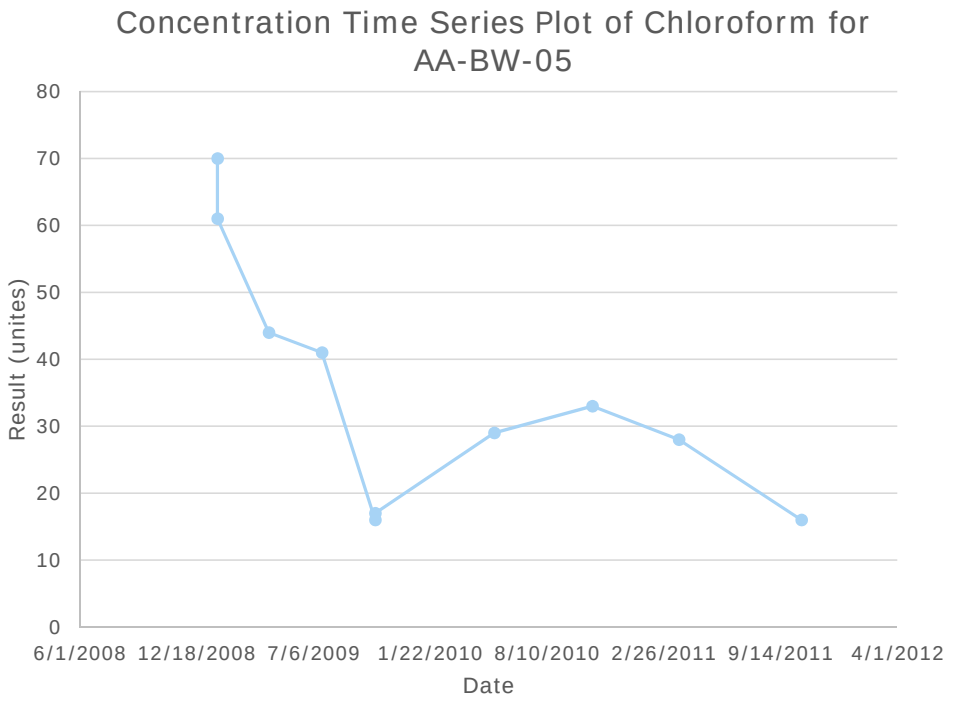
RAMBOLL ENVIRON

Spatial Distribution of Chloroform, Parcels C, D, and G (Groundwater)
(Chloroform Plume as Depicted in 2015)
Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **4-3**

Drafter: RS/EF Date: 6/30/2017 Contract Number: 21-41400A Approved by: Revised:





RAMBOLL ENVIRON

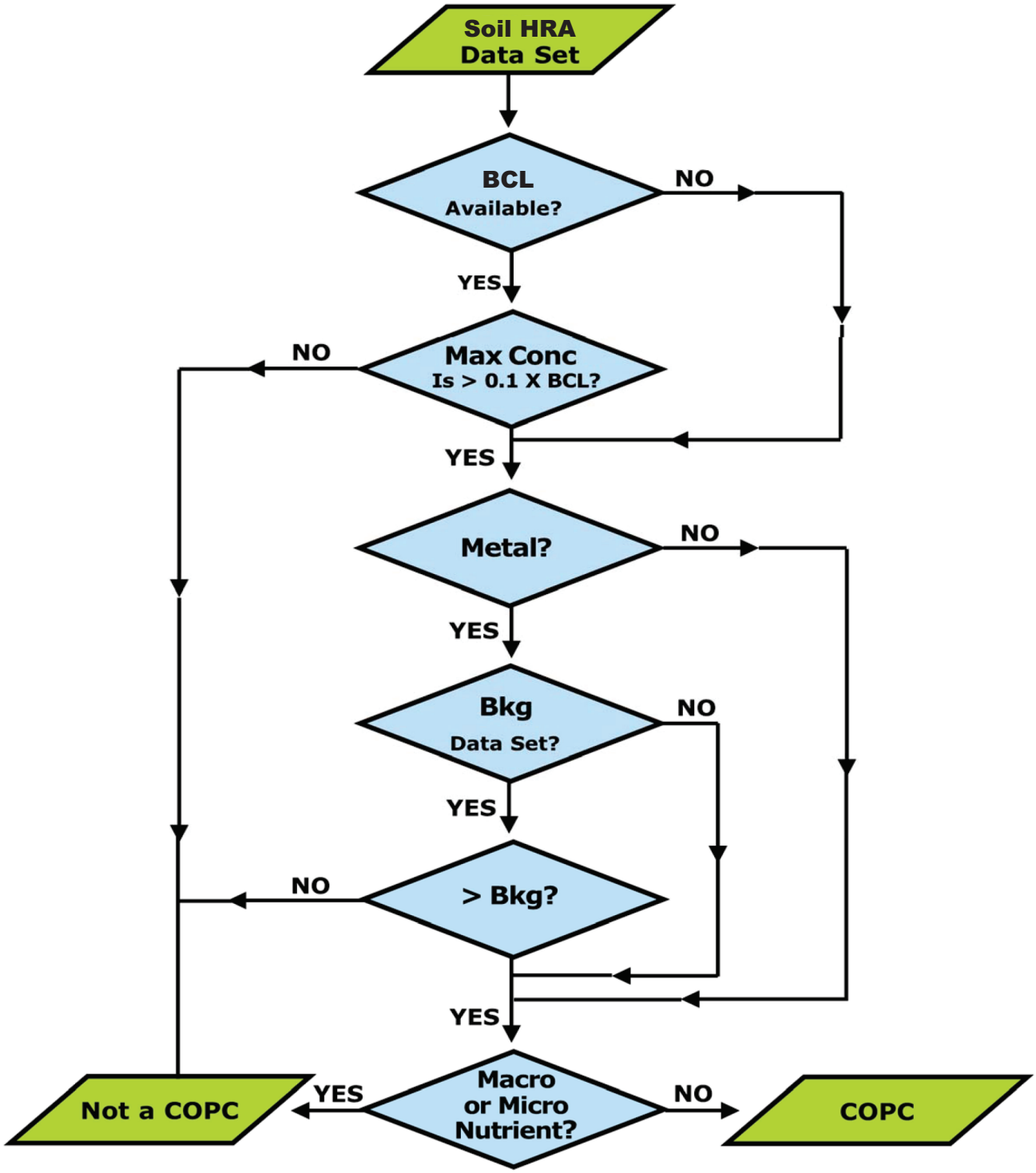
Temporal Trend of Chloroform in Groundwater

Nevada Environmental Response Trust Site, Henderson, Nevada

Drafter: KZ | Date: 6/29/2017 | Contract Number: 21-41400A

Figure

4-4



Q:\DRAWINGS\NERT

RAMBOLL ENVIRON

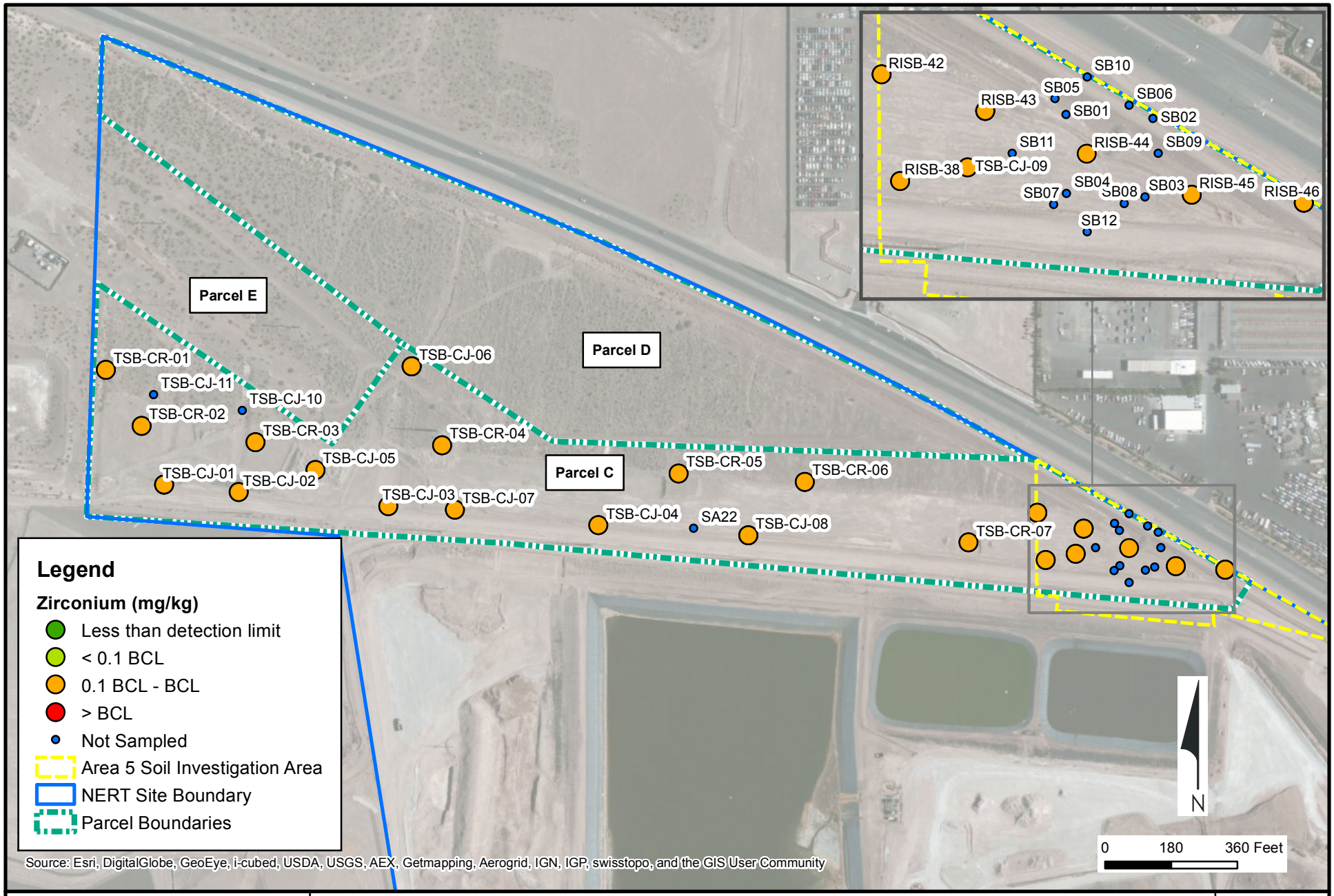
DRAFTED BY: RS

DATE: 8/19/16

Soil COPC Identification Flowchart

FIGURE

5-1



RAMBOLL ENVIRON

Spatial Intensity Plot for Parcel C - Zirconium

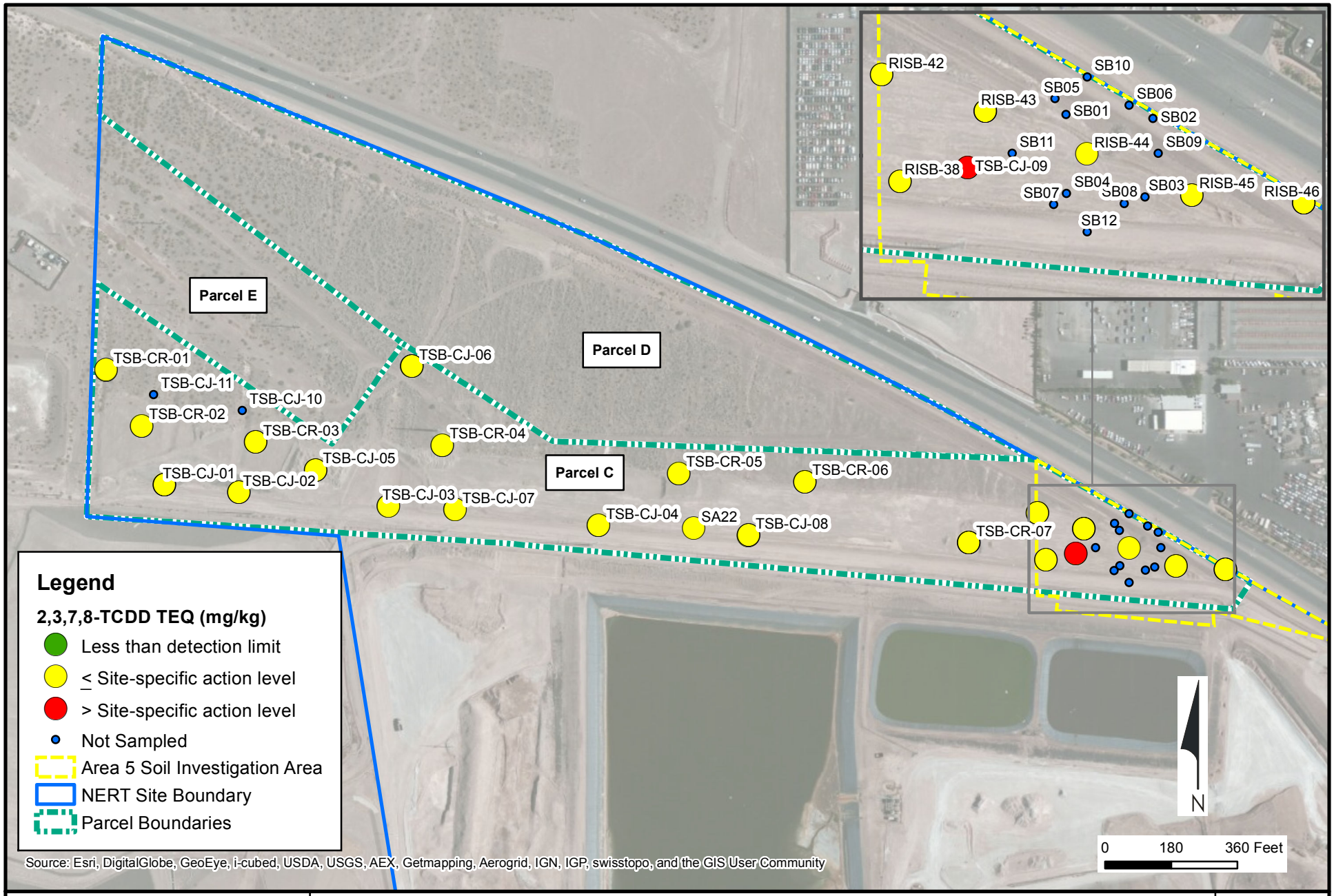
[BCL = 104 mg/kg]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **5-2**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:		Revised:	

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\GIS\COPCmap\201705\Spatial_Quartile_ParcelC_letter.mxd



RAMBOLL ENVIRON

Spatial Intensity Plot for Parcel C - 2,3,7,8-TCDD TEQ

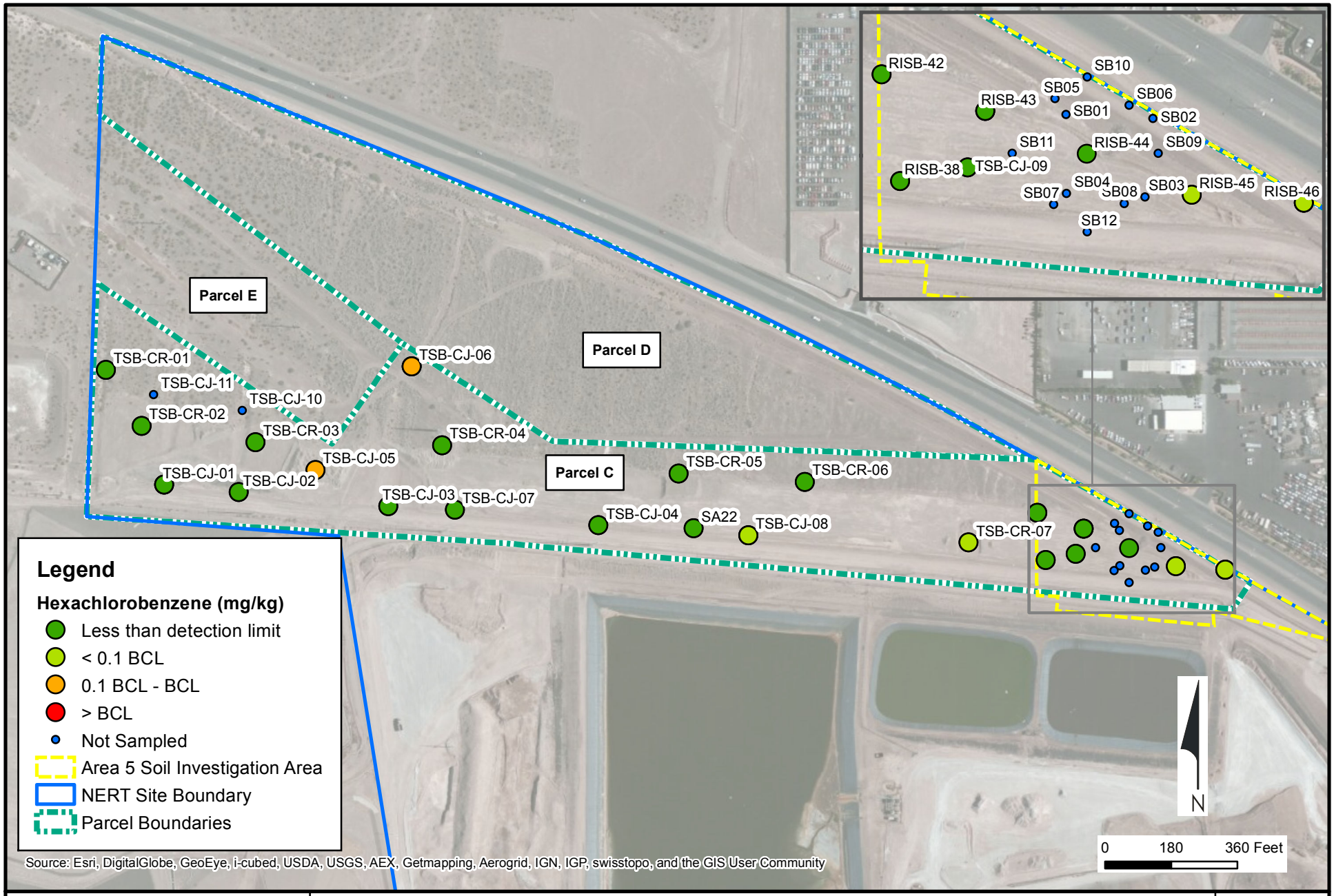
[Site-specific action level = 0.0027 mg/kg]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **5-3**

Drafter:	YZ	Date:	6/21/2017	Contract Number:	21-41400A	Approved:		Revised:	

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\GIS\COPCmap\201705\Spatial_Intensity_ParcelC_TCDD_letter.mxd



RAMBOLL ENVIRON

Spatial Intensity Plot for Parcel C - Hexachlorobenzene

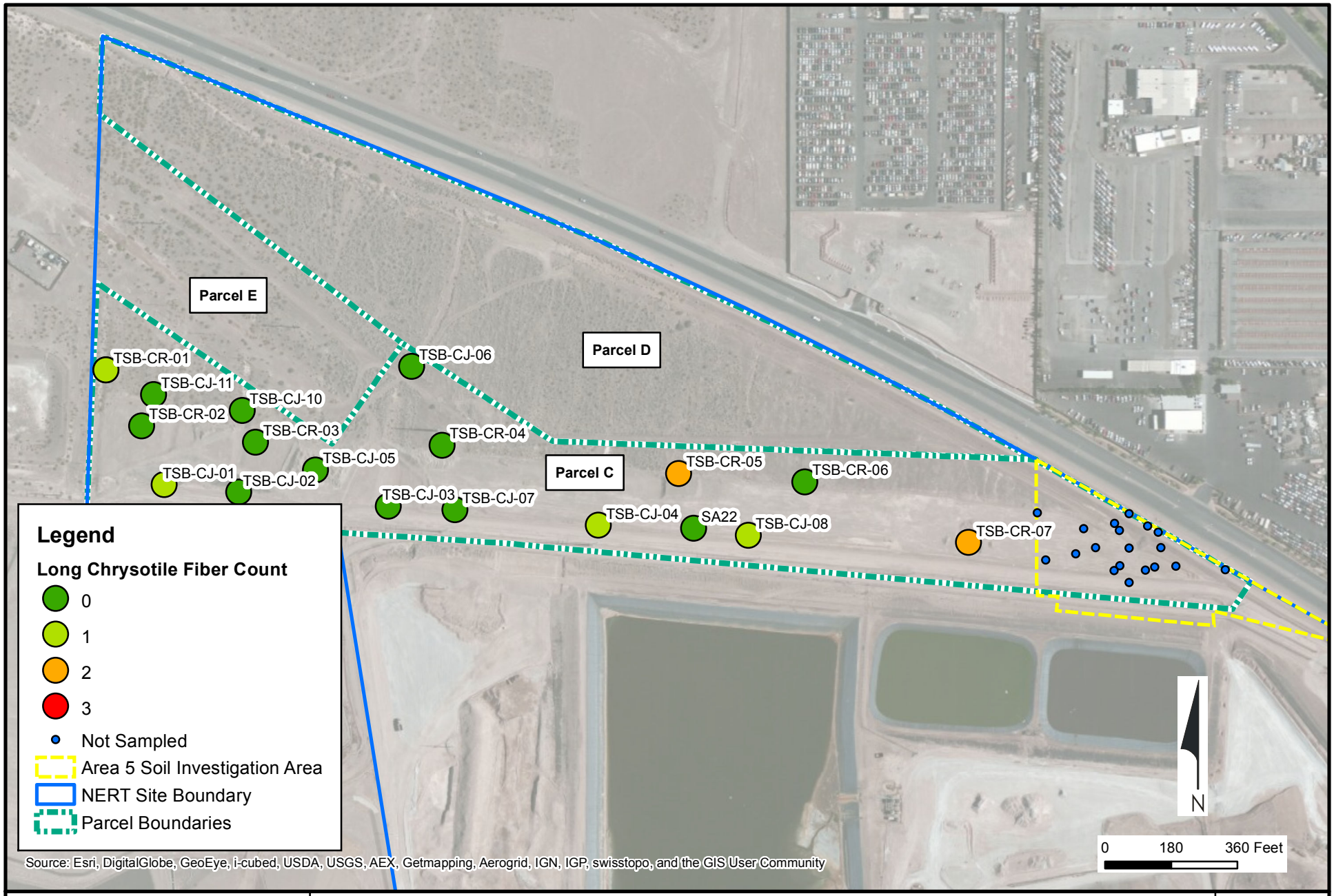
[BCL = 1.6 mg/kg]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **5-4**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\GIS\COPCmap\201705\Spatial_Quartile_ParcelC_letter.mxd



RAMBOLL ENVIRON

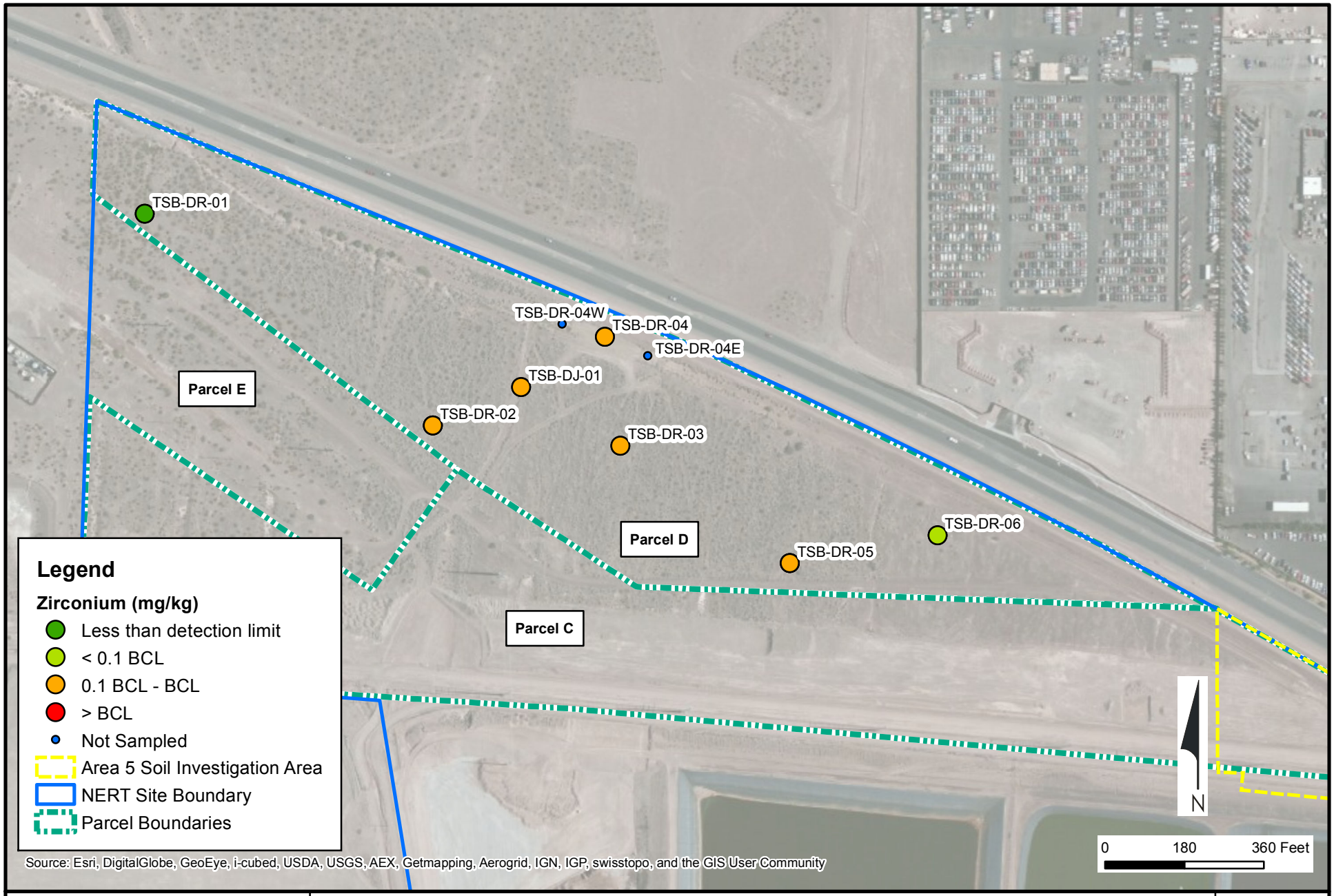
Spatial Intensity Plot for Parcel C - Long Chrysotile Fiber

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **5-5**

Drafter: YZ Date: 6/20/2017 Contract Number: 21-41400A Approved: Revised:

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\GIS\COPCmap\201705\Spatial_Intensity_ParcelC_LongC_letter.mxd



RAMBOLL ENVIRON

Spatial Intensity Plot for Parcel D - Zirconium

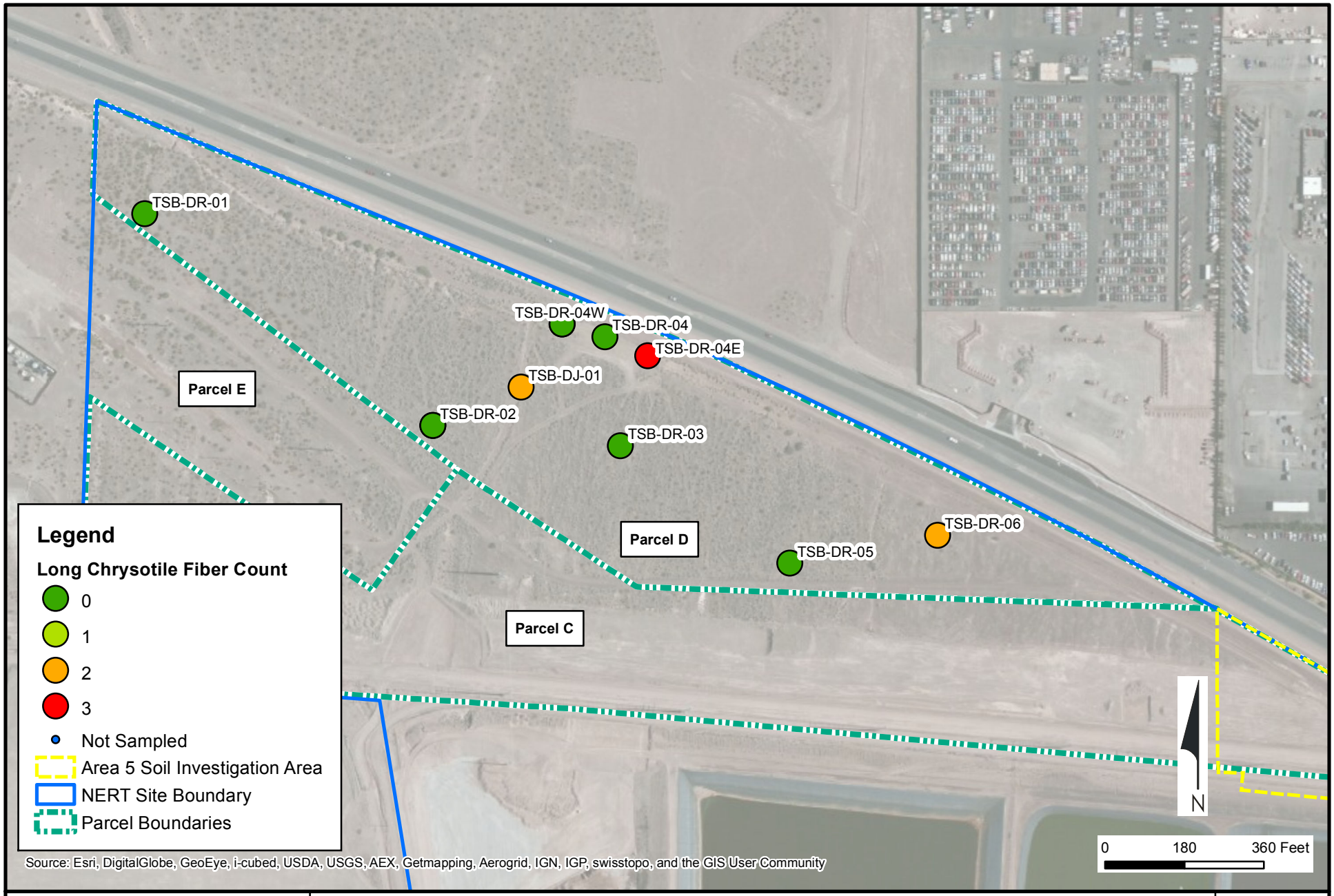
[BCL = 104 mg/kg]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **5-6**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:		Revised:	

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\GIS\COPCmap\201705\Spatial_Quartile_ParcelD_letter.mxd



RAMBOLL ENVIRON

Spatial Intensity Plot for Parcel D - Long Chrysotile Fiber

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **5-7**

Drafter: YZ Date: 6/21/2017 Contract Number: 21-41400A Approved: Revised:

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\GIS\COPCmap\201705\Spatial_Intensity_ParcelD_LongC_letter.mxd

RAMBOLL ENVIRON

Spatial Intensity Plot for Parcel G - Perchlorate

[BCL = 908 mg/kg]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **5-8**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\GIS\COPCmap\201705\Spatial_Quartile_ParcelG_letter.mxd

RAMBOLL ENVIRON

Spatial Intensity Plot for Parcel G - Zirconium

[BCL = 104 mg/kg]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **5-9**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:		Revised:	

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\GIS\COPCmap\201705\Spatial_Quartile_ParcelG_letter.mxd

RAMBOLL ENVIRON

Spatial Intensity Plot for Parcel G - Chloride

[BCL = 113032 mg/kg]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **5-10**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\GIS\COPCmap\201705\Spatial_Quartile_ParcelG_letter.mxd

RAMBOLL ENVIRON

Spatial Intensity Plot for Parcel G - Benzo(a)pyrene Equivalent

[BCL = 0.323 mg/kg]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **5-11**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\GIS\COPCmap\201705\Spatial_Quartile_ParcelG_letter.mxd

RAMBOLL ENVIRON

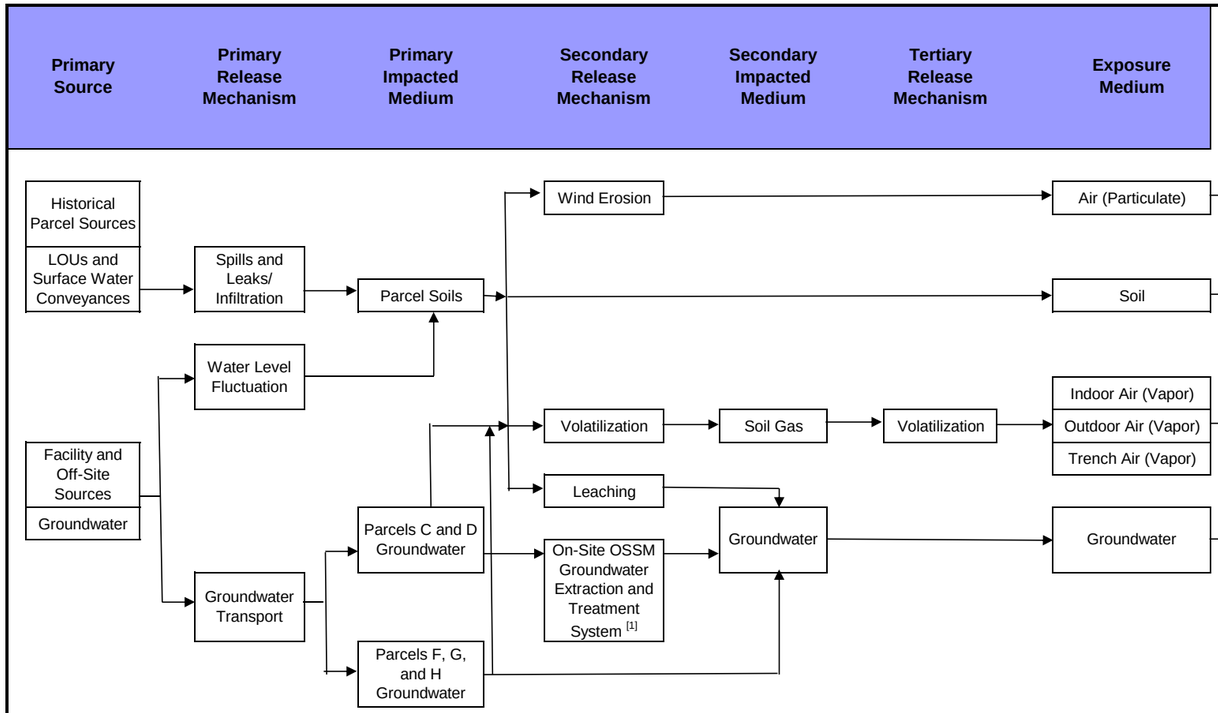
Spatial Intensity Plot for Parcel G – Long Chrysotile Fiber

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **5-12**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\GIS\COPCmap\201705\Spatial_Intensity_ParcelG_LongC_letter.mxd



Primary Source	Primary Release Mechanism	Primary Impacted Medium	Secondary Release Mechanism	Secondary Impacted Medium	Tertiary Release Mechanism	Exposure Medium	Exposure Route	Current/Future Receptor						
								On-Parcel				Off-Site		
								Construction Worker	Indoor Commercial/ Industrial Worker	Outdoor Commercial/ Industrial Worker	Visitor and Trespasser	Indoor Commercial/ Industrial Worker	Outdoor Commercial/ Industrial Worker	Resident
Historical Parcel Sources; LOUs and Surface Water Conveyances	Spills and Leaks/ Infiltration	Parcel Soils	Wind Erosion	Air (Particulate)			Inhalation [2], [3]	X	X	X	O [10]	O [11]	O [11]	O [11]
				Soil			Ingestion [2]	X	X	X	O [10]	--	--	--
							Dermal Contact	X	--	X	O [10]	--	--	--
							External [4]	X	X	X	O [10]	--	--	--
Facility and Off-Site Sources; Groundwater	Water Level Fluctuation; Groundwater Transport	Parcel Soils; Parcels C and D Groundwater; Parcels F, G, and H Groundwater	Volatilization	Soil Gas	Volatilization	Indoor Air (Vapor)	Inhalation	--	X	--	--	O [12]	--	O [12]
						Outdoor Air (Vapor)	Inhalation	O [5]	O [8]	X	O [10]	O [12]	O [12]	O [12]
						Trench Air (Vapor)	Inhalation	X [6]	--	--	--	--	--	--
			Leaching; On-Site OSSM Groundwater Extraction and Treatment System [1]	Groundwater		Groundwater	Ingestion	-- [7]	-- [9]	-- [9]	-- [9]	-- [9]	-- [9]	-- [9]
							Dermal Contact	-- [7]	-- [9]	-- [9]	-- [9]	-- [9]	-- [9]	-- [9]

Notes:

X = Complete or potentially complete exposure pathway
O = Complete, but negligible exposure pathway; discussed qualitatively
-- = Incomplete exposure pathway
EPC = Exposure point concentration
LOU = Letter of Understanding
OSSM = Olin Chlor-Alkali/Stauffer/Syngenta/Montrose
PEF = Particulate emission factor
VOC = Volatile organic compound

[1] The OSSM groundwater treatment system, a portion of which is located in Parcel E, treats for VOCs.
[2] Includes radionuclide exposures, if applicable.
[3] Includes asbestos exposures.
[4] Only radionuclide exposures, if applicable.
[5] The exposure to VOCs in outdoor air is not quantitatively evaluated for construction workers because it is expected to be much lower than the exposure to VOCs in trench air.
[6] To be conservative, construction workers are assumed to be exposed to vapors migrating from soil gas/groundwater while standing in a 10-foot trench in the unsaturated zone, placing them closer to the potential sources.
[7] Incidental ingestion and dermal contact with groundwater by construction workers are not considered complete exposure pathways because depth to groundwater is greater than 10 feet below ground surface.
[8] The exposure to VOCs in outdoor air is not quantitatively evaluated for indoor commercial/industrial workers because it is expected to be much lower than the exposure to VOCs in indoor air.
[9] Exposure via domestic use of groundwater is not evaluated because Site groundwater is not used as a domestic water supply.
[10] Visitors and trespassers are not quantitatively evaluated because 1) public access is generally restricted at industrial sites, and 2) while the public may have access to commercial sites, on-site workers have a much higher exposure potential because they spend substantially more time at the site.
[11] For inhalation of soil particulates, the PEF for on-site construction workers is much higher than the PEF during construction for off-site receptors (see discussion in text Section 6.2.2.1). Therefore, as compared with other exposure factors that may be higher for the off-site receptors, the exposures through inhalation of soil particulates by off-site receptors are expected to be lower than the exposures by on-site construction workers, and are not quantitatively evaluated.
[12] For inhalation of vapors migrating from soil gas or groundwater, the EPCs in air for off-site receptors are expected to be much lower than those for on-site receptors due to air dispersion given the above distances to parcel boundaries (see discussion in text Section 6.2.2.1). Therefore, the off-site receptors are not quantitatively evaluated.

RAMBOLL ENVIRON

Conceptual Site Model for Potential Human Exposures
Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **5-13**

Drafter: | Date: 6/29/2017 | Contract Number: 21-41400A | Approved by: | Revised:

Legend

Estimated Cancer Risk -Future Indoor Worker

- ≤ 1E-6
- > 1E-6 and ≤ 1E-5
- > 1E-5
- Former Ditches
- Site Features (Buildings and Tanks)
- Parcel Boundary
- NERT Site Boundary

Chloroform Concentration (µg/L)

- > 10,000
- 1,000 - 10,000
- 70 - 1,000
- < 70
- Approximate Groundwater Flow Direction

N

0 300 600 Feet

TSB-DJ-01 (4E-7)
TSB-DR-01 (6E-8)
TSB-DR-04 (2E-7)
WARM SPRINGS RD
TSB-DR-02 (1E-6)
TSB-DR-03 (10E-8)
Parcel E
TSB-CR-01 (4E-6)
TSB-CJ-06 (1E-8)
Parcel D
TSB-CR-03 (4E-5)
TSB-DR-05 (1E-7)
TSB-DR-06 (1E-7)
TSB-CR-02 (3E-7)
TSB-CR-04 (4E-8)
TSB-CJ-05 (1E-8)
TSB-CR-05 (5E-7)
Parcel C
TSB-CR-06 (2E-7)
TSB-CJ-01 (6E-6)
TSB-CR-07 (1E-7)
TSB-CJ-04 (2E-9)
TSB-CJ-08 (5E-7)
TSB-CJ-03 (1E-8)
TSB-CJ-07 (3E-9)
TSB-CJ-02 (3E-5)
Parcel G
LAKE MEAD PARKWAY

RAMBOLL ENVIRON

Estimated Chloroform Cancer Risk, Future Indoor Worker, Parcels C and D (Soil Gas 10 ft bgs) (Chloroform Plume as Depicted in 2015)

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **5-14**

Drafter: RS/EF | Date: 6/30/2017 | Contract Number: 21-41400A | Approved by: | Revised:

Legend

Estimated Cancer Risk - Future Indoor Worker

- ≤ 1E-6
- > 1E-6
- Former Ditches
- Site Features (Buildings and Tanks)
- Parcel Boundary
- NERT Site Boundary

Approximate Groundwater Flow Direction

Chloroform Concentration (µg/L)

- > 10,000
- 1,000 - 10,000
- 70 - 1,000
- < 70

N

0 290 580 Feet

SG16 (5E-8)

WARM SPRINGS RD

Parcel E

Parcel D

Parcel C

Parcel G

SG17 (1E-7)

E-SG-2 (3E-7)

E-SG-1 (1E-9)

E-SG-9 (5E-8)

SG18 (1E-6)

E-SG-3 (2E-6)

SG19 (4E-8)

SG90 (2E-6)

SG24 (7E-7)

SG91 (3E-7)

E-SG-7 (3E-8)

E-SG-8 (8E-8)

SG45 (2E-8)

RZ-A

LAKE MEAD PARKWAY

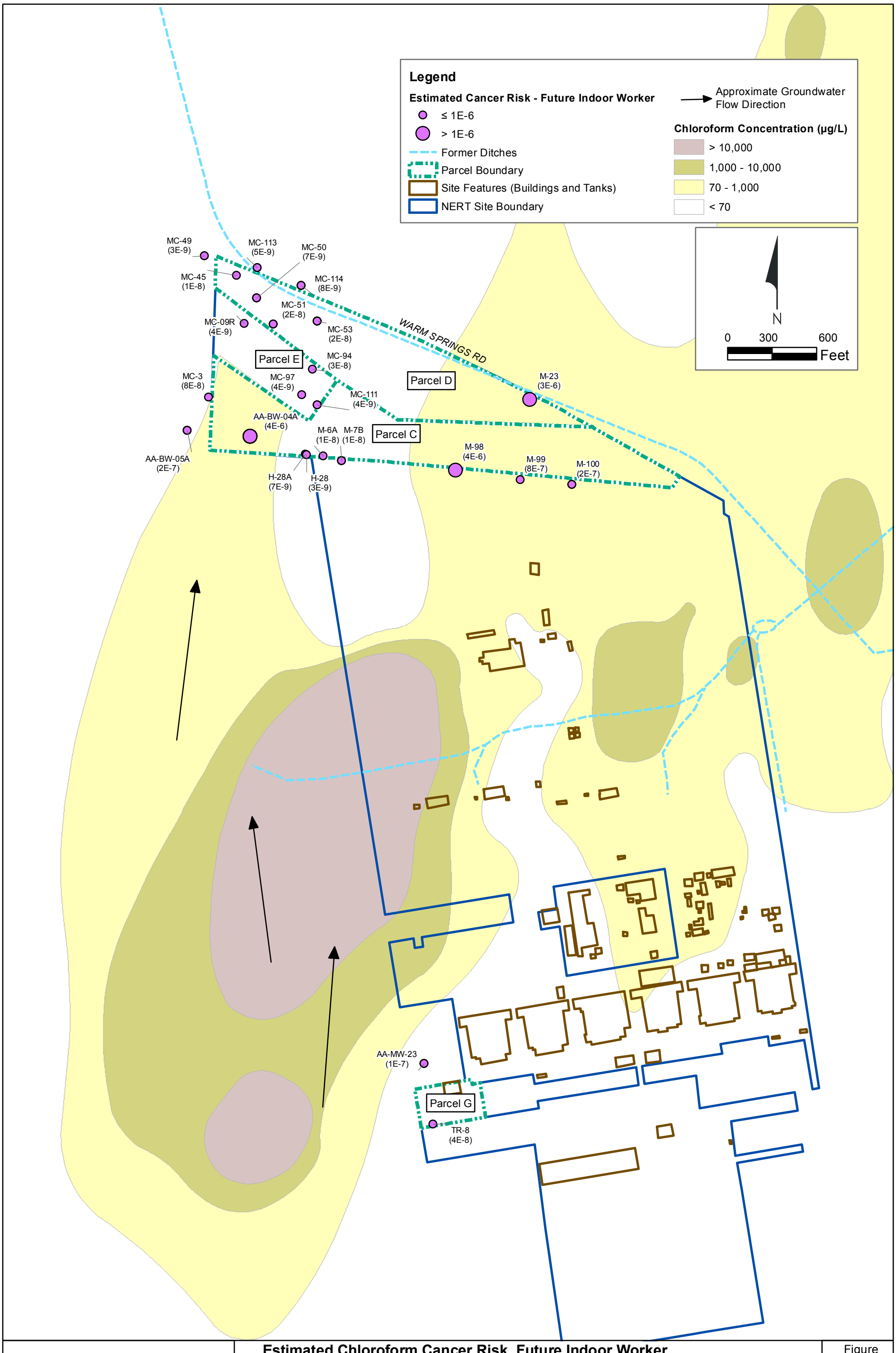
RAMBOLL ENVIRON

Estimated Chlorofrom Cancer Risk Future Indoor Worker, Parcels C, D, and G (Soil Gas 5 ft bgs) (Chloroform Plume as Depicted in 2015)
Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **5-15**

Drafter: RS/EF Date: 7/3/2017 Contract Number: 21-41400A Approved by: Revised:

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\2017 Parcel HRA Report\Maps\Figure 5-15.mxd



Estimated Chloroform Cancer Risk, Future Indoor Worker, Parcels C, D, and G (Groundwater) (Chloroform Plume as Depicted in 2015)
Nevada Environmental Response Trust Site, Henderson, Nevada

RAMBOLL ENVIRON

Figure **5-16**

Drafter: RS/EF | Date: 6/30/2017 | Contract Number: 21-41400A | Approved by: | Revised:

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\2017 Parcel HRA Report\Maps\Figure 5-16.mxd

Legend

Estimated Cancer Risk - Future Indoor Worker

- ≤ 1E-6
- > 1E-6
- Former Ditches
- Parcel Boundary
- Site Features (Buildings and Tanks)
- NERT Site Boundary

Approximate Groundwater Flow Direction

Chloroform Concentration (µg/L)

- > 10,000
- 1,000 - 10,000
- 70 - 1,000
- < 70

N

0 400 800 Feet

MC-49 (4E-8)
MC-45 (2E-8)
MC-114 (7E-8)
MC-50 (1E-8)
MC-51 (6E-8)
MC-53 (3E-8)
MC-09R (4E-9)
MC-94 (4E-8)
WARM SPRINGS RD
Parcel E
MC-3 (3E-7)
MC-97 (1E-8)
Parcel D
M-23 (3E-6)
AA-BW-04A (6E-6)
MC-111 (4E-9)
Parcel C
AA-BW-05A (2E-6)
M-98 (4E-6)
M-99 (9E-7)
M-100 (2E-7)
H-28A (9E-8)
M-6A (1E-8)
M-7B (1E-8)
Parcel G
LAKE MEAD PARKWAY

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\2017 Parcel HRA Report\Maps\Figure 5-17.mxd

RAMBOLL ENVIRON

Estimated Total Cancer Risk, Future Indoor Worker, Parcels C and D (Groundwater) (Chloroform Plume as Depicted in 2015)
Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **5-17**

Drafter: RS/EF | Date: 6/30/2017 | Contract Number: 21-41400A | Approved by: | Revised:

Legend

Estimated Hazard Index - Future Indoor Worker

- > 0 and ≤ 0.1
- > 0.1 and ≤ 1
- Former Ditches
- Site Features (Buildings and Tanks)
- Parcel Boundary
- NERT Site Boundary

Approximate Groundwater Flow Direction

Chloroform Concentration (µg/L)

- 10,000
- 1,000 - 10,000
- 70 - 1,000
- < 70

N

0 400 800

Feet

MC-49 (0.004)
MC-50 (0.003)
MC-113 (0.001)
MC-114 (0.02)
MC-51 (0.02)
MC-45 (0.0009)
MC-53 (0.0003)
MC-09R (0.0001)
WARM SPRINGS RD
MC-94 (0.0002)
MC-97 (0.0002)
Parcel D
MC-3 (0.05)
M-23 (0.007)
MC-111 (0.00002)
Parcel C
AA-BW-05A (0.1)
M-98 (0.006)
M-7B (0.0001)
M-99 (0.08)
M-100 (0.0002)
AA-BW-04A (1)
H-28A (0.02)
M-6A (0.0001)
Parcel G
LAKE MEAD PARKWAY

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\2017 Parcel HRA Report\Maps\Figure 5-18.mxd

RAMBOLL ENVIRON

Estimated Total Hazard Index, Future Indoor Worker, Parcels C and D (Groundwater) (Chloroform Plume as Depicted in 2015)
Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **5-18**

Drafter: RS/EF | Date: 6/30/2017 | Contract Number: 21-41400A | Approved by: | Revised:

APPENDIX A
RESPONSE TO COMMENT LETTERS

APPENDIX A-1
RESPONSE TO COMMENT LETTER – RESPONSES TO NDEP COMMENTS ON SOIL HRA REVISION 3

Appendix A-1

Explanatory Note:
The following are the list of comments received from NDEP on May 6, 2015 on the Post-remediation Screening Health Risk Assessment Report for Parcels C, D, F, G and H, Revision 3 (dated June 19, 2014).

General Comments

General Comment 1: Background for radionuclides.

Background comparisons for metals were performed using the RZ-A data for background, per NDEP recommendations and previous comparisons of site data with background. This is because of the difference between the BRC/TIMET background concentrations and the RZ-A concentrations; the latter exhibit lower mean concentrations, and the differences are often statistically significant. Hence, RZ-A was used as a more local background dataset than the BRC/TIMET BMI Complex-side background data.

However, the BRC/TIMET background data have been used for radionuclides. An initial and cursory review of the BRC/TIMET background and RZ-A concentration data for radionuclides also indicates that the RZ-A mean concentrations are less than the BRC/TIMET mean concentrations. For at least five of the radionuclides under consideration the differences are statistically significant. This suggests that the RZ-A data should be used as background for radionuclides as well as for metals.

An obvious conclusion is that RZ-A represents a (slightly) different geology than the locations for the BRC/TIMET data. However, both datasets of interest are ostensibly taken from McCullough range derived soils. It is possible that there are other issues at play, but this is difficult to determine based on the presentation. For example, perhaps there are analytical issues. It is not unusual for different labs to report slightly different concentrations. A possible course of action would be to investigate lab reports more closely. Also note that the Ra-228 concentrations appear to be quite low in RZ-A, compared to the BC/TIMET data and compared to data from other RZs (or Parcels). This is perhaps an indication of analytical issues.

It is also possible that acid-solvent leaching of the soil matrix with subsequent transport to groundwater has occurred in this area, and this is cause for somewhat decreased concentrations of some metals and radionuclides in relatively near surface soils. Possible courses of action to further investigate this possibility might include evaluation of redox potential of these soils, and spatial comparison to groundwater concentrations for some metals (e.g., arsenic, uranium).

Response:

Northgate and Ramboll Environ had understood that the RZ-A background data set should be used for chemical analytes, but that the BRC/TIMET BMI Complex background data set should be used for radionuclides. We note that the BRC/TIMET background data set was used for the radionuclide background analysis presented in the June 27, 2012 HRArev2 report (Section 5.2.1) and that NDEP did not comment on that analysis; Northgate therefore used the same data set (i.e., the BRC/TIMET data set) in the HRArev3 report.

As agreed during the October 13, 2015 and January 28, 2016 meeting with

NDEP and NDEP consultants to discuss the radionuclide background analysis (Ramboll Environ 2015), the radionuclide background analysis and discussion were revised as follows:

- The background evaluation for radionuclides was based on the comparison with the RZ-A data set for COPC selection.
- An expanded discussion of analytical and other issues associated with the data sets for the radionuclides are included in Section 5.1.1.2.
- Through the comparison of preliminary cancer risks calculated for the parcel data set and background data set (both RZ-A background and BRC/TIMET background), radionuclides are considered as consistent with background and not identified as COPCs.

General Comment 2: Spatial plots.

A request was made for spatial plots, and some have been provided. Chemicals included in spatial plots are those that are identified as COPCs. However, spatial plots of some other chemicals would be useful to understand and contribute to the CSM. This is perhaps more important here at this site because of the concentrations that are lower than BRC/TIMET background in RZ-A.

Of further note is that the spatial plots are not as useful as plots that use a continuous scale across concentrations (while perhaps using different symbols for non-detects). Splitting data by the mean concentration does not provide a general picture of concentration patterns, and does not allow easy comparison of chemicals for similar spatial patterns. Also, use of large and small circles for shallow and deeper samples does not make it easy to discern differences or patterns. Continuous concentration plots and separate plots for surface and deeper samples would be more helpful.

Also, there does not appear to be much discussion of the results of the spatial plots, perhaps because it is not easy to see effects or patterns given the types of plots provided. There is a discussion in Section 4.5 of why some chemicals were chosen for plotting, but there is no discussion of the results.

Response:

Spatial quartile plots for selected detected analytes and spatial intensity plots for all COPCs are provided in the revised report. In the spatial quartile plots, the concentrations bins are tied to those used for the box plots (i.e., <Q1, Q1-Q3, Q3 + [1.5 x IQR] and > Q3 + [1.5 x IQR]). In the spatial intensity plots, the concentrations bins are tied to BCLs or other screening criteria. Discussion of the spatial plots are provided in the report text. Although Neptune did not like the spatial quartile plots or the spatial intensity plots, Ramboll Environ found the spatial plots to be helpful from a risk perspective. Through agreement between Ramboll Environ and Neptune, Neptune would develop their own plots using the data provided in this report by Ramboll Environ.

General Comment 3: Radionuclide risk.

Certain radionuclides were identified as COPCs in Revision 3 of the Parcels C – H HRA Report pursuant to comments on Revision 2 of the HRA Report indicating that radionuclide concentrations appeared elevated relative to background. Because a radionuclide risk assessment has not previously been presented the assessment in Revision 3 was reviewed:

a. Particulate inhalation exposure pathway; indoor worker. The exposure assessment for radionuclides (Section 5.3.2.3) includes a reference to the BCL User's Guide (NDEP 2008-rev 2013) for methodology and equations. Although NDEP (2008-rev 2013) does not differentiate indoor and outdoor workers for radionuclide BCLs, separate calculations for radionuclide risk were performed in Revision 3 of the Parcels C – H HRA Report consistent with the exposure assessment for chemicals. Inhalation of particulates in indoor air, using an attenuation factor applied to ambient air concentrations, is identified as a potentially complete exposure pathway for chemicals in NDEP (2008-rev 2013). In Section 5.1.3, the rationale provided for excluding this pathway for the indoor worker in Revision 3 of the Parcels C – H HRA Report is a reference to a supplemental soil screening levels guidance (EPA 2002a). The fact that particulate inhalation was not identified as a recommended chemical exposure pathway for indoor workers in EPA (2002a) is not justification for excluding this pathway from the radionuclide risk assessment. EPA (2002a) was among the references evaluated during development of the BCLs for the BMI Complex and Common Areas, yet inhalation of particulates in indoor air was retained as a potentially complete exposure pathway for BCL calculations. An attenuation factor for indoor air particulate concentrations may be applied in the inhalation pathway risk calculation for indoor workers to refine this calculation. In fact, a dilution factor for outdoor to indoor air is listed among the parameters shown in Table 7 of the Parcels C – H HRA Report. Please provide rationale for not quantifying indoor worker inhalation risk for radionuclides.

   We note that practically, the particulate inhalation pathway will make a negligible contribution to total radionuclide risks. But this should be demonstrated / explained to justify not evaluating it. An option might be to consider pathway contributions for the BCL calculations.

   Response:

   Radionuclides are not identified as COPCs, and therefore are not carried forward into the risk calculation.

b. Particulate emission factor value. Revision 3 of the Parcels C – H HRA Report presents a screening-level calculation of risk using the maximum concentration for each COPC from all Parcels. The values for industrial/commercial and construction PEF are not stated in the report. Instead, tables are referenced that show Parcel-specific PEF values. The radionuclide risk calculation workbook was reviewed to determine that the Parcel G PEF values were applied in the calculations. The Parcel G PEF values are the largest among all Parcels, and particulate loading in air (and hence cancer risk) is inversely proportional to the magnitude of the PEF value. The selection of the Parcel G PEF values for a screening calculation should be explained since the most-protective value would more commonly be applied during screening.

   Response:

   The soil HRA has been revised to include a separate evaluation of risks for each individual parcel. Parcel-specific PEFs were used for each individual parcel.

c. Tables 7 and 8. The inhalation rate values used for the radionuclide risk calculations should be added to these tables.

Response:

Radionuclides are not identified as COPCs, and therefore are not carried forward into the risk calculation.

d. Section 5.5.4. The use of maximum detected background concentrations as a point of comparison to the screening-level risk assessment results for each scenario is inappropriate and should be removed from this discussion. An estimate of average background radionuclide concentrations may be employed in the risk assessment calculations for the purpose of providing a point of comparison to Site risks and estimating incremental cancer risks. If the protectively biased screening-level risk assessment results using the maxima from all Parcels is inadequate to support risk management decisions a baseline risk assessment for each Parcel using Parcel-specific concentrations should be prepared. Comparison of maxima is completely inappropriate. Maxima are, by their very nature, highly uncertain with values that are greatly affected by sample size. In this case the sample size used for background is 95, which is much greater than the site sample size for any single parcel. Not only is this approach statistical indefensible, but it is made worse by the background sample size used. This is notwithstanding the issue in General Comment #1 above, which requires use of the RZA data to represent background for radionuclides.

Response:

The soil HRA has been revised to include a separate evaluation of risks for each individual parcel. All discussion comparing risks to maxima background radionuclide concentrations were deleted. As noted, discussion comparing parcel risks with risks associated with both the RZ-A and the BRC/TIMET background data set based on 95% UCL over the mean soil activities are included in the revised HRA.

e. Section 5.6, Uncertainty Analysis. A subsection should be added to the Uncertainty Analysis focusing on the radionuclide risk assessment. The current Uncertainty Analysis focuses primarily on the results of the chemical risk assessment. Various aspects of this discussion are not applicable to the radionuclide risk assessment and key uncertainties related to the radiation risk assessment (such as the radon-222 pathway) are not presently addressed.

Response:

A discussion of uncertainties in the radionuclide risk assessment is presented in Section 6.2.4, including uncertainties with excluding radionuclides from the risk calculation and inhalation risk of radon gas (radon-222) within a commercial building.

f. Radon-222 risk. As discussed in Appendix E-4 of the BCL User's Guide (NDEP 2008-rev 2013) inhalation of radon gas within a building is potentially of greater concern than other exposure pathways related to radium-226. At a minimum, a discussion of potential radon-222 inhalation risks should be added to Section 5.5.4.1 and to the new radionuclide risk assessment subsection of the Uncertainty Analysis.

Response:

A discussion of the inhalation risks from radon in indoor air is presented in Section 6.2.4.

General Comment 4: Asbestos data.

ENVIRON noted in their comment responses to Neptune DVSR comments as follows: DVSR Comment d on Table D-10 of the HRA. The comment response indicates that sample Q3-PF-1-1-0.0 was adjusted in Table D-10 to show an analytical sensitivity of 2.99E+06 structures/g PM10. In asbestos workbook Parcel F_asbestos_riskcalcrev.xlsx the analytical sensitivity for this sample is instead 2.96E+06 structures/g PM10. Please clarify.

Response:

The analytical sensitivity listed in asbestos workbook Parcel F_asbestos_riskcalcrev.xlsx for sample Q3-PF-1-1-0.0 was replaced with the value of 2.99E+06.

General Comment 5: Asbestos risk calculation workbooks.

a. The asbestos risk assessment calculations employ both original and field duplicate samples. This increases the sample size by treating these quality control samples as independent samples, resulting in lower values of pooled analytical sensitivity. If field duplicate samples are to be treated as independent samples the magnitude and variability of results for the field duplicate pairs must be compared with that of primary samples to demonstrate that field duplicate results are independent of primary sample results, otherwise the asbestos risk can be under-estimated.

Response:

We note that both original and field duplicate samples were used in the analysis presented in the HRA rev2 report and that NDEP did not comment on the analysis; Northgate therefore used the same approach in the HRArev3 analysis.

The asbestos cancer risks based on the primary and field duplicate samples are presented in the risk characterization section, and the asbestos cancer risks based on the primary samples only are presented in Section 6.1.7. Results indicate that excluding the field duplicate samples would not change the conclusion.

b. References for site-specific values used in the PEF calculations should be provided in the workbooks. These include site surface area, in situ wet bulk soil density, gravimetric soil moisture content, soil silt content, and road surface soil silt content. The references were discovered in Table 6 of the HRA Report. Please provide the appropriate reference in appropriate asbestos sections of the report.

Response:

References for site-specific values used in the PEF calculations are provided in Table 5-10.

Attachment A-1

RTC Comment 1. Section 4.2. The section notes that MS/MSD recoveries were outside of control limits in 570 instances and that holding-time exceedances in 75 instances. This potential effect on the risk assessment should be discussed in the uncertainty analysis.

Response:

The discussion of the potential effect on the risk assessment of the qualified data is provided in Section 6.1.6.

New Comment 1a. The revised text of Section 5.6 discusses the potential impacts of J-qualified data on the risk assessment results and concludes that J and J- data would not impact COPC selection or identification of maximum concentrations. In particular, the text states, "COPC selection was based on the maximum detected concentration; for analytes not selected as COPCs, the J-qualified results were significantly below BCLs such that even if corrected for the low bias, the analyte would not have been identified as a COPC." This statement should be supported by analysis showing estimated bias-corrected values compared to BCLs.

Response:

A summary of the comparison of J-qualified data to BCLs is provided in Table 6-1.

New Comment 1b. In Section 4.2 it is stated that 444 field duplicate results, and one MS/MSD pair, were qualified for excessively large relative percent difference values. Table C-1 however shows only 304 results qualified due to reason code 17 (Field duplicates did not meet the 50% RPD control criterion). The previous report version stated that there were 570 instances where MS/MSD recovery was outside of control limits, but Table C-1 shows 1,281 results qualified due to reason code 4 (The MS/MSD recovery was outside of control limits). The previous report also noted 75 instances of holding time exceedances. Section 4.2 does not specifically discuss holding time exceedance in the current version, but Table C-1 indicates that 1,164 results were qualified due to reason code 1 (The sample preparation and/or analytical holding time was exceeded). Please explain these discrepancies and revise Section 4.2 to provide a complete summarization of data validation results.

Response:

All qualified results (i.e., U, J, J-, and J+ qualified data) for the non-asbestos analytes are presented in Appendix F, Table F-1, and the reasons for these qualified results are summarized in the DVSRs (see Appendix E). The data qualified due to precision exceedance are summarized in Table E-4, and discussed in Section 4.1.1.7 for each parcel.

RTC Comment 2. Section 4.2. Identify rejected data and discuss implications for the risk assessment.

Response:

The discussion of the potential effect of the rejected data on the risk

assessment is presented in Section 6.1.3.

RTC Comment 3. Table 5. Please update using the latest BCL table and guidance (August, 2013).

Response:

The report was updated using the BCL tables and guidance issued in February 2015.

RTC Comment 4. Table 9. The Deliverable should rely upon the latest toxicity criteria for each of the COPCs (listed in Table 9). The NDEP (2013) reference necessarily documents toxicity criteria current when this reference was prepared, but these criteria are subject to revision over time. The authors should review the federal and state agency references where relevant toxicity criteria are published to identify current toxicity criteria. (The values in Table 9 were checked and are current with present-day values published by federal and state agencies – this clarification pertains to methodology and future assessments).

Response:

Comment acknowledged; the referenced federal and state agency sources for the toxicity values were reviewed to confirm that the most current values are being used at the time the report is submitted.

RTC Comment 5. Editorial change. Please change “contaminate” to “contaminant” in footnote #5.

Response:

This comment was addressed.

Attachment A-2

RTC Comment 1. Section 5.2.1. The reasoning by which all radionuclides were dismissed as COPCs appears flawed. In the case of Parcel H, not just one but all four radionuclides in the uranium series were clearly elevated with respect to background.

Response:

Per discussion in the October 13, 2015 and January 28, 2016 meeting with NDEP and NDEP consultants, the radionuclide background analysis for Parcel H is pending for Neptune's review. Before getting agreement with NDEP and NDEP consultants, it is assumed that radionuclide concentration levels are consistent with background in Parcel H, and radionuclides will not be identified as COPCs.

New Comment 1a. Section 5.2.1, 3rd paragraph, 1st sentence. The text indicates that the "potential comparability issues identified for metals data were not observed" for radionuclides. Our review of radionuclide summary statistics for the RZ-A site background and BRC/TIMET (2007) background data sets suggests that, as for metals, RZ-A site background for radionuclides may also be lower than regional background for radionuclides. Data analysis must be provided to support the statement that radionuclides are not affected by the comparability issues and justify the use of the BRC/TIMET (2007) background data set for radionuclides.

Response:

Please see response to General Comment #1.

New Comment 1b. Section 5.2.1, last paragraph. A review of Table F-4 does not support the identification as COPCs of only the uranium-238 decay series radionuclides (U-238, U-234, Th-230, Ra-226) in Parcel H. Thorium-232 and radium-228 are also indicated as being present in Parcel H soils at concentrations elevated above background, indicating that the thorium-232 decay series (Th-232, Ra-228, Th-228) should be retained as COPCs.

Response:

Per discussion in the October 13, 2015 and January 28, 2016 meeting with NDEP and NDEP consultants, the radionuclide background analysis for Parcel H is pending for Neptune's review. Before getting agreement with NDEP and NDEP consultants, it is assumed that radionuclide concentration levels are consistent with background in Parcel H, and radionuclides will not be identified as COPCs.

RTC Comment 2. Spatial intensity plots showing the spatial distribution of analytes are needed to evaluate the implicit assumption that there is no spatial structure to the soil samples and therefore it is appropriate to pool samples.

Response:

Please see response to General Comment #2.

New Comment 2a. Spatial intensity plots should be provided for all chemicals rather than a subset. The purpose of such plots is to investigate possible spatial patterns that can inform the conceptual site model, provide a basis for evaluating data adequacy, and finally support data aggregation for exposure assessment. Also, identifying chemical collocation is facilitated by review of these plots. Producing plots for all analytes should not require substantially more effort than for a subset, and in fact may ultimately be more efficient since there is then no need to provide rationale for omitting a subset of chemicals based on documentation of the reviews described in the response.

Response:

Please see response to General Comment #2.

New Comment 2b. The spatial plots provided in Figures 7 through 17 are inadequate to allow review of spatial patterns of contamination. The plots should provide a continuous scale, using color or bubble size. Distinguishing concentrations at different locations as either greater or less than the mean as the current plots are configured is of limited value for identifying the location of anomalously high values. In addition, it would be more helpful to have separate plots for the two different depth layers – these could be presented side-by-side.

Response:

Please see response to General Comment #2.

RTC Comment 3. Executive Summary. Please revise the paragraph related to asbestos risks to correct the reference to constant lifetime exposure for construction worker amphibole upper-bound cancer risk results in the risk assessment.

Response:

The paragraph has been revised.

New Comment 3a. Footnote 2 clarifies that the fiber counts referenced to the Removal Action Workplan are not remediation goals. Explain the relevance of the cited Removal Action Workplan fiber counts or remove these sentences from the paragraph.

Response:

The language in the report has been revised to delete any suggestion that the number of fiber counts is a remediation goal.

New Comment 3b. In both Executive Summary and Section 5.5.3 there are statements that the upper-bound risk estimates are based on an observed count of zero long amphibole structures in the 75 remaining (post-abatement) samples from the Parcels. These statements are incorrect and misleading, and conflict with the request for clarification of this issue in Comment 19. Asbestos UCLs and related risk estimates were not calculated with 75 samples but rather with the number of post-abatement samples collected in each individual parcel, which range from 6 samples (Parcel G; 6E-06 cancer risk) to 23 samples (Parcel H; 2E-06 cancer risk). Please revise the text in this paragraph and Section 5.5.3.

Response:

The text in the Executive Summary and Section 6.2.2.2 has been revised to reflect the number of samples in the individual parcels, as appropriate to the discussion.

RTC Comment 4. Section 2.2; last paragraph. Asbestos remediation goals are stated in this paragraph without reference. The basis for the chrysotile and amphibole asbestos counts referenced to the Removal Action Workplan is not described in the post-remediation risk assessment and it is inappropriate to infer that these fiber counts somehow define acceptable post-remediation levels of asbestos in soil. Fiber counts in a sample are not meaningful without an associated analytical sensitivity, so while these counts may have significance for delineating target areas for soil remediation in the workplan context they have no particular significance in a risk assessment context. More specifically, it is the pooled analytical sensitivity based on multiple samples that is relevant for estimating asbestos soil concentrations and this is a function of the number of samples as well as sample-specific analytical sensitivity. Explain the relevance of the cited Removal Action Workplan fiber counts or remove this language.

Response:

The language in the report has been revised to delete any suggestion that the number of fiber counts is a remediation goal.

RTC Comment 5. Section 3.1. Appendix C contains data files for samples with qualified results only. The text of Section 3.1 states, "A complete listing of the Parcel Soil Confirmation samples and SDGs is presented in Table 1-2 of the Northgate (2010a) Data Validation Summary Report for the Parcels, which is discussed later in this report and provided in Appendix C." Please briefly describe the three Excel workbooks also provided in Appendix C.

Response:

All the data summary tables and documents related to the soil DUE are presented in Appendices E and F. Appendix E includes four Excel workbooks for data not considered due to soil removal and asbestos abatement activities, data excluded during data processing, rejected data, and qualified field duplicate, in addition to a folder with data validation summary reports. Appendix F includes post remediation soil HRA data set for chemicals and radionuclides (including all U- and J-qualified data) and the post remediation soil HRA data set for asbestos.

RTC Comment 6. Section 3.7. Please define a "trigger sample" as referenced in the sentence describing how "…the trigger sample point was surveyed and marked by LVP."

Response:

This was clarified in the text of Section 3.3.1.2.

RTC Comment 7. Section 4.2. Data validation methods and results for asbestos should be discussed.

Response:

Neptune validated the asbestos results in accordance with NDEP guidance (Neptune 2014), and a memorandum responding to the specific issues identified in the DVSRs along with the agreed data set for risk assessment purposes in the EDD was submitted to NDEP (ENVIRON 2014). The final asbestos data set used in this post-remediation soil HRA is presented in Table F-2.

RTC Comment 8. Section 4.2. Add a discussion of laboratory accreditation / certification under Criterion III.

Response:

The text in Section 4.1.1.4 was amended indicating that analyses were conducted by NDEP-certified laboratories.

RTC Comment 9. Section 4.2. Provide more details about detection limits above BCLs for benzo(a)pyrene and dibenz(a,h)anthracene. Table 5 indicates that detection frequencies for detected PAHs are relatively low, being in all cases less than 5%. This provides evidence that PAHs are not a widespread soil contaminant and support a conclusion that detection limit issues for benzo(a)pyrene and dibenz(a,h)anthracene are not a significant concern. Please add a discussion of this line of evidence to the text of the report.

Response:

A discussion of the impacts of elevated SQLs on the soil COPC selection and risk estimates is presented in Section 6.1.2.

RTC Comment 10. Section 4.2. More information needs to be provided about the RPD exceedances. This information should be summarized in a table.

Response:

The data qualified due to precision exceedance are summarized in Table E-4, and discussed in Section 4.1.1.7 for each parcel.

New Comment 10a. The summary of the assessment of precision in the revised text (444 field duplicate results, and one MS/MSD pair, were qualified for excessively large relative percent difference values) appears inconsistent with the earlier text (570 instances where MS/MSD recovery was outside of control limits). Please explain this discrepancy.

Response:

The summary of data qualified due to precision exceedance was reorganized by Parcels C, D, and G, and was checked against the DVSRs for consistency.

New Comment 10b. Vinyl acetate is identified as the only analyte for which an MS/MSD sample exceeded the RPD criterion. This result was qualified with the statement that vinyl acetate "is not a compound that is included in the HRA data set (Appendix D)." Section 4.4 states that all confirmation data are included in

Appendix D. Please identify any other analytes that have been excluded, explain the basis for which an analyte such as vinyl acetate would have been excluded from the assessment data set, and provide this information in the risk assessment report.

Response:

Vinyl acetate was not excluded from the soil HRA data set (see Table F-1), and the data point qualified for MS/MSD RPD exceedance was still retained in the soil HRA data set. No other analyte was excluded from the soil HRA data set due to precision exceedance.

RTC Comment 11. Section 4.2. Provide the total number of results evaluated and results rejected to calculate percent completeness.

Response:

The rejected data are summarized in Table D-3, and the calculated completeness for each parcel is presented in Section 4.1.1.7.

RTC Comment 12. Section 4.2 and Appendix C. Section 4.2 and Table C-1 do not provide enough information about the data qualifications made. All data qualifications, not just J-, should be discussed. Additionally, Table C-1 needs to provide: limits and recoveries, definition of reason codes, holding time vs exceeded time, LCS/LCSD issues, and an explanation of the yellow highlight. The text on page 21 (570 MS/MSD exceedances and 75 holding time exceedances) does not accord with the numbers of exceedances for these endpoints in Table C-1.

Response:

All qualified results (i.e., U, J, J-, and J+ qualified data) for the non-asbestos analytes are presented in Table F-1, and the reasons for these qualified results, including details of the exceedances and deficiencies, are summarized in the DVSRs (see Appendix E).

New Comment. The summary bullets related to J-qualified data in the Data Quality Indicators discussion were deleted in this revision of the risk assessment. A summary table with information for each analytical suite was introduced for the data completeness endpoint, but summary information related to data qualifiers for precision and accuracy is now missing. Summary tables for precision and accuracy parameters should be added to Section 4.2. These summaries, and reference to Table C-1 as appropriate, should be used as the basis for the discussion of the effect of uncertainty in data usability/data evaluation (Section 5.6) on risk assessment results and conclusions. Table C-1 should be referenced for data qualification details, but this table has >8400 rows and requires summarization in the main report. See also clarification for Attachment A-1, Comment 1, for specific examples of discrepancies between Table C-1 and Section 4.2.

Response:

The Data Quality Indicators discussion was reorganized in Section 4.1.1.7 of this report. All the data summary tables and documents related to the soil DUE

are presented in Appendices E and F. Appendix E includes four Excel workbooks for data not considered due to soil removal and asbestos abatement activities, data excluded during data processing, rejected data, and qualified field duplicate, in addition to a folder with data validation summary reports. Appendix F includes post remediation soil HRA data set for chemicals and radionuclides (including all U- and J-qualified data) and post remediation soil HRA data set for asbestos. This information was used as the basis for the discussion of the effect of uncertainty in data usability/data evaluation on risk assessment results and conclusions (see Section 6.1).

RTC Comment 13. Section 4.2. There needs to be more information about how blank contamination was handled for DVSRs. Blank contamination is one of the parameters that should be summarized in Section 4.2 and discussed in relation to the effect of uncertainty in data usability/data evaluation (Section 5.6) on risk assessment results and conclusions. Although the impact of blank contamination is discussed in Section 5.6 a summary of the sample results affected by blank contamination should be provided in Section 4.2. Information summarizing the levels of contamination found in blank samples should be added to the discussion in Section 4.2. See also the clarification for Comment 12.

Response:

As requested by NDEP and in accordance with the most recent guidance (NDEP 2012) for evaluating data associated with blank contamination, Ramboll Environ queried the censored data for blank contamination from the project database, and changed them from nondetected values at PQLs (U qualified) to detected values at reported concentrations (J qualified) if the PQLs were higher than the reported concentrations. Such revisions did not affect any sample in Parcel C, D, or G. However, during our review, Ramboll Environ noticed that several discrepancies in the data associated with blank contamination exist between the project database and the amended tables of the DVSRs Northgate prepared in the Soil HRA Report Revision 3 (Northgate 2014), especially for the reported concentrations. Data consistent with the project database are included in this soil HRA, and the impacts of such discrepancies on the soil HRA results are further discussed in Section 6.1.6. Also, please see our response to NDEP comment on Attachment A-2, Comment #12.

RTC Comment 14. Section 5.2.1. Please clarify why data from two different locations are used as background. Analysis must be provided to support this statement and justify the use of the BRA and TIMET (2007) background data set for radionuclides. As noted in the New Comment for RTC Comment 1, our cursory review of radionuclide summary statistics for the RZ-A site background and BRA and TIMET (2007) background data sets suggests that, as for metals, RZ-A site background for radionuclides may also be lower than regional background for radionuclides. Geologic differences are cited in Section 5.2.1 and in this comment response as one possible explanation of the discrepancy between Site and background concentrations for analytes in the metals analytical suite, and such differences could also affect radionuclide concentrations.

Response:

See response to General Comment #1.

RTC Comment 15. Section 5.2.1. The reason for using different substitution values for non-detects for parametric and non-parametric tests should be discussed. Section 5 .2.1 was revised to cite NDEP guidance for the substitution values, but the rationale for the use of different values for parametric and non-parametric tests was not provided as the response indicated it would be. Please provide a brief summary of the rationale, which pertains to the difference between representing results by ranked value (non-parametric tests) versus representing results by the most-likely actual value (parametric tests).

Response:

The text in Section 4.1.2.2 was expanded accordingly.

RTC Comment 16. Section 5.2.1. Discuss issues related to the use of PQLs in the data analyses in lieu of SQLs. The analytes affected by this issue are not specified nor is the direction or degree of potential bias clearly explained for data analyses affected by this issue. Tables including affected analytes would be helpful, including a comparison of the non-detect limits with the detected data, and some discussion of how this affects conclusions. Table 3 contains some of this information. For example, the non-detect (presumably PQLs) for antimony appear to range from 1 – 5.4 ppm, but the detected data range from 0.088 to 0.32 ppm. The same basic issues arise for all metals that have non-detects reported (e.g., boron, cadmium, chromium VI, mercury, thallium, tin, tungsten). Some of these metals failed background comparisons, however, the impact of the PQLs on these background comparisons is not clear. For example, boron and thallium failed background comparisons – was this because of the high PQLs?

Response:

As discussed in Section 4.1.1.5, the issue of reporting nondetect results to PQL instead of SQL no longer exists in the current soil HRA data set. After taking the responsibility for maintaining the project database on behalf of the Trust in early 2011, Ramboll Environ repossessed the nondetect data according to the current NDEP guidance on the use of censoring limits (NDEP 2008). In the soil HRA data set, nondetect results are reported to the SQL whenever it is available; otherwise, nondetect results are reported to the method detection limit (MDL). Only when either SQL or MDL is not available, the nondetect results are reported to the PQL.

RTC Comment 17. Section 5.2.2. Reconcile presentation of amphibole risks with amphibole not being identified as a COPC. Consistent with the April 1, 2014 NDEP response to the NERT response to Comment 17, amphibole was retained as a COPC. Table 5 indicates amphibole was identified as a COPC based on NDEP (2011), but no NDEP (2011) reference is included in the risk assessment references (Section 7). Please provide the reference.

Response:

Long amphibole fiber was included as a COPC per NDEP guidance (Neptune 2015).

RTC Comment 18. Section 5.5.3. Revise paragraph to accurately describe bias related to the asbestos URF used in the risk assessment. The Comment 3 is also applied to this comment.

Response:

The uncertainty of asbestos toxicity value is discussed in Section 6.2.3. Also, see response to Attachment A-2, Comment 3.

RTC Comment 19. Section 5.6. Add a discussion explaining the relationship between sample size and pooled analytical sensitivity to provide context for upper-bound asbestos risk estimates. This discussion provides a good summary of the relationship between sample size, fiber count, and the 95UCL for asbestos. This should be referenced in addressing New Comment for RTC Comment 3 and RTC Comment 18.

Response:

The discussion of uncertainty in asbestos exposure point concentrations is presented in Section 6.2.2.2, in response to NDEP Attachment A-2 RTC Comment 3 and RTC Comment 18.

RTC Comment 20. Section 5.2.1. The rationale and distinction between parcel level comparisons and site wide comparisons should be more fully discussed in the main report. The following new text was added to Section 5.2.1: "The background evaluation was performed for each Parcel individually and is presented for both the combined Parcels and individual Parcels. The Parcels were evaluated individually because potential sources of chemicals could exist only in certain Parcels." Please revise the second sentence as follows: "The Parcels were evaluated individually because they had different operational histories and previous soil investigations identified different potential contaminants among the different Parcels (see Section 2.0)"

Response:

The soil HRA has been revised to include a separate evaluation of risks for each individual parcel, so the background evaluation will only be performed for each parcel individually. The referenced sentence was revised as suggested in Section 4.1.2.2.

RTC Comment 21. Tables F5A and F5B. Explain what is meant by the "Number Missing" column.

Response:

The missing number is the count of sampling locations for which one or more results are unavailable. A footnote has been added to Tables I-5a and I-5b.

RTC Comment 22. Section 5.5.3. The variation in the asbestos upper-bound risk estimates is a function of differences in sample size and should be explained in that context.

Response:

See response to Attachment A-2 RTC Comment 19.

RTC Comment 23. Table 5. Add a footnote explaining blue shading.

Response:

A footnote was added to Tables 5-1 through 5-3 explaining that blue shading indicates analyte is carried forward to COPC identification Step 2.

RTC Comment 24. Appendix F boxplots. The points outside of the 1.5x interquartile range are not necessarily outliers.

Response:

The term “outlier” was deleted from all boxplots in Appendix I.

APPENDIX A-2
RESPONSE TO COMMENT LETTER – RESPONSES TO NDEP COMMENTS ON SOIL GAS HRA REVISION 1

Appendix A-2

Explanatory Note:
The following are the list of comments received from NDEP on January 12, 2017 on the Soil Gas Investigation and Health Risk Assessment for Parcels C, D, F, G, and H, Revision 1 (dated September 23, 2016).

General Comment:

1. Run the J&E model for the soils at the depth of 5 ft. and 10 ft., and the groundwater with the data available, respectively;
2. The input data for the J&E model must use the site specific data. If the site specific data is not available, NERT should choose using the default values of the dominant soil classifications for corresponding soil horizons at the site or collecting new data for the depth of 5 ft. and 10 ft.;
3. Do a 30-day exposure frequency for trench model analysis.

Specific Comment #1 - March 18, 2013 NERT HRA Work Plan, on page 2, Section 1.1 Overview, footnote #4 and Section 5.4.3
This section states: "Potential risks associated with soils within the Study Area are currently being evaluated. The current draft of the soil HRA was submitted to NDEP on May 18, 2012 (Northgate 2012) and NDEP provided comments on the draft HRA on August 7, 2012. Responses to NDEP comments and revisions to the draft HRA are in preparation. Results from the final (NDEP-approved) HRA will be combined with the risk results for the vapor intrusion pathway to evaluate cumulative risk."

The current version of the report only addresses the vapor intrusion pathway and makes no statement with regard to next steps/path forward. It is understood that the path forward is dependent upon risk management decisions among stakeholders, however, the current report does not address the cumulative risk.

> **Response:** Reporting of cumulative risk (soil + soil gas) was discussed on pages 2, 3-4, and 49 of the Rev1 report. As noted on those pages, the original plan was for the cumulative cancer risks and HIs for inhalation of VOCs (as evaluated in the Soil Gas HRA) and for soil-related pathways (for all soil chemicals of potential concern) to be presented in the final version of the Soil Gas HRA or in the final version of the soil HRA. The current version of this report now addresses soil, soil gas and groundwater for Parcels C, D and G.

Specific Comment #2 - March 18, 2013 NERT HRA Work Plan, Figure 5
Figure 5, the CSM, indicates that the downgradient receptor pathways for Indoor Worker and Resident are complete. Further, page 35, Section 5.2.l Conceptual Site Model, last paragraph states:

> "In accordance with the 2010 and 2013 risk assessment work plans (Northgate and Exponent 2010a; ENVIRON 2013a), off-site receptors, visitors, and trespassers were not quantitatively evaluated in the HRA. The rationale for excluding these receptors and a qualitative in the HRA. The rationale for excluding these receptors and a qualitative discussion of their potential risks is presented in Section 6.4.

And on Page 47, Section 6.4, Exposure Assessment, fourth paragraph states:

> "In accordance with the NDEP-approved Health Risk Assessment Work Plan (Northgate and Exponent 2010a), off-site receptors were not quantitatively

evaluated in the HRA. Inhalation of VOCs by on-site outdoor commercial/industrial workers serves as an upper-bound estimate of the potential exposures to VOCs by off-site receptors, ..."

For reference and clarity of the administrative record, the Health Risk Assessment Work Plan (Northgate and Exponent 2010a) specifically states on page 8:

> "...off-Site receptors will not be quantitatively evaluated in post-remediation risk assessments and a discussion will be included to provide rationale for this decision, and the associated uncertainties will be included in the uncertainty assessment."

The report lacks transparency as regards rationale and justification for not evaluating off- Site receptors as this justification is not brought forward into the HRA report. It should also be noted this plan states, "Based on the relative differences in the on-Site receptor particulate emission factor .... and the off-Site receptor particulate emission factor during construction, ... versus other exposure factors that may be higher for the off-site receptor, the on-Site construction exposure will be greater than that of the off-Site receptors." Underline added for emphasis to draw attention to lack of technical justification for not evaluating the off-Site receptor. Recommend revision to this section to provide clear justification and technical rationale for why off-Site receptors are protected.

Response: Discussion was added to clarify this point in Section 6.2.2.

Specific Comment #3 - Executive Summary

The construction worker receptor should be evaluated using a model accounting for vapor intrusion into a utility trench such as that from the Virginia Department of Environmental Quality (2016).[1]

Response: A utility trench was not included in the approved work plan. At the request of NDEP a utility trench scenario has been added to the Parcel C, D, and G HRA Report.

Specific Comment #4 - Section 1. Introduction, page 3.

The text states that "In addition, based on a review of figures showing a chloroform plume in shallow groundwater, NDEP noted that the 2008 Phase B investigation soil gas samples were collected from locations where VOC results would likely be biased low. Finally, NDEP commented that it may be reasonable to use the site-wide soil gas data reported in the 2010 Site-Wide Soil Gas HRA in conjunction with groundwater data to evaluate potential risks for the vapor intrusion pathway."

Section 1. Introduction, page 5. The text states that "Since completion of the soil gas sampling and Revision 0 of this HRA, USEPA issued the final version of its guidance Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air (USEPA 2015a). Ramboll Environ has reviewed the guidance and found that the completed field work and HRA are generally consistent with the current guidance."

USEPA (2015) referenced herein states that "Modeling results for idealized scenarios

[1] http://www.deg.virginia.gov/Programs/LandProtectionRevitalization/RemediationPrograrn/Voluntai:yRemediationPr ogram/VRPRiskAssessmentGuidance /Guidance.aspx

show that, in homogeneous soil, soil gas concentrations tend to be greater beneath the building than at the same depth in adjacent open areas when the vapor source is underneath the building, even if the source is laterally extensive relative to the building footprint (e.g., broad plume of contaminated groundwater) (USEPA 2012b). Given these predictions and supporting field evidence (USEPA 2012a, see Figure 6; Luo et al. 2009; Patterson and Davis 2009, see Figure 1), individual exterior soil gas samples cannot generally be expected to accurately estimate sub-slab or indoor air concentrations. This potential limitation may be particularly valid for shallow soil gas samples collected exterior or adjacent to a building footprint…Deeper soil gas samples collected in the vadose zone immediately above the source of vapor contamination (i.e., 'near-source' soil gas samples; see Section 6.3.1) can reasonably be expected to be less susceptible to the diluting effects of ambient air, compared to shallow soil gas samples. On this basis, deeper soil gas samples collected in the vadose zone immediately above the source of vapor contamination will tend to be more suitable than will be shallow soil gas samples for assessing vapor concentrations that may be in contact with the building's sub-slab." The USEPA (2015) as referenced in the Deliverable does not appear to support the use of shallow soil gas sample on open areas.

Response: Groundwater modelling results were included in the previous report in Appendix I. As discussed with NDEP, the groundwater results have been updated and moved into the main text as an additional line of evidence. In addition, soil gas samples collected in 2007 within Parcels C and D at a depth of 10 ft bgs have been identified and included in the Parcel C, D and G HRA Report.

Specific Comment #5 - Section 2.1.5 Parcel H, First Line, page 14
The text indicates the size of Parcel H is 24.5 acres. However, the J&E modeling done used a parcel size of 26.3. Please reconcile and correct J&E modeling accordingly (Table 12).

Response: This will be corrected in the Parcel H HRA Report.

Specific Comment #6 - Section 4.1.1Soil Gas Data Set, Second Paragraph, page 22
The text indicates that there are 12 sampling locations from the 2008 investigation…shown on Figures 5 and 6. Consistent with the RTCs, for Parcel H, why not include the soil gas data from sample locations SG47, SG66 and SG67?

Response: Samples SG47, SG66, and SG67 are to the north of Parcel H. For the few cases in which samples exterior to a parcel boundary were included in the HRA data set, the samples were located downgradient (not updgradient) of a parcel.

Specific Comment #7 - Section 4.2.2.2 Parcels F, G, and H), page 32.
1. The text states that "However, as previously described (Section 2.3), chloroform was not detected in the 0 and 10 ft soil samples collected within Parcel F (7 of which were located within LOU 63, although downgradient of SG34), but was detected at concentrations of 200 and 410 µg/kg in two of the 20 and 30 ft soil samples collected within Parcel F, suggesting a groundwater source." Please show this data in graphic and/or tabular form.
2. The text states that "For the outlier pair, for which the soil gas concentration was higher than predicted, available shallow soil samples (at 0 and 10 ft bgs) did not provide evidence of a surface source, with chloroform detected only in deep soil samples at 20 and 30 ft bgs." The correlation shown in Figure 8 does not support the predicted concentration assumed herein. Given that USEPA (2015) referenced in the states that "Modeling results for idealized scenarios show that, in homogeneous soil, soil gas concentrations tend to be greater beneath the building than at the same depth in adjacent open areas…individual exterior soil gas samples cannot generally be

expected to accurately estimate sub-slab or indoor air concentrations ... This potential limitation may be particularly valid for shallow soil gas samples collected exterior or adjacent to a building footprint..."Please explain the apparent low bias in shallow soil gas as shown in these two paragraphs in Section 4.2.2.2.

Response: As agreed with NDEP, the groundwater/soil gas comparison has been removed from the report. Groundwater modelling results were included in the previous report in Appendix I. As discussed with NDEP, the groundwater results have been updated and moved into the main text as an additional line of evidence.

Specific Comment #8 - Section 4.2.3 Spatial Analysis of VOCs in Soil Gas, page 32
In general, it appears that this exercise also supports the tenet of groundwater as the source yet several exceptions are noted. For example, no discussion is offered concerning significant contribution of carbon tetrachloride in Parcel G soil gas samples E-SG-8 and SG47. However, shallow groundwater data (Table 8) in Parcel G monitoring well TR-8 reports nondetect or very low estimated concentrations. Please update this section to provide a more robust interpretation of the data.

Response: During our meeting, NDEP agreed to remove this comment.

Specific Comment #9 - Section 5.2.3.2 Fate and Transport Modeling, page 36.
The text states that "For the receptors evaluated in this HRA (future on-site workers), transfer factors for soil gas to indoor air and outdoor air were derived based on migration of soil gas from 5 ft bgs into a commercial slab-on-grade building and into ambient air." The J&E model documentation states that the advective zone of influence for soil gas flow is limited to soil immediately adjacent to the building foundation. The foundation acts as a barrier to atmospheric cycles resulting in higher sub-foundation soil gas concentrations than measured in the absence of a building. Computer simulations by Massmann and Farrier (1992) supports the concept that "fresh air may migrate several meters into the subsurface during a barometric pressure cycle." Three-dimensional modeling by Abreu, et.al. (2008) indicated that for shallow sources on undeveloped land the best sampling depth was between 4 to 5 meters of depth and for deep sources samples should be collected from a maximum depth of 5.5 meters.

Reference to Table 12 and Table 14. The J&E soil gas model was for shallow 5-foot deep soil gas samples; however, the soil physical properties were for soil samples from 9 to 15 feet deep with an average of 10 feet deep. The mean volumetric water content was 0.154 (unitless) and the total porosity was 0.366 (unitless). Ifcomparable shallow soil samples are not available on the NERT site then J&E default values for loamy sand (volumetric water content 0.076 and total porosity was 0.39) should be used in the model.

Response: Groundwater modelling results were included in the previous report in Appendix I. As discussed with NDEP, the groundwater results will be updated and moved into the main text as an additional line of evidence.

In addition, soil gas samples collected from Parcels C and D at a depth of 10 feet bgs have been identified and included in the HRA. The 10 foot soil properties were used for all soil gas modelling but the use of more conservative default soil properties is discussed in the uncertainties section (Section 6.2.2.3).

The site-specific soil properties were used in the modelling of both the 5 and 10 foot soil gas samples. After reviewing site boring logs and lithology, the site-specific soil

properties were used with the removal of the one sample collected at 15 feet. Reviewing both the boring logs in the parcels and the boring logs where the samples were collected did not reveal any systematic increase in “wetness” between 5 and 10 feet throughout the site. While a few locations did note wetter conditions at 10 feet, a few locations also noted wetter conditions at 5 feet as well. Additionally, there is very little variability among the soil properties measured from the 9 and 10 feet samples. The exception to that is the one sample collected at a depth of 15 feet that did note wetter conditions than typical and also had the highest water filled porosity measured at the site. It was decided to remove the 15 foot sample from the evaluation and modify the site-specific soil properties to include only the samples from 9 and 10 feet. We also reviewed the stratigraphy from the site and in all of the parcel areas, both 5 and 10 feet should be located in the same stratigraphic unit (the alluvium) and are expected to have very similar conditions. The upper muddy creek formation, which should have wetter soil properties, does not appear stratigraphically until significantly deeper than 10 feet in all three parcels.

Use of conservative default values in the place of site-specific soil properties has been addressed in the uncertainty section (Section 6.2.2.3).

Specific Comment #10 - Section 6.3, page 46
The report states "California's default air exchange rate of 1 air change per hour (Cal/EPA 2011) was used in the absence of a default rate from USEPA. A conservative height of 10 ft was assumed, although many commercial buildings have higher first floor ceilings." The CalEPA default commercial building height (8 feet) should be used.

Response: The height was proposed and agreed upon in the Work Plan.

Specific Comment #11 - Section 6.3 Exposure Concentrations, page 50.
The text states that "Lastly, it is expected that the soil gas samples will provide a more accurate risk characterization because soil gas samples are collected closer to the point of exposure." It is accurate to say that the shallow soil gas sample is closer to the point of exposure; however, it is inaccurate to say that a shallow soil gas sample is equivalent to a sub-slab or deep soil gas sample. Shallow soil gas samples over undeveloped land are not equivalent to either sub-slab soil gas (USEPA, 2015; USEPA, 2004) or soil gas samples from undeveloped land (Massmann and Farrier, 1992; Abreu, et.al., 2008). Given the probable low bias from shallow soil gas in undeveloped (open) as cited here and in previous comments, it is recommended that shallow soil gas samples be used as only one line of evidence. Furthermore, it is recommended that the groundwater COPCs be modeled using the J&E Groundwater Model.

Response: Groundwater modelling results were included in the previous report in Appendix I. As discussed with NDEP, the groundwater results were updated and moved into the main text as an additional line of evidence. In addition, soil gas samples collected in 2007 within Parcels C and D at a depth of 10 ft bgs have been identified and included in the Parcel C, D and G HRA.

Specific Comment #12 – Table 1 LOUs Within and Directly Upgradient of the Study Area Parcels
Parcel C does not list LOU #58 yet Figure 4 indicates it is within or directly upgradient. Please correct accordingly.

Response: For this report, the table has been removed but the figure retained (now Figure 2-1). As shown in the figure, LOU #58 is not within or directly upgradient of

Parcel C.

Specific Comment #13 - Table 3
Please provide the equation(s) used to derive the risk-based concentrations (RBCs).

Response: Page 32 of the report states that "The RBCs were derived using the inputs to the Johnson and Ettinger (1991) model and values for exposure assumptions and toxicity criteria presented in Section 5 of this HRA." Equations for deriving RBCs were added in the Section 5 of the report.

Specific Comment #14 - Table 4 Field Duplicate Qualifications
Please verify the calculation for sample pairs E-SG-6-030813 1,2 Dibromoethane, E-SG-6- 030813 cis-1,3 Dichloropropene, E-SG-6-0308131 1,1,1,2-Tetrachloroethane as they do not appear to be correct.

Response: Soil gas sample E-SG-6-030813 collected in 2013 is located in Parcel F. The calculations for field duplicates for this sample are updated and included in the Parcel F HRA Report which is anticipated to be submitted to NDEP by the end of 2017.

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Specific Comment #15 - Table 7 Soil Gas Summary Statistics -Combined 2008 and 2013 Data

Several chemicals were which were detected in 2008 were not analyzed in 2013 yet the report does not provide rationale for elimination of these chemicals from the suite. The chemicals are noted as follows:

- N-Butylbenzene @ 100% detection frequency
- Ethanol @ 92% detection frequency
- N-Octane @ 50% detection frequency
- N-Propylbenzene @ 75% detection frequency

Please provide some discussion on the subject.

Response: Although both investigations used analytical method TO-15, the laboratories reported a different set of chemicals. As shown in Appendix Q, Table Q-2-4, all chemicals listed above were evaluated for noncarcinogenic effects in the soil gas HRA and none contributed significantly to the estimated HIs for any parcels or exposure populations.

Specific Comment #16 - Table 8
Please expand this table to include all groundwater COPCs listed in Table 9.

Response: Groundwater tables were revised and now include all groundwater COPCs.

Specific Comment #17 - Table 11
Was vapor intrusion modeling and associated risk calculations conducted for chloroform for Parcel E? If not, because Figure 4 and Figure 5 show elevated chloroform concentrations in groundwater immediately south/southwest (upgradient) of Parcel E, it is recommended that a groundwater-based vapor intrusion model be used to quantify the potential future risk associated with chloroform in groundwater given the expectation that this chloroform will soon migrate beneath this parcel.

Response: Parcel E is not included in this report.

Specific Comment #18 - Table 12 and Table 14
Are there any data soil properties data available for samples collected at depths less than or equal to 5 feet? If so, they should be used. The default saturation (ratio of water-filled porosity to porosity) for a loamy sand is approximately 19% whereas the value used in the model (0.154 / 0.366) equates to approximately 42%. The values listed in the table are associated with samples collected from depths ranging between 9 and 15 feet. Please provide justification for using these samples for vapor intrusion model simulations based on a source depth of only 5 feet, especially given the moist/wet conditions noted on some of the boring logs included in Appendix F in the 9- to 15-foot depth interval in which the soil properties samples were collected. The potential for lower moisture conditions in the depth interval ranging between 0 and 5 feet, and associated higher risk values, should be discussed.

Response: See response to Specific Comment #9.

Specific Comment #19 - Table 13 and 'VLOOKUP' Table
Many of the chemical property values in these tables are outdated in comparison to those more recently published by the USEPA. It is recommended that the updated USEPA values be used. For example, the reference concentration for TCE – which is a COPC as listed in Table 9 - has been revised downward from 0.04 mg/m^3 to 0.002 mg/m^3.

Response: The tables were updated.

Specific Comment #20 - Table 14
Footnote b of this table states that the volumetric moisture content is "As measured per ASTM D 2216". This is incorrect as ASTM D 2216 measures moisture content on a mass basis (e.g., grams of water per gram of soil). Mass basis moisture values should be adjusted using dry bulk density and water density values as described in NDEP (2010) *Soil Physical and Chemical Property Measurement and Calculation Guidance.*

Response: The values presented in the table are already corrected using that methodology. The footnote in the table has been revised for clarity.

Specific Comment #21 - Figure 4, Figure 5, and Figure 6
Please add a groundwater flow direction arrow (or arrows) to these figures. Further, Figure 5 indicates the Primary Source of Groundwater VOC is from Off-Site sources. As new field data is collected the validity of this assumption is called into question, specifically as regards Units 4 and 5 investigations. Revision to this figure is recommended.

Response: A revised figure (Figure 3-3) was made to incorporate the changes. Previous Figures 5 and 6 are now included in Appendix B and groundwater flow direction arrows have been added. Figure 5 shows the chloroform groundwater plume as it was depicted in 2010. Figure 6 shows the chloroform groundwater plume as it was depicted in 2016.

Specific Comment #22 - Figures
The figure suggests that there are chloroform data are from 2008 and 2013. Are there more recent chloroform soil gas data?

Response: No.

Specific Comment #23 - Figure 6
Comparison to Figure 5 shows the chloroform in groundwater plume is migrating to the northeast. A discussion regarding the potential for soil gas concentrations to increase or decrease at the various parcels in the future as the chloroform in groundwater plume continues to migrate should be included. API Publication Number 4741 (2005) notes that for deeper sources (i.e., greater than 10 meters [30 feet] – which is in reasonable agreement with the 35-foot depth modeled in this report), vertical vapor-phase travel times can be on the order of years to decades.

Response: Discussion has been added in Section 5.4.3.1.

Specific Comment #24 - Figure 7 and Figure 8
Are there contemporaneous groundwater and soil gas data? From what year? Are there co-located (in plan-view) groundwater and soil gas data?

Response: Per NDEP's comment, the scatter plots of co-located groundwater and soil gas data were removed.

Specific Comment #25 - Appendix H, J&E, Groundwater Advanced and Soil Gas Advanced Models.
Please provide the rationale and reference for adding the Reference Concentration on the Chemical Properties sheet for both models.

Response: It was added for convenience but has been removed from the printouts in this report.

Specific Comment #26 - Appendix I, Shallow Groundwater Evaluation, Section 1.5, page 1-4.
The text states that "It is expected that the soil gas sampling will provide a more accurate risk characterization because the samples are collected closer to the receptor. In general, the closer the sampled medium is to the receptor, the more relevant the data are for estimating exposure and greater its weight of evidence (California Environmental Protection Agency [Cal/EPA] 2011)." Please refer to Comment # 10 above.

Response: Groundwater modelling results were included in the previous report in Appendix I. As discussed with NDEP, the groundwater results have been updated and moved into the main text as an additional line of evidence. In addition, soil gas samples collected in 2007 within Parcels C and D at a depth of 10 ft bgs have been identified and included in the Parcel C, D and G HRA.

Editorial Comments
Specific Comment No. #27 - Page 7, Section 1.4 Geologic and Hydrogeologic Setting
This section states:

> "Soil types identified in the on-site soil borings include poorly sorted gravel, silty gravel, poorly sorted sand, well sorted sand, and silty sand (ENSR 2005)"

This discussion should tie back to the loamy sand parameter on Table 12. Suggest footnote.

Response: Footnote has been added to refer to the text for further discussion of the soil type selection.

Specific Comment #28 - Page 8, Section 1.4 Geologic and Hydrogeologic Setting, last paragraph, last sentence.
This statement is not support without reference to technical report. Suggest adding reference.

Response: Reference was added.

Specific Comment #29 – Page 16, Section 2.3 Study Area CSM, third bullet
This bullet states: "Additional investigation is necessary at the Unit 4 and 5 Buildings to better understand the distribution of chloroform in this area. This work was begun in early 2016 and will continue into 2017."

Yet, on the following page and paragraph the Deliverable states,

> "...nor is there evidence of significant on-Site sources of groundwater contamination." ...."There is no evidence to suggest that soils at the Study Area are acting as a source of groundwater VOC contamination; further, concentrations in soil are not indicative of historic releases of chloroform to soils"

Suggest deleting these statements as there is insufficient data until the site investigation is complete.

Response: The Study Area refers to the Parcels, not the Operations area which includes the Unit 4 and 5 Buildings. The text has been changed to clarify this.

Specific Comment #30 - Page 30, Section 4.2.2 Scatterplots for Co-located Soil Gas and Groundwater Samples
Although classified as "shallow" groundwater monitoring wells, TR-6 is screened from 60 - 80 ft bgs in the UMCf and TR-8 is screened from 63-93 ft bgs UMCf as compared to M-92 Parcel F) which is screened from 39 - 49 ft bgs. Perhaps this should be noted/considered in discussions correlating groundwater data to soil gas data.

Response: As mentioned in response to comment #7, as agreed with NDEP, the groundwater/soil gas comparison has been removed from the report. However, this will be noted in the general discussion.

Specific Comment #31 - Page 35, Section 5.2.1 Conceptual Site Model
It should be noted that the nearest resident north - northwest is only 1550 ft away from Parcel D and the nearest resident south is only 500 ft from parcel H.

Response: Noted and added to the text.

Specific Comment #32 - Figure 10 Explanation b
Please correct the sentence for Explanation b.

Response: Corrected the sentence.

Specific Comment #34 - Table 10 References
USEPA, 2002. Should be revised to USEPA, 2002b.

Response: References have been updated.

References

Abreu, L., Johnson, P., and McAlary, T. 2006. 3D Model Simulations and Implications to Near Building Sampling. USEPA VI Workshop, AEHS Conference, San Diego, CA. March.

Massmann, J., and D. F. Farrier. 1992. Effects of Atmospheric Pressures on Gas Transport in the Vadose Zone. Water Resources Research, v. 28, n. 3, p. 777 -791.

NDEP, 2010. Soil Physical and Chemical Property Measurement and Calculation Guidance, BMI Plant Sites and Common Areas Projects, Henderson, Nevada. March 11.

USEPA, 1992. Supplemental Guidance to RAGS: Calculating the Concentration Term. Office of Solid Waste and Emergency Response. Publication 9285.7-081. May.

USEPA, 2004. User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings. February.

USEPA, 2015. OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air. EPA9200.2-154. June.

APPENDIX B
2013 SOIL GAS FIELD SAMPLING INVESTIGATION

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Figure B-4 2008 and 2013 Soil Gas Sampling Locations (Chloroform as Depicted in 2015)

ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
ENVIRON	ENVIRON International Corporation
Exponent	Exponent, Inc.
ft	foot, feet
HQ	hazard quotient
IDW	investigation-derived waste
LOU	Letter of Understanding
NDEP	Nevada Division of Environmental Protection
Northgate	Northgate Environmental Management, Inc.
PQL	practical quantitation limit
QC	quality control
RBC	risk-based concentration
SQL	sample quantitation limit
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

1. 2013 SOIL GAS FIELD SAMPLING INVESTIGATION

This section summarizes the soil gas sampling investigation conducted by ENVIRON International Corporation (ENVIRON) in March 2013; no additional soil gas samples have been collected in the Study Area since that time.

1.1 Sampling Locations

The October 2012 draft soil gas investigation work plan (ENVIRON 2012) identified eight locations for collection of 5 feet below ground surface (ft bgs) soil gas samples, as follows: 2 in Parcel C, 1 in Parcel D, 3 in Parcel F, 2 in Parcel G, and none in Parcel H. Factors considered in identifying the sampling locations included: (1) the 2008 soil gas sampling locations within and downgradient of the parcels[1], (2) available analytical results for chloroform concentrations in shallow groundwater beneath and upgradient of the Study Area, (3) direction of groundwater flow, (4) Letters of Understanding (LOUs) at which volatile organic compounds (VOCs) may have been used (Table B-1 and Figure B-1), and (5) VOC results for soil samples collected within the Study Area. The locations of paleochannels, the Olin extraction well field, and the interceptor well field were also considered (Figures B-2, B-3, and B-4). Additionally, samples were located near groundwater wells (Figures B-3 and B-4) that had been analyzed for VOCs during the Phase B investigation or as part of investigations conducted by BMI facilities to the west of the Site. The purpose of locating soil gas samples near groundwater monitoring wells was to provide additional paired results for investigation of the correlation between soil gas and the underlying groundwater concentrations, as initially proposed by Northgate and Exponent (2010) in the 2010 site-wide soil gas Health Risk Assessment.

On January 29, 2013, Nevada Division of Environmental Protection (NDEP) approved the field work and sampling portions of the work plan and recommended collection of one additional sample near M-23 located in Parcel D (NDEP 2013a). This location (E-SG-9, shown on Figures B-3 and B-4) was added to the sampling program and the approved field work was implemented the week of March 4, 2013.

Subsequent to completion of the field work, ENVIRON submitted an expanded work plan to NDEP that included a newly added section describing the risk assessment methodology (ENVIRON 2013). The previously submitted sections of the work plan had been updated to address NDEP's January 29, 2013, comments. NDEP provided comments on the expanded work plan on April 9, 2013, including additional comments on the previously-approved field work (NDEP 2013b). Specifically, NDEP requested sampling at an additional four locations (one in each of Parcels C, F, G, and H). Because the field work had been completed at the time this request was made, these additional samples were not collected. Uncertainty in the soil gas characterization data set is discussed in the main text.

[1] The chloroform plume and paleochannels shown on Figures B-1 and B-3 were taken from Northgate 2010. The 2010 depiction of the plume was used to inform selection of sample locations in 2013 since no additional on-site data were available for groundwater VOCs. In 2016, Ramboll ENVIRON updated the chloroform contours considering chloroform groundwater data from the Ramboll Environ 2015 sampling event. Figure B-4 presents the 2008 and 2013 sampling locations overlying the updated chloroform contours.

1.2 Sampling Methodology

Nine soil gas samples (E-SG-1 through E-SG-9) were collected at the locations shown on Figures B-3 and B-4. All probes were installed at a depth of 5 ft bgs, using new materials as specified in the March 2013 Work Plan (ENVIRON 2013) and shown in Tables B-2 and B-3. Probes were installed using direct-push tooling as described in the March 2013 Work Plan and no adjustments of probe depth were required during installation. Sampling was conducted in accordance with the March 2013 Work Plan.

Prior to sampling and as part of the leak-check procedure, a shut-in test was performed at each location to confirm the air-tightness of the sampling train. All shut-in tests were completed successfully. In addition, helium gas was used as a leak check compound during purging and sampling. Shroud concentrations ranged from 20.0% to 34.7% and averaged 28.7%. Helium was not detected in the probes with the exception of probe E-SG-1 (2.85%) and E-SG-3 (0.5%); however, the laboratory detections for these samples were 0.0067% and 0.0082%, respectively, indicating that the field detections had not impacted the samples. Helium detections are shown in Table B-4. Once connections were checked, soil gas was withdrawn from the Teflon® tubing using an evacuated purge Summa™ canister connected via a shut-off valve. The first three dead volumes of soil gas were discarded to purge the sample tubing, sand pack, and void space of the dry bentonite in the annular space.

After purging, the soil gas sample was collected in a 1-liter Summa™ canister while monitoring the fill time and the in-line vacuum gauge. The sample fill time and initial and final vacuums were recorded in the field notes. Following sampling, the tubing was pulled from the ground and the surface patched to match surroundings.

ENVIRON was present during drilling and maintained a log of the borings, made observations of the work area conditions, conducted health and safety monitoring of possible organic vapors encountered during drilling, screened and logged soil cores, directed the installation of the soil probes, performed leak testing, and collected and maintained custody of soil gas and field quality control (QC) samples. Field QC samples for this investigation consisted of one duplicate soil gas sample collected at the same time as the primary sample using a T-fitting, and one trip blank sample per sample shipment to the laboratory. Replicate sampling was not performed.

1.3 Sample Handling and Chain-of-Custody

Each lot of sampling containers was certified as contaminant-free by the laboratory. Samples were collected, handled, and stored in such a manner that they were representative of their original condition and chemical composition. Summa™ canisters and sample trains identified as having leaks or being incapable of holding a vacuum were not used during sampling and were returned to the laboratory and identified as unused due to leaks.

Identification of samples and maintenance of custody are important elements and were utilized to ensure that samples would be representative of site conditions. All samples were properly identified and maintained under chain-of-custody protocol to protect sample integrity as described in the October 2012 Work Plan.

As samples were shipped to the laboratory, the original chain-of-custody relinquishing the samples was sealed inside a plastic bag within the shipping box and the box was sealed by the last person listed on the chain-of-custody. United States Department of Transportation shipping

requirements were followed and the sample shipping receipt was retained in the project files as part of the permanent chain-of-custody document. The shipping company (Federal Express) did not sign the chain-of-custody forms as a receiver; instead the laboratory signed as a receiver when the samples were received.

1.4 Analytical Testing

The soil gas and associated QC samples were submitted to McCampbell Analytical, Inc., a qualified licensed analytical laboratory, under chain-of-custody protocol for analysis of VOCs by United States Environmental Protection Agency (USEPA) Method TO-15 and helium on a standard 5-day turn-around time. The laboratory's ability to achieve practical quantitation limits (PQLs) below risk-based concentrations (RBCs) corresponding to either a cancer risk of 1×10^{-6} for carcinogens or a hazard quotient (HQ) of 1 for non-carcinogens was confirmed prior to sampling. As part of the data usability evaluation (DUE), the sample quantitation limits (SQLs) for analytes reported as not detected in one or more samples were compared to the RBCs (see Section 4 of the main report). Table B-5 presents the summary statistics for the 2013 soil gas results.

1.5 Equipment Decontamination

Prior to mobilizing the direct-push rig to the Study Area, the rig and all associated equipment were cleaned with a high-pressure, steam washer to remove any oil, grease, mud, tar, and/or other foreign matter. To minimize the potential for cross-contamination, equipment used during the field investigation (including all non-dedicated sampling equipment) was decontaminated after use at each sampling location. Decontamination consisted of a detergent wash (Alconox) followed by a clean water wash, and finally a clean water rinse.

Sample containers, soil gas manifolds, and critical orifice flow controllers with integral particulate filters are dedicated sampling equipment and were received as certified-clean from the laboratory. Materials used for probe construction (tubing, filters, and fittings) were purchased new and not reused.

1.6 Management of Investigation-Derived Waste

Solid investigation-derived waste (IDW) was collected in a 5-gallon bucket that was labeled and sealed following completion of field activities. Liquid waste created during decontamination was collected in a 5-gallon bucket and was drained into the GW-11 pond for treatment. Each container was marked with water-proof labels and water-proof markers. Following characterization, each container of material was disposed of as appropriate per federal, state, and local requirements.

2. REFERENCES

ENVIRON International Corporation (ENVIRON), 2012. Draft Soil Gas Investigation Work Plan for Parcels C, D, F, G, and H, Nevada Environmental Response Trust Site, Henderson, Nevada. October. NDEP commented January 29, 2013, and approved the field work and sampling.

ENVIRON, 2013. Soil Gas Investigation and Human Health Risk Assessment Work Plan for Parcels C, D, F, G, and H, Nevada Environmental Response Trust Site, Henderson, Nevada. March 18. NDEP approved April 9, 2013.

NDEP, 2013a. NDEP Response to: Soil Gas Investigation Work Plan for Parcels C, D, F, G, and H, Nevada Environmental Response Trust Site, Henderson, Nevada, Dated: October 2012. January 29.

NDEP, 2013b. NDEP Response to: Soil Gas Investigation and Human Health Risk Assessment Work Plan for Parcels C, D, F, G, and H, dated March 18, 2013. April 9.

Northgate and Exponent, 2010. Site-Wide Soil Gas Human Health Risk Assessment, Tronox LLC, Henderson, Nevada, November 22 (not reviewed or approved by NDEP).

Table B-1. LOUs Within and Directly Upgradient of the Study Area Parcels
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	LOU			VOCs Identified as Potential Contaminants?[a]
	#	Name	Location	
Parcel C	1	Trade Effluent Settling Ponds	upgradient	VOCs (benzene derivatives)
	10	On-Site Hazardous Waste Landfill	upgradient	*not identified*
	22	Pond WC-West and Associated Piping	upgradient	*not identified*
	23	Pond WC-East and Associated Piping	upgradient	*not identified*
	32	Groundwater Remediation Unit	upgradient	*not identified*
Parcel D	6	Unnamed Drainage Ditch Segment (BMI Landfill)	within	*not identified*
	68	Southern Nevada Auto Parts Site (Kerr-McGee tenant)	within	VOCs
Parcel F	4	Former Hardesty Chemical Company Site	upgradient	VOCs (benzene derivatives)
	26	Trash Storage Area	upgradient	*not identified*
	41	Unit 1 Tenants - Stains	upgradient	VOCs
	59	Storm Sewer System	within	*not identified*
	60	Acid Drain System	upgradient	VOCs
	63	J.B. Kelley Trucking Inc. Site	within	VOCs
	65(a)	Ebony Construction Sites	upgradient	VOCs
	65(b)	Buckles Construction Company	upgradient	VOCs
	65(c)	Nevada Precast Concrete Products (Kerr-McGee tenant)	within	*not identified*[b]
Parcel G	59	Storm Sewer System	within	*not identified*
	60	Acid Drain System	within	VOCs
	65(d)	Green Ventures International (Kerr-McGee tenant)	within	*not identified*[b]
Parcel H	--	--	--	--

Notes:
-- = No LOU is within or upgradient of the parcel
LOU = Letter of Understanding
VOC = Volatile organic compound

[a] As identified by (1) ENSR and AECOM (2008) based on a review of historical sources and/or (2) NDEP in 2011 (NDEP 2011).
[b] NDEP (2011) lists VOCs as potential contaminants in LOU 65. However, Kleinfelder (1993) reported that LOU 65c and LOU 65d were used only for offices.

References:

ENSR Corporation (ENSR), 2007. Phase A Source Area Investigation Results Report, Tronox LLC Facility, Henderson, Nevada. September. NDEP approved November 30, 2007.

ENSR, 2008. Phase B Source Area Investigation Work Plan, Soil Gas Survey, Tronox LLC Facility, Henderson, Nevada, March. NDEP approved March 26, 2008

Kleinfelder, 1993. Environmental Conditions Assessment, Kerr-McGee Chemical Corporation, Henderson, Nevada. April.

Nevada Division of Environmental Protection (NDEP), 2011. Action Memorandum: Removal Actions, Nevada Environmental Response Trust Site, Clark County, Nevada. July 21.

TABLE B-2. Soil Gas Probe Construction Details

Nevada Environmental Response Trust Site
Henderson, Nevada

Location ID	Date Installed	Borehole Diameter (inches)	Total Depth of Boring (feet bgs)	Proposed Probe Depth (feet bgs)	Installed Probe Depth (feet bgs)	Sand Pack Interval (feet bgs)
E-SG-1	3/7/2013	2.25	5.5	5.0	5.0	4.5 - 5.5
E-SG-2	3/7/2013	2.25	5.5	5.0	5.0	4.5 - 5.5
E-SG-3	3/7/2013	2.25	5.5	5.0	5.0	4.5 - 5.5
E-SG-4	3/7/2013	2.25	5.5	5.0	5.0	4.5 - 5.5
E-SG-5	3/7/2013	2.25	5.5	5.0	5.0	4.5 - 5.5
E-SG-6	3/7/2013	2.25	5.5	5.0	5.0	4.5 - 5.5
E-SG-7	3/7/2013	2.25	5.5	5.0	5.0	4.5 - 5.5
E-SG-8	3/7/2013	2.25	5.5	5.0	5.0	4.5 - 5.5
E-SG-9	3/7/2013	2.25	5.5	5.0	5.0	4.5 - 5.5

Notes:

ID = identification

feet bgs = feet below ground surface

1/4" outer diameter Teflon-lined tubing with 1" stainless steel sintered filter used in all probe construction.

Cemex Lapis Lustre #3 Monterey sand used for filter pack with hydrated Cetco #8 crumbles used for seal.

TABLE B-3. Summary of Soil Gas Purging and Sampling
Nevada Environmental Response Trust Site
Henderson, Nevada

Location ID	Date Installed	Sample Date	Targeted Probe Depths	Installed Probe Depths	Total Tubing	Stick-Up	Filter Pack Volume[a]	3X Purge Volume	Volume Purged[b]	PVs	Purge Rate[c]
			(feet bgs)	(feet bgs)	(feet)	(feet)	(ml)	(ml)	(ml)		(ml/min)
E-SG-1	3/7/2013	3/8/2013	5.0	5.0	7.0	2.0	273	989	1000	3.0	150
E-SG-2	3/7/2013	3/7/2013	5.0	5.0	7.0	2.0	273	989	1000	3.0	200
E-SG-3	3/7/2013	3/7/2013	5.0	5.0	7.0	2.0	273	989	1000	3.0	200
E-SG-4	3/7/2013	3/13/2013	5.0	5.0	7.0	2.0	273	989	1000	3.0	150
E-SG-5	3/7/2013	3/13/2013	5.0	5.0	7.0	2.0	273	989	1000	3.0	150
E-SG-6	3/7/2013	3/8/2013	5.0	5.0	7.0	2.0	273	989	1000	3.0	200
E-SG-7	3/7/2013	3/8/2013	5.0	5.0	7.0	2.0	273	989	1000	3.0	150
E-SG-8	3/7/2013	3/13/2013	5.0	5.0	7.0	2.0	273	989	1000	3.0	150
E-SG-9	3/7/2013	3/8/2013	5.0	5.0	7.0	2.0	273	989	1000	3.0	150

Notes:

ID = identification

feet bgs = feet below ground surface

ml= milliliter

ml/min = milliliter per minute

PV = purge volume

[a] Filter pack volume includes dry bentonite above sand pack. Thirty percent porosity assumed.

[b] All samples were purged with Summa™ purge can.

[c] Critical orifice supplied from the lab rated to between 150-200 ml/min. A rotameter attached to the purge can was used to measure the actual purge rate.

TABLE B-4: Summary of Soil Gas Probe Leak Checking[a]
Nevada Environmental Response Trust Site
Henderson, Nevada

Location ID	Sample Date	Shut-in Test	Helium Concentration in Shroud			Helium Concentration in Probe			Lab Detection	% of Shroud Concentration[b]
			Pre-Sampling	Post-Sampling	Average	Pre-Sampling	Post-Sampling	Average		
E-SG-1	3/8/2013	PASSED	35.0	20.0	27.5	3.3	2.4	2.85	0.0067	0.024
E-SG-2	3/7/2013	PASSED	21.8	27.2	24.5	ND<0.1	ND<0.1	ND<0.1	0.0081	0.033
E-SG-3	3/7/2013	PASSED	30.0	30.0	30.0	0.1	ND<0.1	0.5	0.0082	0.027
E-SG-4	3/13/2013	PASSED	30.5	38.9	34.7	ND<0.1	ND<0.1	ND<0.1	0.010	0.029
E-SG-5	3/13/2013	PASSED	28.1	33.2	30.7	ND<0.1	ND<0.1	ND<0.1	0.0071	0.023
E-SG-6	3/8/2013	PASSED	29.6	30.3	30.0	ND<0.1	ND<0.1	ND<0.1	2.0	6.7
E-SG-6-FD	3/8/2013	PASSED	29.6	30.3	30.0	ND<0.1	ND<0.1	ND<0.1	0.076	0.25
E-SG-7	3/8/2013	PASSED	24.4	18.3	21.4	ND<0.1	ND<0.1	ND<0.1	ND<0.005	0.023
E-SG-8	3/13/2013	PASSED	31.6	31.5	31.6	ND<0.1	ND<0.1	ND<0.1	0.012	0.038
E-SG-9	3/8/2013	PASSED	31.0	21.9	26.5	ND<0.1	ND<0.1	ND<0.1	ND<0.005	0.019

Notes:

ID = identification

FD = field duplicate

ND = not detected above sample quantitation limit

[a] All values are reported in %.

[b] The sample quantitation limit (SQL) was used for samples that were not detected in the lab.

TABLE B-5. Summary Statistics for 2013 Soil Gas
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Acetone	µg/m^3	11	11	100	--	--	6.2	67	13	18	18	0.96	E-SG-6
Acrylonitrile	µg/m^3	11	0	0	0.1	0.12	--	--	--	--	--	--	--
t-Amyl methyl ether	µg/m^3	11	1	9.09	0.076	0.08	0.78	0.78	0.78	0.78	--	--	E-SG-6
Benzene	µg/m^3	11	11	100	--	--	1.4	12	2	3.5	3.8	1.1	E-SG-2
Benzyl chloride	µg/m^3	11	2	18.18	0.068	0.071	0.14	0.43	0.29	0.29	0.21	0.72	E-SG-6
Bromodichloromethane	µg/m^3	11	7	63.64	0.1	0.1	0.3	1.7	1.2	1	0.49	0.48	E-SG-6
Bromoform	µg/m^3	11	0	0	2.2	2.7	--	--	--	--	--	--	--
Bromomethane	µg/m^3	11	4	36.36	0.2	0.21	0.33	0.84	0.36	0.47	0.25	0.52	E-SG-6
1,3-Butadiene	µg/m^3	11	0	0	0.28	0.44	--	--	--	--	--	--	--
2-Butanone	µg/m^3	11	11	100	--	--	3.2	9.9	4.9	5.5	2.2	0.39	E-SG-6
Carbon disulfide	µg/m^3	11	0	0	0.042	0.051	--	--	--	--	--	--	--
Carbon tetrachloride	µg/m^3	11	11	100	--	--	0.3	110	18	32	39	1.2	E-SG-4
Chlorobenzene	µg/m^3	11	8	72.73	0.07	0.07	0.12	17	0.86	3.7	6	1.6	E-SG-2
Chloroethane	µg/m^3	11	2	18.18	0.076	0.092	100	140	120	120	28	0.24	E-SG-3
Chloroform	µg/m^3	11	11	100	--	--	2.2	2,900	460	921	1,130	1.2	E-SG-3
Chloromethane	µg/m^3	11	0	0	0.022	0.027	--	--	--	--	--	--	--
Cyclohexane	µg/m^3	11	4	36.36	0.18	73	0.6	4.9	4.8	3.8	2.1	0.56	E-SG-1
1,2-Dibromo-3-chloropropane	µg/m^3	11	2	18.18	0.2	0.21	0.41	1.7	1.1	1.1	0.91	0.86	E-SG-6
Dibromochloromethane	µg/m^3	11	1	9.09	0.11	0.11	1.2	1.2	1.2	1.2	--	--	E-SG-6
1,2-Dibromoethane	µg/m^3	11	1	9.09	0.096	0.1	1.4	1.4	1.4	1.4	--	--	E-SG-6
1,2-Dichlorobenzene	µg/m^3	11	5	45.45	0.15	0.15	1.5	6.1	2.7	3.1	1.8	0.59	E-SG-2
1,3-Dichlorobenzene	µg/m^3	11	3	27.27	0.1	0.13	0.12	38	13	17	19	1.1	E-SG-2
1,4-Dichlorobenzene	µg/m^3	11	5	45.45	0.18	0.18	0.94	10	1.3	3.6	3.8	1.1	E-SG-2
Dichlorodifluoromethane	µg/m^3	11	11	100	--	--	1.5	2.6	2.1	2	0.4	0.2	E-SG-3
1,1-Dichloroethane	µg/m^3	11	4	36.36	0.82	0.82	1	330	150	160	179	1.2	E-SG-2
1,2-Dichloroethane	µg/m^3	11	6	54.55	0.09	0.09	0.11	33	0.51	10	15	1.5	E-SG-3
1,1-Dichloroethene	µg/m^3	11	2	18.18	0.04	0.048	13	33	23	23	14	0.61	E-SG-2
cis-1,2-Dichloroethene	µg/m^3	11	3	27.27	0.068	0.068	0.32	2.3	0.89	1.2	1	0.87	E-SG-2
trans-1,2-Dichloroethene	µg/m^3	11	4	36.36	0.064	0.064	0.069	2.2	1.5	1.3	1	0.76	E-SG-3
1,2-Dichloropropane	µg/m^3	11	3	27.27	0.11	0.12	0.12	1.4	1	0.84	0.65	0.78	E-SG-3
cis-1,3-Dichloropropene	µg/m^3	11	1	9.09	0.08	0.084	0.75	0.75	0.75	0.75	--	--	E-SG-6
trans-1,3-Dichloropropene	µg/m^3	11	1	9.09	0.24	0.25	0.68	0.68	0.68	0.68	--	--	E-SG-6
Diisopropyl ether	µg/m^3	11	0	0	0.058	0.07	--	--	--	--	--	--	--
1,4-Dioxane	µg/m^3	11	1	9.09	0.096	0.1	0.64	0.64	0.64	0.64	--	--	E-SG-6
Ethyl benzene	µg/m^3	11	11	100	--	--	0.5	4.4	0.79	1.2	1.1	0.92	E-SG-4

TABLE B-5. Summary Statistics for 2013 Soil Gas
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
					Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Ethyl acetate	µg/m^3	11	11	100	--	--	0.75	14	2.5	5	5	1	E-SG-1
4-Ethyltoluene	µg/m^3	11	2	18.18	1	1.2	1.2	3.1	2.1	2.1	1.3	0.62	E-SG-4
Freon 114	µg/m^3	11	2	18.18	0.16	0.16	0.25	1.4	0.82	0.82	0.81	0.99	E-SG-6
n-Heptane	µg/m^3	11	9	81.82	0.074	0.077	0.91	2.4	1.7	1.7	0.63	0.37	E-SG-3
Hexachlorobutadiene	µg/m^3	11	5	45.45	0.14	0.14	0.33	7.1	2.1	2.9	2.7	0.93	E-SG-9
n-Hexane	µg/m^3	11	11	100	--	--	0.95	6100	2.3	557	1840	3.3	E-SG-6
2-Hexanone	µg/m^3	11	7	63.64	0.22	0.23	0.52	2.3	0.7	0.97	0.64	0.66	E-SG-6
Methyl tert-butyl ether	µg/m^3	11	0	0	0.096	0.89	--	--	--	--	--	--	--
4-Methyl-2-pentanone	µg/m^3	11	11	100	--	--	0.77	7.2	1.9	2.3	1.9	0.82	E-SG-2
Methylene Chloride	µg/m^3	11	3	27.27	0.078	0.7	2.9	19	14	12	8.2	0.69	E-SG-2
Naphthalene	µg/m^3	11	10	90.91	0.42	0.42	0.89	5.2	1.3	1.8	1.3	0.73	E-SG-6
Styrene	µg/m^3	11	4	36.36	0.05	0.052	0.098	0.74	0.26	0.34	0.28	0.82	E-SG-6
1,1,1,2-Tetrachloroethane	µg/m^3	11	1	9.09	0.15	0.16	1.1	1.1	1.1	1.1	--	--	E-SG-6
1,1,2,2-Tetrachloroethane	µg/m^3	11	2	18.18	0.072	0.075	0.14	1.1	0.62	0.62	0.68	1.1	E-SG-6
Tetrachloroethene	µg/m^3	11	11	100	--	--	1.2	1,100	15	155	337	2.2	E-SG-3
Tetrahydrofuran	µg/m^3	11	0	0	1.2	1.4	--	--	--	--	--	--	--
Toluene	µg/m^3	11	11	100	--	--	0.77	15	5.7	6.7	5.2	0.78	E-SG-1
1,2,4-Trichlorobenzene	µg/m^3	11	4	36.36	0.22	0.22	0.47	79	5.5	23	38	1.7	E-SG-2
1,1,1-Trichloroethane	µg/m^3	11	2	18.18	0.092	0.096	0.12	1	0.56	0.56	0.62	1.1	E-SG-6
1,1,2-Trichloroethane	µg/m^3	11	4	36.36	0.1	0.1	0.19	21	4.6	7.6	9.6	1.3	E-SG-3
Trichloroethene	µg/m^3	11	11	100	--	--	0.34	570	3.5	81	173	2.1	E-SG-2
Trichlorofluoromethane	µg/m^3	11	7	63.64	1.1	1.2	1.2	48	1.7	8.5	17	2	E-SG-4
1,2,4-Trimethylbenzene	µg/m^3	11	11	100	--	--	0.44	3.2	0.68	1.1	0.91	0.8	E-SG-4
1,3,5-Trimethylbenzene	µg/m^3	11	4	36.36	0.15	0.16	0.3	1.2	0.89	0.82	0.41	0.51	E-SG-6
Vinyl acetate	µg/m^3	11	11	100	--	--	1.8	10	3	3.9	2.5	0.63	E-SG-6
Vinyl chloride	µg/m^3	11	3	27.27	0.12	0.12	0.4	4.4	2.3	2.4	2	0.85	E-SG-2
Xylenes (total)	µg/m^3	11	10	90.91	2.6	2.6	2.9	21	3.7	5.6	5.5	0.98	E-SG-4
Ethyl tert-butyl ether	µg/m^3	11	1	9.09	0.084	0.088	0.82	0.82	0.82	0.82	--	--	E-SG-6
tert Butyl alcohol	µg/m^3	11	11	100	--	--	0.92	4.8	2	2.3	1.1	0.47	E-SG-6
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/m^3	11	0	0	1.6	1.9	--	--	--	--	--	--	--

Notes:

-- = not available

µg/m^3 = microgram per cubic meter

N

0 325 650

Feet

Former Northwest Ditch

WARM SPRINGS RD

Former Beta Ditch

Parcel C

Parcel D

Parcel E

Parcel F

Parcel G

Parcel H

LAKE MEAD PARKWAY

Legend

- NERT Property Boundary
- Study Area
- Paleochannel (from Northgate 2010)
- Former Ditches
- Interceptor Well Field
- Groundwater Barrier Wall

Letter of Understanding (LOUs)

- LOU #59 Storm Sewer System
- LOU #60 Acid Drain System
- LOUs not within or directly upgradient of Parcels
- LOUs within or directly upgradient of Parcels

Chloroform Concentrations (µg/L)

µg/L = microgram per liter

- <1.62
- 1.62-16.2
- 16.2-162
- 162-1,620
- 1,620-16,200
- >16,200

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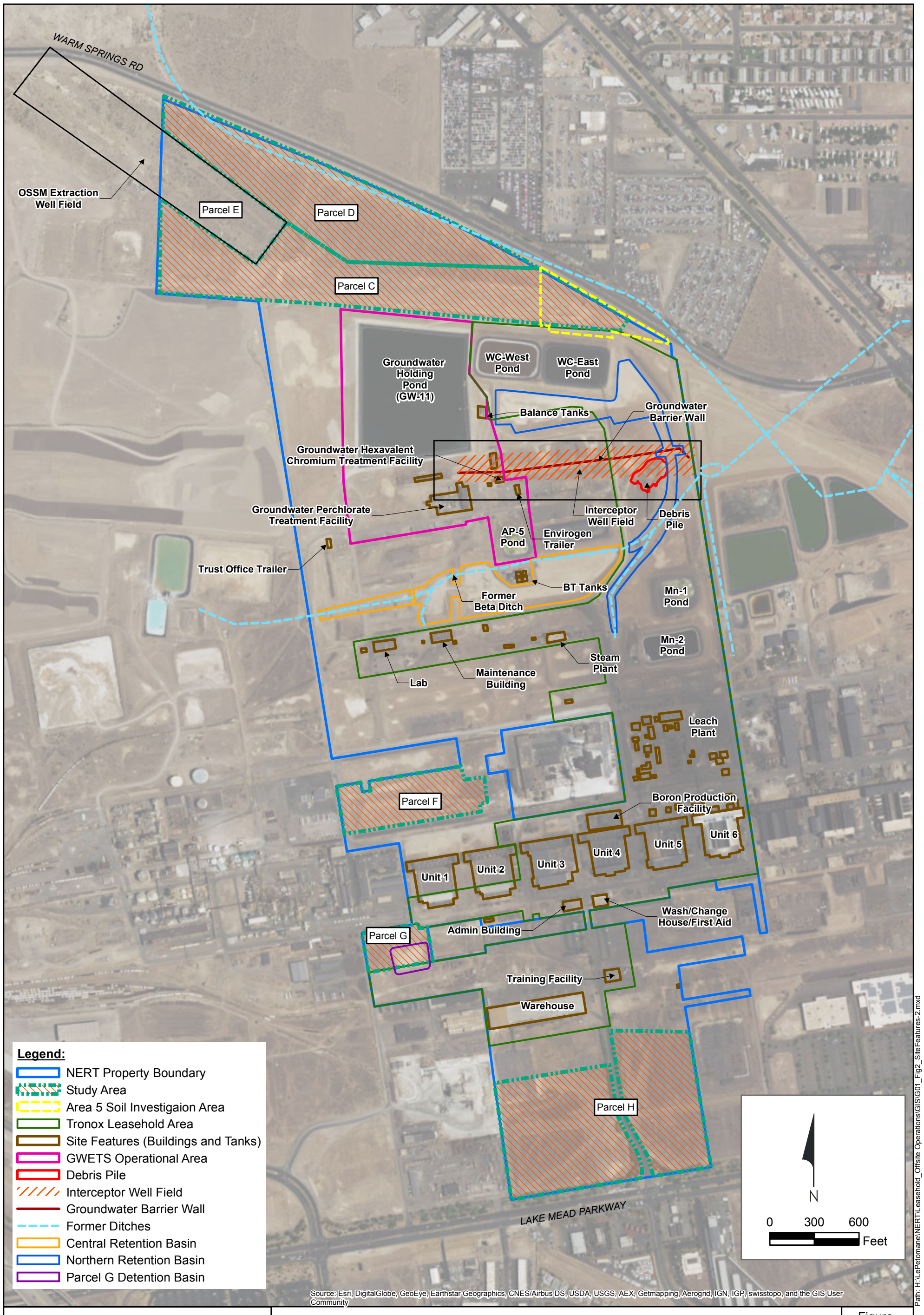
RAMBOLL ENVIRON

LOUs and Chloroform in Shallow Groundwater (Chloroform Plume as Depicted in 2010)

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **B-1**

Drafter: EA/RS Date: 9/21/2016 Contract Number: 21-41400A Approved by: Revised:



RAMBOLL ENVIRON

Study Area and Site Features

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **B-2**

Drafter: EA/RS Date: 9/19/2016 Contract Number: 21-41400A Approved by: Revised:

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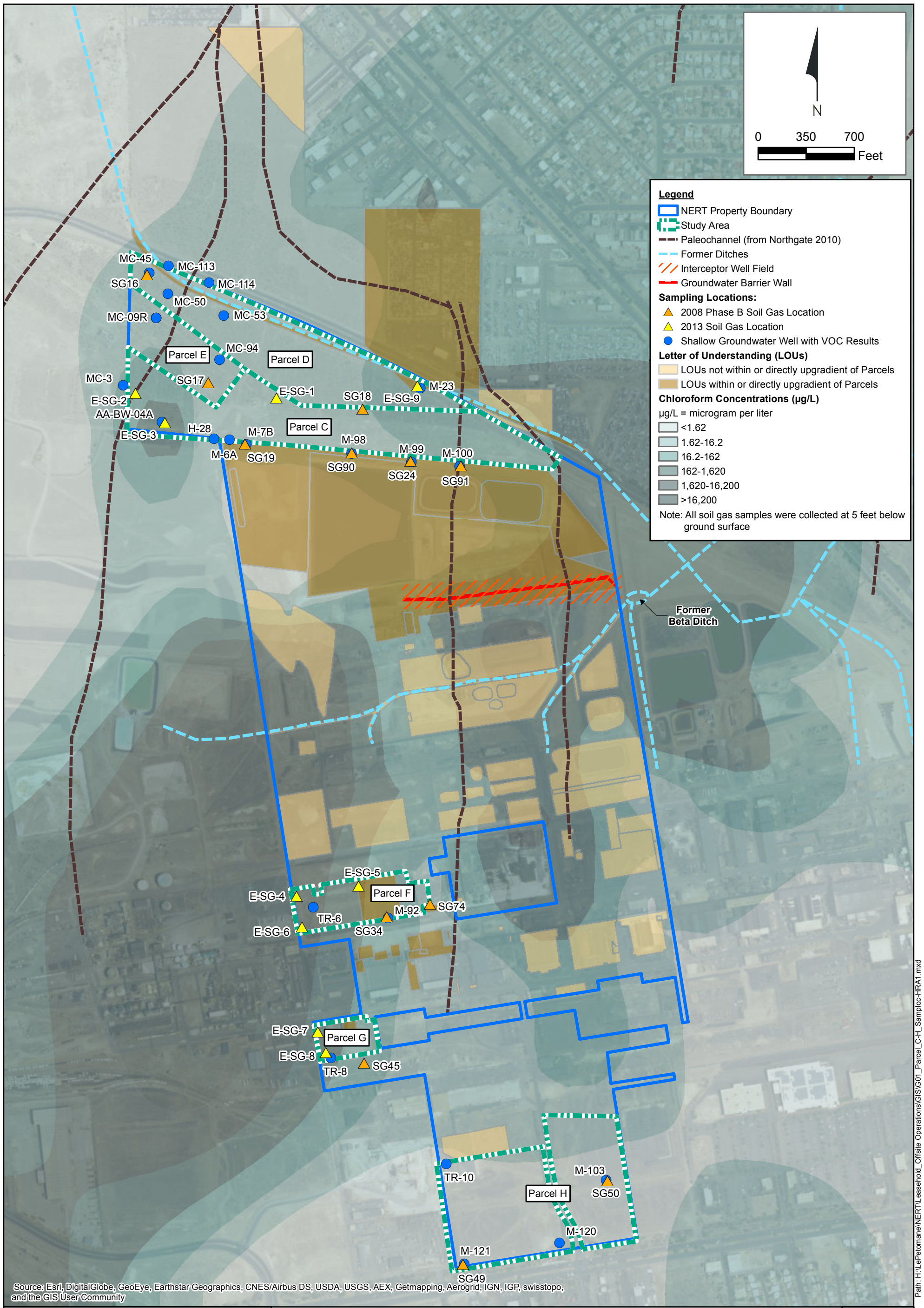


RAMBOLL ENVIRON

2008 and 2013 Soil Gas Sampling Locations (Chloroform Plume as Depicted in 2010)
Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **B-3**

Drafter: RS | Date: 9/19/2016 | Contract Number: 21-41400A | Approved by: | Revised:

N

0 350 700

Feet

Legend

- Study Area
- Paleochannel (from Northgate 2010)
- Former Ditches
- Central Retention Basin
- Northern Retention Basin
- Parcel G Detention Basin
- Interceptor Well Field
- Groundwater Barrier Wall
- Site Features (Buildings and Tanks)

Ponds:

- Active Pond
- Inactive Pond

Sampling Locations:

- 2008 Phase B Soil Gas Location
- 2013 Soil Gas Location
- Shallow Groundwater Well with VOC Results

Chloroform Concentration, µg/L

- 10,000
- 1,000-10,000
- 70-1,000
- <70

Note: All soil gas samples were collected at 5 feet below ground surface

µg/L = microgram per liter

MC-45 MC-113 SG16 MC-114 MC-50 MC-09R MC-53 Parcel E MC-94 Parcel D MC-3 SG17 E-SG-1 SG18 E-SG-9 M-23 E-SG-2 AA-BW-04A H-28 M-7B Parcel C M-98 M-99 M-100 E-SG-3 M-6A SG19 SG90 SG24 SG91

Former Beta Ditch

E-SG-5 E-SG-4 Parcel F M-92 SG74 TR-6 E-SG-6 SG34

E-SG-7 Parcel G E-SG-8 TR-8 SG45

TR-10 M-103 Parcel H SG50 M-120 M-121 SG49

Path: H:\LePetomane\NERT\Leasehold_Offsite Operations\GIS\G01_Parcel_C-H_Samploc-HRA1 - 2013-2015.mxd

RAMBOLL ENVIRON

2008 and 2013 Soil Gas Sampling Locations
(Chloroform Plume as Depicted in 2015)
Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **B-4**

Drafter: RS Date: 9/19/2016 Contract Number: 21-41400A Approved by: Revised:

APPENDIX C
REMOVAL ACTION WORKPLAN FOR SOIL, TRONOX PARCELS "C", "D", "F", "G", AND "H" SITES

Basic Environmental
COMPANY

July 1, 2008

Ms. Shannon Harbour, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
2030 E. Flamingo Road, Suite 230
Las Vegas, Nevada 89119-0818

Subject: Removal Action Workplan for Soil, Tronox Parcels "C", "D", "F", "G" and "H" Sites, Henderson, Nevada

Dear Shannon:

On behalf of Tronox, Basic Environmental Company (BEC) appreciates the opportunity to submit this Removal Action Workplan (RAW) to address the remediation of impacted soil at the Tronox Parcels "C", "D", "F", "G" and "H". These Sites are located within the Tronox facility, north of Lake Mead Parkway, one mile west of the intersection with Boulder Highway, in Henderson, Nevada. Figure 1 illustrates the location of the subject Sites within the Tronox property.

The conclusion that remediation of soil at each of the Sites is needed is based on the findings of the field investigations carried out in accordance to each of the NDEP-approved Phase 2 Sampling and Analysis Plans. The overall goal of this RAW is to present a cleanup strategy for each of the Sites that effectively reduces, to the extent feasible, the human health risks associated with the identified soil in the impacted areas of each Site. . As with prior work on Parcels A and B, NDEP has indicated that a target risk of one in a million excess cancers will be utilized to guide remediation. Preliminary risk summary tables for each of the Parcels were presented and discussed with NDEP, Tronox and AIG in a meeting at the NDEP offices May 15, 2008. All proposed remediation work will be completed under the direction of a State of Nevada Certified Environmental Manager. Discussion on the proposed remediation at each of the Sites is presented below.

Parcels C and D

Results of the Phase 2 field investigation indicate the presence of amphibole (one or more long fibers) and/or chrysotile (four or more long fibers) at four locations within Parcels C and D, as well as elevated levels of dioxins/furans (above the Agency for Toxic Substances and Disease Registry [ATSDR] action level of 1.0 parts per billion) at one location. Based on the sample locations across the Site, a Thiessen or Voronoi map was overlaid across the Site.

Voronoi maps are constructed from a series of polygons formed around each sample location. Voronoi polygons are created so that every location within a polygon is closer to the sample location in that polygon than any other sample location. These polygons do not take into account the respective concentrations at each sample location.

875 West Warm Springs Road, Henderson, Nevada 89011 • Phone 702.567.0400 • Fax 702.567.0473

These polygons were used as the basis for the areal extent of remediation for each of the locations with elevated asbestos levels. Those polygons associated with elevated asbestos levels proposed for remediation are shown on Figure 2. At two sample locations, the size of the remediation polygon area is large. This area could be reduced by the placement of two additional sample locations (shown on Figure 2) and it is our intent to collect these additional samples. If these sample locations are clean, then the reduced polygon shown on Figure 2 would be the remediation area. However, if one or both have elevated levels of asbestos, then the areal extent for remediation would be the original polygon(s) size.

One exception to the use of these polygons for the extent of asbestos remediation is the sample location in Parcel D, TSB-DR-04, which is situated within a drainage ditch. Two supplemental samples were collected approximately 100 feet to either side of this sample, along the ditch. Results of these sample locations were considered clean, therefore, the extent of the proposed remediation for sample location TSB-DR-04 is half the distance to each of these two supplemental samples, and bounded by the extent of the ditch in the other two directions.

Because the extent of impact associated with the sample location with elevated dioxins/furans is likely to be small, the remediation area is based on a 50-foot square area around this sample location (TSB-CR-07). The total areal extent of remediation at Parcels C and D ranges from 2.6 to 3.7 acres, depending on whether the additional samples are collected, and their results.

Parcel F

Results of the Phase 2 field investigation indicate the presence of amphibole (one or more long fibers) and/or chrysotile (four or more long fibers) at eight locations within Parcel F, as well as several other chemicals at three of these locations. Based on the sample locations across the Site, a Thiessen or Voronoi map was overlaid across the Site. These polygons were used as the basis for the areal extent of remediation for each of the locations with elevated asbestos levels. Those polygons associated with elevated contaminant levels in surface soil (results for deep soil samples are pending) proposed for remediation are shown on Figure 3. The total areal extent of remediation at Parcel F is 3.8 acres.

Parcel G

Results of the Phase 2 field investigation indicate the presence of amphibole (one or more long fibers) at two locations within Parcel G, as well as elevated levels of benzo(a)pyrene (above the USEPA Region 6 MSSL) at one location.. Based on the sample locations across the Site, a Thiessen or Voronoi map was overlaid across the Site. These polygons were used as the basis for the areal extent of remediation for each of the locations with elevated asbestos and benzo(a)pyrene levels. Those polygons associated with elevated levels in surface soil (results for deep soil samples are pending) proposed for remediation are shown on Figure 4. The total areal extent of remediation at Parcel G is 1.3 acres.

Parcel H

Results of the Phase 2 field investigation indicate the presence of amphibole (one or more long fibers) and/or chrysotile (four or more long fibers) at two locations within Parcel H. Based on the sample locations across the Site, a Thiessen or Voronoi map was overlaid across the Site. These polygons were used as the basis for the areal extent of remediation for each of the locations with elevated asbestos levels. Those polygons associated with elevated asbestos levels proposed for

remediation are shown on Figure 5. At one sample location, the size of the remediation polygon area is large. This area could be reduced by the placement of two additional sample locations (shown on Figure 5) and it is our intent to collect these additional samples. If these sample locations are clean, then the reduced polygon shown on Figure 5 would be the remediation area. However, if one or both have elevated levels of asbestos, then the areal extent for remediation would be increased appropriately. The total areal extent of remediation at Parcel H ranges from 0.55 to 2.1 acres, depending on whether the additional samples are collected, and their results.

Confirmation Sampling

Following remediation confirmation sampling will be conducted at each of the original sample locations. Field activities will be conducted in accordance with applicable standard operating procedures (SOPs; BRC, ERM and MWH 2007). The BRC Quality Assurance Project Plan (QAPP; BRC and ERM 2008) and Health and Safety Plan (HASP; BRC and MWH 2005) prepared for the BMI Common Areas will be used for confirmation soil sampling.

For each location, the proposed analyte list is composed of those chemicals that triggered the remediation at that location. Collectively, the analytes set includes; polyaromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), dioxins/furans, metals and asbestos.

Following collection and analysis of confirmation soil samples, the data will be discussed with the NDEP. If results are considered acceptable, a risk assessment will be conducted to evaluate the potential risks to future on-site human receptors at each Site. The receptors identified to be evaluated in the risk assessment will be consistent with the proposed development of each Site.

Schedule

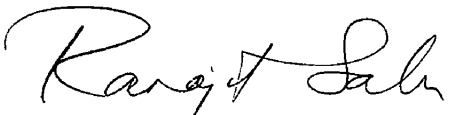
Once final approval of the RAW is received from NDEP, field implementation activities can commence within one week. BEC will provide NDEP with at least two days notice prior to the initiation of field activities at the Site. It is anticipated that this work can be completed within one week, depending on field conditions. The confirmation soil samples will be submitted to the laboratories and placed on a standard turn around time. A report will be completed within three weeks after the final data are received from the laboratory and validated.

Closing Remarks

See attached for appropriate certification language and signature. Please direct any remaining questions or comments you may have to me at 626-382-0001.

Sincerely,

Basic Environmental Company



Ranajit Sahu, CEM
Project Manager

cc: Brian Rakvica, NDEP, BCA, Las Vegas, NV 89119
Jim Najima, NDEP, BCA, Carson City, NV 89701

Attachments: Figure 1 – Tronox/BEC Parcel Map with Tronox Source Areas
Figure 2 – Remediation Areas – Parcels "C" and "D"
Figure 3 – Remediation Areas – Parcel "F"
Figure 4 – Remediation Areas – Parcel "G"
Figure 5 – Remediation Areas – Parcel "H"

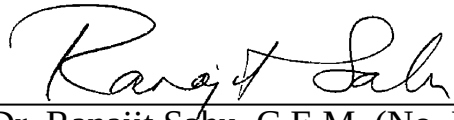
References

Basic Remediation Company (BRC) and MWH. 2005. BRC Health and Safety Plan, BMI Common Areas, Clark County, Nevada. October.

Basic Remediation Company (BRC), ERM, and MWH. 2007. BRC Field Sampling and Standard Operating Procedures, BMI Common Areas, Clark County, Nevada. August.

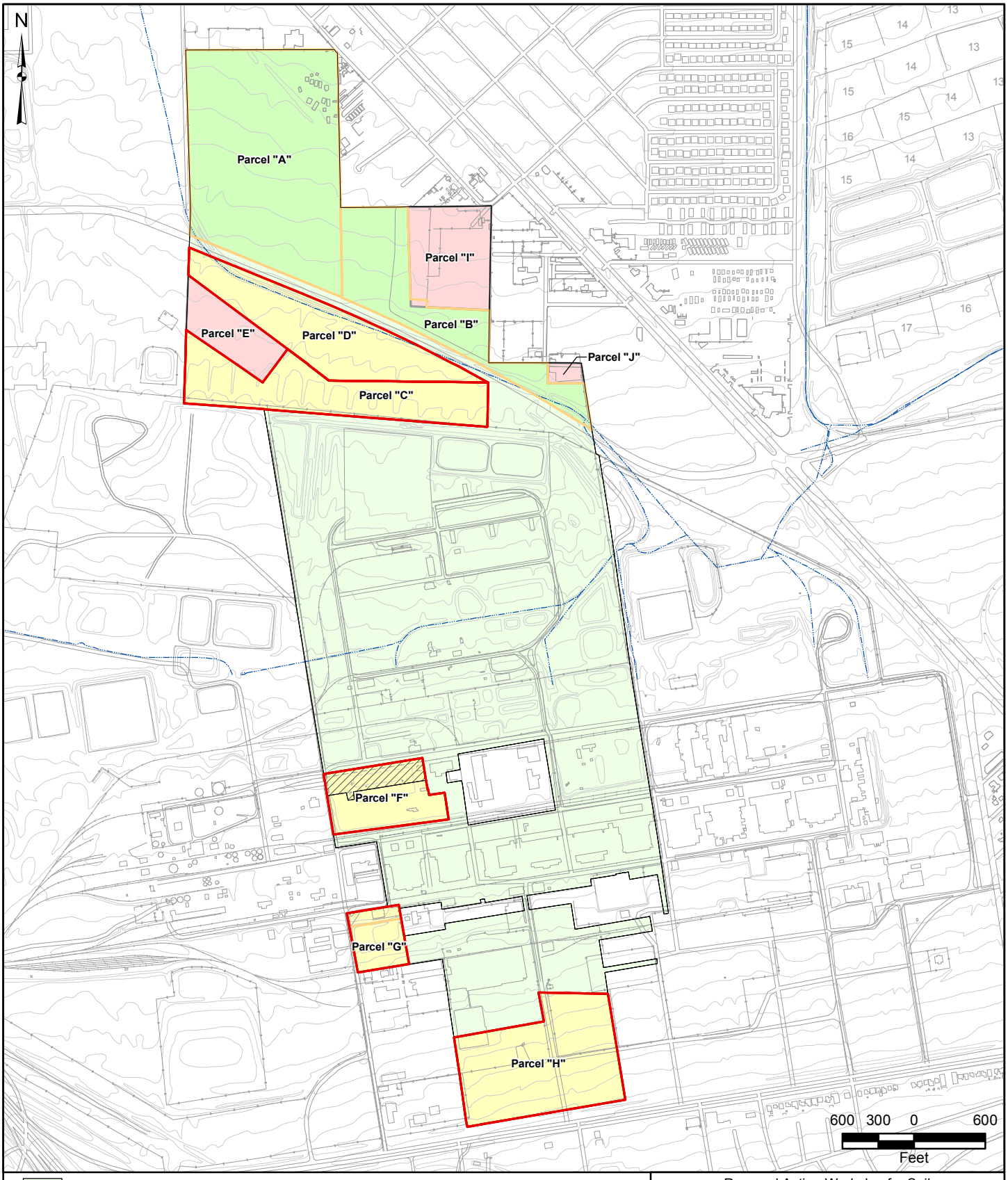
Basic Remediation Company (BRC) and ERM. 2008. BRC Quality Assurance Project Plan. BMI Common Areas, Clark County, Nevada. April.

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and to the best of my knowledge comply with all applicable federal, state and local statutes, regulations and ordinances. I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein.



July 1, 2008

Dr. Ranajit Sahu, C.E.M. (No. EM-1699, Exp. 10/07/2009) Date
BRC Project Manager



Tronox Property

Historical Ditches

Tronox/BEC Parcels

- Parcels included in this RAW
- NFA previously obtained
- NFA to be obtained later
- TIMET NFA Area

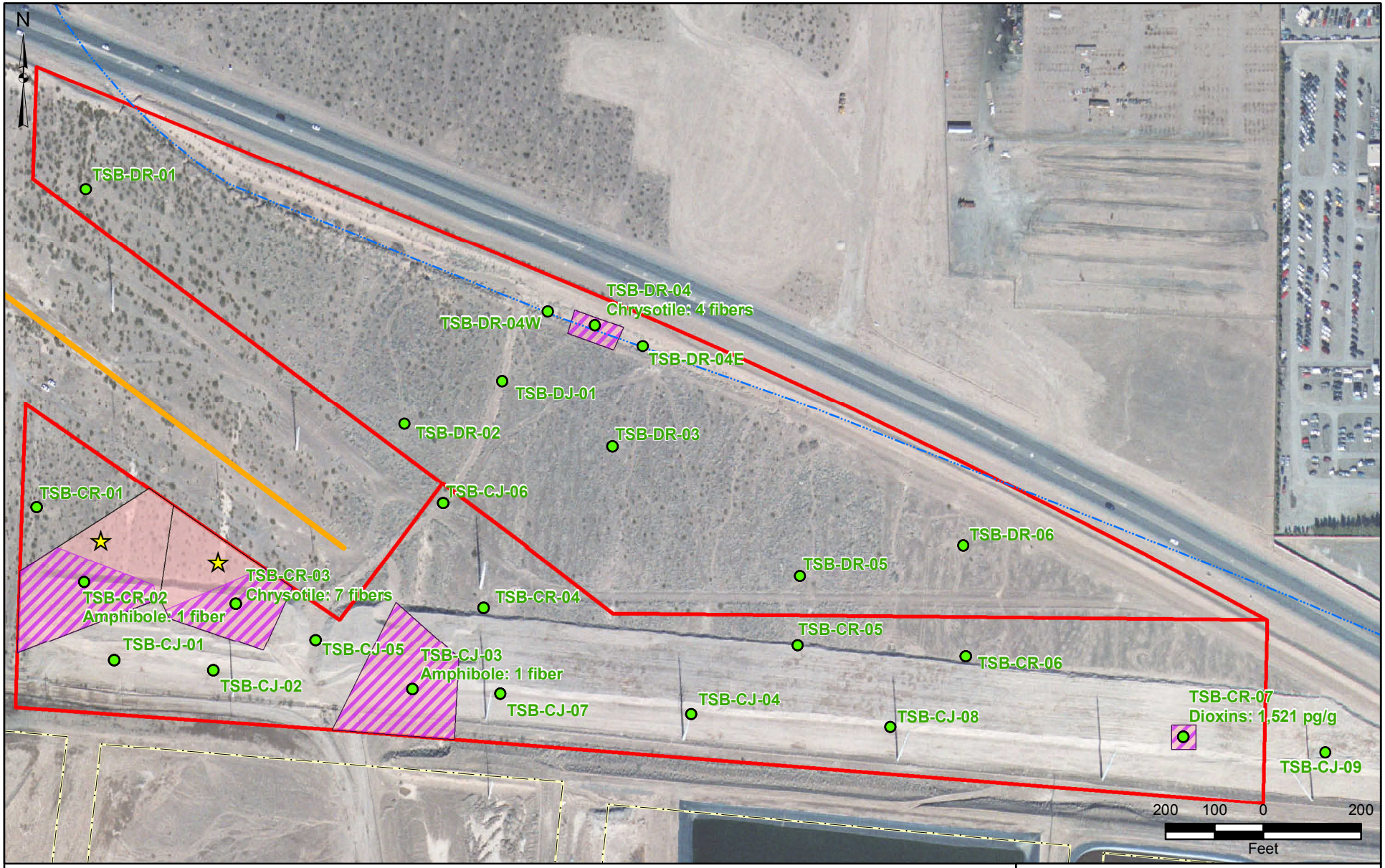
Removal Action Workplan for Soil
Tronox Parcels "C", "D", "F", "G" and "H"

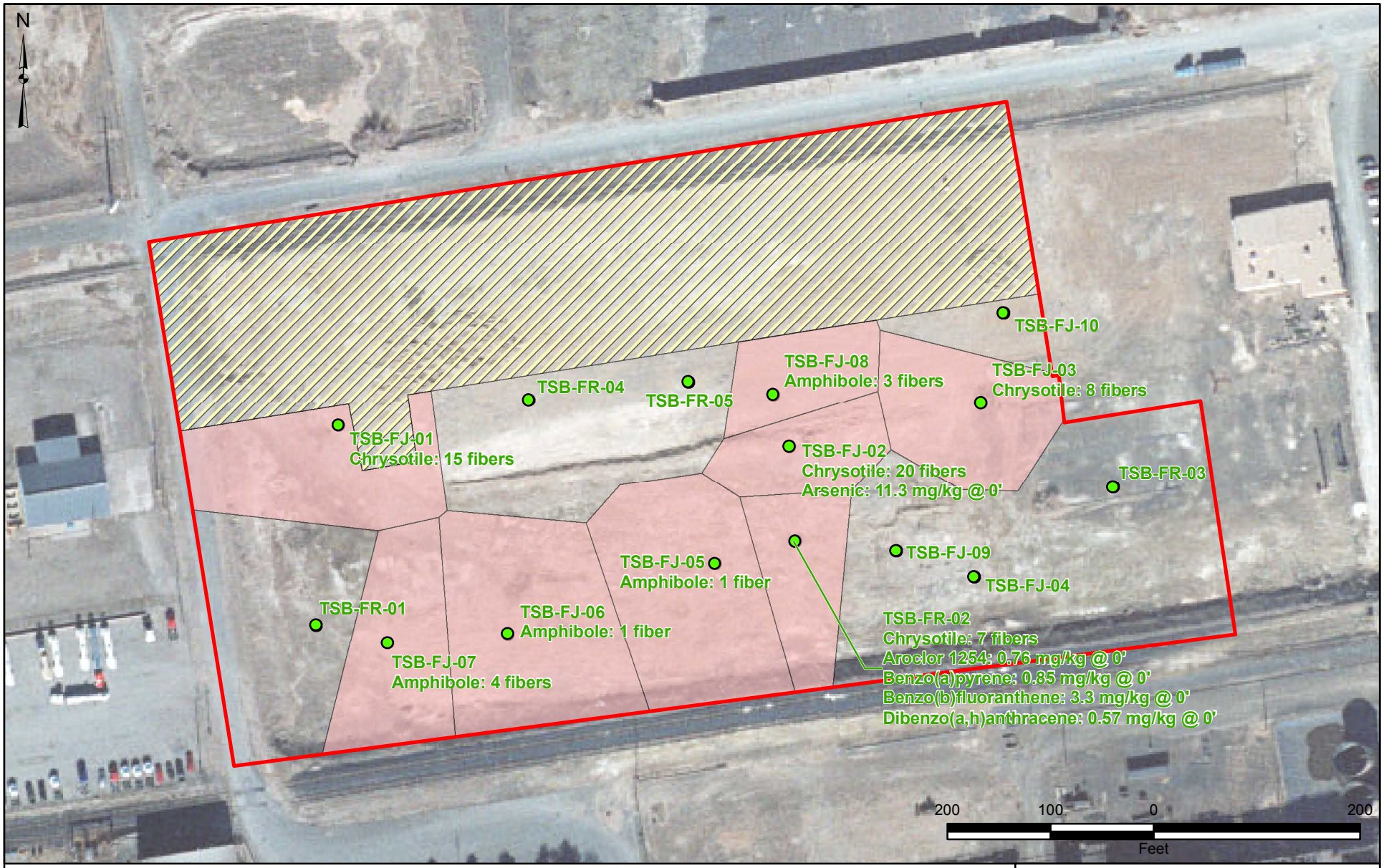
FIGURE 1

TRONOX/BEC
PARCEL MAP

Basic Environmental COMPANY

Prepared by:	Date	JOB No. 0069073
MKJ	07/01/08	FILE: GIS/BEC/TRONOX/FIGURE_1.MXD


N
TSB-DR-01
TSB-DR-04
Chrysotile: 4 fibers
TSB-DR-04W
TSB-DR-04E
TSB-DJ-01
TSB-DR-02
TSB-DR-03
TSB-CR-01
TSB-CJ-06
TSB-DR-06
TSB-DR-05
TSB-CR-03
Chrysotile: 7 fibers
TSB-CR-02
Amphibole: 1 fiber
TSB-CR-04
TSB-CR-05
TSB-CJ-01
TSB-CJ-05
TSB-CJ-03
Amphibole: 1 fiber
TSB-CR-06
TSB-CJ-02
TSB-CJ-07
TSB-CJ-04
TSB-CJ-08
TSB-CR-07
Dioxins: 1,521 pg/g
TSB-CJ-09
200 100 0 200
Feet
Parcel Boundaries
Historical Effluent Ponds
Pioneer/Montrose GW Treatment System
Historical Northwestern Ditch
Additional Asbestos Sample Location
Sampling Location
Proposed Scrape Areas (3.7 Acres)
Scrape Area with 2 Extra Pts (2.6 Acres)
Random Sample
Judgmental Sample
Parcel ID
TSB-CR(J)-01
Sample Number
January 2008 Aerial from AeroTech Mapping.
Removal Action Workplan for Soil
Tronox Parcels "C", "D", "F", "G" and "H"
FIGURE 2
REMEDIATION AREAS
PARCELS "C" AND "D"
Basic Environmental COMPANY
Prepared by: MKJ
Date 07/01/08
JOB No. 0069073
FILE: GIS/BEC/TRONOX/FIGURE_2.MXD



Parcel F Boundary

TIMET NFA Area

Sampling Location

Proposed Scrape Areas (3.8 Acres)

Random Sample

Judgmental Sample

Parcel ID

TSB-FR(J)-01

Sample Number

January 2008 Aerial from AeroTech Mapping.

Removal Action Workplan for Soil
Tronox Parcels "C", "D", "F", "G" and "H"

FIGURE 3

REMEDIATION AREAS
PARCEL "F"

Basic Environmental COMPANY

Prepared by: MKJ

Date 07/01/08

JOB No. 0069073
FILE: GIS/BEC/TRONOX/FIGURE_3.MXD

Sampling Location

Parcel G Boundary

Proposed Scrape Areas (1.3 Acres)

Random Sample

Judgmental Sample

Parcel ID

TSB-GR(J)-01

Sample Number

January 2008 Aerial from AeroTech Mapping.

Removal Action Workplan for Soil
Tronox Parcels "C", "D", "F", "G" and "H"

FIGURE 4

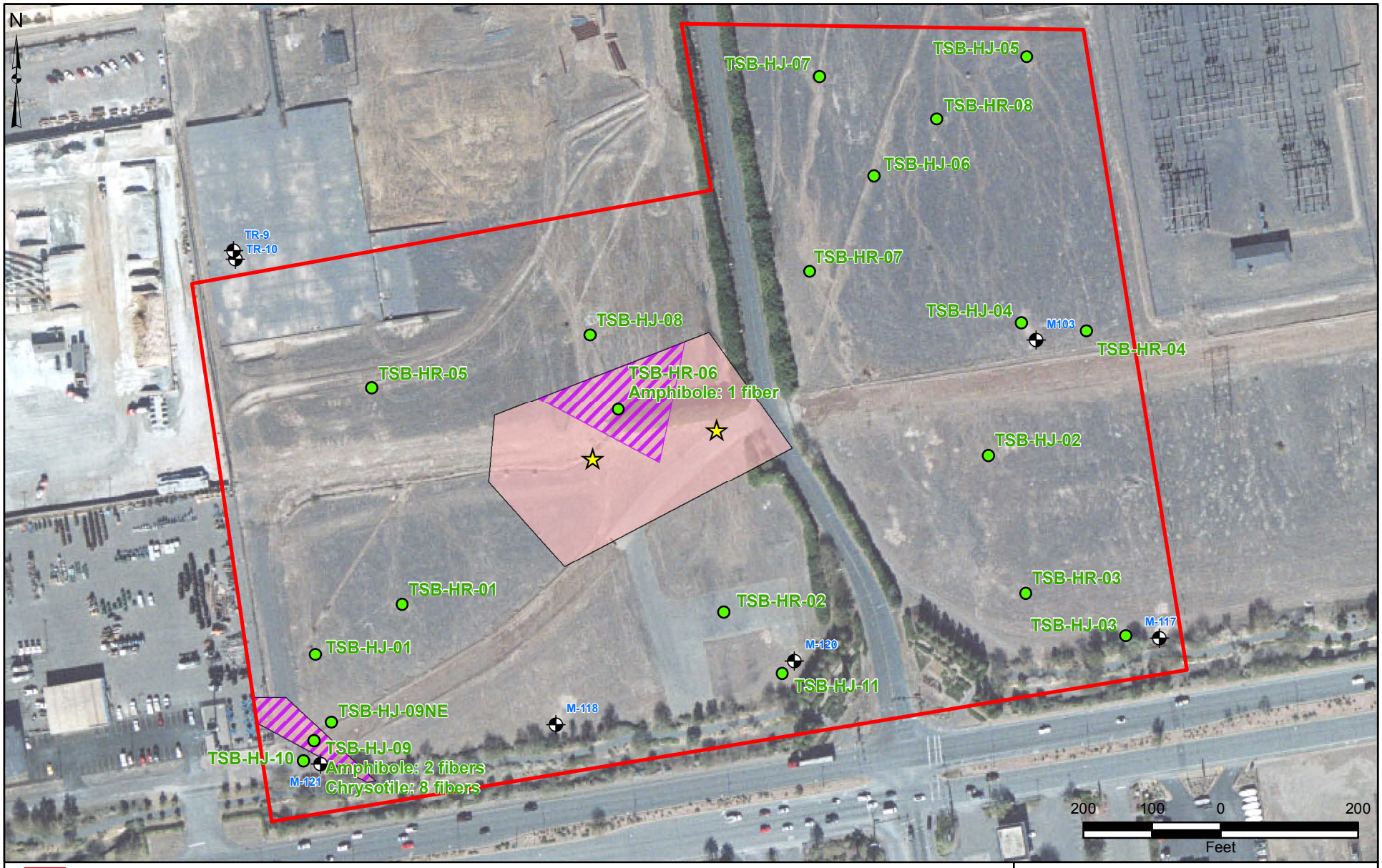
REMEDIATION AREAS
PARCEL "G"

Basic Environmental COMPANY

Prepared by: MKJ

Date 07/01/08

JOB No. 0069073
FILE: GIS/BEC/TRONOX/FIGURE_4.MXD



Parcel H Boundary

Additional Asbestos Sample Location

Sampling Location

Proposed Scrape Areas (2.1 Acres)

Scrape Area with 2 Extra Pts (0.55 Acres)

Sample ID Nomenclature:

TSB-HR(J)-01

- TSB-HR: Parcel ID
- (J): Judgmental Sample
- (R): Random Sample
- 01: Sample Number

January 2008 Aerial from AeroTech Mapping.

Removal Action Workplan for Soil
Tronox Parcels "C", "D", "F", "G" and "H"

FIGURE 5

REMEDIATION AREAS
PARCEL "H"

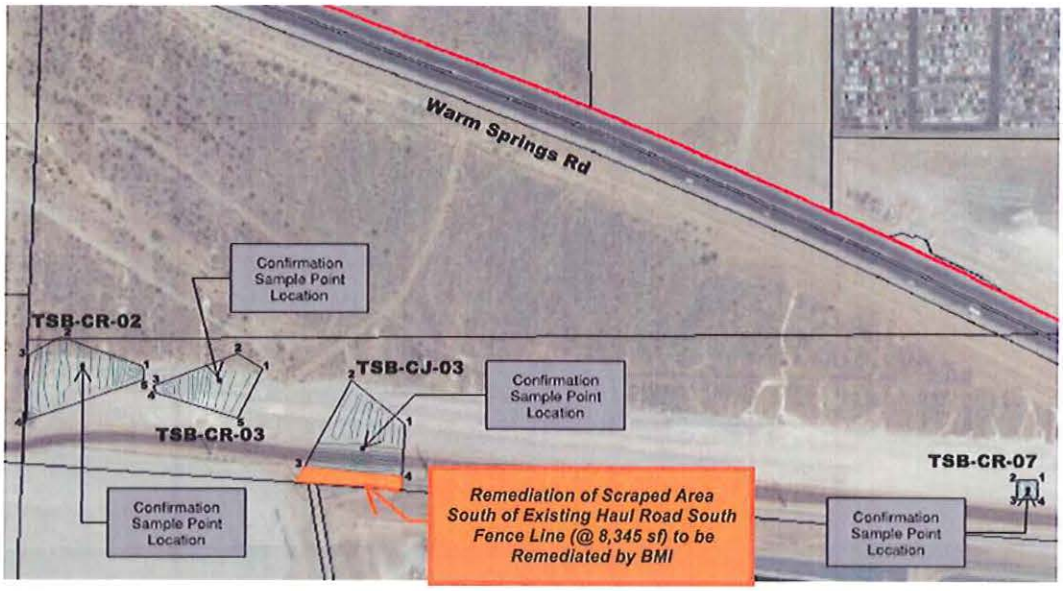
Basic Environmental COMPANY

Prepared by:	Date	JOB No. 0069073
MKJ	07/01/08	FILE: GIS/BEC/TRONOX/FIGURE_5.MXD

APPENDIX D-1
LAS VEGAS PAVING SCRAPE CLEAN UP FIGURES

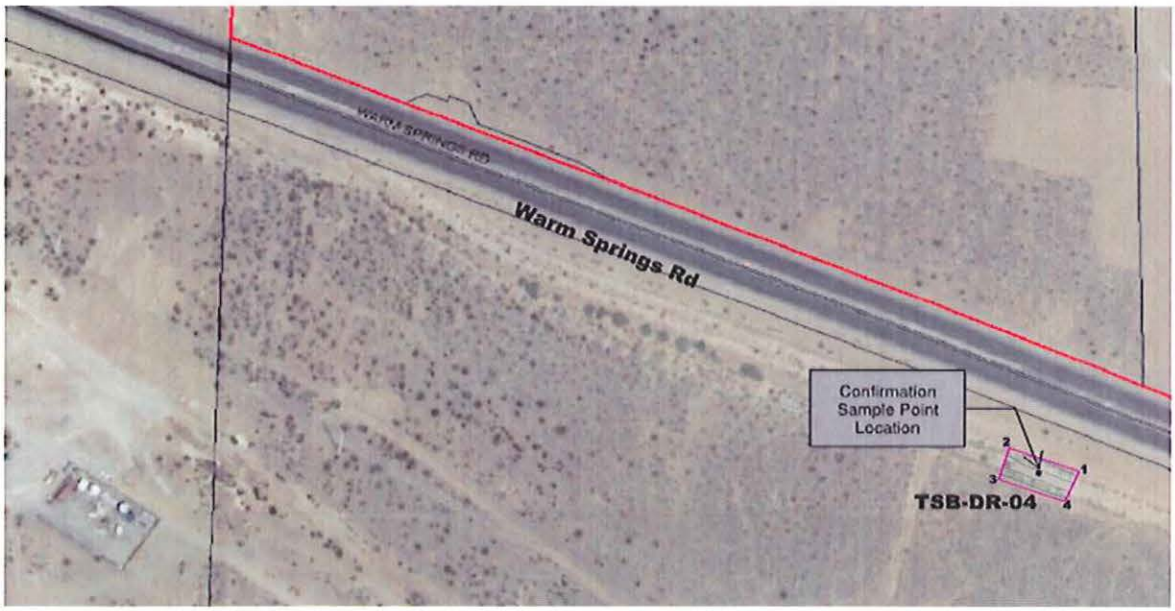
Tronox Parcel C,D,F,G,&H Scrape Clean Up

Parcel C Scrape Areas Information



Tronox Parcel C,D,F,G,&H Scrape Clean Up

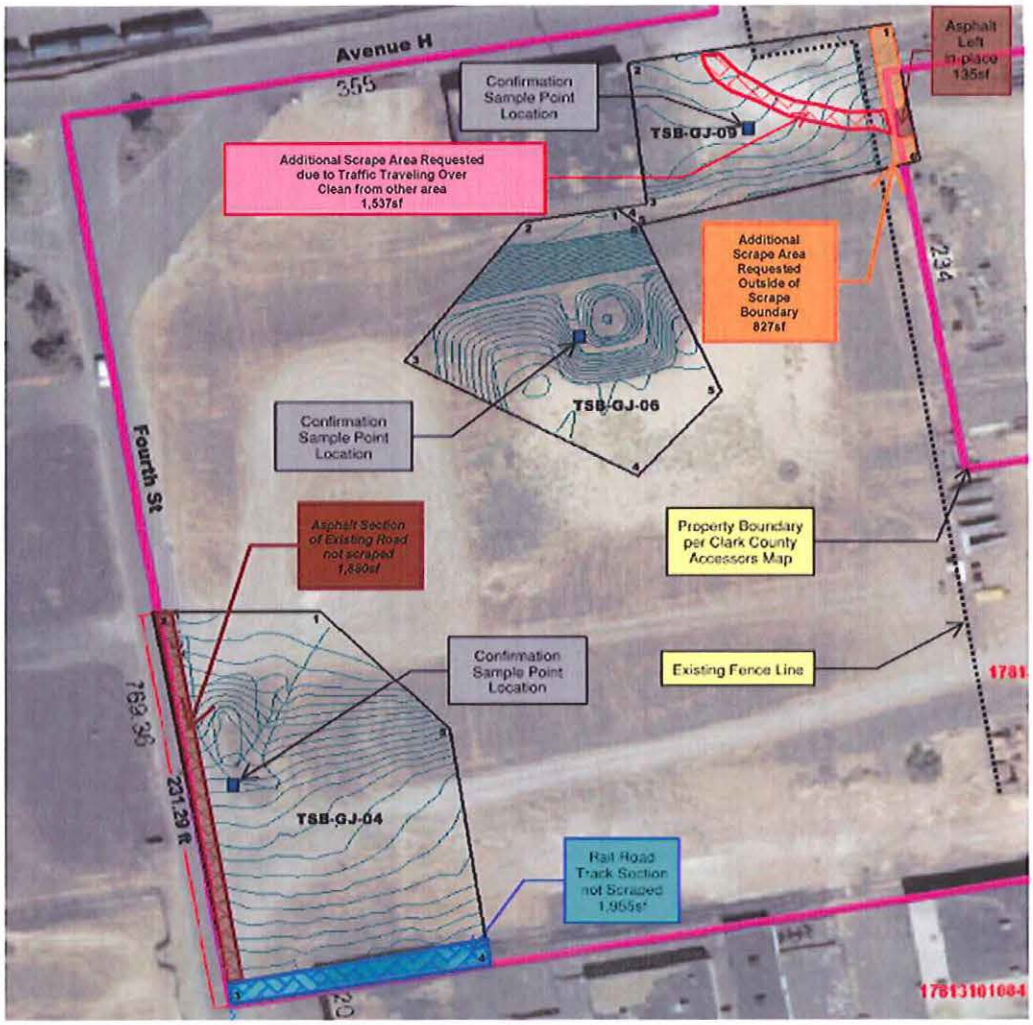
Parcel D Scrape Area Information



Source: Las Vegas Paving, 2010

Tronox Parcel C,D,F,G,&H Scrape Clean Up

Parcel G Scrape Areas Information



Source: Las Vegas Paving, 2010

APPENDIX D-2
SOIL DISPOSAL MANIFESTS FOR PARCELS C, D, AND G (CD)

APPENDIX E
DATA VALIDATION SUMMARY REPORTS (CD) AND TABLES – SOIL (CD)

APPENDIX F
POST REMEDIATION SOIL HRA DATA SET FOR PARCELS C, D, AND G (CD)

APPENDIX F-1
POST REMEDIATION SOIL HRA DATA SET FOR PARCELS C, D, AND G - CHEMICALS AND RADIONUCLIDES (CD)

APPENDIX F-2
POST REMEDIATION SOIL HRA DATA SET FOR PARCELS C, D, AND G – ASBESTOS

TABLE F-2. Post Remediation Soil HRA Data Set for Parcels C, D, and G - Asbestos
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Sample ID	Sample Type	Sample Date	Start Depth (ft bgs)	Long Amphibole Count (s/sample)	Long Chrysotile Count (s/sample)	Total Long Asbestos Count (s/sample)	Short Amphibole Count (s/sample)	Short Chrysotile Count (s/sample)	Total Short Asbestos Count (s/sample)	Total Amphibole Count (s/sample)	Total Chrysotile Count (s/sample)	Total Asbestos Count (s/sample)	Analytical Sensitivity (s/gPM10)
C	TSB-CJ-01-0_11/5/2007	N	11/5/2007	0	0	1	1	0	0	0	0	1	1	2996902
C	TSB-CJ-02-0_11/2/2007	N	11/2/2007	0	0	0	0	0	0	0	0	0	0	2985422
C	H2-PC-1-1-0.0	N	4/14/2010	0	0	0	0	0	0	0	0	0	0	2970000
C	TSB-CJ-04-0_11/2/2007	N	11/2/2007	0	0	1	1	0	1	1	0	2	2	2939784
C	TSB-CJ-05-0_11/2/2007	N	11/2/2007	0	0	0	0	0	0	0	0	0	0	2975224
C	TSB-CJ-06-0_11/2/2007	N	11/2/2007	0	0	0	0	1	2	3	1	2	3	2989641
C	TSB-CJ-07-0_11/2/2007	N	11/2/2007	0	0	0	0	0	0	0	0	0	0	2977917
C	TSB-CJ-08-0_11/2/2007	N	11/2/2007	0	0	1	1	1	4	5	1	5	6	2985422
C	TSB-CJ-10-0_7/8/2008	N	7/8/2008	0	0	0	0	0	0	0	0	0	0	2973432
C	TSB-CJ-11-0_7/8/2008	N	7/8/2008	0	0	0	0	0	0	0	0	0	0	2999026
C	TSB-CR-01-0_11/2/2007	N	11/2/2007	0	0	1	1	1	2	3	1	3	4	2978516
C	TSB-CR-01-0 FD_11/2/2007	FD	11/2/2007	0	0	1	1	0	1	1	0	2	2	2978516
C	E1-PC-1-1-0.0	N	4/13/2010	0	0	0	0	0	0	0	0	0	0	2960000
C	G1-PC-1-1-0.0	N	4/13/2010	0	0	0	0	0	0	0	0	0	0	2960000
C	TSB-CR-04-0_11/2/2007	N	11/2/2007	0	0	0	0	0	0	0	0	0	0	2985422
C	TSB-CR-05-0_11/2/2007	N	11/2/2007	0	0	2	2	0	0	0	0	2	2	2854495
C	TSB-CR-06-0_11/2/2007	N	11/2/2007	0	0	0	0	0	0	0	0	0	0	2997509
C	TSB-CR-07-0_11/2/2007	N	11/2/2007	0	0	2	2	0	4	4	0	6	6	2975224
C	SA22-0	N	12/2/2006	0	0	0	0	NA	NA	NA	NA	NA	NA	2883000
D	TSB-DJ-01-0_11/2/2007	N	11/2/2007	0	0	2	2	0	1	1	0	3	3	2956512
D	TSB-DR-01-0_11/2/2007	N	11/2/2007	0	0	0	0	0	0	0	0	0	0	2981515
D	TSB-DR-02-0_11/2/2007	N	11/2/2007	0	0	0	0	0	0	0	0	0	0	2964503
D	TSB-DR-02-0 FD_11/2/2007	FD	11/2/2007	0	0	0	0	0	0	0	0	0	0	2964503
D	TSB-DR-03-0_11/2/2007	N	11/2/2007	0	0	0	0	1	0	1	1	0	1	2997812
D	F4-PD-1-1-0.0	N	4/13/2010	0	0	0	0	0	0	0	0	0	0	2990000
D	TSB-DR-04E-0	N	6/4/2008	0	0	3	3	0	5	5	0	8	8	2961242
D	TSB-DR-04W-0	N	6/4/2008	0	0	0	0	0	1	1	0	1	1	2998419
D	TSB-DR-04W-0 FD	FD	6/4/2008	0	0	0	0	0	1	1	0	1	1	2972537
D	TSB-DR-05-0_11/2/2007	N	11/2/2007	0	0	0	0	0	0	0	0	0	0	2995083
D	TSB-DR-06-0_11/2/2007	N	11/2/2007	0	0	2	2	0	0	0	0	2	2	2960058
G	TSB-GJ-01-0_11/2/2007	N	11/2/2007	0	0	0	0	0	1	1	0	1	1	2678913
G	TSB-GJ-02-0_11/19/2007	N	11/19/2007	0	0	1	1	0	0	0	0	1	1	2972239
G	TSB-GJ-06-0_11/2/2007	N	11/2/2007	0	0	0	0	0	0	0	0	0	0	2980614
G	TSB-GJ-07-0_11/19/2007	N	11/19/2007	0	0	0	0	0	0	0	0	0	0	2966879
G	TSB-GJ-08-0_6/4/2008	N	6/4/2008	0	0	0	0	0	0	0	0	0	0	2983016
G	S3-PG-1-1-0.0	N	4/14/2010	0	0	0	0	0	0	0	0	0	0	2960000
G	TSB-GR-01-0_11/2/2007	N	11/2/2007	0	0	0	0	1	0	1	1	0	1	2992057

TABLE F-2. Post Remediation Soil HRA Data Set for Parcels C, D, and G - Asbestos
Nevada Environmental Response Trust Site
Henderson, Nevada

Parcel	Sample ID	Sample Type	Sample Date	Start Depth (ft bgs)	Long Amphibole Count (s/sample)	Long Chrysotile Count (s/sample)	Total Long Asbestos Count (s/sample)	Short Amphibole Count (s/sample)	Short Chrysotile Count (s/sample)	Total Short Asbestos Count (s/sample)	Total Amphibole Count (s/sample)	Total Chrysotile Count (s/sample)	Total Asbestos Count (s/sample)	Analytical Sensitivity (s/gPM10)
G	TSB-GR-01-0 FD_11/2/2007	FD	11/2/2007	0	0	0	0	0	0	0	0	0	0	2966285

Notes:

bgs = below ground surface

ft = feet

s/g PM_{10} = fiber per gram of particulate matter (< 10 micrometer)

s/sample = fiber per sample

FD = Field Duplicate

N = Normal Sample

NA = Not Available

APPENDIX G
SOIL SUMMARY STATISTICS FOR PARCELS C, D, AND G

TABLE G-1. Summary Statistics for Soil Data - Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Chlorine Oxyanions	Chlorate	mg/kg	50	19	38	0.051	1.3	0.10	16	5.8	7.5	6.0	0.80	TSB-CJ-09
	Perchlorate	mg/kg	50	49	98	0.0034	0.0034	0.017	21	1.1	4.2	6.0	1.4	TSB-CJ-09
Metals	Aluminum	mg/kg	50	50	100	--	--	5,170	14,000	7,560	8,090	2,050	0.25	RISB-38
	Antimony	mg/kg	50	33	66	0.052	0.56	0.11	0.32	0.15	0.16	0.040	0.26	TSB-CR-07
	Arsenic	mg/kg	74	74	100	--	--	2.1	11	3.3	4.0	1.7	0.42	TSB-CJ-09
	Barium	mg/kg	50	50	100	--	--	87	340	180	180	46	0.25	TSB-CJ-08
	Beryllium	mg/kg	37	37	100	--	--	0.34	0.59	0.46	0.47	0.069	0.15	TSB-CR-06
	Boron	mg/kg	50	31	62	1.4	3.3	3.2	13	7.4	7.4	3.0	0.41	RISB-38
	Cadmium	mg/kg	50	27	54	0.0050	0.28	0.049	0.27	0.094	0.11	0.058	0.54	RISB-38
	Calcium	mg/kg	37	37	100	--	--	10,400	91,900	27,900	29,800	15,300	0.51	TSB-CJ-03
	Chromium (total)	mg/kg	50	50	100	--	--	4.8	19	11	10	3.4	0.32	RISB-42
	Chromium VI	mg/kg	50	2	4.0	0.13	0.47	0.11	0.52	0.32	0.32	0.29	0.92	RISB-42
	Cobalt	mg/kg	50	50	100	--	--	3.6	9.3	6.5	6.3	1.2	0.20	RISB-42
	Copper	mg/kg	50	50	100	--	--	10	27	14	15	4.0	0.27	TSB-CJ-03
	Iron	mg/kg	50	50	100	--	--	7,580	22,000	11,800	12,500	3,050	0.24	RISB-42
	Lead	mg/kg	50	50	100	--	--	4.9	29	8.4	9.1	3.6	0.39	TSB-CR-07
	Lithium	mg/kg	35	32	91	0.66	0.73	8.6	24	14	15	4.5	0.29	TSB-CJ-08
	Magnesium	mg/kg	50	50	100	--	--	5,760	14,600	9,660	9,550	2,150	0.23	TSB-CR-03
	Manganese	mg/kg	50	50	100	--	--	160	840	310	350	130	0.38	TSB-CR-07
	Mercury	mg/kg	50	17	34	0.0067	0.042	0.0081	0.092	0.022	0.034	0.025	0.73	RISB-46
	Molybdenum	mg/kg	50	20	40	0.052	1.1	0.38	0.92	0.51	0.54	0.13	0.24	TSB-CJ-01
	Nickel	mg/kg	50	50	100	--	--	8.4	20	14	14	2.4	0.18	RISB-42
	Niobium	mg/kg	40	0	0	0.76	2.0	--	--	--	--	--	--	--
	Palladium	mg/kg	46	33	72	0.048	0.061	0.24	0.90	0.46	0.48	0.17	0.36	TSB-CR-04
	Phosphorus (total)	mg/kg	48	48	100	--	--	560	1,440	950	950	220	0.23	TSB-CR-07
	Platinum	mg/kg	37	2	5.4	0.010	0.024	0.014	0.014	0.014	0.014	0	0	SA22
	Potassium	mg/kg	37	37	100	--	--	1,460	3,660	2,270	2,390	570	0.24	TSB-CJ-01
	Selenium	mg/kg	50	0	0	0.16	0.63	--	--	--	--	--	--	--
	Silicon	mg/kg	48	48	100	--	--	67	520	190	210	110	0.52	TSB-CJ-09
	Silver	mg/kg	50	37	74	0.76	0.85	0.076	0.18	0.099	0.10	0.022	0.21	TSB-CR-01
	Sodium	mg/kg	37	37	100	--	--	190	2,300	790	890	550	0.62	TSB-CJ-04
	Strontium	mg/kg	50	50	100	--	--	100	450	210	220	70	0.31	TSB-CR-04
	Sulfur	mg/kg	45	29	64	22	390	466	24,800	950	1,810	4,440	2.5	TSB-CR-04
	Thallium	mg/kg	50	4	8.0	0.10	0.28	0.10	0.24	0.15	0.16	0.067	0.42	TSB-CR-01
	Tin	mg/kg	37	21	57	0.026	0.026	0.41	1.2	0.50	0.56	0.20	0.37	TSB-CJ-02
	Titanium	mg/kg	37	37	100	--	--	290	700	440	480	110	0.24	TSB-CR-06
	Tungsten	mg/kg	50	2	4.0	0.10	5.6	0.46	0.87	0.67	0.67	0.29	0.44	SA22
	Uranium (total)	mg/kg	50	50	100	--	--	0.52	2.7	1.1	1.3	0.52	0.40	TSB-CR-04
	Vanadium	mg/kg	37	37	100	--	--	20	49	29	32	8.2	0.26	TSB-CR-06

TABLE G-1. Summary Statistics for Soil Data - Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Metals	Zinc	mg/kg	50	50	100	--	--	19	50	28	29	6.9	0.23	TSB-CJ-05
	Zirconium	mg/kg	48	48	100	--	--	16	30	22	22	3.4	0.15	RISB-38
Other Inorganics	Ammonia	mg/kg	15	3	20	0.61	2.7	2.6	3.9	3.5	3.3	0.67	0.20	RISB-42
	Bromide	mg/kg	50	7	14	0.063	3.9	1.7	15	7.2	6.7	4.2	0.63	TSB-CR-04
	Chloride	mg/kg	50	50	100	--	--	0.85	2,910	390	670	830	1.2	TSB-CR-04
	Chlorite	mg/kg	29	0	0	0.040	0.80	--	--	--	--	--	--	--
	Fluoride	mg/kg	35	11	31	0.10	0.25	0.48	8.2	1.2	2.2	2.3	1.1	TSB-CJ-09
	Nitrate	mg/kg	50	42	84	0.086	3.8	0.13	160	5.2	16	29	1.8	RISB-45
	Nitrate/Nitrite	mg/kg	13	11	85	1.1	1.2	1.6	37	7.3	11	9.9	0.94	RISB-45
	Nitrite	mg/kg	44	3	6.8	0.020	1.2	0.68	1.4	1.1	1.1	0.36	0.34	RISB-46
	ortho-Phosphate	mg/kg	50	1	2.0	0.50	6.3	6.3	6.3	6.3	6.3	--	--	SA22
	Sulfate	mg/kg	50	50	100	--	--	5.4	16,700	230	960	2,530	2.6	TSB-CR-04
Radionuclides	Radium-226	pCi/g	50	50	100	--	--	0.78	1.8	1.1	1.1	0.18	0.16	TSB-CJ-09
	Radium-228	pCi/g	50	50	100	--	--	0.90	3.2	1.7	1.6	0.37	0.23	TSB-CJ-09
	Thorium-228	pCi/g	50	50	100	--	--	1.2	4.9	1.7	1.8	0.55	0.31	TSB-CJ-09
	Thorium-230	pCi/g	50	50	100	--	--	0.80	3.4	1.3	1.4	0.43	0.30	TSB-CJ-09
	Thorium-232	pCi/g	50	50	100	--	--	1.2	2.2	1.6	1.7	0.24	0.15	TSB-CJ-09
	Uranium-234	pCi/g	37	37	100	--	--	0.87	2.1	1.4	1.4	0.31	0.22	TSB-CR-05
	Uranium-235	pCi/g	37	37	100	--	--	0.014	0.33	0.039	0.052	0.054	1.1	TSB-CJ-09
	Uranium-238	pCi/g	50	50	100	--	--	0.80	1.9	1.1	1.2	0.22	0.19	TSB-CR-02
Dioxin/Furans	2,3,7,8-TCDD TEQ*	mg/kg	50	41	82	0.000017	0.016	0.00000027	0.0039	0.000038	0.00027	0.00064	2.4	TSB-CJ-09
Other Organics	Phthalic acid	mg/kg	48	1	2.1	0.25	1.4	0.40	0.40	0.40	0.40	--	--	TSB-CJ-09
PAHs	Acenaphthene	mg/kg	50	0	0	0.0041	0.42	--	--	--	--	--	--	--
	Acenaphthylene	mg/kg	50	0	0	0.0041	0.42	--	--	--	--	--	--	--
	Anthracene	mg/kg	50	0	0	0.00067	0.42	--	--	--	--	--	--	--
	BaPEq*	mg/kg	50	1	2.0	0.0031	0.49	0.0093	0.0093	0.0093	0.0093	--	--	RISB-43
	Benzo(g,h,i)perylene	mg/kg	50	1	2.0	0.0041	0.42	0.0050	0.0050	0.0050	0.0050	--	--	RISB-43
	Fluoranthene	mg/kg	50	1	2.0	0.0041	0.42	0.0070	0.0070	0.0070	0.0070	--	--	RISB-43
	Fluorene	mg/kg	50	0	0	0.0041	0.42	--	--	--	--	--	--	--
	1-Methylnaphthalene	mg/kg	13	0	0	0.15	0.17	--	--	--	--	--	--	--
	2-Methylnaphthalene	mg/kg	50	0	0	0.033	0.42	--	--	--	--	--	--	--
	Naphthalene	mg/kg	56	0	0	0.00097	0.42	--	--	--	--	--	--	--
	Phenanthrene	mg/kg	50	0	0	0.0017	0.42	--	--	--	--	--	--	--
	Pyrene	mg/kg	50	1	2.0	0.0030	0.42	0.0060	0.0060	0.0060	0.0060	--	--	RISB-43
PCBs	Aroclor-1016	mg/kg	4	0	0	0.0049	0.042	--	--	--	--	--	--	--
	Aroclor-1221	mg/kg	4	0	0	0.0049	0.042	--	--	--	--	--	--	--
	Aroclor-1232	mg/kg	4	0	0	0.0049	0.042	--	--	--	--	--	--	--
	Aroclor-1242	mg/kg	4	0	0	0.0049	0.042	--	--	--	--	--	--	--
	Aroclor-1248	mg/kg	4	0	0	0.0049	0.042	--	--	--	--	--	--	--

TABLE G-1. Summary Statistics for Soil Data - Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
PCBs	Aroclor-1254	mg/kg	4	0	0	0.0027	0.042	--	--	--	--	--	--	--
	Aroclor-1260	mg/kg	17	0	0	0.0027	0.042	--	--	--	--	--	--	--
Pesticides - OCPs	Aldrin	mg/kg	49	0	0	0.000088	0.0022	--	--	--	--	--	--	--
	alpha-BHC	mg/kg	49	5	10	0.000096	0.0022	0.0021	0.046	0.0043	0.012	0.019	1.5	TSB-CJ-05
	beta-BHC	mg/kg	49	25	51	0.00019	0.0017	0.0016	0.18	0.054	0.056	0.046	0.82	TSB-CR-07
	delta-BHC	mg/kg	49	0	0	0.000083	0.0022	--	--	--	--	--	--	--
	gamma-BHC	mg/kg	49	1	2.0	0.000083	0.0022	0.013	0.013	0.013	0.013	--	--	TSB-CJ-05
	Chlordane (total)	mg/kg	36	0	0	0.0023	0.013	--	--	--	--	--	--	--
	alpha-Chlordane	mg/kg	49	0	0	0.00010	0.0023	--	--	--	--	--	--	--
	gamma-Chlordane	mg/kg	49	3	6.1	0.000086	0.0022	0.0024	0.0053	0.0040	0.0039	0.0015	0.37	TSB-CJ-09
	2,4'-DDD	mg/kg	35	3	8.6	0.00011	0.00031	0.0018	0.0066	0.0027	0.0037	0.0026	0.69	TSB-CR-07
	4,4'-DDD	mg/kg	49	0	0	0.000089	0.0022	--	--	--	--	--	--	--
	2,4'-DDE	mg/kg	48	11	23	0.000089	0.0017	0.0019	0.085	0.0041	0.018	0.026	1.4	TSB-CJ-05
	4,4'-DDE	mg/kg	49	16	33	0.00019	0.0022	0.0018	0.20	0.0073	0.030	0.053	1.8	TSB-CJ-05
	4,4'-DDT	mg/kg	49	14	29	0.00020	0.0022	0.0018	0.096	0.0044	0.016	0.026	1.6	TSB-CJ-05
	Dieldrin	mg/kg	49	0	0	0.000073	0.0022	--	--	--	--	--	--	--
	Endosulfan I	mg/kg	49	0	0	0.000083	0.0022	--	--	--	--	--	--	--
	Endosulfan II	mg/kg	49	0	0	0.000093	0.0022	--	--	--	--	--	--	--
	Endosulfan sulfate	mg/kg	49	0	0	0.00012	0.0023	--	--	--	--	--	--	--
	Endrin	mg/kg	49	0	0	0.000083	0.0022	--	--	--	--	--	--	--
	Endrin aldehyde	mg/kg	49	1	2.0	0.00011	0.0022	0.0029	0.0029	0.0029	0.0029	--	--	TSB-CR-07
	Endrin ketone	mg/kg	49	0	0	0.00016	0.0023	--	--	--	--	--	--	--
	Heptachlor	mg/kg	49	0	0	0.00017	0.0023	--	--	--	--	--	--	--
	Heptachlor epoxide	mg/kg	49	0	0	0.00012	0.0023	--	--	--	--	--	--	--
	Hexachlorobenzene	mg/kg	50	6	12	0.033	0.42	0.035	0.37	0.081	0.16	0.15	0.96	TSB-CJ-05
	Methoxychlor	mg/kg	49	4	8.2	0.00032	0.0042	0.0030	0.0078	0.0069	0.0061	0.0022	0.35	TSB-CJ-06
	Toxaphene	mg/kg	49	1	2.0	0.0058	0.063	0.12	0.12	0.12	0.12	--	--	RISB-42
	2,4,5-TP	mg/kg	1	0	0	0.025	0.025	--	--	--	--	--	--	--
Pesticides - OPPs	Chlorpyrifos	mg/kg	1	0	0	0.025	0.025	--	--	--	--	--	--	--
	Coumaphos	mg/kg	1	0	0	0.016	0.016	--	--	--	--	--	--	--
	Dasanit	mg/kg	1	0	0	0.016	0.016	--	--	--	--	--	--	--
	Demeton-O	mg/kg	1	0	0	0.049	0.049	--	--	--	--	--	--	--
	Demeton-S	mg/kg	1	0	0	0.019	0.019	--	--	--	--	--	--	--
	Diazinon	mg/kg	1	0	0	0.028	0.028	--	--	--	--	--	--	--
	Dibrom	mg/kg	1	0	0	0.042	0.042	--	--	--	--	--	--	--
	Dichlorovos	mg/kg	1	0	0	0.029	0.029	--	--	--	--	--	--	--
	Dimethoate	mg/kg	1	0	0	0.028	0.028	--	--	--	--	--	--	--
	Disulfoton	mg/kg	1	0	0	0.061	0.061	--	--	--	--	--	--	--
	Ethoprop	mg/kg	1	0	0	0.019	0.019	--	--	--	--	--	--	--

TABLE G-1. Summary Statistics for Soil Data - Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Pesticides - OPPs	Ethyl p-nitrophenyl benzenethiophosphate	mg/kg	1	0	0	0.016	0.016	--	--	--	--	--	--	--
	Famphur	mg/kg	1	0	0	0.016	0.016	--	--	--	--	--	--	--
	Fenthion	mg/kg	1	0	0	0.042	0.042	--	--	--	--	--	--	--
	Guthion	mg/kg	1	0	0	0.016	0.016	--	--	--	--	--	--	--
	Malathion	mg/kg	1	0	0	0.019	0.019	--	--	--	--	--	--	--
	Merphos	mg/kg	1	0	0	0.038	0.038	--	--	--	--	--	--	--
	Methyl parathion	mg/kg	1	0	0	0.025	0.025	--	--	--	--	--	--	--
	Mevinphos	mg/kg	1	0	0	0.019	0.019	--	--	--	--	--	--	--
	Parathion	mg/kg	1	0	0	0.023	0.023	--	--	--	--	--	--	--
	Phorate	mg/kg	1	0	0	0.025	0.025	--	--	--	--	--	--	--
	Prothiophos	mg/kg	1	0	0	0.025	0.025	--	--	--	--	--	--	--
	Ronnel	mg/kg	1	0	0	0.023	0.023	--	--	--	--	--	--	--
	Stirophos	mg/kg	1	0	0	0.019	0.019	--	--	--	--	--	--	--
	Sulfotepp	mg/kg	1	0	0	0.025	0.025	--	--	--	--	--	--	--
	Sulprofos	mg/kg	1	0	0	0.016	0.016	--	--	--	--	--	--	--
	Thionazin	mg/kg	1	0	0	0.023	0.023	--	--	--	--	--	--	--
	o-Ethyl o-2,4,5-trichlorophenyl ethyl-phosphonothioate	mg/kg	1	0	0	0.025	0.025	--	--	--	--	--	--	--
SVOCs	Acetophenone	mg/kg	35	0	0	0.033	0.033	--	--	--	--	--	--	--
	Aniline	mg/kg	48	0	0	0.033	0.096	--	--	--	--	--	--	--
	Azobenzene	mg/kg	35	0	0	0.033	0.033	--	--	--	--	--	--	--
	Benzenethiol	mg/kg	35	0	0	0.12	0.12	--	--	--	--	--	--	--
	Benzidine	mg/kg	12	0	0	0.66	0.75	--	--	--	--	--	--	--
	Benzoic acid	mg/kg	48	0	0	0.033	0.38	--	--	--	--	--	--	--
	Benzyl alcohol	mg/kg	48	0	0	0.033	0.17	--	--	--	--	--	--	--
	bis(2-Chloro-1-methylethyl) ether	mg/kg	35	0	0	0.033	0.033	--	--	--	--	--	--	--
	bis(2-Chloroethoxy)methane	mg/kg	48	0	0	0.033	0.15	--	--	--	--	--	--	--
	bis(2-Chloroethyl) ether	mg/kg	48	0	0	0.033	0.079	--	--	--	--	--	--	--
	bis(2-Ethylhexyl)phthalate	mg/kg	50	0	0	0.033	0.42	--	--	--	--	--	--	--
	bis(4-Chlorophenyl) disulfide	mg/kg	35	0	0	0.20	0.20	--	--	--	--	--	--	--
	bis(4-Chlorophenyl) sulfone	mg/kg	35	0	0	0.33	0.33	--	--	--	--	--	--	--
	4-Bromophenyl-phenyl ether	mg/kg	48	0	0	0.033	0.085	--	--	--	--	--	--	--
	Butylbenzylphthalate	mg/kg	50	0	0	0.033	0.42	--	--	--	--	--	--	--
	Carbazole	mg/kg	35	0	0	0.033	0.033	--	--	--	--	--	--	--
	4-Chloro-3-methylphenol	mg/kg	48	0	0	0.033	0.079	--	--	--	--	--	--	--
	4-Chloroaniline	mg/kg	48	0	0	0.033	0.15	--	--	--	--	--	--	--
	2-Chloronaphthalene	mg/kg	48	0	0	0.033	0.076	--	--	--	--	--	--	--
	2-Chlorophenol	mg/kg	48	0	0	0.033	0.079	--	--	--	--	--	--	--
	4-Chlorophenyl-phenyl ether	mg/kg	48	0	0	0.033	0.096	--	--	--	--	--	--	--

TABLE G-1. Summary Statistics for Soil Data - Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
SVOCs	4-Chlorothioanisole	mg/kg	35	0	0	0.0076	0.0076	--	--	--	--	--	--	--
	4-Chlorothiophenol	mg/kg	35	0	0	0.19	0.19	--	--	--	--	--	--	--
	Di-n-butylphthalate	mg/kg	50	0	0	0.033	0.42	--	--	--	--	--	--	--
	Di-n-octylphthalate	mg/kg	50	0	0	0.015	0.42	--	--	--	--	--	--	--
	Dibenzofuran	mg/kg	48	0	0	0.033	0.076	--	--	--	--	--	--	--
	3,3'-Dichlorobenzidine	mg/kg	48	0	0	0.033	0.17	--	--	--	--	--	--	--
	2,2'-/4,4'-Dichlorobenzil	mg/kg	35	0	0	0.070	0.12	--	--	--	--	--	--	--
	2,4-Dichlorophenol	mg/kg	48	0	0	0.033	0.076	--	--	--	--	--	--	--
	Diethylphthalate	mg/kg	50	0	0	0.033	0.42	--	--	--	--	--	--	--
	2,4-Dimethylphenol	mg/kg	48	0	0	0.033	0.15	--	--	--	--	--	--	--
	Dimethylphthalate	mg/kg	50	0	0	0.033	0.42	--	--	--	--	--	--	--
	2,4-Dinitrophenol	mg/kg	48	0	0	0.033	0.37	--	--	--	--	--	--	--
	2,4-Dinitrotoluene	mg/kg	48	0	0	0.033	0.091	--	--	--	--	--	--	--
	2,6-Dinitrotoluene	mg/kg	48	0	0	0.033	0.11	--	--	--	--	--	--	--
	1,4-Dioxane	mg/kg	37	0	0	0.033	0.42	--	--	--	--	--	--	--
	Diphenyl disulfide	mg/kg	35	0	0	0.029	0.029	--	--	--	--	--	--	--
	Diphenyl sulfide	mg/kg	35	0	0	0.0035	0.0035	--	--	--	--	--	--	--
	Diphenyl sulfone	mg/kg	35	0	0	0.0067	0.0067	--	--	--	--	--	--	--
	1,2-Diphenylhydrazine	mg/kg	35	0	0	0.033	0.033	--	--	--	--	--	--	--
	Hexachlorobutadiene	mg/kg	50	0	0	0.00096	0.033	--	--	--	--	--	--	--
	Hexachlorocyclopentadiene	mg/kg	48	0	0	0.13	0.33	--	--	--	--	--	--	--
	Hexachloroethane	mg/kg	48	0	0	0.033	0.15	--	--	--	--	--	--	--
	Hydroxymethyl phthalimide	mg/kg	35	0	0	0.043	0.043	--	--	--	--	--	--	--
	Isophorone	mg/kg	48	0	0	0.033	0.076	--	--	--	--	--	--	--
	2-Methylphenol	mg/kg	48	0	0	0.079	0.12	--	--	--	--	--	--	--
	3&4-Methylphenol	mg/kg	48	0	0	0.067	0.15	--	--	--	--	--	--	--
	2-Nitroaniline	mg/kg	48	0	0	0.033	0.076	--	--	--	--	--	--	--
	3-Nitroaniline	mg/kg	48	0	0	0.033	0.15	--	--	--	--	--	--	--
	4-Nitroaniline	mg/kg	48	0	0	0.13	0.33	--	--	--	--	--	--	--
	Nitrobenzene	mg/kg	50	0	0	0.033	0.42	--	--	--	--	--	--	--
	2-Nitrophenol	mg/kg	48	0	0	0.033	0.15	--	--	--	--	--	--	--
	4-Nitrophenol	mg/kg	48	0	0	0.14	0.33	--	--	--	--	--	--	--
	n-Nitroso-di-n-propylamine	mg/kg	48	0	0	0.033	0.079	--	--	--	--	--	--	--
	n-Nitrosodiphenylamine	mg/kg	48	0	0	0.033	0.091	--	--	--	--	--	--	--
	Octachlorostyrene	mg/kg	50	2	4.0	0.033	2.6	0.039	0.065	0.052	0.052	0.018	0.35	TSB-CJ-05
	Pentachlorobenzene	mg/kg	35	0	0	0.033	0.033	--	--	--	--	--	--	--
	Pentachlorophenol	mg/kg	48	0	0	0.33	0.38	--	--	--	--	--	--	--
	Phenol	mg/kg	48	0	0	0.033	0.10	--	--	--	--	--	--	--
	Pyridine	mg/kg	50	0	0	0.033	2.0	--	--	--	--	--	--	--

TABLE G-1. Summary Statistics for Soil Data - Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
SVOCs	1,2,4,5-Tetrachlorobenzene	mg/kg	35	0	0	0.033	0.033	--	--	--	--	--	--	--
	2,4,5-Trichlorophenol	mg/kg	48	0	0	0.033	0.15	--	--	--	--	--	--	--
	2,4,6-Trichlorophenol	mg/kg	48	0	0	0.033	0.085	--	--	--	--	--	--	--
VOCs	Acetone	mg/kg	50	6	12	0.0017	0.013	0.0088	0.32	0.070	0.14	0.14	1.1	TSB-CR-01
	Acetonitrile	mg/kg	35	0	0	0.0020	0.0054	--	--	--	--	--	--	--
	t-Amyl methyl ether	mg/kg	15	0	0	0.00096	0.0063	--	--	--	--	--	--	--
	Benzene	mg/kg	50	0	0	0.000087	0.0063	--	--	--	--	--	--	--
	Bromobenzene	mg/kg	50	0	0	0.00012	0.0063	--	--	--	--	--	--	--
	Bromochloromethane	mg/kg	49	0	0	0.00023	0.0063	--	--	--	--	--	--	--
	Bromodichloromethane	mg/kg	50	0	0	0.00021	0.0063	--	--	--	--	--	--	--
	Bromoform	mg/kg	50	0	0	0.000059	0.0063	--	--	--	--	--	--	--
	Bromomethane	mg/kg	50	0	0	0.00013	0.013	--	--	--	--	--	--	--
	2-Butanone	mg/kg	49	2	4.1	0.00087	0.013	0.0036	0.011	0.0073	0.0073	0.0052	0.72	TSB-CJ-06
	tert Butyl alcohol	mg/kg	15	0	0	0.0055	0.011	--	--	--	--	--	--	--
	n-Butylbenzene	mg/kg	50	0	0	0.00018	0.0063	--	--	--	--	--	--	--
	sec-Butylbenzene	mg/kg	50	0	0	0.00011	0.0063	--	--	--	--	--	--	--
	tert-Butylbenzene	mg/kg	50	0	0	0.00010	0.0063	--	--	--	--	--	--	--
	Carbon disulfide	mg/kg	35	0	0	0.00012	0.00055	--	--	--	--	--	--	--
	Carbon tetrachloride	mg/kg	50	0	0	0.00021	0.0063	--	--	--	--	--	--	--
	Chlorobenzene	mg/kg	50	0	0	0.00011	0.0063	--	--	--	--	--	--	--
	Chloroethane	mg/kg	50	0	0	0.00035	0.0063	--	--	--	--	--	--	--
	Chloroform	mg/kg	50	5	10	0.00010	0.0063	0.00056	0.0023	0.00095	0.0013	0.00084	0.63	TSB-CJ-01
	Chloromethane	mg/kg	50	0	0	0.00027	0.0063	--	--	--	--	--	--	--
	2-Chlorotoluene	mg/kg	50	0	0	0.00024	0.0063	--	--	--	--	--	--	--
	4-Chlorotoluene	mg/kg	50	0	0	0.00017	0.0063	--	--	--	--	--	--	--
	Cumene	mg/kg	50	1	2.0	0.00010	0.0063	0.00029	0.00029	0.00029	0.00029	--	--	TSB-CR-01
	p-Cymene	mg/kg	49	0	0	0.00012	0.0063	--	--	--	--	--	--	--
	1,2-Dibromo-3-chloropropane	mg/kg	50	0	0	0.00021	0.0063	--	--	--	--	--	--	--
	Dibromochloromethane	mg/kg	50	0	0	0.00012	0.0063	--	--	--	--	--	--	--
	1,2-Dibromoethane	mg/kg	15	0	0	0.00048	0.0063	--	--	--	--	--	--	--
	Dibromomethane	mg/kg	50	0	0	0.00017	0.0063	--	--	--	--	--	--	--
	1,2-Dichlorobenzene	mg/kg	50	1	2.0	0.00012	0.0063	0.00036	0.00036	0.00036	0.00036	--	--	TSB-CJ-01
	1,3-Dichlorobenzene	mg/kg	50	2	4.0	0.00013	0.0063	0.00079	0.00080	0.00080	0.00080	0.0000071	0.0089	TSB-CR-01
	1,4-Dichlorobenzene	mg/kg	50	3	6.0	0.00011	0.0063	0.00027	0.00051	0.00043	0.00040	0.00012	0.30	TSB-CR-01
	Dichlorodifluoromethane	mg/kg	50	0	0	0.00029	0.0063	--	--	--	--	--	--	--
	1,1-Dichloroethane	mg/kg	50	0	0	0.000070	0.0063	--	--	--	--	--	--	--
	1,2-Dichloroethane	mg/kg	50	0	0	0.000066	0.0063	--	--	--	--	--	--	--
	1,1-Dichloroethene	mg/kg	50	0	0	0.00012	0.0063	--	--	--	--	--	--	--
	1,2-Dichloroethene	mg/kg	35	0	0	0.00011	0.00054	--	--	--	--	--	--	--

TABLE G-1. Summary Statistics for Soil Data - Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
VOCs	cis-1,2-Dichloroethene	mg/kg	50	0	0	0.000054	0.0063	--	--	--	--	--	--	--
	trans-1,2-Dichloroethene	mg/kg	50	0	0	0.000090	0.0063	--	--	--	--	--	--	--
	1,2-Dichloropropane	mg/kg	50	0	0	0.00011	0.0063	--	--	--	--	--	--	--
	1,3-Dichloropropane	mg/kg	50	0	0	0.000051	0.0063	--	--	--	--	--	--	--
	cis-1,3-Dichloropropene	mg/kg	50	0	0	0.00010	0.0063	--	--	--	--	--	--	--
	trans-1,3-Dichloropropene	mg/kg	50	0	0	0.00010	0.0063	--	--	--	--	--	--	--
	2,2-Dichloropropane	mg/kg	50	0	0	0.00017	0.0063	--	--	--	--	--	--	--
	1,1-Dichloropropene	mg/kg	50	0	0	0.000087	0.0063	--	--	--	--	--	--	--
	Diisopropyl ether	mg/kg	15	0	0	0.00096	0.0063	--	--	--	--	--	--	--
	Dimethyl disulfide	mg/kg	35	0	0	0.00018	0.00021	--	--	--	--	--	--	--
	2,2-Dimethylpentane	mg/kg	35	0	0	0.00028	0.00028	--	--	--	--	--	--	--
	2,3-Dimethylpentane	mg/kg	35	0	0	0.00022	0.00022	--	--	--	--	--	--	--
	2,4-Dimethylpentane	mg/kg	35	0	0	0.00019	0.00019	--	--	--	--	--	--	--
	3,3-Dimethylpentane	mg/kg	35	0	0	0.00020	0.00020	--	--	--	--	--	--	--
	Ethanol	mg/kg	35	0	0	0.047	0.19	--	--	--	--	--	--	--
	Ethyl benzene	mg/kg	50	2	4.0	0.000058	0.0063	0.00037	0.0022	0.0013	0.0013	0.0013	1.0	TSB-CR-01
	Ethyl tert-butyl ether	mg/kg	15	0	0	0.00096	0.0063	--	--	--	--	--	--	--
	3-Ethylpentane	mg/kg	35	0	0	0.00021	0.00021	--	--	--	--	--	--	--
	n-Heptane	mg/kg	35	0	0	0.00016	0.00016	--	--	--	--	--	--	--
	2-Hexanone	mg/kg	50	0	0	0.00024	0.013	--	--	--	--	--	--	--
	Iodomethane	mg/kg	35	0	0	0.00012	0.00026	--	--	--	--	--	--	--
	Methyl tert-butyl ether	mg/kg	50	0	0	0.000089	0.0063	--	--	--	--	--	--	--
	4-Methyl-2-pentanone	mg/kg	50	0	0	0.00029	0.013	--	--	--	--	--	--	--
	Methylene Chloride	mg/kg	49	0	0	0.00069	0.0063	--	--	--	--	--	--	--
	2-Methylhexane	mg/kg	35	0	0	0.00020	0.00020	--	--	--	--	--	--	--
	3-Methylhexane	mg/kg	35	0	0	0.00014	0.00014	--	--	--	--	--	--	--
	2-Nitropropane	mg/kg	35	0	0	0.00060	0.0017	--	--	--	--	--	--	--
	n-Nonyl aldehyde	mg/kg	35	0	0	0.00047	0.00088	--	--	--	--	--	--	--
	n-Propylbenzene	mg/kg	50	1	2.0	0.00011	0.0063	0.0010	0.0010	0.0010	0.0010	--	--	TSB-CR-01
	Styrene	mg/kg	50	0	0	0.00017	0.0063	--	--	--	--	--	--	--
	1,1,1,2-Tetrachloroethane	mg/kg	50	0	0	0.00018	0.0063	--	--	--	--	--	--	--
	1,1,2,2-Tetrachloroethane	mg/kg	50	0	0	0.000078	0.0063	--	--	--	--	--	--	--
	Tetrachloroethene	mg/kg	50	2	4.0	0.000087	0.0063	0.0010	0.0027	0.0019	0.0019	0.0012	0.65	TSB-CR-01
	Toluene	mg/kg	50	2	4.0	0.00013	0.0063	0.00031	0.00056	0.00043	0.00043	0.00018	0.41	TSB-CR-06
	1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	34	0	0	0.00014	0.00054	--	--	--	--	--	--	--
	1,2,3-Trichlorobenzene	mg/kg	50	2	4.0	0.00039	0.0063	0.00098	0.0017	0.0013	0.0013	0.00051	0.38	TSB-CR-01
	1,2,4-Trichlorobenzene	mg/kg	50	4	8.0	0.00033	0.0063	0.0012	0.014	0.0036	0.0056	0.0060	1.1	TSB-CR-01
	1,3,5-Trichlorobenzene	mg/kg	35	0	0	0.00037	0.00068	--	--	--	--	--	--	--
	1,1,1-Trichloroethane	mg/kg	50	0	0	0.00011	0.0063	--	--	--	--	--	--	--

TABLE G-1. Summary Statistics for Soil Data - Parcel C
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
VOCs	1,1,2-Trichloroethane	mg/kg	50	0	0	0.000067	0.0063	--	--	--	--	--	--	--
	Trichloroethene	mg/kg	50	0	0	0.00010	0.0063	--	--	--	--	--	--	--
	Trichlorofluoromethane	mg/kg	50	0	0	0.00022	0.0063	--	--	--	--	--	--	--
	1,2,3-Trichloropropane	mg/kg	50	0	0	0.00025	0.0063	--	--	--	--	--	--	--
	1,2,4-Trimethylbenzene	mg/kg	50	3	6.0	0.00013	0.0063	0.0021	0.0045	0.0034	0.0033	0.0012	0.36	TSB-CR-01
	1,3,5-Trimethylbenzene	mg/kg	50	3	6.0	0.000097	0.0063	0.00048	0.0019	0.0012	0.0012	0.00071	0.59	TSB-CR-01
	2,2,3-Trimethylbutane	mg/kg	35	0	0	0.00021	0.00021	--	--	--	--	--	--	--
	Vinyl acetate	mg/kg	35	0	0	0.00018	0.00024	--	--	--	--	--	--	--
	Vinyl chloride	mg/kg	50	0	0	0.00011	0.0063	--	--	--	--	--	--	--
	m,p-Xylene	mg/kg	48	5	10	0.00017	0.0011	0.00087	0.011	0.0014	0.0032	0.0044	1.4	TSB-CR-01
	o-Xylene	mg/kg	48	2	4.2	0.000076	0.00056	0.00047	0.0041	0.0023	0.0023	0.0026	1.1	TSB-CR-01
	Xylenes (total)	mg/kg	37	4	11	0.00023	0.013	0.0014	0.015	0.0016	0.0049	0.0068	1.4	TSB-CR-01

Notes:

-- = No value
mg/kg = milligram per kilogram
pCi/g = picocurie per gram
BaPEq = Benzo(a)pyrene equivalent
BHC = Hexachlorocyclohexane
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethylene
DDT = Dichlorodiphenyltrichloroethane
OCP = Organochlorine pesticide
OPP = Organophosphorus pesticide
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
SVOC = Semivolatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
TP = Trichlorophenoxy propionic acid
VOC = Volatile organic compound
* Methodology for equivalent calculations explained in text

TABLE G-2. Summary Statistics for Soil Data - Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Chlorine Oxyanions	Chlorate	mg/kg	16	3	19	1.0	1.0	1.1	12	6.3	6.5	5.6	0.85	TSB-DR-06
	Perchlorate	mg/kg	16	16	100	--	--	0.040	28	0.48	2.9	7.2	2.5	TSB-DR-06
Metals	Aluminum	mg/kg	16	16	100	--	--	3,430	10,800	7,730	7,360	1,710	0.23	TSB-DR-05
	Antimony	mg/kg	16	16	100	--	--	0.088	0.28	0.18	0.18	0.045	0.25	TSB-DR-04
	Arsenic	mg/kg	16	16	100	--	--	1.3	6.1	3.2	3.5	1.2	0.33	TSB-DR-04
	Barium	mg/kg	16	16	100	--	--	83	240	170	160	46	0.28	TSB-DR-04
	Beryllium	mg/kg	16	16	100	--	--	0.23	0.68	0.51	0.49	0.11	0.22	TSB-DR-05
	Boron	mg/kg	16	8	50	1.4	1.4	5.0	23	13	14	6.9	0.49	TSB-DR-05
	Cadmium	mg/kg	16	9	56	0.0050	0.0050	0.067	0.13	0.11	0.11	0.017	0.15	TSB-DR-04
	Calcium	mg/kg	16	16	100	--	--	8,900	43,400	21,800	25,400	10,800	0.43	TSB-DR-01
	Chromium (total)	mg/kg	16	16	100	--	--	4.1	18	11	11	3.4	0.32	TSB-DR-04
	Chromium VI	mg/kg	16	1	6.3	0.16	0.16	1.3	1.3	1.3	1.3	--	--	TSB-DR-05
	Cobalt	mg/kg	16	16	100	--	--	3.2	7.5	6.5	6.1	1.1	0.19	TSB-DR-05
	Copper	mg/kg	16	16	100	--	--	6.0	15	13	13	2.4	0.19	TSB-DJ-01
	Iron	mg/kg	16	16	100	--	--	5,950	14,400	12,500	11,800	2,260	0.19	TSB-DR-05
	Lead	mg/kg	16	16	100	--	--	3.8	20	9.1	9.5	3.6	0.37	TSB-DR-04
	Lithium	mg/kg	16	16	100	--	--	9.8	21	13	14	3.3	0.24	TSB-DJ-01
	Magnesium	mg/kg	16	16	100	--	--	4,100	14,300	8,950	9,080	2,730	0.30	TSB-DR-05
	Manganese	mg/kg	16	16	100	--	--	110	450	330	320	86	0.27	TSB-DR-04
	Mercury	mg/kg	16	16	100	--	--	0.0082	0.021	0.012	0.014	0.0044	0.32	TSB-DR-06
	Molybdenum	mg/kg	16	8	50	0.052	0.052	0.49	1.1	0.61	0.75	0.27	0.36	TSB-DR-06
	Nickel	mg/kg	16	16	100	--	--	6.0	16	14	13	2.7	0.20	TSB-DR-04
	Niobium	mg/kg	16	2	13	0.76	0.76	4.2	5.3	4.8	4.8	0.78	0.16	TSB-DR-06
	Palladium	mg/kg	16	16	100	--	--	0.090	0.63	0.28	0.32	0.13	0.40	TSB-DJ-01
	Phosphorus (total)	mg/kg	16	16	100	--	--	380	1,640	830	860	260	0.30	TSB-DR-04
	Platinum	mg/kg	16	0	0	0.010	0.010	--	--	--	--	--	--	--
	Potassium	mg/kg	16	16	100	--	--	190	4,480	2,370	2,580	950	0.37	TSB-DR-05
	Selenium	mg/kg	16	0	0	0.16	0.16	--	--	--	--	--	--	--
	Silicon	mg/kg	16	16	100	--	--	110	380	210	230	74	0.32	TSB-DR-05
	Silver	mg/kg	16	16	100	--	--	0.038	0.12	0.095	0.093	0.023	0.25	TSB-DR-05
	Sodium	mg/kg	16	16	100	--	--	220	2,100	500	690	520	0.75	TSB-DR-05
	Strontium	mg/kg	16	16	100	--	--	51	330	150	170	69	0.40	TSB-DJ-01
	Sulfur	mg/kg	16	11	69	210	210	430	5,670	550	1,370	1,550	1.1	TSB-DJ-01
	Thallium	mg/kg	16	2	13	0.10	0.10	0.40	0.45	0.43	0.43	0.035	0.083	TSB-DR-04
	Tin	mg/kg	16	15	94	0.026	0.026	0.28	0.67	0.55	0.54	0.11	0.21	TSB-DR-05
	Titanium	mg/kg	16	16	100	--	--	260	720	600	560	120	0.22	TSB-DR-05
	Tungsten	mg/kg	16	2	13	0.10	0.10	1.0	1.1	1.1	1.1	0.071	0.067	TSB-DR-06

TABLE G-2. Summary Statistics for Soil Data - Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Metals	Uranium (total)	mg/kg	16	16	100	--	--	0.39	2.5	0.96	1.2	0.62	0.52	TSB-DR-05
	Vanadium	mg/kg	16	16	100	--	--	19	47	36	35	7.5	0.21	TSB-DR-04
	Zinc	mg/kg	16	16	100	--	--	14	33	30	28	5.3	0.19	TSB-DR-02
	Zirconium	mg/kg	16	14	88	0.25	0.25	8.7	28	21	20	5.6	0.28	TSB-DR-05
Other Inorganics	Bromide	mg/kg	16	5	31	0.063	0.063	1.8	9.7	5.6	5.9	2.9	0.48	TSB-DR-01
	Chloride	mg/kg	16	16	100	--	--	13	3,730	190	1,160	1,490	1.3	TSB-DR-03
	Chlorite	mg/kg	16	0	0	0.040	0.40	--	--	--	--	--	--	--
	Fluoride	mg/kg	16	6	38	0.25	0.25	0.50	2.3	1.2	1.2	0.60	0.49	TSB-DR-04
	Nitrate	mg/kg	16	14	88	0.086	0.086	0.54	32	1.5	4.3	8.3	2.0	TSB-DR-03
	Nitrite	mg/kg	5	0	0	0.050	0.050	--	--	--	--	--	--	--
	ortho-Phosphate	mg/kg	16	0	0	1.6	1.6	--	--	--	--	--	--	--
	Sulfate	mg/kg	16	16	100	--	--	8.9	6,660	199	1,240	2,040	1.6	TSB-DJ-01
Radionuclides	Radium-226	pCi/g	16	16	100	--	--	0.96	1.5	1.1	1.1	0.12	0.11	TSB-DR-01
	Radium-228	pCi/g	16	16	100	--	--	1.6	2.0	1.8	1.8	0.14	0.078	TSB-DR-03
	Thorium-228	pCi/g	15	15	100	--	--	1.1	1.9	1.5	1.5	0.21	0.14	TSB-DR-05
	Thorium-230	pCi/g	15	15	100	--	--	0.98	2.0	1.3	1.3	0.26	0.20	TSB-DR-01
	Thorium-232	pCi/g	15	15	100	--	--	0.92	1.7	1.5	1.4	0.21	0.14	TSB-DR-05
	Uranium-234	pCi/g	16	16	100	--	--	0.84	2.3	1.2	1.3	0.38	0.29	TSB-DR-01
	Uranium-235	pCi/g	16	16	100	--	--	0.014	0.070	0.036	0.042	0.017	0.40	TSB-DJ-01
	Uranium-238	pCi/g	16	16	100	--	--	0.82	1.6	1.0	1.1	0.24	0.22	TSB-DR-01
Dioxin/Furans	2,3,7,8-TCDD TEQ*	mg/kg	16	13	81	0.000017	0.000024	0.0000014	0.00077	0.000073	0.00017	0.00024	1.4	TSB-DJ-01
Other Organics	Phthalic acid	mg/kg	16	0	0	0.25	0.25	--	--	--	--	--	--	--
PAHs	Acenaphthene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Acenaphthylene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Anthracene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	BaPEq*	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Benzo(g,h,i)perylene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Fluoranthene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Fluorene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2-Methylnaphthalene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Naphthalene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Phenanthrene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Pyrene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
Pesticides - OCPs	Aldrin	mg/kg	16	0	0	0.000088	0.000088	--	--	--	--	--	--	--
	alpha-BHC	mg/kg	16	0	0	0.000096	0.000096	--	--	--	--	--	--	--
	beta-BHC	mg/kg	16	7	44	0.00035	0.00035	0.0020	0.096	0.028	0.032	0.032	0.98	TSB-DR-04
	delta-BHC	mg/kg	16	0	0	0.000083	0.000083	--	--	--	--	--	--	--
	gamma-BHC	mg/kg	16	0	0	0.000083	0.000083	--	--	--	--	--	--	--
	Chlordane (total)	mg/kg	16	0	0	0.0023	0.0023	--	--	--	--	--	--	--
	alpha-Chlordane	mg/kg	16	0	0	0.00030	0.00030	--	--	--	--	--	--	--

TABLE G-2. Summary Statistics for Soil Data - Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Pesticides - OCPs	gamma-Chlordane	mg/kg	16	0	0	0.000086	0.000086	--	--	--	--	--	--	--
	2,4'-DDD	mg/kg	16	1	6.3	0.00011	0.00011	0.0026	0.0026	0.0026	0.0026	--	--	TSB-DR-04
	4,4'-DDD	mg/kg	16	1	6.3	0.00016	0.00016	0.0019	0.0019	0.0019	0.0019	--	--	TSB-DR-04
	2,4'-DDE	mg/kg	16	3	19	0.000089	0.000089	0.0023	0.037	0.0088	0.016	0.018	1.2	TSB-DR-04
	4,4'-DDE	mg/kg	16	6	38	0.00025	0.00025	0.0018	0.10	0.0049	0.024	0.039	1.6	TSB-DR-04
	4,4'-DDT	mg/kg	16	3	19	0.00043	0.00043	0.0027	0.028	0.019	0.017	0.013	0.77	TSB-DR-04
	Dieldrin	mg/kg	16	0	0	0.000073	0.000073	--	--	--	--	--	--	--
	Endosulfan I	mg/kg	16	0	0	0.000083	0.000083	--	--	--	--	--	--	--
	Endosulfan II	mg/kg	16	0	0	0.00015	0.00015	--	--	--	--	--	--	--
	Endosulfan sulfate	mg/kg	16	0	0	0.00012	0.00012	--	--	--	--	--	--	--
	Endrin	mg/kg	16	0	0	0.000083	0.000083	--	--	--	--	--	--	--
	Endrin aldehyde	mg/kg	16	0	0	0.00011	0.00011	--	--	--	--	--	--	--
	Endrin ketone	mg/kg	16	0	0	0.00038	0.00038	--	--	--	--	--	--	--
	Heptachlor	mg/kg	16	0	0	0.00059	0.00059	--	--	--	--	--	--	--
	Heptachlor epoxide	mg/kg	16	0	0	0.00012	0.00012	--	--	--	--	--	--	--
	Hexachlorobenzene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Methoxychlor	mg/kg	16	1	6.3	0.00070	0.00070	0.0020	0.0020	0.0020	0.0020	--	--	TSB-DR-03
	Toxaphene	mg/kg	16	0	0	0.0071	0.0071	--	--	--	--	--	--	--
SVOCs	Acetophenone	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Aniline	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Azobenzene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Benzenethiol	mg/kg	16	0	0	0.12	0.12	--	--	--	--	--	--	--
	Benzoic acid	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Benzyl alcohol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	bis(2-Chloro-1-methylethyl) ether	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	bis(2-Chloroethoxy)methane	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	bis(2-Chloroethyl) ether	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	bis(2-Ethylhexyl)phthalate	mg/kg	16	1	6.3	0.033	0.033	0.040	0.040	0.040	0.040	--	--	TSB-DR-03
	bis(4-Chlorophenyl) disulfide	mg/kg	16	0	0	0.20	0.20	--	--	--	--	--	--	--
	bis(4-Chlorophenyl) sulfone	mg/kg	16	0	0	0.33	0.33	--	--	--	--	--	--	--
	4-Bromophenyl-phenyl ether	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Butylbenzylphthalate	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Carbazole	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	4-Chloro-3-methylphenol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	4-Chloroaniline	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2-Chloronaphthalene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2-Chlorophenol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	4-Chlorophenyl-phenyl ether	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	4-Chlorothioanisole	mg/kg	16	0	0	0.0076	0.0076	--	--	--	--	--	--	--
	4-Chlorothiophenol	mg/kg	16	0	0	0.19	0.19	--	--	--	--	--	--	--

TABLE G-2. Summary Statistics for Soil Data - Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
SVOCs	Di-n-butylphthalate	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Di-n-octylphthalate	mg/kg	16	0	0	0.015	0.015	--	--	--	--	--	--	--
	Dibenzofuran	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	3,3'-Dichlorobenzidine	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2,2'-/4,4'-Dichlorobenzil	mg/kg	16	0	0	0.070	0.070	--	--	--	--	--	--	--
	2,4-Dichlorophenol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Diethylphthalate	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2,4-Dimethylphenol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Dimethylphthalate	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2,4-Dinitrophenol	mg/kg	16	0	0	0.33	0.33	--	--	--	--	--	--	--
	2,4-Dinitrotoluene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2,6-Dinitrotoluene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	1,4-Dioxane	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Diphenyl disulfide	mg/kg	16	0	0	0.029	0.029	--	--	--	--	--	--	--
	Diphenyl sulfide	mg/kg	16	0	0	0.0035	0.0035	--	--	--	--	--	--	--
	Diphenyl sulfone	mg/kg	16	0	0	0.0067	0.0067	--	--	--	--	--	--	--
	1,2-Diphenylhydrazine	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Hexachlorobutadiene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Hexachlorocyclopentadiene	mg/kg	16	0	0	0.33	0.33	--	--	--	--	--	--	--
	Hexachloroethane	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Hydroxymethyl phthalimide	mg/kg	16	0	0	0.043	0.043	--	--	--	--	--	--	--
	Isophorone	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2-Methylphenol	mg/kg	16	0	0	0.12	0.12	--	--	--	--	--	--	--
	3&4-Methylphenol	mg/kg	16	0	0	0.067	0.067	--	--	--	--	--	--	--
	2-Nitroaniline	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	3-Nitroaniline	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	4-Nitroaniline	mg/kg	16	0	0	0.33	0.33	--	--	--	--	--	--	--
	Nitrobenzene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2-Nitrophenol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	4-Nitrophenol	mg/kg	16	0	0	0.33	0.33	--	--	--	--	--	--	--
	n-Nitroso-di-n-propylamine	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	n-Nitrosodiphenylamine	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Octachlorostyrene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Pentachlorobenzene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Pentachlorophenol	mg/kg	16	0	0	0.33	0.33	--	--	--	--	--	--	--
	Phenol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Pyridine	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	1,2,4,5-Tetrachlorobenzene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2,4,5-Trichlorophenol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2,4,6-Trichlorophenol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--

TABLE G-2. Summary Statistics for Soil Data - Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
VOCs	Acetone	mg/kg	16	4	25	0.0038	0.0038	0.0066	0.79	0.012	0.21	0.39	1.9	TSB-DR-01
	Acetonitrile	mg/kg	16	0	0	0.0020	0.0020	--	--	--	--	--	--	--
	Benzene	mg/kg	16	0	0	0.00017	0.00017	--	--	--	--	--	--	--
	Bromobenzene	mg/kg	16	0	0	0.00023	0.00023	--	--	--	--	--	--	--
	Bromochloromethane	mg/kg	16	0	0	0.00041	0.00041	--	--	--	--	--	--	--
	Bromodichloromethane	mg/kg	16	0	0	0.00033	0.00033	--	--	--	--	--	--	--
	Bromoform	mg/kg	16	0	0	0.00024	0.00024	--	--	--	--	--	--	--
	Bromomethane	mg/kg	16	0	0	0.00031	0.00031	--	--	--	--	--	--	--
	2-Butanone	mg/kg	16	0	0	0.0014	0.0014	--	--	--	--	--	--	--
	n-Butylbenzene	mg/kg	16	0	0	0.00053	0.00053	--	--	--	--	--	--	--
	sec-Butylbenzene	mg/kg	16	0	0	0.00025	0.00025	--	--	--	--	--	--	--
	tert-Butylbenzene	mg/kg	16	0	0	0.00027	0.00027	--	--	--	--	--	--	--
	Carbon disulfide	mg/kg	16	0	0	0.00055	0.00055	--	--	--	--	--	--	--
	Carbon tetrachloride	mg/kg	16	0	0	0.00090	0.00090	--	--	--	--	--	--	--
	Chlorobenzene	mg/kg	16	0	0	0.00012	0.00012	--	--	--	--	--	--	--
	Chloroethane	mg/kg	16	0	0	0.00035	0.00035	--	--	--	--	--	--	--
	Chloroform	mg/kg	16	0	0	0.00014	0.00014	--	--	--	--	--	--	--
	Chloromethane	mg/kg	16	0	0	0.00044	0.00044	--	--	--	--	--	--	--
	2-Chlorotoluene	mg/kg	16	0	0	0.00046	0.00046	--	--	--	--	--	--	--
	4-Chlorotoluene	mg/kg	16	0	0	0.00088	0.00088	--	--	--	--	--	--	--
	Cumene	mg/kg	16	0	0	0.00018	0.00018	--	--	--	--	--	--	--
	p-Cymene	mg/kg	16	0	0	0.00024	0.00024	--	--	--	--	--	--	--
	1,2-Dibromo-3-chloropropane	mg/kg	16	0	0	0.00089	0.00089	--	--	--	--	--	--	--
	Dibromochloromethane	mg/kg	16	0	0	0.00029	0.00029	--	--	--	--	--	--	--
	Dibromomethane	mg/kg	16	0	0	0.00035	0.00035	--	--	--	--	--	--	--
	1,2-Dichlorobenzene	mg/kg	16	0	0	0.00015	0.00015	--	--	--	--	--	--	--
	1,3-Dichlorobenzene	mg/kg	16	1	6.3	0.00013	0.00013	0.00034	0.00034	0.00034	0.00034	--	--	TSB-DR-03
	1,4-Dichlorobenzene	mg/kg	16	0	0	0.00011	0.00011	--	--	--	--	--	--	--
	Dichlorodifluoromethane	mg/kg	16	0	0	0.00037	0.00037	--	--	--	--	--	--	--
	1,1-Dichloroethane	mg/kg	16	0	0	0.00095	0.00095	--	--	--	--	--	--	--
	1,2-Dichloroethane	mg/kg	16	0	0	0.00044	0.00044	--	--	--	--	--	--	--
	1,1-Dichloroethene	mg/kg	16	0	0	0.00055	0.00055	--	--	--	--	--	--	--
	1,2-Dichloroethene	mg/kg	16	0	0	0.00054	0.00054	--	--	--	--	--	--	--
	cis-1,2-Dichloroethene	mg/kg	16	0	0	0.00043	0.00043	--	--	--	--	--	--	--
	trans-1,2-Dichloroethene	mg/kg	16	0	0	0.00022	0.00022	--	--	--	--	--	--	--
	1,2-Dichloropropane	mg/kg	16	0	0	0.00037	0.00037	--	--	--	--	--	--	--
	1,3-Dichloropropane	mg/kg	16	0	0	0.00018	0.00018	--	--	--	--	--	--	--
	cis-1,3-Dichloropropene	mg/kg	16	0	0	0.00073	0.00073	--	--	--	--	--	--	--
	trans-1,3-Dichloropropene	mg/kg	16	0	0	0.00020	0.00020	--	--	--	--	--	--	--

TABLE G-2. Summary Statistics for Soil Data - Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
VOCs	2,2-Dichloropropane	mg/kg	16	0	0	0.00017	0.00017	--	--	--	--	--	--	--
	1,1-Dichloropropene	mg/kg	16	0	0	0.00029	0.00029	--	--	--	--	--	--	--
	Dimethyl disulfide	mg/kg	16	0	0	0.00021	0.00021	--	--	--	--	--	--	--
	2,2-Dimethylpentane	mg/kg	16	0	0	0.00028	0.00028	--	--	--	--	--	--	--
	2,3-Dimethylpentane	mg/kg	16	0	0	0.00022	0.00022	--	--	--	--	--	--	--
	2,4-Dimethylpentane	mg/kg	16	0	0	0.00019	0.00019	--	--	--	--	--	--	--
	3,3-Dimethylpentane	mg/kg	16	0	0	0.00020	0.00020	--	--	--	--	--	--	--
	Ethanol	mg/kg	16	0	0	0.19	0.19	--	--	--	--	--	--	--
	Ethyl benzene	mg/kg	16	1	6.3	0.00019	0.00019	0.0014	0.0014	0.0014	0.0014	--	--	TSB-DR-01
	3-Ethylpentane	mg/kg	16	0	0	0.00021	0.00021	--	--	--	--	--	--	--
	n-Heptane	mg/kg	16	0	0	0.00016	0.00016	--	--	--	--	--	--	--
	2-Hexanone	mg/kg	16	0	0	0.00028	0.00028	--	--	--	--	--	--	--
	Iodomethane	mg/kg	16	0	0	0.00026	0.00026	--	--	--	--	--	--	--
	Methyl tert-butyl ether	mg/kg	16	0	0	0.00046	0.00046	--	--	--	--	--	--	--
	4-Methyl-2-pentanone	mg/kg	16	0	0	0.0016	0.0016	--	--	--	--	--	--	--
	Methylene Chloride	mg/kg	16	0	0	0.0025	0.0025	--	--	--	--	--	--	--
	2-Methylhexane	mg/kg	16	0	0	0.00020	0.00020	--	--	--	--	--	--	--
	3-Methylhexane	mg/kg	16	0	0	0.00014	0.00014	--	--	--	--	--	--	--
	2-Nitropropane	mg/kg	16	0	0	0.0017	0.0017	--	--	--	--	--	--	--
	n-Nonyl aldehyde	mg/kg	16	0	0	0.00088	0.00088	--	--	--	--	--	--	--
	n-Propylbenzene	mg/kg	16	1	6.3	0.00095	0.00095	0.0010	0.0010	0.0010	0.0010	--	--	TSB-DR-01
	Styrene	mg/kg	16	0	0	0.0012	0.0012	--	--	--	--	--	--	--
	1,1,1,2-Tetrachloroethane	mg/kg	16	0	0	0.00022	0.00022	--	--	--	--	--	--	--
	1,1,2,2-Tetrachloroethane	mg/kg	16	0	0	0.00014	0.00014	--	--	--	--	--	--	--
	Tetrachloroethene	mg/kg	16	0	0	0.00027	0.00027	--	--	--	--	--	--	--
	Toluene	mg/kg	16	1	6.3	0.00013	0.00013	0.00051	0.00051	0.00051	0.00051	--	--	TSB-DR-05
	1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	16	0	0	0.00054	0.00054	--	--	--	--	--	--	--
	1,2,3-Trichlorobenzene	mg/kg	16	0	0	0.00078	0.00078	--	--	--	--	--	--	--
	1,2,4-Trichlorobenzene	mg/kg	16	0	0	0.00073	0.00073	--	--	--	--	--	--	--
	1,3,5-Trichlorobenzene	mg/kg	16	0	0	0.00068	0.00068	--	--	--	--	--	--	--
	1,1,1-Trichloroethane	mg/kg	16	0	0	0.00015	0.00015	--	--	--	--	--	--	--
	1,1,2-Trichloroethane	mg/kg	16	0	0	0.00028	0.00028	--	--	--	--	--	--	--
	Trichloroethene	mg/kg	16	0	0	0.00036	0.00036	--	--	--	--	--	--	--
	Trichlorofluoromethane	mg/kg	16	0	0	0.00050	0.00050	--	--	--	--	--	--	--
	1,2,3-Trichloropropane	mg/kg	16	0	0	0.00056	0.00056	--	--	--	--	--	--	--
	1,2,4-Trimethylbenzene	mg/kg	16	1	6.3	0.00022	0.00022	0.0038	0.0038	0.0038	0.0038	--	--	TSB-DR-01
	1,3,5-Trimethylbenzene	mg/kg	16	2	13	0.00021	0.00021	0.00029	0.0015	0.00089	0.00089	0.00086	0.96	TSB-DR-01
	2,2,3-Trimethylbutane	mg/kg	16	0	0	0.00021	0.00021	--	--	--	--	--	--	--

TABLE G-2. Summary Statistics for Soil Data - Parcel D
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
VOCs	Vinyl acetate	mg/kg	16	0	0	0.00018	0.00018	--	--	--	--	--	--	--
	Vinyl chloride	mg/kg	16	0	0	0.00024	0.00024	--	--	--	--	--	--	--
	m,p-Xylene	mg/kg	16	2	13	0.00057	0.00057	0.0011	0.0079	0.0045	0.0045	0.0048	1.1	TSB-DR-01
	o-Xylene	mg/kg	16	1	6.3	0.00031	0.00031	0.0026	0.0026	0.0026	0.0026	--	--	TSB-DR-01
	Xylenes (total)	mg/kg	16	1	6.3	0.00086	0.00086	0.010	0.010	0.010	0.010	--	--	TSB-DR-01

Notes:

-- = No Value
mg/kg = milligram per kilogram
pCi/g = picocurie per gram
BaPEq = Benzo(a)pyrene equivalent
BHC = Hexachlorocyclohexane
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethylene
DDT = Dichlorodiphenyltrichloroethane
OCP = Organochlorine pesticide
PAH = Polycyclic aromatic hydrocarbon
SVOC = Semivolatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
VOC = Volatile organic compound
* Methodology for equivalent calculations explained in text

TABLE G-3: Summary Statistics for Soil Data – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Chlorine Oxyanions	Chlorate	mg/kg	16	8	50	0.53	1.0	5.5	250	8.9	61	99	1.6	TSB-GJ-09
	Perchlorate	mg/kg	16	16	100	--	--	0.38	140	1.2	21	44	2.2	TSB-GJ-09
Metals	Aluminum	mg/kg	16	16	100	--	--	6,410	8,870	7,860	7,720	680	0.089	TSB-GJ-08
	Antimony	mg/kg	16	11	69	0.063	0.063	0.17	0.22	0.19	0.19	0.017	0.090	TSB-GJ-06
	Arsenic	mg/kg	16	16	100	--	--	2.5	6.1	3.3	3.7	1.0	0.28	TSB-GJ-08
	Barium	mg/kg	16	16	100	--	--	89	230	180	180	36	0.20	TSB-GJ-09
	Beryllium	mg/kg	16	16	100	--	--	0.42	0.65	0.53	0.53	0.056	0.11	TSB-GJ-08
	Boron	mg/kg	16	4	25	1.4	3.3	8.0	14	9.6	10	2.6	0.25	TSB-GJ-08
	Cadmium	mg/kg	16	7	44	0.0050	0.020	0.069	0.17	0.11	0.12	0.041	0.35	TSB-GJ-08
	Calcium	mg/kg	16	16	100	--	--	12,700	50,900	25,400	28,600	10,700	0.37	TSB-GJ-06
	Chromium (total)	mg/kg	16	16	100	--	--	8.1	12	11	10	1.1	0.11	TSB-GJ-07
	Chromium VI	mg/kg	16	1	6.3	0.16	0.43	0.49	0.49	0.49	0.49	--	--	TSB-GJ-08
	Cobalt	mg/kg	16	16	100	--	--	6.0	8.1	7.1	7.2	0.60	0.084	TSB-GJ-01
	Copper	mg/kg	16	16	100	--	--	13	18	15	15	1.1	0.073	TSB-GJ-08
	Iron	mg/kg	16	16	100	--	--	10,800	14,300	13,000	12,800	1,050	0.082	TSB-GJ-06
	Lead	mg/kg	16	16	100	--	--	7.1	39	9.9	12	7.6	0.64	TSB-GJ-08
	Lithium	mg/kg	16	14	88	0.66	0.66	10	24	16	17	3.9	0.23	TSB-GJ-09
	Magnesium	mg/kg	16	16	100	--	--	7,500	25,000	9,160	10,500	4,170	0.40	TSB-GJ-08
	Manganese	mg/kg	16	16	100	--	--	240	710	350	390	140	0.35	TSB-GJ-06
	Mercury	mg/kg	16	1	6.3	0.0067	0.012	0.016	0.016	0.016	0.016	--	--	TSB-GJ-08
	Molybdenum	mg/kg	16	11	69	0.052	0.052	0.47	1.1	0.61	0.67	0.20	0.30	TSB-GJ-08
	Nickel	mg/kg	16	16	100	--	--	12	17	15	15	0.96	0.065	TSB-GJ-02
	Niobium	mg/kg	14	0	0	0.76	1.5	--	--	--	--	--	--	--
	Palladium	mg/kg	15	15	100	--	--	0.29	0.79	0.45	0.46	0.14	0.30	TSB-GJ-07
	Phosphorus (total)	mg/kg	16	16	100	--	--	610	1,140	920	920	120	0.13	TSB-GJ-02
	Platinum	mg/kg	16	0	0	0.010	0.024	--	--	--	--	--	--	--
	Potassium	mg/kg	16	16	100	--	--	1,290	2,630	1,790	1,810	310	0.17	TSB-GJ-06
	Selenium	mg/kg	16	0	0	0.16	0.16	--	--	--	--	--	--	--
	Silicon	mg/kg	16	16	100	--	--	72	380	150	160	82	0.50	TSB-GJ-09
	Silver	mg/kg	16	16	100	--	--	0.084	0.18	0.11	0.11	0.028	0.25	TSB-GJ-09
	Sodium	mg/kg	16	16	100	--	--	360	1,810	680	760	420	0.55	TSB-GJ-09
	Strontium	mg/kg	16	16	100	--	--	160	480	240	250	76	0.30	TSB-GJ-09
	Sulfur	mg/kg	16	12	75	22	210	440	1,740	540	940	560	0.60	TSB-GJ-09
	Thallium	mg/kg	16	0	0	0.10	0.15	--	--	--	--	--	--	--
	Tin	mg/kg	16	16	100	--	--	0.42	0.66	0.54	0.52	0.072	0.14	TSB-GJ-08
	Titanium	mg/kg	16	16	100	--	--	440	680	540	540	77	0.14	TSB-GJ-06
	Tungsten	mg/kg	16	0	0	0.10	0.25	--	--	--	--	--	--	--
	Uranium (total)	mg/kg	16	16	100	--	--	0.84	3.9	1.2	1.4	0.71	0.51	TSB-GJ-08

TABLE G-3: Summary Statistics for Soil Data – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Metals	Vanadium	mg/kg	16	16	100	--	--	34	50	41	41	4.6	0.11	TSB-GJ-06
	Zinc	mg/kg	16	16	100	--	--	27	52	34	34	5.5	0.16	TSB-GJ-08
	Zirconium	mg/kg	16	16	100	--	--	18	26	23	22	2.8	0.12	TSB-GJ-06
Other Inorganics	Bromide	mg/kg	16	3	19	0.062	0.25	1.6	17	10	9.6	7.8	0.81	TSB-GJ-09
	Chloride	mg/kg	16	16	100	--	--	7.3	15,900	500	2,050	4,540	2.2	TSB-GJ-09
	Chlorite	mg/kg	13	0	0	0.040	0.21	--	--	--	--	--	--	--
	Fluoride	mg/kg	16	8	50	0.10	0.25	0.38	2.2	0.59	0.77	0.59	0.77	TSB-GR-01
	Nitrate	mg/kg	16	16	100	--	--	0.52	160	8.8	25	43	1.7	TSB-GJ-09
	Nitrite	mg/kg	5	0	0	0.020	0.020	--	--	--	--	--	--	--
	ortho-Phosphate	mg/kg	16	0	0	0.50	1.6	--	--	--	--	--	--	--
	Sulfate	mg/kg	16	16	100	--	--	14	3,310	460	780	1,000	1.3	TSB-GJ-09
Radionuclides	Radium-226	pCi/g	16	16	100	--	--	0.77	1.3	1.0	1.0	0.17	0.16	TSB-GJ-02
	Radium-228	pCi/g	16	16	100	--	--	0.85	2.7	1.7	1.8	0.40	0.22	TSB-GJ-08
	Thorium-228	pCi/g	16	16	100	--	--	1.3	2.3	1.8	1.8	0.30	0.17	TSB-GJ-06
	Thorium-230	pCi/g	16	16	100	--	--	0.93	1.8	1.2	1.3	0.23	0.18	TSB-GJ-02
	Thorium-232	pCi/g	16	16	100	--	--	1.2	2.0	1.5	1.6	0.24	0.15	TSB-GR-01
	Uranium-234	pCi/g	14	14	100	--	--	0.80	2.0	1.3	1.3	0.36	0.27	TSB-GJ-02
	Uranium-235	pCi/g	14	14	100	--	--	0.020	0.17	0.056	0.067	0.035	0.52	TSB-GJ-09
	Uranium-238	pCi/g	14	14	100	--	--	0.66	1.6	1.1	1.1	0.26	0.23	TSB-GJ-02
Dioxin/Furans	2,3,7,8-TCDD TEQ*	mg/kg	11	6	55	0.0000011	0.020	0.00000065	0.0017	0.000017	0.00029	0.00069	2.3	TSB-GR-01
Other Organics	Phthalic acid	mg/kg	16	0	0	0.25	0.25	--	--	--	--	--	--	--
PAHs	Acenaphthene	mg/kg	16	1	6.3	0.011	0.033	0.41	0.41	0.41	0.41	--	--	TSB-GJ-08
	Acenaphthylene	mg/kg	16	1	6.3	0.015	0.033	0.17	0.17	0.17	0.17	--	--	TSB-GJ-08
	Anthracene	mg/kg	16	0	0	0.00067	0.033	--	--	--	--	--	--	--
	BaPEq*	mg/kg	16	3	19	0.0031	0.038	0.0032	0.25	0.027	0.094	0.14	1.5	TSB-GJ-08
	Benzo(g,h,i)perylene	mg/kg	16	3	19	0.0061	0.033	0.042	0.37	0.075	0.16	0.18	1.1	TSB-GJ-08
	Fluoranthene	mg/kg	16	0	0	0.033	0.038	--	--	--	--	--	--	--
	Fluorene	mg/kg	16	0	0	0.019	0.033	--	--	--	--	--	--	--
	2-Methylnaphthalene	mg/kg	16	0	0	0.020	0.033	--	--	--	--	--	--	--
	Naphthalene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Phenanthrene	mg/kg	16	2	13	0.0017	0.033	0.021	0.055	0.038	0.038	0.024	0.63	TSB-GJ-08
	Pyrene	mg/kg	16	2	13	0.0030	0.033	0.025	0.16	0.092	0.092	0.095	1.0	TSB-GJ-08
PCBs	Aroclor-1016	mg/kg	5	0	0	0.0049	0.0049	--	--	--	--	--	--	--
	Aroclor-1221	mg/kg	5	0	0	0.0049	0.0049	--	--	--	--	--	--	--
	Aroclor-1232	mg/kg	5	0	0	0.0049	0.0049	--	--	--	--	--	--	--
	Aroclor-1242	mg/kg	5	0	0	0.0049	0.0049	--	--	--	--	--	--	--
	Aroclor-1248	mg/kg	5	0	0	0.0049	0.0049	--	--	--	--	--	--	--
	Aroclor-1254	mg/kg	5	0	0	0.0027	0.0027	--	--	--	--	--	--	--
	Aroclor-1260	mg/kg	5	0	0	0.0027	0.0027	--	--	--	--	--	--	--

TABLE G-3: Summary Statistics for Soil Data – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
Pesticides - OCPs	Aldrin	mg/kg	16	0	0	0.000088	0.000095	--	--	--	--	--	--	--
	alpha-BHC	mg/kg	16	0	0	0.000096	0.00028	--	--	--	--	--	--	--
	beta-BHC	mg/kg	16	7	44	0.00019	0.00034	0.0052	0.045	0.016	0.022	0.017	0.76	TSB-GJ-09
	delta-BHC	mg/kg	16	0	0	0.000083	0.00017	--	--	--	--	--	--	--
	gamma-BHC	mg/kg	16	0	0	0.000083	0.00012	--	--	--	--	--	--	--
	alpha-Chlordane	mg/kg	16	0	0	0.00010	0.00021	--	--	--	--	--	--	--
	gamma-Chlordane	mg/kg	16	0	0	0.000083	0.000086	--	--	--	--	--	--	--
	Chlordane (total)	mg/kg	16	0	0	0.0023	0.0023	--	--	--	--	--	--	--
	2,4'-DDD	mg/kg	16	0	0	0.00011	0.00030	--	--	--	--	--	--	--
	4,4'-DDD	mg/kg	16	1	6.3	0.000089	0.00016	0.0020	0.0020	0.0020	0.0020	--	--	TSB-GR-01
	2,4'-DDE	mg/kg	16	1	6.3	0.000089	0.00020	0.0056	0.0056	0.0056	0.0056	--	--	TSB-GR-01
	4,4'-DDE	mg/kg	16	9	56	0.00019	0.00025	0.0019	0.20	0.014	0.044	0.067	1.5	TSB-GJ-08
	4,4'-DDT	mg/kg	16	8	50	0.00020	0.00043	0.0018	0.16	0.016	0.034	0.052	1.5	TSB-GR-01
	Dieldrin	mg/kg	16	0	0	0.000073	0.000091	--	--	--	--	--	--	--
	Endosulfan I	mg/kg	16	0	0	0.000083	0.00010	--	--	--	--	--	--	--
	Endosulfan II	mg/kg	16	0	0	0.000093	0.00015	--	--	--	--	--	--	--
	Endosulfan sulfate	mg/kg	16	0	0	0.00012	0.00026	--	--	--	--	--	--	--
	Endrin	mg/kg	16	0	0	0.000083	0.000083	--	--	--	--	--	--	--
	Endrin aldehyde	mg/kg	16	0	0	0.00011	0.00018	--	--	--	--	--	--	--
	Endrin ketone	mg/kg	16	0	0	0.00016	0.00038	--	--	--	--	--	--	--
	Heptachlor	mg/kg	16	0	0	0.00017	0.00059	--	--	--	--	--	--	--
	Heptachlor epoxide	mg/kg	16	0	0	0.00012	0.00013	--	--	--	--	--	--	--
	Hexachlorobenzene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Methoxychlor	mg/kg	16	0	0	0.00032	0.00070	--	--	--	--	--	--	--
	Toxaphene	mg/kg	16	0	0	0.0058	0.0071	--	--	--	--	--	--	--
SVOCs	Acetophenone	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Aniline	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Azobenzene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Benzenethiol	mg/kg	16	0	0	0.12	0.12	--	--	--	--	--	--	--
	Benzoic acid	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Benzyl alcohol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	4-Bromophenyl-phenyl ether	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Butylbenzylphthalate	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Carbazole	mg/kg	16	1	6.3	0.033	0.033	0.059	0.059	0.059	0.059	--	--	TSB-GJ-06
	4-Chloroaniline	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	bis(2-Chloroethoxy)methane	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	bis(2-Chloroethyl) ether	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	bis(2-Chloro-1-methylethyl) ether	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--

TABLE G-3: Summary Statistics for Soil Data – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
SVOCs	4-Chloro-3-methylphenol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2-Chloronaphthalene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2-Chlorophenol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	bis(4-Chlorophenyl) disulfide	mg/kg	16	0	0	0.20	0.20	--	--	--	--	--	--	--
	4-Chlorophenyl-phenyl ether	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	bis(4-Chlorophenyl) sulfone	mg/kg	16	0	0	0.33	0.33	--	--	--	--	--	--	--
	4-Chlorothioanisole	mg/kg	16	0	0	0.0076	0.0076	--	--	--	--	--	--	--
	4-Chlorothiophenol	mg/kg	16	0	0	0.18	0.18	--	--	--	--	--	--	--
	Dibenzofuran	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	3,3'-Dichlorobenzidine	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2,2'-/4,4'-Dichlorobenzil	mg/kg	16	0	0	0.070	2.0	--	--	--	--	--	--	--
	2,4-Dichlorophenol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Diethylphthalate	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2,4-Dimethylphenol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Dimethylphthalate	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Di-n-butylphthalate	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2,4-Dinitrophenol	mg/kg	16	0	0	0.33	0.33	--	--	--	--	--	--	--
	2,4-Dinitrotoluene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2,6-Dinitrotoluene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Di-n-octylphthalate	mg/kg	16	0	0	0.015	0.015	--	--	--	--	--	--	--
	1,4-Dioxane	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Diphenyl disulfide	mg/kg	16	0	0	0.029	0.029	--	--	--	--	--	--	--
	1,2-Diphenylhydrazine	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Diphenyl sulfide	mg/kg	16	0	0	0.0035	0.0035	--	--	--	--	--	--	--
	Diphenyl sulfone	mg/kg	16	0	0	0.0066	0.0066	--	--	--	--	--	--	--
	bis(2-Ethylhexyl)phthalate	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Hexachlorobutadiene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Hexachlorocyclopentadiene	mg/kg	16	0	0	0.33	0.33	--	--	--	--	--	--	--
	Hexachloroethane	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Hydroxymethyl phthalimide	mg/kg	16	0	0	0.043	0.043	--	--	--	--	--	--	--
	Isophorone	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2-Methylphenol	mg/kg	16	0	0	0.12	0.12	--	--	--	--	--	--	--
	3&4-Methylphenol	mg/kg	16	0	0	0.067	0.067	--	--	--	--	--	--	--
	2-Nitroaniline	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	3-Nitroaniline	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	4-Nitroaniline	mg/kg	16	0	0	0.33	0.33	--	--	--	--	--	--	--
	Nitrobenzene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2-Nitrophenol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--

TABLE G-3: Summary Statistics for Soil Data – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
SVOCs	4-Nitrophenol	mg/kg	16	0	0	0.33	0.33	--	--	--	--	--	--	--
	n-Nitroso-di-n-propylamine	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	n-Nitrosodiphenylamine	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Octachlorostyrene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Pentachlorobenzene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Pentachlorophenol	mg/kg	16	0	0	0.33	0.33	--	--	--	--	--	--	--
	Phenol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	Pyridine	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	1,2,4,5-Tetrachlorobenzene	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2,4,5-Trichlorophenol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
	2,4,6-Trichlorophenol	mg/kg	16	0	0	0.033	0.033	--	--	--	--	--	--	--
VOCs	Acetone	mg/kg	16	10	63	0.0017	0.0038	0.0073	0.046	0.015	0.019	0.011	0.60	TSB-GR-01
	Acetonitrile	mg/kg	16	0	0	0.0020	0.0054	--	--	--	--	--	--	--
	Benzene	mg/kg	16	0	0	0.000087	0.00017	--	--	--	--	--	--	--
	Bromobenzene	mg/kg	16	0	0	0.00012	0.00023	--	--	--	--	--	--	--
	Bromochloromethane	mg/kg	16	0	0	0.00022	0.00041	--	--	--	--	--	--	--
	Bromodichloromethane	mg/kg	16	0	0	0.00021	0.00033	--	--	--	--	--	--	--
	Bromoform	mg/kg	16	0	0	0.000059	0.00024	--	--	--	--	--	--	--
	Bromomethane	mg/kg	16	0	0	0.00013	0.00031	--	--	--	--	--	--	--
	2-Butanone	mg/kg	16	1	6.3	0.00087	0.0014	0.0038	0.0038	0.0038	0.0038	--	--	TSB-GJ-06
	n-Butylbenzene	mg/kg	16	0	0	0.00018	0.00053	--	--	--	--	--	--	--
	sec-Butylbenzene	mg/kg	16	0	0	0.00011	0.00025	--	--	--	--	--	--	--
	tert-Butylbenzene	mg/kg	16	0	0	0.00010	0.00026	--	--	--	--	--	--	--
	Carbon disulfide	mg/kg	16	0	0	0.00012	0.00055	--	--	--	--	--	--	--
	Carbon tetrachloride	mg/kg	16	0	0	0.00020	0.00090	--	--	--	--	--	--	--
	Chlorobenzene	mg/kg	16	0	0	0.00011	0.00012	--	--	--	--	--	--	--
	Chloroethane	mg/kg	16	0	0	0.00035	0.00046	--	--	--	--	--	--	--
	Chloroform	mg/kg	16	0	0	0.00010	0.00014	--	--	--	--	--	--	--
	Chloromethane	mg/kg	16	0	0	0.00027	0.00044	--	--	--	--	--	--	--
	2-Chlorotoluene	mg/kg	16	0	0	0.00025	0.00046	--	--	--	--	--	--	--
	4-Chlorotoluene	mg/kg	16	0	0	0.00017	0.00088	--	--	--	--	--	--	--
	Cumene	mg/kg	16	0	0	0.00010	0.00018	--	--	--	--	--	--	--
	p-Cymene	mg/kg	16	0	0	0.00012	0.00024	--	--	--	--	--	--	--
	Dibromochloromethane	mg/kg	16	0	0	0.00012	0.00029	--	--	--	--	--	--	--
	1,2-Dibromo-3-chloropropane	mg/kg	16	0	0	0.00021	0.00089	--	--	--	--	--	--	--
	Dibromomethane	mg/kg	16	0	0	0.00017	0.00035	--	--	--	--	--	--	--
	1,2-Dichlorobenzene	mg/kg	16	0	0	0.00012	0.00015	--	--	--	--	--	--	--
	1,3-Dichlorobenzene	mg/kg	16	0	0	0.00013	0.00013	--	--	--	--	--	--	--
	1,4-Dichlorobenzene	mg/kg	16	0	0	0.00011	0.00014	--	--	--	--	--	--	--
	Dichlorodifluoromethane	mg/kg	16	0	0	0.00029	0.00037	--	--	--	--	--	--	--
VOCs	1,1-Dichloroethane	mg/kg	16	0	0	0.000070	0.00095	--	--	--	--	--	--	--

TABLE G-3: Summary Statistics for Soil Data – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
	1,2-Dichloroethane	mg/kg	16	0	0	0.000066	0.00044	--	--	--	--	--	--	--
	1,1-Dichloroethene	mg/kg	16	0	0	0.00012	0.00055	--	--	--	--	--	--	--
	1,2-Dichloroethene	mg/kg	16	0	0	0.00011	0.00054	--	--	--	--	--	--	--
	cis-1,2-Dichloroethene	mg/kg	16	0	0	0.000054	0.00043	--	--	--	--	--	--	--
	trans-1,2-Dichloroethene	mg/kg	16	0	0	0.000090	0.00022	--	--	--	--	--	--	--
	trans-1,3-Dichloropropene	mg/kg	16	0	0	0.00010	0.00020	--	--	--	--	--	--	--
	cis-1,3-Dichloropropene	mg/kg	16	0	0	0.00010	0.00073	--	--	--	--	--	--	--
	1,2-Dichloropropane	mg/kg	16	0	0	0.00011	0.00037	--	--	--	--	--	--	--
	1,3-Dichloropropane	mg/kg	16	0	0	0.000051	0.00018	--	--	--	--	--	--	--
	2,2-Dichloropropane	mg/kg	16	0	0	0.00017	0.00023	--	--	--	--	--	--	--
	1,1-Dichloropropene	mg/kg	16	0	0	0.000087	0.00029	--	--	--	--	--	--	--
	Dimethyl disulfide	mg/kg	16	0	0	0.00018	0.00021	--	--	--	--	--	--	--
	2,2-Dimethylpentane	mg/kg	16	0	0	0.00028	0.00028	--	--	--	--	--	--	--
	2,3-Dimethylpentane	mg/kg	16	0	0	0.00022	0.00022	--	--	--	--	--	--	--
	2,4-Dimethylpentane	mg/kg	16	0	0	0.00019	0.00019	--	--	--	--	--	--	--
	3,3-Dimethylpentane	mg/kg	16	0	0	0.00020	0.00020	--	--	--	--	--	--	--
	Ethanol	mg/kg	16	0	0	0.047	0.19	--	--	--	--	--	--	--
	Ethyl benzene	mg/kg	16	0	0	0.000058	0.00019	--	--	--	--	--	--	--
	3-Ethylpentane	mg/kg	16	0	0	0.00021	0.00021	--	--	--	--	--	--	--
	n-Heptane	mg/kg	16	0	0	0.00016	0.00016	--	--	--	--	--	--	--
	2-Hexanone	mg/kg	16	0	0	0.00024	0.00028	--	--	--	--	--	--	--
	Iodomethane	mg/kg	16	0	0	0.00012	0.00026	--	--	--	--	--	--	--
	Methyl tert-butyl ether	mg/kg	16	0	0	0.000089	0.00046	--	--	--	--	--	--	--
	4-Methyl-2-pentanone	mg/kg	16	0	0	0.00029	0.0016	--	--	--	--	--	--	--
	Methylene Chloride	mg/kg	16	3	19	0.00069	0.0025	0.011	0.016	0.015	0.014	0.0026	0.19	TSB-GJ-09
	2-Methylhexane	mg/kg	16	0	0	0.00020	0.00020	--	--	--	--	--	--	--
	3-Methylhexane	mg/kg	16	0	0	0.00014	0.00014	--	--	--	--	--	--	--
	2-Nitropropane	mg/kg	16	0	0	0.00060	0.0017	--	--	--	--	--	--	--
	n-Nonyl aldehyde	mg/kg	16	0	0	0.00047	0.00088	--	--	--	--	--	--	--
	n-Propylbenzene	mg/kg	16	0	0	0.00011	0.00094	--	--	--	--	--	--	--
	Styrene	mg/kg	16	0	0	0.00017	0.0012	--	--	--	--	--	--	--
	1,1,1,2-Tetrachloroethane	mg/kg	16	0	0	0.00018	0.00022	--	--	--	--	--	--	--
	1,1,2,2-Tetrachloroethane	mg/kg	16	0	0	0.000078	0.00014	--	--	--	--	--	--	--
	Tetrachloroethene	mg/kg	16	0	0	0.000087	0.00027	--	--	--	--	--	--	--
	Toluene	mg/kg	16	1	6.3	0.00013	0.00032	0.00059	0.00059	0.00059	0.00059	--	--	TSB-GJ-06
	1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	16	0	0	0.00014	0.00054	--	--	--	--	--	--	--
	1,2,3-Trichlorobenzene	mg/kg	16	0	0	0.00039	0.00078	--	--	--	--	--	--	--
	1,2,4-Trichlorobenzene	mg/kg	16	0	0	0.00033	0.00073	--	--	--	--	--	--	--
	1,3,5-Trichlorobenzene	mg/kg	16	0	0	0.00037	0.00068	--	--	--	--	--	--	--
VOCs	1,1,1-Trichloroethane	mg/kg	16	0	0	0.00010	0.00015	--	--	--	--	--	--	--
	1,1,2-Trichloroethane	mg/kg	16	0	0	0.000067	0.00028	--	--	--	--	--	--	--

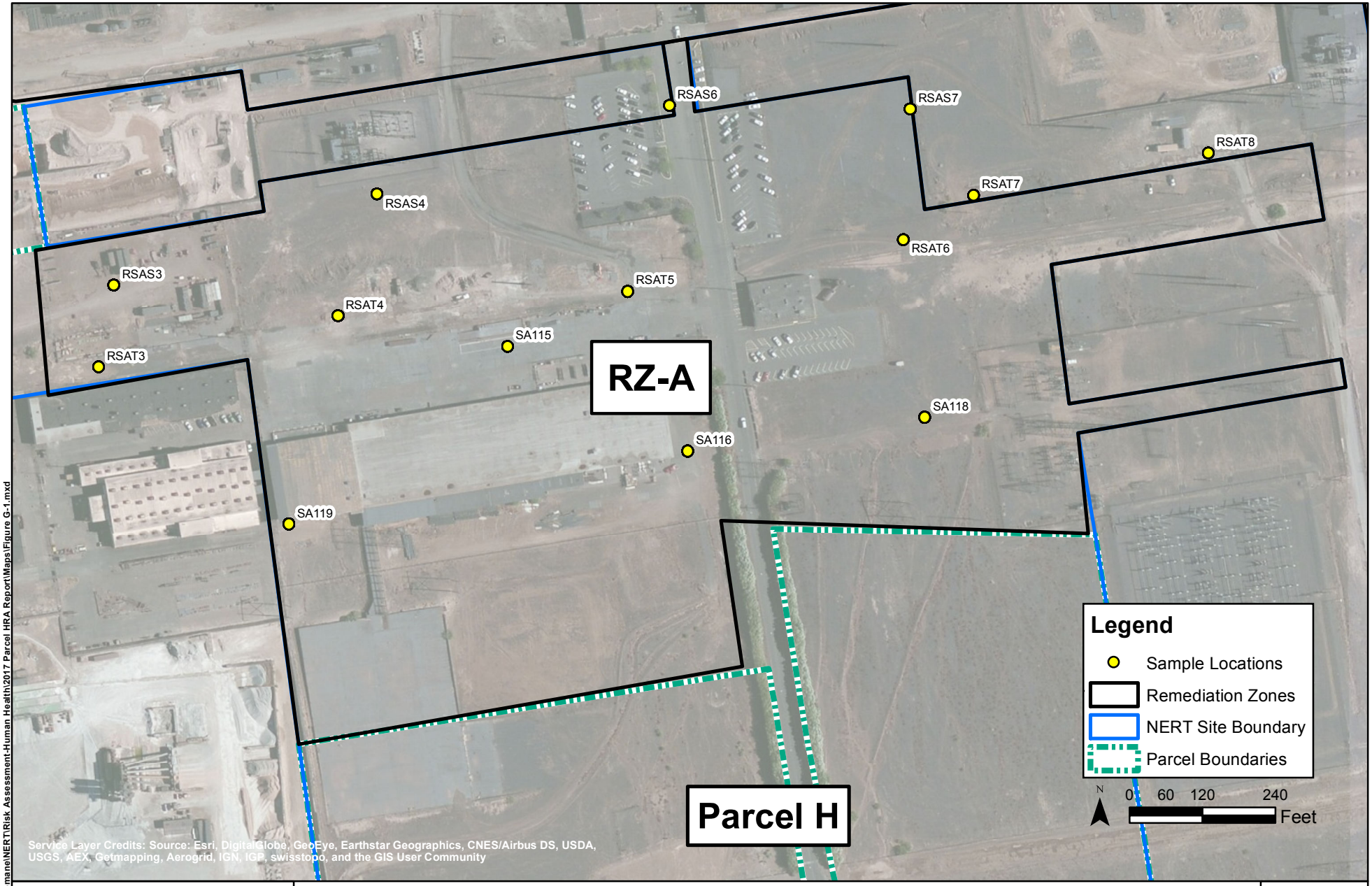
TABLE G-3: Summary Statistics for Soil Data – Parcel G
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Group	Analyte	Unit	No. of Samples	No. of Detects	% Detects	Nondetects		Detects						
						Minimum	Maximum	Minimum	Maximum	Median	Mean	Standard Deviation	Coefficient of Variation	Location of Maximum
	Trichloroethene	mg/kg	16	0	0	0.00010	0.00036	--	--	--	--	--	--	--
	Trichlorofluoromethane	mg/kg	16	0	0	0.00022	0.00050	--	--	--	--	--	--	--
	1,2,3-Trichloropropane	mg/kg	16	0	0	0.00025	0.00056	--	--	--	--	--	--	--
	1,2,4-Trimethylbenzene	mg/kg	16	1	6.3	0.00013	0.00022	0.00045	0.00045	0.00045	0.00045	--	--	TSB-GJ-02
	1,3,5-Trimethylbenzene	mg/kg	16	0	0	0.000097	0.00021	--	--	--	--	--	--	--
	2,2,3-Trimethylbutane	mg/kg	16	0	0	0.00021	0.00021	--	--	--	--	--	--	--
	Vinyl acetate	mg/kg	16	0	0	0.00018	0.00024	--	--	--	--	--	--	--
	Vinyl chloride	mg/kg	16	0	0	0.00011	0.00024	--	--	--	--	--	--	--
	m,p-Xylene	mg/kg	16	0	0	0.00017	0.00057	--	--	--	--	--	--	--
	o-Xylene	mg/kg	16	0	0	0.000076	0.00031	--	--	--	--	--	--	--
	Xylenes (total)	mg/kg	16	0	0	0.00023	0.00086	--	--	--	--	--	--	--

Notes:

-- = No value
mg/kg = milligram per kilogram
pCi/g = picocurie per gram
BaPEq = Benzo(a)pyrene equivalent
BHC = Hexachlorocyclohexane
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethylene
DDT = Dichlorodiphenyltrichloroethane
OCP = Organochlorine pesticide
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
SVOC = Semivolatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEQ = Toxicity equivalent
VOC = Volatile organic compound
* Methodology for equivalent calculations explained in text

APPENDIX H
BACKGROUND SOIL DATA SET (CD)



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RAMBOLL ENVIRON

RZ-A Soil Background Sample Locations

Nevada Environmental Response Trust Site, Henderson, Nevada

Figure **H-1**

Drafter: EF | Date: 4/13/2017 | Contract Number: 21-41400A | Approved by: | Revised:

APPENDIX I
BACKGROUND EVALUATION FOR METALS AND RADIONUCLIDES IN SOIL FOR PARCELS C, D, AND G

TABLE I-1. Summary Statistics for Metals in Background (RZ-A) Soils and Parcels C, D, and G Soils (0-10 feet bgs)
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Name	Location	No. of Samples	No. of Detects	% Detects	Non-Detects (mg/kg)		Detects (mg/kg)					Shapiro-Wilk Test	
					Minimun	Maximum	Minimum	Median	Mean	Maximum	Standard Deviation	Normal (*p* -value)	Lognormal (*p* -value)
Aluminum	Background	31	31	100%	NA	NA	7,340	8,970	9,020	11,400	890	0.6	0.9
	Parcel C	50	50	100%	NA	NA	5,170	7,560	8,090	14,000	2,050	*0.002*	0.2
	Parcel D	16	16	100%	NA	NA	3,430	7,730	7,360	10,800	1,710	*0.003*	*<0.001*
	Parcel G	16	16	100%	NA	NA	6,410	7,860	7,720	8,870	685	0.7	0.6
Antimony	Background	31	3	10%	2.0	2.2	0.60	0.90	1.6	3.4	1.5	*<0.001*	*<0.001*
	Parcel C	50	33	66%	0.052	0.56	0.11	0.15	0.16	0.32	0.040	*0.006*	*<0.001*
	Parcel D	16	16	100%	NA	NA	0.088	0.18	0.18	0.28	0.045	0.2	0.05
	Parcel G	16	11	69%	0.063	0.063	0.17	0.19	0.19	0.22	0.017	*<0.001*	*<0.001*
Arsenic	Background	31	31	100%	NA	NA	1.6	2.4	2.4	4.3	0.54	0.02	0.5
	Parcel C	74	74	100%	NA	NA	2.1	3.3	4.0	11	1.7	*<0.001*	*<0.001*
	Parcel D	16	16	100%	NA	NA	1.3	3.2	3.5	6.1	1.2	0.08	0.04
	Parcel G	16	16	100%	NA	NA	2.5	3.4	3.7	6.1	1.0	*0.004*	0.05
Barium	Background	31	31	100%	NA	NA	111	162	166	213	23	0.6	0.4
	Parcel C	50	50	100%	NA	NA	87	179	182	340	46	0.1	0.2
	Parcel D	16	16	100%	NA	NA	83	171	163	236	46	0.1	0.02
	Parcel G	16	16	100%	NA	NA	89	176	177	230	36	0.5	0.03
Beryllium	Background	31	31	100%	NA	NA	0.36	0.46	0.46	0.59	0.048	0.6	0.7
	Parcel C	37	37	100%	NA	NA	0.34	0.46	0.47	0.59	0.069	0.3	0.4
	Parcel D	16	16	100%	NA	NA	0.23	0.51	0.49	0.68	0.11	*0.008*	*<0.001*
	Parcel G	16	16	100%	NA	NA	0.42	0.53	0.53	0.65	0.056	0.9	0.9
Boron	Background	31	7	23%	10	11	3.6	6.2	6.7	12	2.7	*<0.001*	*<0.001*
	Parcel C	50	31	62%	1.4	3.3	3.2	7.4	7.4	13	3.0	*<0.001*	*<0.001*
	Parcel D	16	8	50%	1.4	1.4	5.0	13	14	23	6.9	*0.001*	*<0.001*
	Parcel G	16	4	25%	1.4	3.3	8.0	9.6	10	14	2.6	*<0.001*	*<0.001*
Cadmium	Background	31	25	81%	0.10	0.11	0.11	0.19	0.20	0.48	0.085	*0.003*	0.02
	Parcel C	50	27	54%	0.0050	0.28	0.049	0.094	0.11	0.27	0.058	*<0.001*	*<0.001*
	Parcel D	16	9	56%	0.0050	0.0050	0.067	0.11	0.11	0.13	0.017	*<0.001*	*<0.001*
	Parcel G	16	7	44%	0.0050	0.020	0.069	0.11	0.12	0.17	0.041	*0.001*	*<0.001*
Calcium	Background	31	31	100%	NA	NA	19,200	28,200	29,000	43,300	6,580	0.2	0.6
	Parcel C	37	37	100%	NA	NA	10,400	27,900	29,800	91,900	15,300	*<0.001*	0.4
	Parcel D	16	16	100%	NA	NA	8,900	21,800	25,400	43,400	10,800	0.2	0.4
	Parcel G	16	16	100%	NA	NA	12,700	25,400	28,700	50,900	10,700	0.2	0.9
Chromium (total)	Background	31	31	100%	NA	NA	5.6	7.5	7.7	11	1.2	0.4	0.7
	Parcel C	50	50	100%	NA	NA	4.8	11	10	19	3.4	0.2	0.2
	Parcel D	16	16	100%	NA	NA	4.1	11	11	18	3.4	0.4	0.07
	Parcel G	16	16	100%	NA	NA	8.1	11	11	12	1.1	0.02	*0.007*

TABLE I-1. Summary Statistics for Metals in Background (RZ-A) Soils and Parcels C, D, and G Soils (0-10 feet bgs)
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Name	Location	No. of Samples	No. of Detects	% Detects	Non-Detects (mg/kg)		Detects (mg/kg)					Shapiro-Wilk Test	
					Minimun	Maximum	Minimum	Median	Mean	Maximum	Standard Deviation	Normal (*p* -value)	Lognormal (*p* -value)
Chromium VI	Background	31	1	3.2%	0.41	0.43	0.29	0.29	0.29	0.29	NA	*<0.001*	*<0.001*
	Parcel C	50	2	4.0%	0.13	0.47	0.11	0.32	0.32	0.52	0.29	*<0.001*	*<0.001*
	Parcel D	16	1	6.3%	0.16	0.16	1.3	1.3	1.3	1.3	NA	*<0.001*	*<0.001*
	Parcel G	16	1	6.3%	0.16	0.43	0.49	0.49	0.49	0.49	NA	*<0.001*	*<0.001*
Cobalt	Background	31	31	100%	NA	NA	5.4	7.3	7.3	9.1	0.76	0.5	0.4
	Parcel C	50	50	100%	NA	NA	3.6	6.6	6.3	9.3	1.2	0.6	0.1
	Parcel D	16	16	100%	NA	NA	3.2	6.5	6.1	7.5	1.1	0.01	*0.001*
	Parcel G	16	16	100%	NA	NA	6.0	7.1	7.2	8.1	0.60	0.8	0.7
Copper	Background	31	31	100%	NA	NA	16	19	23	140	22	*<0.001*	*<0.001*
	Parcel C	50	50	100%	NA	NA	10	14	15	27	4.0	*<0.001*	*0.003*
	Parcel D	16	16	100%	NA	NA	6.0	13	13	15	2.4	*0.002*	*<0.001*
	Parcel G	16	16	100%	NA	NA	13	15	15	18	1.1	0.3	0.4
Iron	Background	31	31	100%	NA	NA	11,300	15,700	15,500	20,600	2,140	0.5	0.3
	Parcel C	50	50	100%	NA	NA	7,580	11,900	12,500	22,000	3,050	0.05	0.8
	Parcel D	16	16	100%	NA	NA	5,950	12,500	11,800	14,400	2,260	*0.003*	*<0.001*
	Parcel G	16	16	100%	NA	NA	10,800	13,100	12,800	14,300	1,050	0.6	0.5
Lead	Background	31	31	100%	NA	NA	7.1	8.9	11	73	12	*<0.001*	*<0.001*
	Parcel C	50	50	100%	NA	NA	4.9	8.4	9.1	29	3.6	*<0.001*	*0.001*
	Parcel D	16	16	100%	NA	NA	3.8	9.2	9.5	20	3.6	0.05	0.4
	Parcel G	16	16	100%	NA	NA	7.1	9.9	12	39	7.6	*<0.001*	*0.001*
Magnesium	Background	31	31	100%	NA	NA	7,700	9,810	9,990	13,000	1,320	0.8	1
	Parcel C	50	50	100%	NA	NA	5,760	9,660	9,550	14,600	2,150	0.4	0.3
	Parcel D	16	16	100%	NA	NA	4,100	8,950	9,080	14,300	2,740	0.6	0.06
	Parcel G	16	16	100%	NA	NA	7,500	9,160	10,500	25,000	4,170	*<0.001*	*<0.001*
Manganese	Background	31	31	100%	NA	NA	262	360	366	537	61	0.03	0.4
	Parcel C	50	50	100%	NA	NA	163	312	346	841	133	*<0.001*	0.4
	Parcel D	16	16	100%	NA	NA	111	330	318	453	86	0.4	*0.007*
	Parcel G	16	16	100%	NA	NA	235	351	387	711	137	0.05	0.5
Mercury	Background	31	27	87%	0.017	0.019	0.0060	0.016	0.036	0.36	0.069	*<0.001*	*<0.001*
	Parcel C	50	17	34%	0.0067	0.042	0.0081	0.022	0.034	0.092	0.025	*<0.001*	*<0.001*
	Parcel D	16	16	100%	NA	NA	0.0082	0.012	0.014	0.021	0.0044	0.02	0.1
	Parcel G	16	1	6.3%	0.0067	0.012	0.016	0.016	0.016	0.016	NA	*<0.001*	*<0.001*
Molybdenum	Background	31	30	97%	0.31	0.31	0.31	0.49	1.7	33	5.9	*<0.001*	*<0.001*
	Parcel C	50	20	40%	0.052	1.1	0.38	0.51	0.54	0.92	0.13	*<0.001*	*<0.001*
	Parcel D	16	8	50%	0.052	0.052	0.49	0.62	0.75	1.1	0.27	*0.002*	*<0.001*
	Parcel G	16	11	69%	0.052	0.052	0.47	0.61	0.67	1.1	0.20	0.05	*<0.001*

TABLE I-1. Summary Statistics for Metals in Background (RZ-A) Soils and Parcels C, D, and G Soils (0-10 feet bgs)
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Name	Location	No. of Samples	No. of Detects	% Detects	Non-Detects (mg/kg)		Detects (mg/kg)					Shapiro-Wilk Test	
					Minimun	Maximum	Minimum	Median	Mean	Maximum	Standard Deviation	Normal (*p* -value)	Lognormal (*p* -value)
Nickel	Background	31	31	100%	NA	NA	13	16	16	21	1.8	0.08	0.5
	Parcel C	50	50	100%	NA	NA	8.4	14	14	20	2.4	0.2	0.01
	Parcel D	16	16	100%	NA	NA	6.0	14	13	16	2.7	*<0.001*	*<0.001*
	Parcel G	16	16	100%	NA	NA	13	15	15	17	0.96	0.8	0.7
Platinum	Background	31	19	61%	0.10	0.11	0.0060	0.010	0.012	0.046	0.0085	*<0.001*	*<0.001*
	Parcel C	37	2	5.4%	0.010	0.024	0.014	0.014	0.014	0.014	NA	*<0.001*	*<0.001*
	Parcel D	16	0	0%	0.010	0.010	NA	NA	NA	NA	NA	NA	NA
	Parcel G	16	0	0%	0.010	0.024	NA	NA	NA	NA	NA	*<0.001*	*<0.001*
Potassium	Background	31	31	100%	NA	NA	1,450	2,080	2,180	4,210	658	*<0.001*	0.02
	Parcel C	37	37	100%	NA	NA	1,460	2,270	2,400	3,660	569	0.2	0.8
	Parcel D	16	16	100%	NA	NA	787	2,370	2,580	4,480	954	0.8	0.2
	Parcel G	16	16	100%	NA	NA	1,290	1,790	1,810	2,630	309	0.3	0.9
Selenium	Background	31	3	10%	4.1	4.4	0.80	0.80	0.83	0.90	0.058	*<0.001*	*<0.001*
	Parcel C	50	0	0%	0.16	0.63	NA	NA	NA	NA	NA	*<0.001*	*<0.001*
	Parcel D	16	0	0%	0.16	0.16	NA	NA	NA	NA	NA	NA	NA
	Parcel G	16	0	0%	0.16	0.16	NA	NA	NA	NA	NA	NA	NA
Silver	Background	31	0	0%	0.50	0.50	NA	NA	NA	NA	NA	NA	NA
	Parcel C	50	37	74%	0.76	0.85	0.076	0.099	0.10	0.18	0.022	*<0.001*	*<0.001*
	Parcel D	16	16	100%	NA	NA	0.038	0.095	0.093	0.12	0.023	0.02	*<0.001*
	Parcel G	16	16	100%	NA	NA	0.084	0.11	0.11	0.18	0.028	*0.006*	0.05
Sodium	Background	31	31	100%	NA	NA	307	630	621	1,050	194	0.3	0.3
	Parcel C	37	37	100%	NA	NA	186	794	890	2,300	555	*0.008*	0.4
	Parcel D	16	16	100%	NA	NA	222	502	686	2,100	516	*0.005*	0.5
	Parcel G	16	16	100%	NA	NA	359	685	759	1,810	421	*<0.001*	0.09
Strontium	Background	31	31	100%	NA	NA	129	214	222	339	57	0.4	0.3
	Parcel C	50	50	100%	NA	NA	100	211	223	446	70	0.01	0.9
	Parcel D	16	16	100%	NA	NA	51	150	172	332	69	0.1	0.08
	Parcel G	16	16	100%	NA	NA	158	238	254	485	76	*0.002*	0.07
Thallium	Background	31	31	100%	NA	NA	0.071	0.092	0.11	0.19	0.033	*<0.001*	*0.003*
	Parcel C	50	4	8.0%	0.10	0.28	0.10	0.15	0.16	0.24	0.067	*<0.001*	*<0.001*
	Parcel D	16	2	13%	0.10	0.10	0.40	0.43	0.43	0.45	0.035	*<0.001*	*<0.001*
	Parcel G	16	0	0%	0.10	0.15	NA	NA	NA	NA	NA	*<0.001*	*<0.001*
Tin	Background	31	0	0%	10	11	NA	NA	NA	NA	NA	0.4	0.4
	Parcel C	37	21	57%	0.026	0.026	0.41	0.50	0.56	1.2	0.20	*<0.001*	*<0.001*
	Parcel D	16	15	94%	0.026	0.026	0.28	0.55	0.54	0.67	0.11	*0.001*	*<0.001*
	Parcel G	16	16	100%	NA	NA	0.42	0.54	0.52	0.66	0.072	0.4	0.3

TABLE I-1. Summary Statistics for Metals in Background (RZ-A) Soils and Parcels C, D, and G Soils (0-10 feet bgs)
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Name	Location	No. of Samples	No. of Detects	% Detects	Non-Detects (mg/kg)		Detects (mg/kg)					Shapiro-Wilk Test	
					Minimun	Maximum	Minimum	Median	Mean	Maximum	Standard Deviation	Normal (*p* -value)	Lognormal (*p* -value)
Titanium	Background	31	31	100%	NA	NA	480	829	793	1,080	162	0.2	0.04
	Parcel C	37	37	100%	NA	NA	287	439	480	695	114	*0.01*	0.07
	Parcel D	16	16	100%	NA	NA	257	598	563	719	124	*0.008*	*<0.001*
	Parcel G	16	16	100%	NA	NA	436	538	542	675	78	0.4	0.4
Tungsten	Background	31	30	97%	0.11	0.11	0.12	0.17	0.21	0.62	0.11	*<0.001*	0.04
	Parcel C	50	2	4.0%	0.10	5.6	0.46	0.67	0.67	0.87	0.29	*<0.001*	*<0.001*
	Parcel D	16	2	13%	0.10	0.10	1.0	1.1	1.1	1.1	0.071	*<0.001*	*<0.001*
	Parcel G	16	0	0%	0.10	0.25	NA	NA	NA	NA	NA	*<0.001*	*<0.001*
Uranium (total)	Background	31	31	100%	NA	NA	0.66	0.98	1.1	1.9	0.36	*0.002*	0.05
	Parcel C	50	50	100%	NA	NA	0.52	1.1	1.3	2.7	0.52	*<0.001*	0.08
	Parcel D	16	16	100%	NA	NA	0.39	0.96	1.2	2.5	0.62	0.05	0.5
	Parcel G	16	16	100%	NA	NA	0.84	1.2	1.4	3.9	0.71	*<0.001*	*0.004*
Vanadium	Background	31	31	100%	NA	NA	28	46	44	55	7.6	0.08	0.02
	Parcel C	37	37	100%	NA	NA	20	29	32	49	8.2	0.03	0.1
	Parcel D	16	16	100%	NA	NA	19	36	35	47	7.5	0.3	0.03
	Parcel G	16	16	100%	NA	NA	34	41	41	50	4.6	1	1
Zinc	Background	31	31	100%	NA	NA	26	33	40	254	40	*<0.001*	*<0.001*
	Parcel C	50	50	100%	NA	NA	19	28	29	50	6.9	*0.005*	0.2
	Parcel D	16	16	100%	NA	NA	14	30	28	33	5.3	*0.002*	*<0.001*
	Parcel G	16	16	100%	NA	NA	27	34	34	52	5.5	*<0.001*	*0.006*

Notes:

bgs = below ground surface

mg/kg = milligram per kilogram

NA = value not available

p- values < 0.01 are shown in italic.

Background dataset is from RZ-A, excluding the six borings in LOU 62.

Shapiro Wilk tests use 1/2 the detection limit (DL) for non-detects.

TABLE I-2. Background Comparisons for Metals in Parcels C, D, and G Soils (0-10 feet bgs)
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Name	Location	Distribution	*t*-test	*t*-test (logged data)	Gehan Test	Quantile Test (0.8)	Slippage Test	Fail Statistical Testing for Background Consistency?
			(*p*-value)	(*p*-value)	(*p*-value)	(*p*-value)	(*p*-value)	
Aluminum	Parcel C	LN	1	1	1	0.8	0.1	No
	Parcel D	NP	1	1	1	1	1	No
	Parcel G	N, LN	1	1	1	1	1	No
Antimony	Parcel C	NP	1	1	1	0.1	1	LDF
	Parcel D	N, LN	1	1	1	*0.01*	1	LDF
	Parcel G	NP	1	1	1	*0.01*	1	LDF
Arsenic	Parcel C	NP	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	Yes
	Parcel D	N, LN	*<0.001*	*<0.001*	*<0.001*	*0.001*	*0.01*	Yes
	Parcel G	LN	*<0.001*	*<0.001*	*<0.001*	*<0.001*	0.03	Yes
Barium	Parcel C	N, LN	*0.02*	0.06	*0.02*	*0.02*	*0.02*	Yes
	Parcel D	N, LN	0.6	0.7	0.4	0.7	0.1	No
	Parcel G	N, LN	0.1	0.2	0.04	0.2	0.1	No
Beryllium	Parcel C	N, LN	0.4	0.5	0.5	0.06	0.5	No
	Parcel D	NP	0.2	0.3	*0.009*	0.03	0.3	Yes
	Parcel G	N, LN	*<0.001*	*<0.001*	*<0.001*	*0.001*	0.3	Yes
Boron	Parcel C	NP	0.9	1	1	*0.02*	0.1	LDF
	Parcel D	NP	0.2	0.9	1	0.06	*0.003*	LDF
	Parcel G	NP	1	1	1	0.5	0.3	LDF
Cadmium	Parcel C	NP	1	1	1	1	1	No
	Parcel D	NP	1	1	1	1	1	No
	Parcel G	NP	1	1	1	1	1	No
Calcium	Parcel C	LN	0.4	0.7	0.7	0.7	0.08	No
	Parcel D	N, LN	0.9	0.9	0.9	0.5	0.3	No
	Parcel G	N, LN	0.5	0.7	0.7	0.7	0.1	No

TABLE I-2. Background Comparisons for Metals in Parcels C, D, and G Soils (0-10 feet bgs)
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Name	Location	Distribution	*t*-test (*p*-value)	*t*-test (logged data) (*p*-value)	Gehan Test (*p*-value)	Quantile Test (0.8) (*p*-value)	Slippage Test (*p*-value)	Fail Statistical Testing for Background Consistency?
Chromium (total)	Parcel C	N, LN	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	Yes
	Parcel D	N, LN	*0.002*	*0.004*	*<0.001*	*<0.001*	*<0.001*	Yes
	Parcel G	N	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	Yes
Chromium VI	Parcel C	NP	1	1	1	0.9	1	LDF
	Parcel D	NP	0.8	1	1	0.6	0.9	LDF
	Parcel G	NP	1	1	1	0.6	0.9	LDF
Cobalt	Parcel C	N, LN	1	1	1	1	0.6	No
	Parcel D	N	1	1	1	1	1	No
	Parcel G	N, LN	0.8	0.8	0.7	0.7	1	No
Copper	Parcel C	NP	1	1	1	1	1	No
	Parcel D	NP	1	1	1	1	1	No
	Parcel G	N, LN	1	1	1	1	1	No
Iron	Parcel C	N, LN	1	1	1	1	0.6	No
	Parcel D	NP	1	1	1	1	1	No
	Parcel G	N, LN	1	1	1	1	1	No
Lead	Parcel C	NP	0.8	0.9	0.9	0.3	1	No
	Parcel D	N, LN	0.8	0.7	0.4	0.2	1	No
	Parcel G	NP	0.4	0.2	0.09	0.06	1	No
Magnesium	Parcel C	N, LN	0.9	0.9	0.8	0.4	0.2	No
	Parcel D	N, LN	0.9	0.9	0.9	0.5	0.3	No
	Parcel G	NP	0.3	0.5	0.9	0.5	0.1	No
Manganese	Parcel C	LN	0.8	1	1	0.6	0.08	No
	Parcel D	N	1	1	0.9	0.9	1	No
	Parcel G	N, LN	0.3	0.4	0.6	0.2	0.03	No

TABLE I-2. Background Comparisons for Metals in Parcels C, D, and G Soils (0-10 feet bgs)
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Name	Location	Distribution	*t*-test	*t*-test (logged data)	Gehan Test	Quantile Test (0.8)	Slippage Test	Fail Statistical Testing for Background Consistency?
			(*p*-value)	(*p*-value)	(*p*-value)	(*p*-value)	(*p*-value)	
Mercury	Parcel C	NP	0.9	1	1	0.4	1	No
	Parcel D	N, LN	0.9	1	1	0.7	1	No
	Parcel G	NP	1	1	1	1	1	LDF
Molybdenum	Parcel C	NP	0.9	1	0.7	1	1	No
	Parcel D	NP	0.9	1	0.9	0.7	1	No
	Parcel G	N	0.9	1	0.6	0.7	1	No
Nickel	Parcel C	N, LN	1	1	1	1	1	No
	Parcel D	NP	1	1	1	1	1	No
	Parcel G	N, LN	1	1	1	1	1	No
Platinum	Parcel C	NP	1	1	1	1	1	LDF
	Parcel D	N, LN	1	1	1	1	1	LDF
	Parcel G	NP	1	1	0.9	1	1	LDF
Potassium	Parcel C	N, LN	0.08	0.05	*0.02*	0.1	1	Yes
	Parcel D	N, LN	0.07	0.1	0.05	0.06	0.3	No
	Parcel G	N, LN	1	1	1	1	1	No
Selenium	Parcel C	NP	1	1	1	1	1	LDF
	Parcel D	N, LN	1	1	1	1	1	LDF
	Parcel G	N, LN	1	1	1	1	1	LDF
Silver	Parcel C	NP	1	1	1	*<0.001*	NA	LDF
	Parcel D	N	1	1	1	1	NA	LDF
	Parcel G	LN	1	1	1	1	NA	LDF
Sodium	Parcel C	LN	*0.004*	0.05	0.05	*<0.001*	*<0.001*	Yes
	Parcel D	LN	0.3	0.7	0.7	0.2	*0.01*	Yes
	Parcel G	LN	0.1	0.1	0.2	0.7	0.1	No

TABLE I-2. Background Comparisons for Metals in Parcels C, D, and G Soils (0-10 feet bgs)
Nevada Environmental Response Trust Site
Henderson, Nevada

Chemical Name	Location	Distribution	*t*-test	*t*-test (logged data)	Gehan Test	Quantile Test (0.8)	Slippage Test	Fail Statistical Testing for Background Consistency?
			(*p*-value)	(*p*-value)	(*p*-value)	(*p*-value)	(*p*-value)	
Strontium	Parcel C	N, LN	0.5	0.6	0.6	0.6	0.2	No
	Parcel D	N, LN	1	1	1	0.9	1	No
	Parcel G	LN	0.07	0.05	0.1	0.5	0.1	No
Thallium	Parcel C	NP	1	1	*<0.001*	1	0.5	LDF
	Parcel D	NP	0.6	1	0.03	0.9	0.1	LDF
	Parcel G	NP	1	1	*0.01*	1	1	LDF
Tin	Parcel C	NP	1	1	1	*<0.001*	NA	LDF
	Parcel D	NP	1	1	1	*<0.001*	NA	LDF
	Parcel G	N, LN	1	1	1	*<0.001*	NA	LDF
Titanium	Parcel C	LN	1	1	1	1	1	No
	Parcel D	NP	1	1	1	1	1	No
	Parcel G	N, LN	1	1	1	1	1	No
Tungsten	Parcel C	NP	*<0.001*	0.7	1	1	0.5	LDF
	Parcel D	NP	0.6	1	1	0.9	0.1	LDF
	Parcel G	NP	1	1	1	1	1	LDF
Uranium (total)	Parcel C	LN	*0.02*	*0.02*	0.04	0.06	0.05	Yes
	Parcel D	N, LN	0.2	0.4	0.4	0.2	0.03	No
	Parcel G	NP	0.05	*0.02*	*0.01*	0.8	0.3	Yes
Vanadium	Parcel C	N, LN	1	1	1	1	1	No
	Parcel D	N, LN	1	1	1	1	1	No
	Parcel G	N, LN	0.9	0.9	0.9	1	1	No

TABLE I-2. Background Comparisons for Metals in Parcels C, D, and G Soils (0-10 feet bgs)

Nevada Environmental Response Trust Site

Henderson, Nevada

Chemical Name	Location	Distribution	*t*-test	*t*-test (logged data)	Gehan Test	Quantile Test (0.8)	Slippage Test	Fail Statistical Testing for Background Consistency?
			(*p*-value)	(*p*-value)	(*p*-value)	(*p*-value)	(*p*-value)	
Zinc	Parcel C	LN	0.9	1	1	0.9	1	No
	Parcel D	NP	1	1	1	1	1	No
	Parcel G	NP	0.8	0.7	0.4	0.9	1	No

Notes:

bgs = below ground surface

NA = value not available

LDF = Low detection frequency (<25%) in either site or background datasets. Background comparison results may not be applicable.

p-values in italics indicate $p < 0.025$

Background comparison tests use 1/2 the detection limit (DL) for non-detects in the parametric test (t-test) and the DL for non-parametric tests (Gehan test, quantile test, and slippage test).

Background dataset is from RZ-A, excluding the six borings in LOU 62.

Distibution:

N = Study area data and background data consistent with normal distribution

LN = Study area data and background data consistent with log-normal distribution

NP = Study area data or background data is not consistent with both normal distribution and log-normal distribution.

TABLE I-3. Summary Statistics for Radionuclides in Background (RZ-A) Soils and Parcels C, D, and G Soils (0-10 feet bgs)
Nevada Environmental Response Trust Site
Henderson, Nevada

Chain	Chemical Name	Location	No. of Samples	No. of Detects	% Detects	Non-Detects (pCi/g)		Detects (pCi/g)					Shapiro-Wilk Test	
						Minimun	Maximum	Minimum	Median	Mean	Maximum	Standard Deviation	Normal (*p* -value)	Lognormal (*p* -value)
Uranium-238	Uranium-238	Background	31	31	100%	NA	NA	0.36	1.0	1.0	1.6	0.21	*0.004*	*<0.001*
		Parcel C	50	50	100%	NA	NA	0.80	1.1	1.2	1.9	0.22	*0.003*	0.20
		Parcel D	16	16	100%	NA	NA	0.82	1.0	1.1	1.6	0.24	0.07	0.20
		Parcel G	14	14	100%	NA	NA	0.66	1.1	1.1	1.6	0.26	0.80	0.70
	Uranium-234	Background	31	31	100%	NA	NA	0.39	1.0	1.1	1.7	0.30	0.09	0.04
		Parcel C	37	37	100%	NA	NA	0.87	1.4	1.4	2.1	0.31	0.3	0.2
		Parcel D	16	16	100%	NA	NA	0.84	1.2	1.3	2.3	0.38	0.03	0.4
		Parcel G	14	14	100%	NA	NA	0.80	1.3	1.3	2.0	0.36	0.9	0.8
	Thorium-230	Background	31	31	100%	NA	NA	0.51	1.1	1.1	1.7	0.28	0.7	0.7
		Parcel C	50	50	100%	NA	NA	0.80	1.3	1.4	3.4	0.43	*<0.001*	0.2
		Parcel D	15	15	100%	NA	NA	0.98	1.3	1.3	2.0	0.26	0.1	0.3
		Parcel G	16	16	100%	NA	NA	0.93	1.2	1.3	1.8	0.23	0.5	0.8
	Radium-226	Background	31	31	100%	NA	NA	0.047	0.89	0.95	1.7	0.35	0.4	<0.001
		Parcel C	50	50	100%	NA	NA	0.76	1.1	1.1	1.8	0.18	*0.004*	*0.3*
		Parcel D	16	16	100%	NA	NA	0.96	1.1	1.1	1.5	0.12	*<0.001*	*0.002*
		Parcel G	16	16	100%	NA	NA	0.77	1.0	1.0	1.3	0.17	0.3	*0.4*
Thorium-232	Thorium-232	Background	31	31	100%	NA	NA	1.0	1.5	1.5	2.1	0.24	1	1
		Parcel C	50	50	100%	NA	NA	1.2	1.6	1.7	2.2	0.24	0.4	0.8
		Parcel D	15	15	100%	NA	NA	0.92	1.5	1.4	1.7	0.21	0.04	*0.008*
		Parcel G	16	16	100%	NA	NA	1.2	1.5	1.6	2.0	0.24	0.5	0.6
	Radium-228	Background	31	31	100%	NA	NA	0.46	1.2	1.3	2.5	0.54	0.3	0.8
		Parcel C	50	50	100%	NA	NA	0.90	1.7	1.6	3.2	0.37	*<0.001*	*0.005*
		Parcel D	16	16	100%	NA	NA	1.6	1.8	1.8	2.0	0.14	0.4	0.4
		Parcel G	16	16	100%	NA	NA	0.85	1.7	1.8	2.7	0.40	0.09	*0.007*
	Thorium-228	Background	31	31	100%	NA	NA	1.2	1.7	1.7	2.9	0.36	0.03	0.5
		Parcel C	50	50	100%	NA	NA	1.2	1.7	1.8	4.9	0.55	*<0.001*	*<0.001*
		Parcel D	15	15	100%	NA	NA	1.1	1.5	1.5	1.9	0.21	1	0.9
		Parcel G	16	16	100%	NA	NA	1.3	1.8	1.8	2.3	0.30	0.5	0.8

TABLE I-3. Summary Statistics for Radionuclides in Background (RZ-A) Soils and Parcels C, D, and G Soils (0-10 feet bgs)
Nevada Environmental Response Trust Site
Henderson, Nevada

Chain	Chemical Name	Location	No. of Samples	No. of Detects	% Detects	Non-Detects (pCi/g)		Detects (pCi/g)					Shapiro-Wilk Test	
						Minimun	Maximum	Minimum	Median	Mean	Maximum	Standard Deviation	Normal (*p* -value)	Lognormal (*p* -value)
Uranium-235	Uranium-235	Background	31	31	100%	NA	NA	-0.077	0.049	0.051	0.20	0.044	*0.003*	*NA*
		Parcel C	37	37	100%	NA	NA	0.014	0.039	0.052	0.33	0.054	*<0.001*	0.070
		Parcel D	16	16	100%	NA	NA	0.014	0.036	0.042	0.070	0.017	0.300	*0.3000*
		Parcel G	14	14	100%	NA	NA	0.02	0.056	0.067	0.17	0.035	*0.0070*	0.30

Notes:

bgs = below ground surface

pCi/g = picocurie per gram

NA = value not available

p- values < 0.01 are shown in italic.

Background dataset is from RZ-A, excluding the six borings in LOU 62.

Shapiro Wilk tests use 1/2 the detection limit (DL) for non-detects.

TABLE I-4. Background Comparisons for Radionuclides in Parcels C, D, and G Soils (0-10 feet bgs)
Nevada Environmental Response Trust Site
Henderson, Nevada

Chain	Chemical Name	Location	Distribution	*t*-test (*p*-value)	*t*-test (logged data) (*p*-value)	Gehan Test (*p*-value)	Quantile Test (0.8) (*p*-value)	Slippage Test (*p*-value)	Fail Statistical Testing for Background Consistency?
Uranium-238	Uranium-238	Parcel C	LN	*0.005*	*0.007*	*0.002*	0.4	0.2	Yes
		Parcel D	N, LN	0.2	0.2	0.3	0.5	0.3	No
		Parcel G	N, LN	0.1	0.1	0.2	0.3	1	No
	Uranium-234	Parcel C	N, LN	*<0.001*	*<0.001*	*<0.001*	0.04	0.04	Yes
		Parcel D	N, LN	*0.02*	*0.009*	*0.01*	0.2	0.03	Yes
		Parcel G	N, LN	*0.01*	*0.01*	*0.01*	*0.02*	0.09	Yes
	Thorium-230	Parcel C	LN	*<0.001*	*<0.001*	*<0.001*	*0.02*	*0.005*	Yes
		Parcel D	N, LN	*0.005*	*0.002*	*0.006*	0.1	0.3	Yes
		Parcel G	N, LN	*0.006*	*0.002*	*0.005*	0.2	0.3	Yes
	Radium-226	Parcel C	LN	*0.02*	*0.02*	*0.003*	0.9	0.6	Yes
		Parcel D	NP	0.04	*0.02*	*0.02*	1	1	Yes
		Parcel G	N, LN	0.1	0.06	0.07	0.7	1	No
Thorium-232	Thorium-232	Parcel C	N, LN	*0.004*	*0.004*	*0.008*	0.04	0.2	Yes
		Parcel D	N	0.8	0.8	0.8	1	1	No
		Parcel G	N, LN	0.2	0.2	0.3	0.2	1	No
	Radium-228	Parcel C	NP	*0.001*	*<0.001*	*<0.001*	0.4	0.6	Yes
		Parcel D	N, LN	*<0.001*	*<0.001*	*<0.001*	0.2	1	Yes
		Parcel G	N	*<0.001*	*<0.001*	*<0.001*	0.2	0.3	Yes
	Thorium-228	Parcel C	NP	0.2	0.3	0.4	0.8	0.6	No
		Parcel D	N, LN	1	1	1	1	1	No
		Parcel G	N, LN	0.2	0.1	0.2	0.5	1	No

TABLE I-4. Background Comparisons for Radionuclides in Parcels C, D, and G Soils (0-10 feet bgs)

Nevada Environmental Response Trust Site

Henderson, Nevada

Chain	Chemical Name	Location	Distribution	*t*-test (*p*-value)	*t*-test (logged data) (*p*-value)	Gehan Test (*p*-value)	Quantile Test (0.8) (*p*-value)	Slippage Test (*p*-value)	Fail Statistical Testing for Background Consistency?
Uranium-235	Uranium-235	Parcel C	LN	0.5	0.7	0.9	1	0.5	No
		Parcel D	N, LN	0.9	0.8	0.9	0.9	1	No
		Parcel G	LN	0.1	0.05	0.08	0.6	1	No

Notes:

bgs = below ground surface

p- values in italics indicate p < 0.025

Background comparison tests use 1/2 the detection limit (DL) for non-detects in the parametric test (t-test) and the DL for non-parametric tests (Gehan test, quantile test, and slippage test).

Background dataset is from RZ-A, excluding the six borings in LOU 62.

Distibution:

N = Study area data and background data consistent with normal distribution

LN = Study area data and background data consistent with log-normal distribution

NP = Study area data or background data is not consistent with both normal distribution and log-normal distribution.

Table I-5a. Equivalence Test for Secular Equilibrium of Uranium Decay Series (U-238 Chain)[1]
Nevada Environmental Response Trust Remediation Project Site
Henderson, Nevada

Location	p-value	Conclusion[2]	Delta	Sample Size[3]	Number Missing[4]	Analyte	Mean Proportions of Radioactivity	95% Confid. Intervals		Shifts[5]
								Lower	Upper	
All	<0.0001	in Secular Equilibrium	0.1	94	22	Ra-226	0.2208	0.2078	0.2337	0
						Th-230	0.2747	0.2607	0.2888	0
						U-234	0.2658	0.2538	0.2777	0
						U-238	0.2387	0.2278	0.2496	0
Background	<0.0001	in Secular Equilibrium	0.1	31	0	Ra-226	0.2267	0.1909	0.2625	0
						Th-230	0.2626	0.2314	0.2939	0
						U-234	0.2572	0.2283	0.2861	0
						U-238	0.2534	0.2276	0.2793	0
C	0.0002	in Secular Equilibrium	0.1	34	19	Ra-226	0.2129	0.1968	0.2290	0
						Th-230	0.2881	0.2631	0.3131	0
						U-234	0.2682	0.2528	0.2836	0
						U-238	0.2308	0.2162	0.2455	0
D	0.0004	in Secular Equilibrium	0.1	15	1	Ra-226	0.2281	0.1997	0.2564	0
						Th-230	0.2708	0.2444	0.2971	0
						U-234	0.2708	0.2389	0.3028	0
						U-238	0.2303	0.2080	0.2526	0
G	0.0006	in Secular Equilibrium	0.1	14	2	Ra-226	0.2189	0.1998	0.2380	0
						Th-230	0.2733	0.2388	0.3079	0
						U-234	0.2734	0.2339	0.3128	0
						U-238	0.2344	0.2011	0.2677	0

Notes:

1. Analyzed in top 10 feet bgs using the EnviroGISdT software tool from Neptune & Company, Inc.

2. Tool states "in Secular Equilibrium" if the computed *p* -value is less than a standard significance level of 0.05.

3. Sample dataset includes field duplicates

4. Count of sampling locations for which one or more results are unavailable. These sampling locations are not counted in the sample size and are not included in the secular equilibrium calculation.

5. Data Shift - Lists the values of the data shift utililzed by the tool in case of negative radioactivity measurements. All measurements values for that radioisotope are shifted upwards by the shift value so that all values are non-negative. A zero shift value indicates lack of negative measurements.

Table I-5b. Equivalence Test for Secular Equilibrium of Thorium Decay Series (Th-232 Chain)[1]

Nevada Environmental Response Trust Remediation Project Site
Henderson, Nevada

Location	p-value	Conclusion[2]	Delta	Sample Size[3]	Number Missing[4]	Analyte	Mean Proportions of Radioactivity	95% Confid. Intervals		Shifts[5]
								Lower	Upper	
All	<0.0001	in Secular Equilibrium	0.1	112	1	Ra-228	0.3222	0.3043	0.3401	0
						Th-228	0.3520	0.3401	0.3639	0
						Th-232	0.3258	0.3146	0.3371	0
Background	0.164	Not in Secular Equilibrium	0.1	31	0	Ra-228	0.2779	0.2341	0.3218	0
						Th-228	0.3808	0.3557	0.4060	0
						Th-232	0.3413	0.3141	0.3684	0
C	<0.0001	in Secular Equilibrium	0.1	50	0	Ra-228	0.3228	0.3034	0.3422	0
						Th-228	0.3464	0.3295	0.3634	0
						Th-232	0.3308	0.3150	0.3465	0
D	0.0069	in Secular Equilibrium	0.1	15	1	Ra-228	0.3802	0.3490	0.4114	0
						Th-228	0.3164	0.2947	0.3381	0
						Th-232	0.3034	0.2819	0.3250	0
G	<0.0001	in Secular Equilibrium	0.1	16	0	Ra-228	0.3518	0.3043	0.3992	0
						Th-228	0.3468	0.3187	0.3749	0
						Th-232	0.3014	0.2752	0.3276	0

Notes:

1. Analyzed in top 10 feet bgs using the EnviroGISdT software tool from Neptune & Company, Inc.

2. Tool states "in Secular Equilibrium" if the computed *p* -value is less than a standard significance level of 0.05.

3. Sample dataset includes field duplicates

4. Count of sampling locations for which one or more results are unavailable. These sampling locations are not counted in the sample size and are not included in the secular equilibrium calculation.

5. Data Shift - Lists the values of the data shift utililzed by the tool in case of negative radioactivity measurements. All measurements values for that radioisotope are shifted upwards by the shift value so that all values are non-negative. A zero shift value indicates lack of negative measurements.

Table I-6. Correlation Matrices for the Uranium Decay Series and the Thorium Decay Series
Nevada Environmental Response Trust Site
Henderson, Nevada

i) Parcels C (0-10 ft bgs)

Uranium Decay Chain				
Correl.	Ra-226	Th-230	U-234	U-238
Ra-226	1	0.484	0.626	0.534
Th-230	0.484	1	0.691	0.646
U-234	0.626	0.691	1	0.801
U-238	0.534	0.646	0.801	1

Thorium Decay Chain			
Correl.	Ra-228	Th-228	Th-232
Ra-228	1	0.580	0.208
Th-228	0.580	1	0.507
Th-232	0.208	0.507	1

ii) Parcels D (0-10 ft bgs)

Uranium Decay Chain				
Correl.	Ra-226	Th-230	U-234	U-238
Ra-226	1	0.737	0.682	0.657
Th-230	0.737	1	0.784	0.636
U-234	0.682	0.784	1	0.883
U-238	0.657	0.636	0.883	1

Thorium Decay Chain			
Correl.	Ra-228	Th-228	Th-232
Ra-228	1	-0.042	0.104
Th-228	-0.042	1	0.721
Th-232	0.104	0.721	1

iii) Parcels G (0-10 ft bgs)

Uranium Decay Chain				
Correl.	Ra-226	Th-230	U-234	U-238
Ra-226	1	0.706	0.865	0.638
Th-230	0.706	1	0.626	0.621
U-234	0.865	0.626	1	0.668
U-238	0.638	0.621	0.668	1

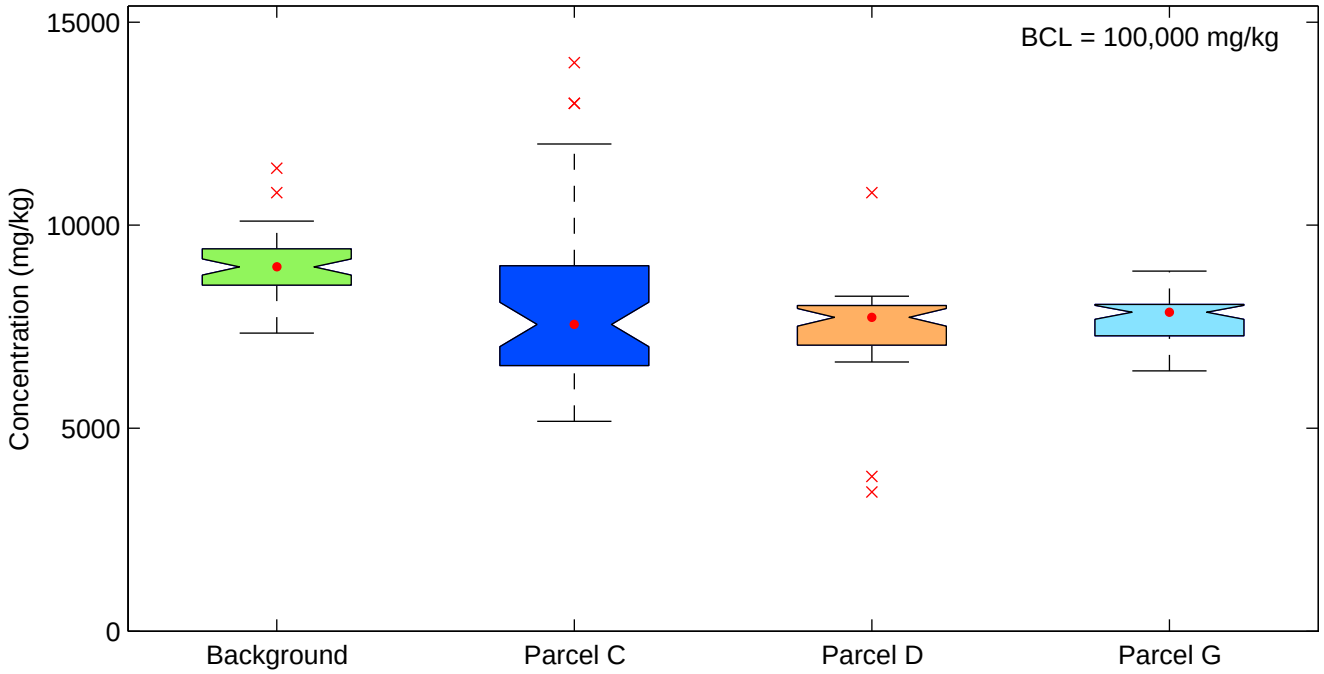
Thorium Decay Chain			
Correl.	Ra-228	Th-228	Th-232
Ra-228	1	0.226	0.096
Th-228	0.226	1	0.799
Th-232	0.096	0.799	1

iv) Background (RZ-A) Soils

Uranium Decay Chain				
Correl.	Ra-226	Th-230	U-234	U-238
Ra-226	1	0.680	0.313	0.321
Th-230	0.680	1	0.351	0.271
U-234	0.313	0.351	1	0.886
U-238	0.321	0.271	0.886	1

Thorium Decay Chain			
Correl.	Ra-228	Th-228	Th-232
Ra-228	1	0.297	0.119
Th-228	0.297	1	0.627
Th-232	0.119	0.627	1

Figure I1−1. Background vs. Parcels C, D, and G Boxplots
Aluminum



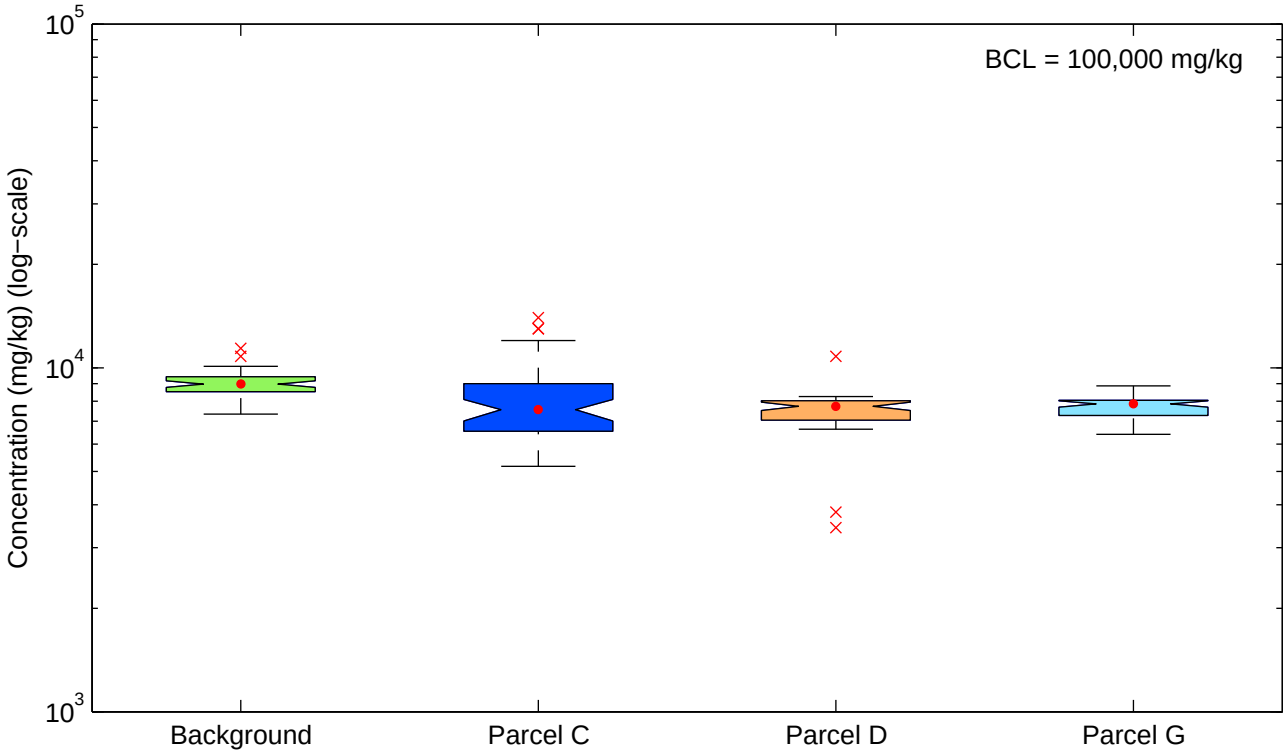
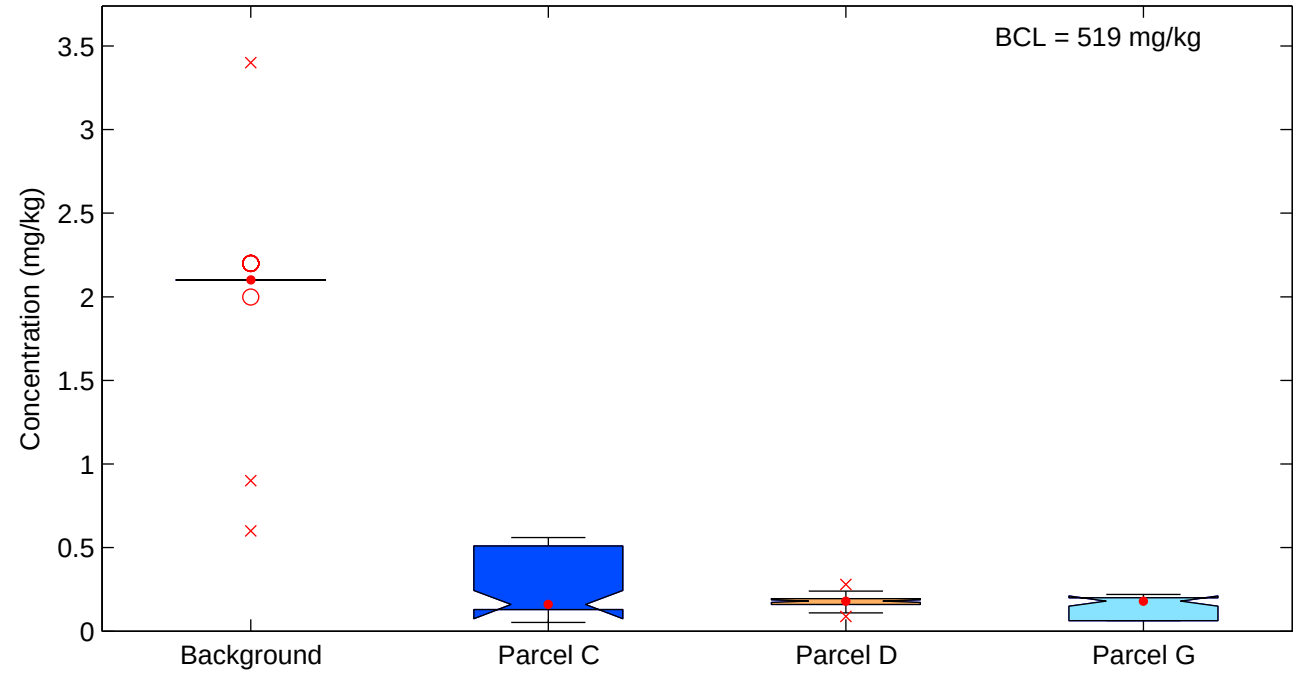


Figure I1−2. Background vs. Parcels C, D, and G Boxplots
Antimony



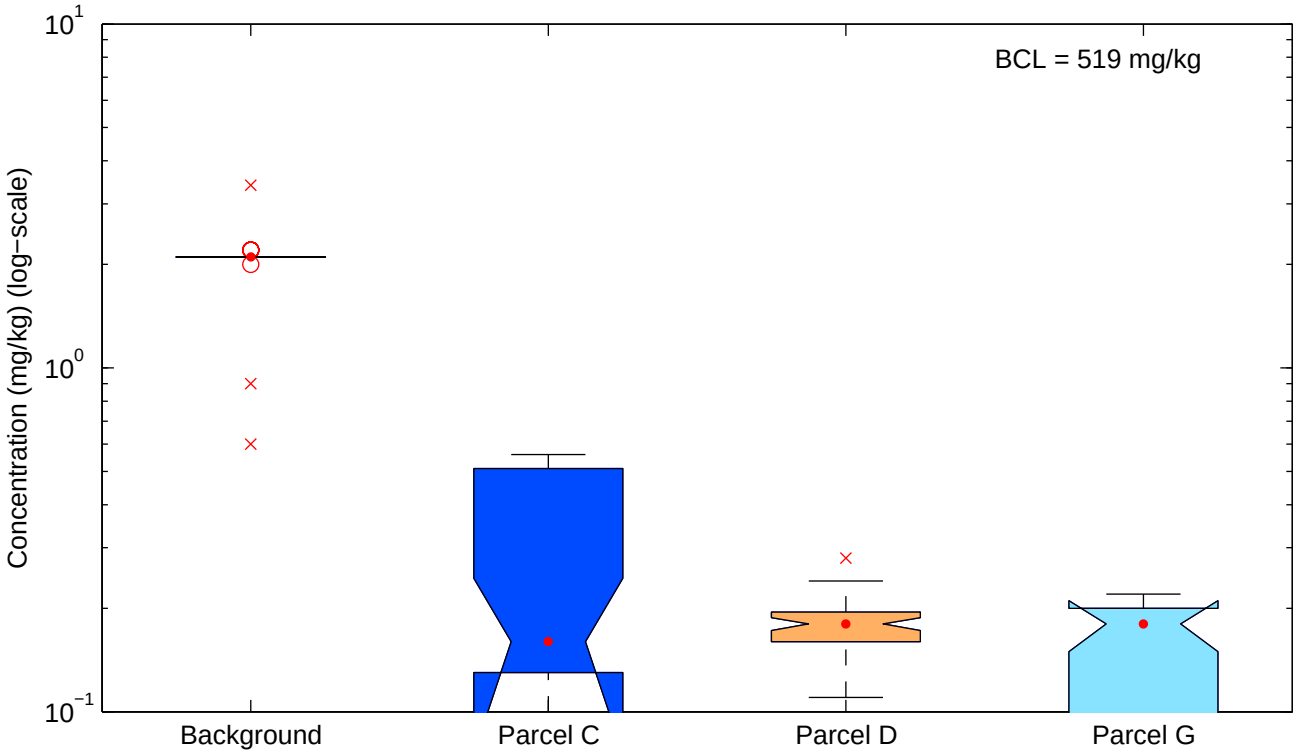
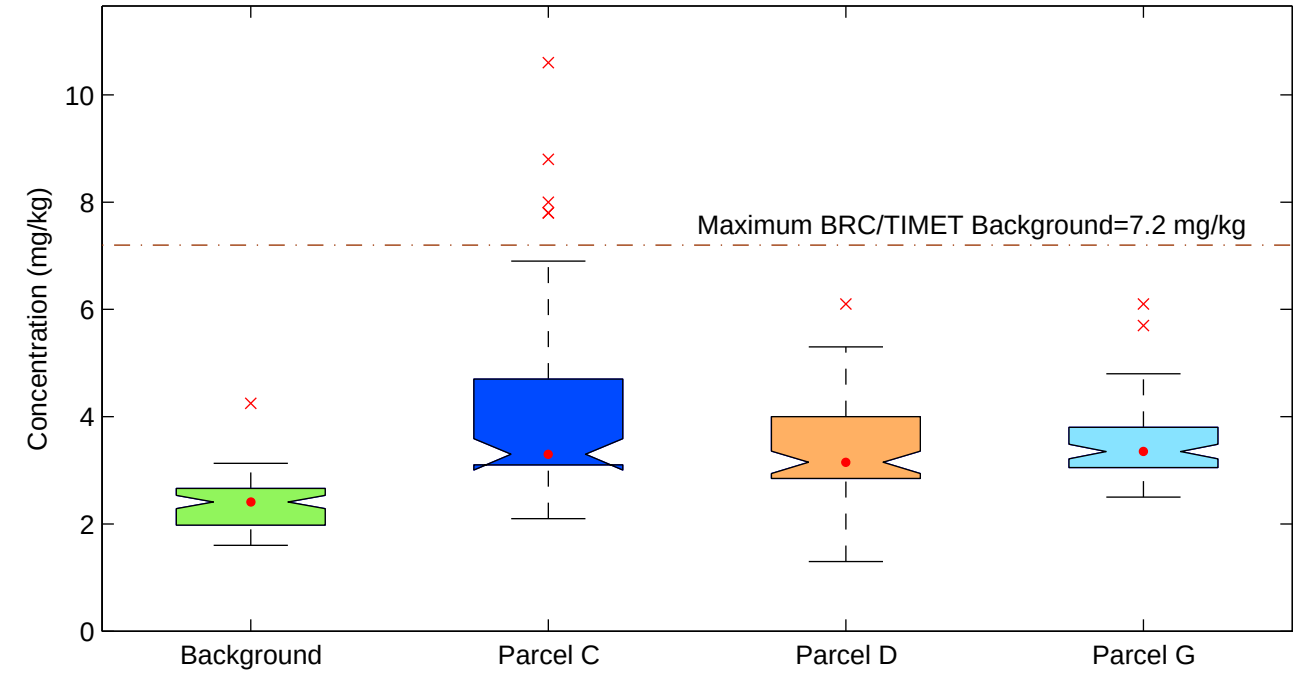


Figure I1−3. Background vs. Parcels C, D, and G Boxplots
Arsenic



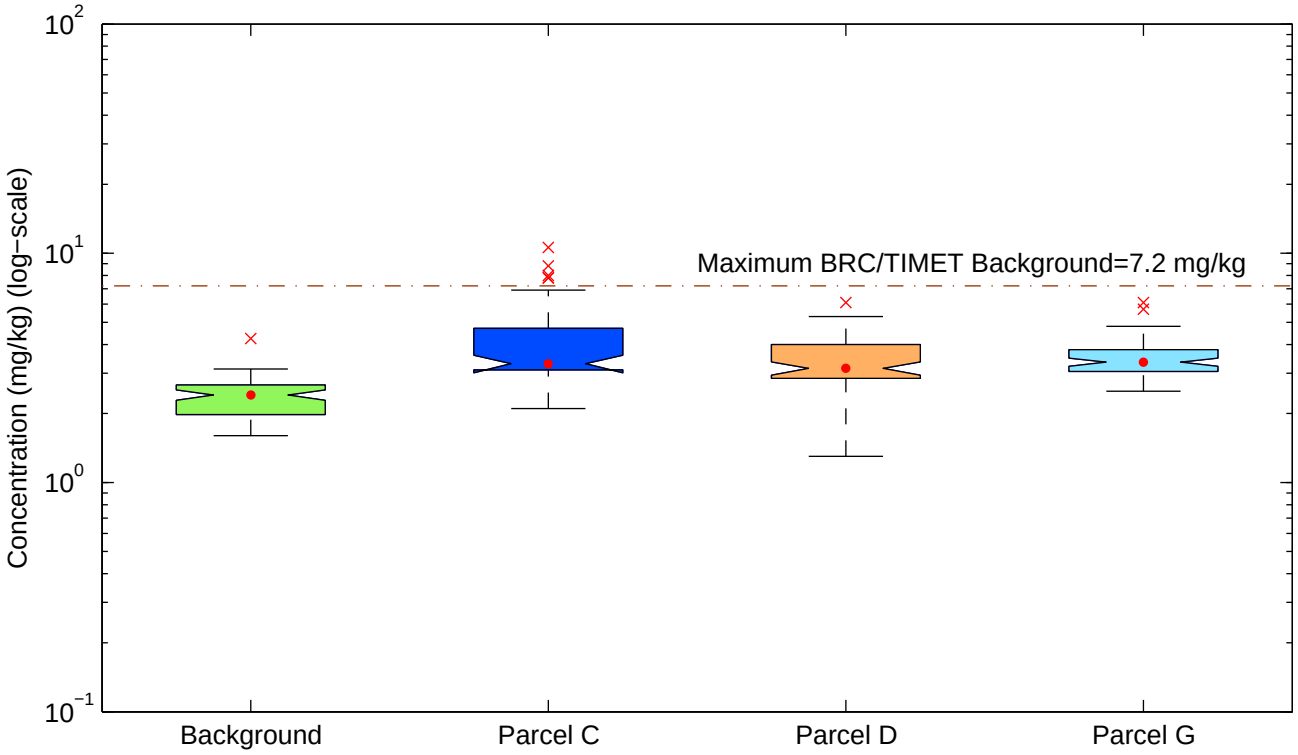
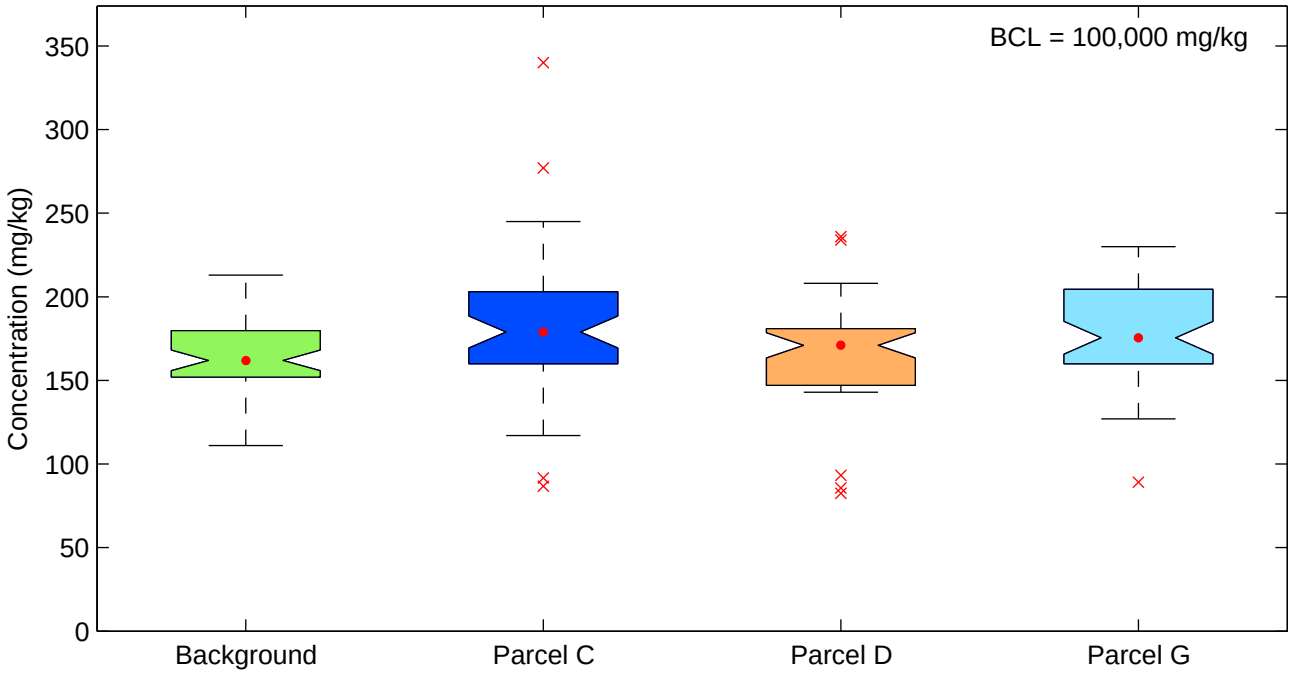


Figure I1−4. Background vs. Parcels C, D, and G Boxplots
Barium



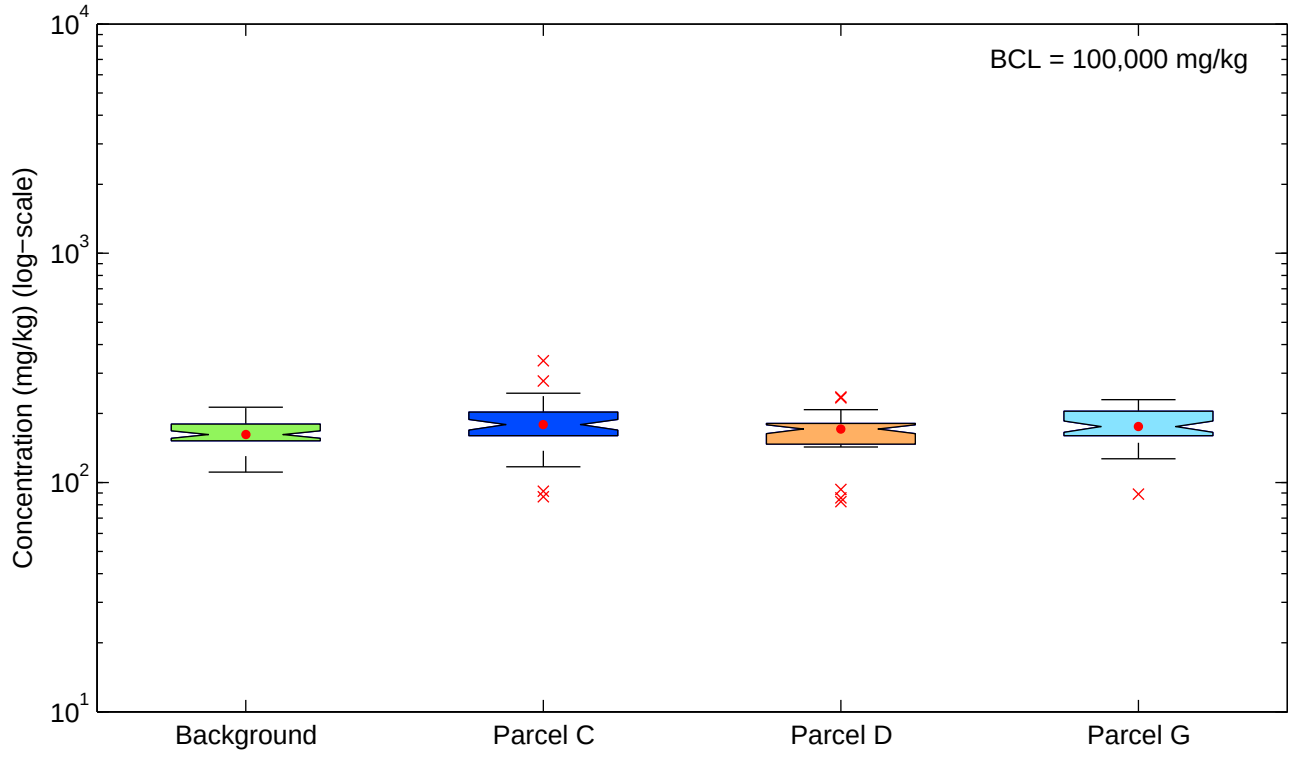
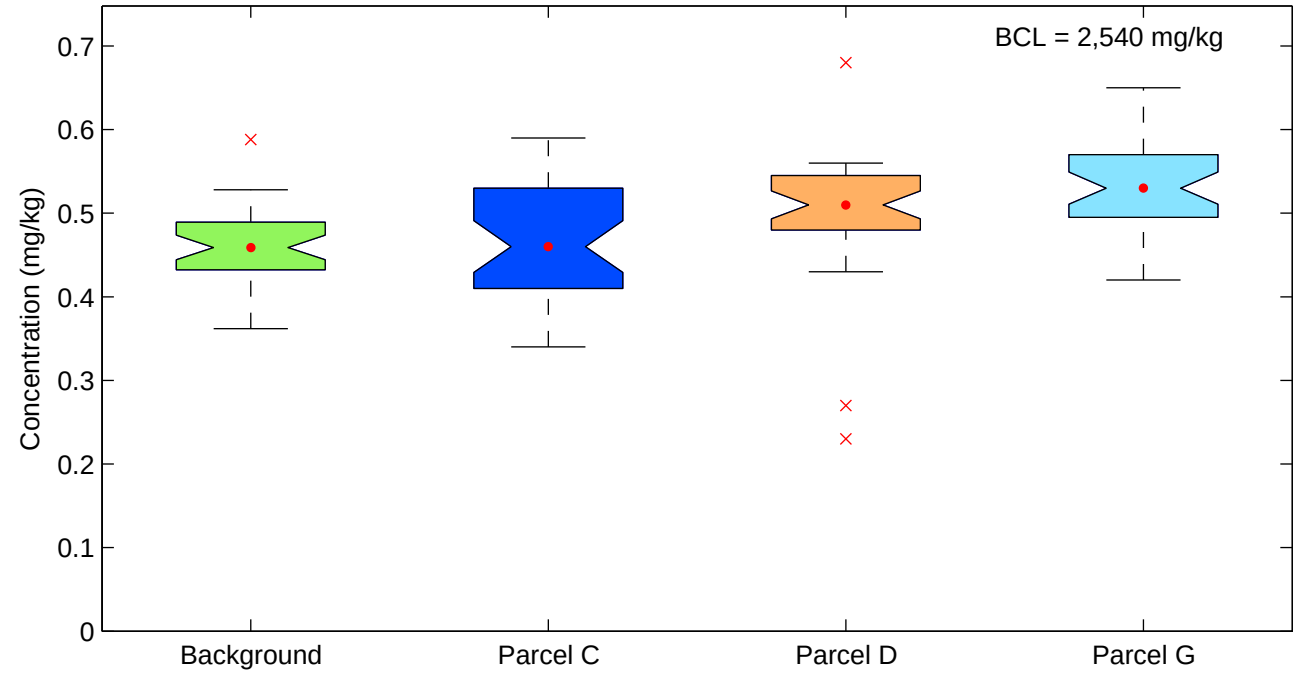


Figure I1−5. Background vs. Parcels C, D, and G Boxplots
Beryllium



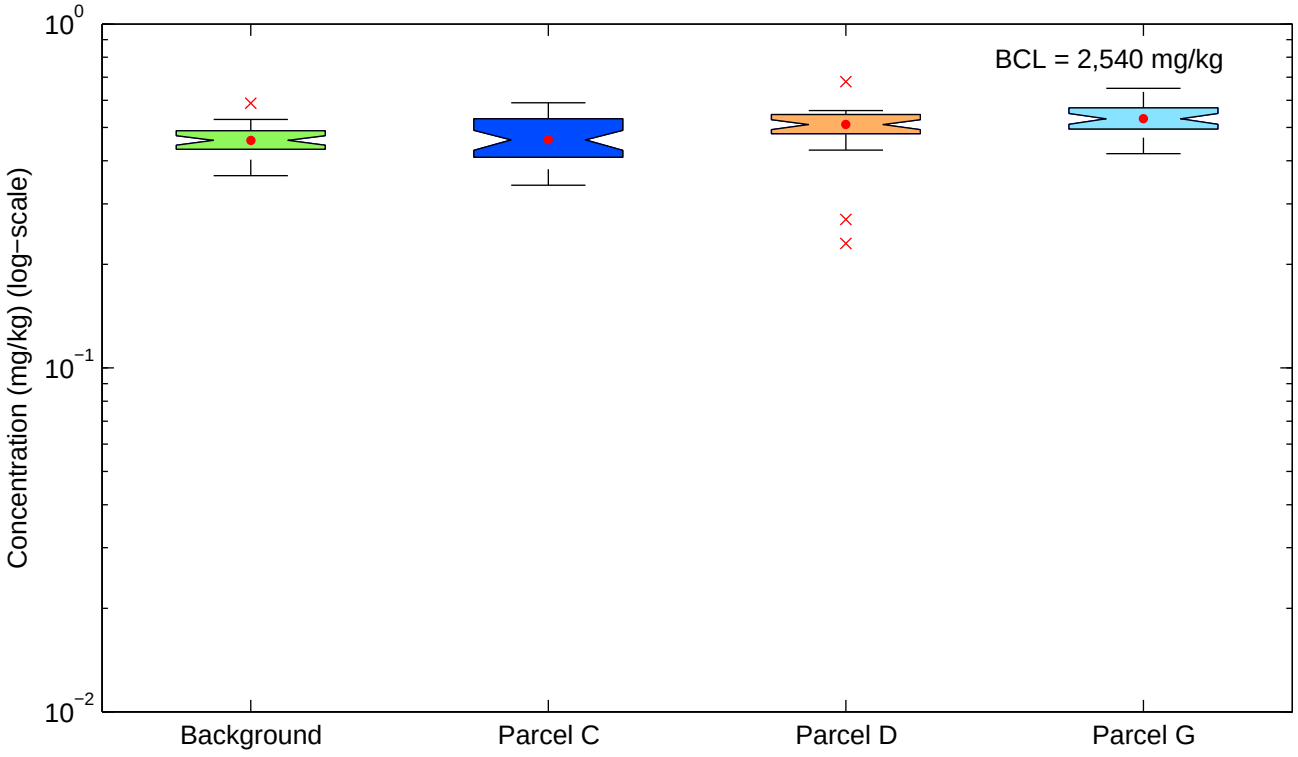
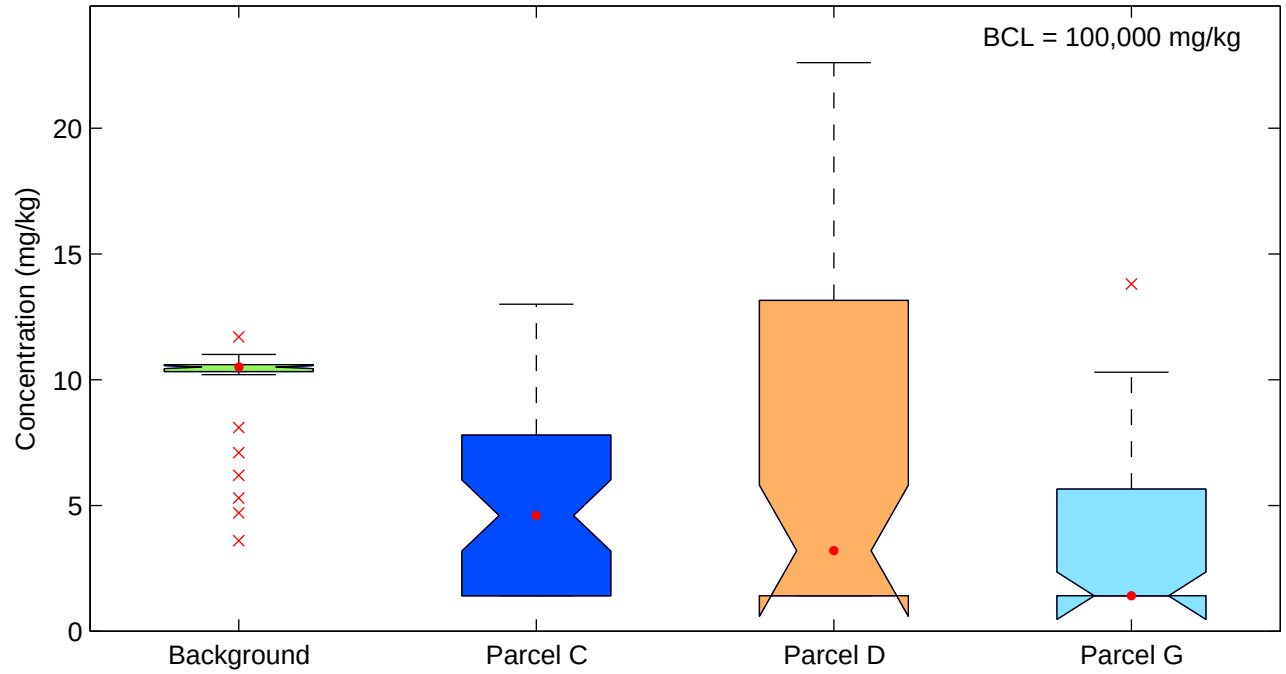


Figure I1−6. Background vs. Parcels C, D, and G Boxplots
Boron



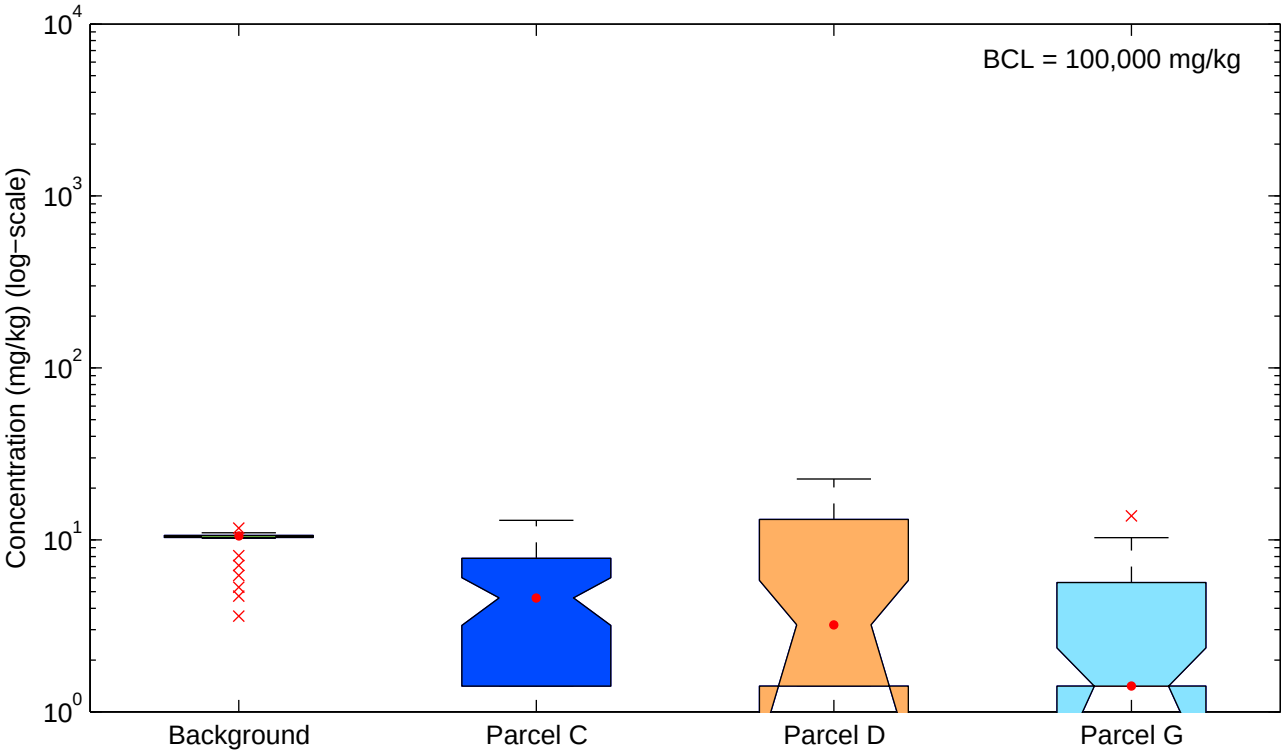
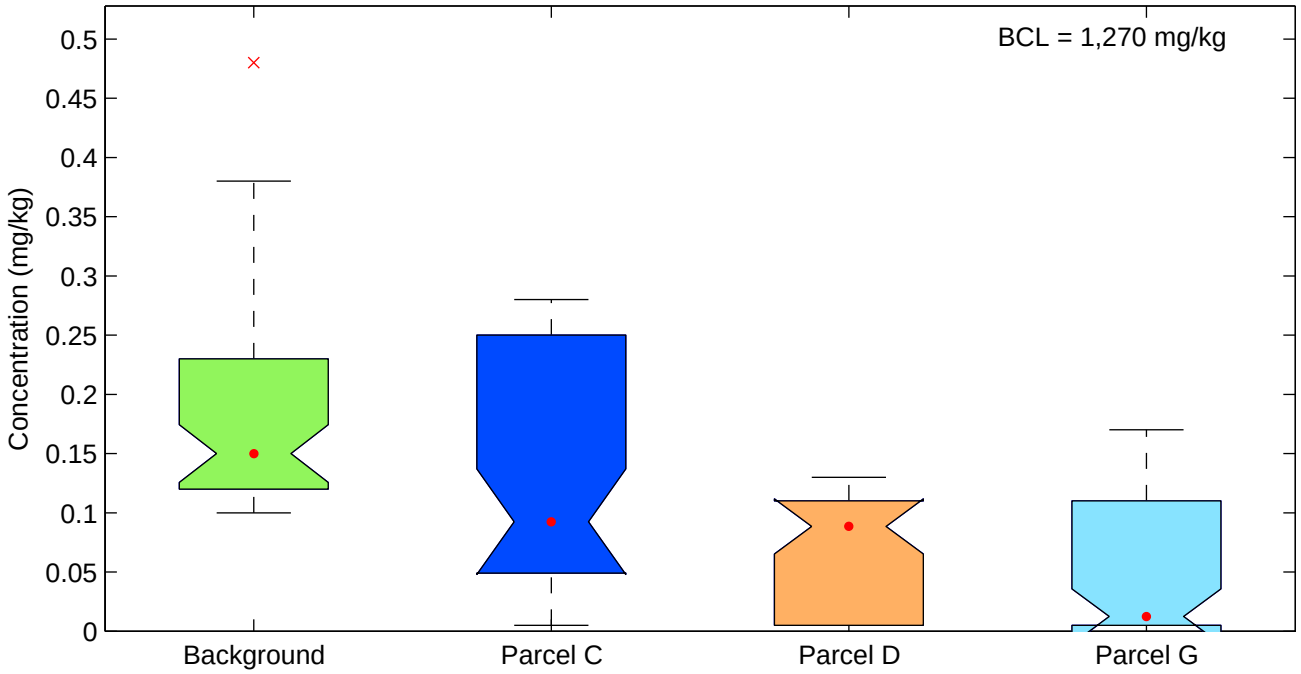


Figure I1−7. Background vs. Parcels C, D, and G Boxplots
Cadmium



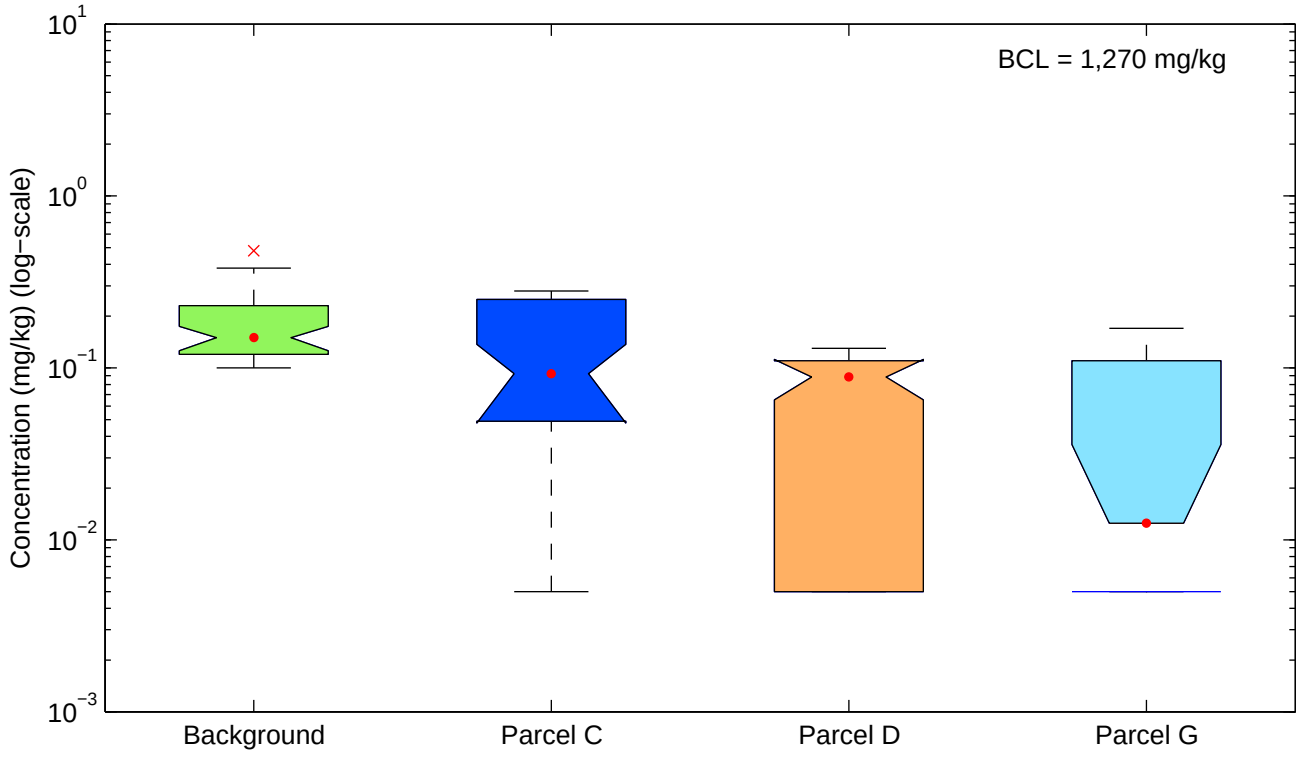
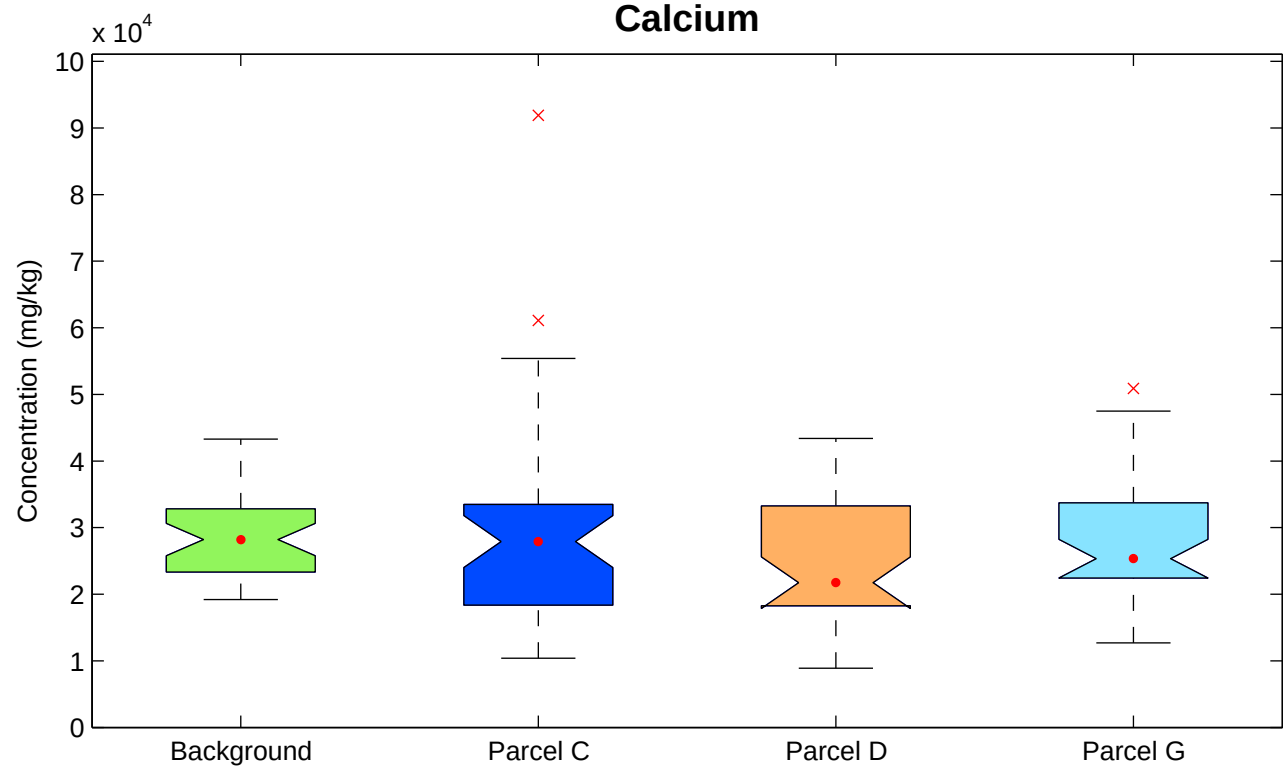


Figure I1−8. Background vs. Parcels C, D, and G Boxplots
Calcium



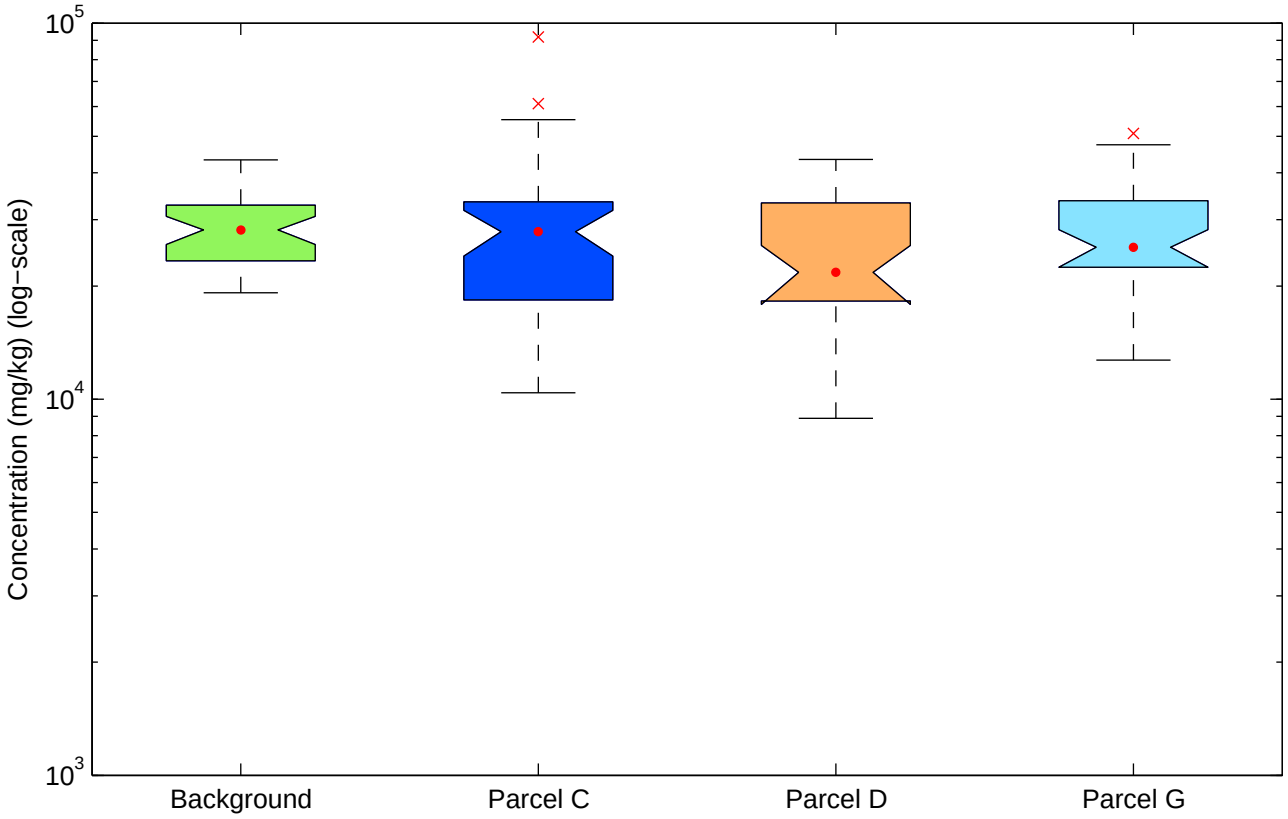
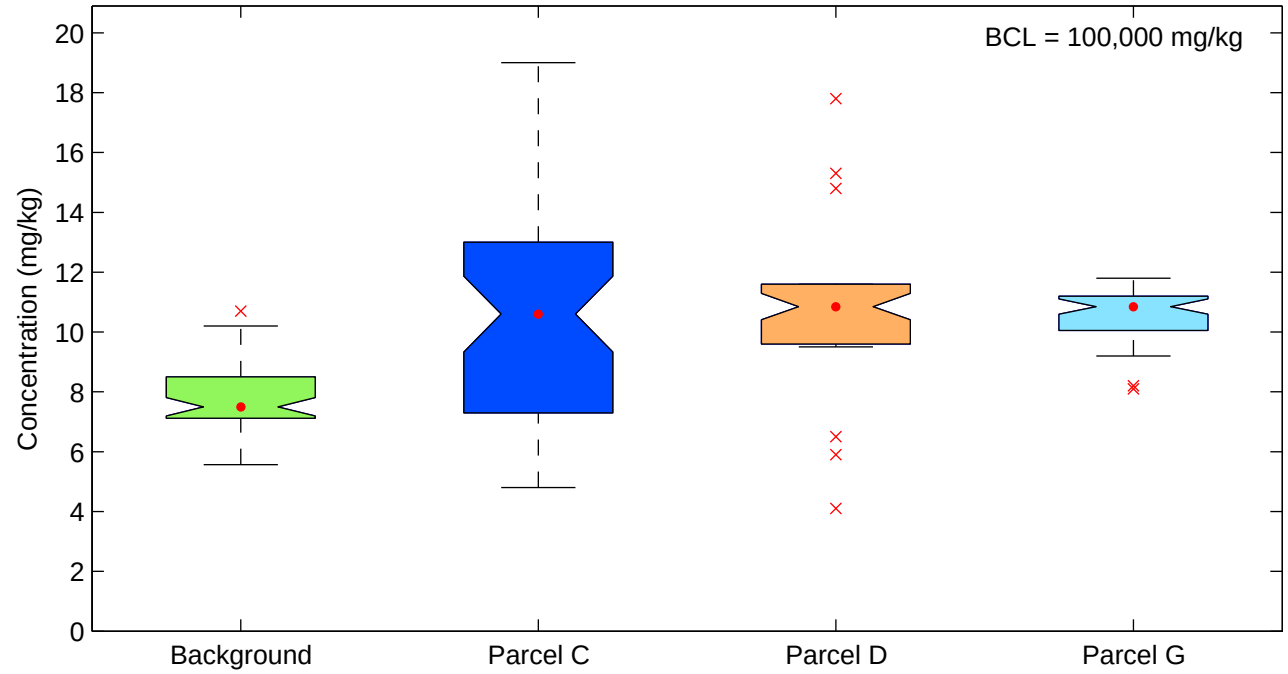


Figure I1−9. Background vs. Parcels C, D, and G Boxplots
Chromium (total)



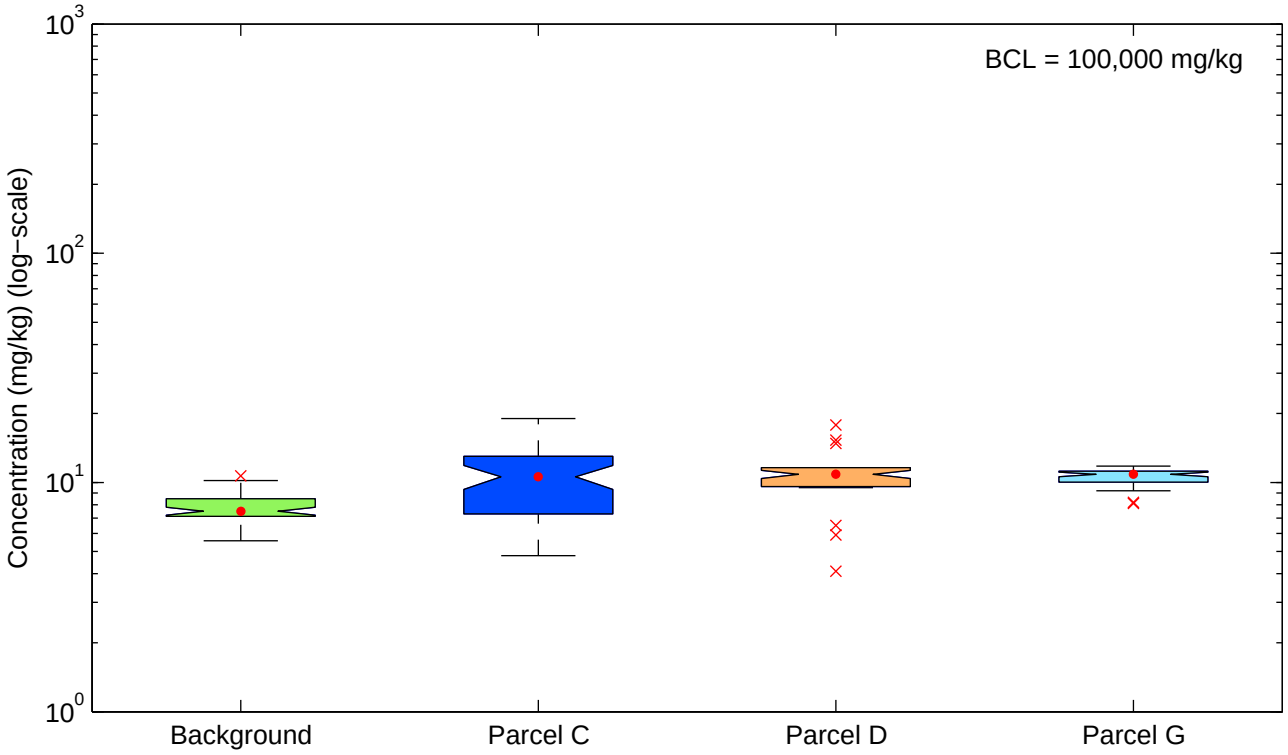
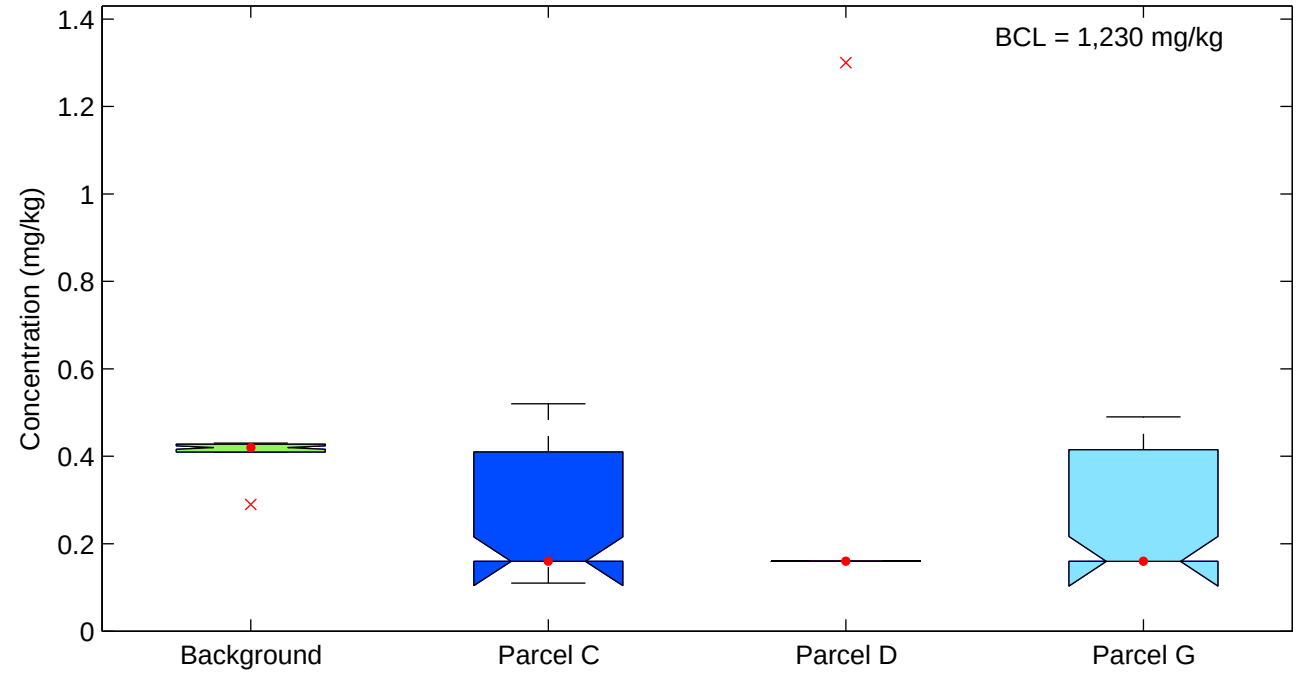


Figure I1−10. Background vs. Parcels C, D, and G Boxplots
Chromium VI



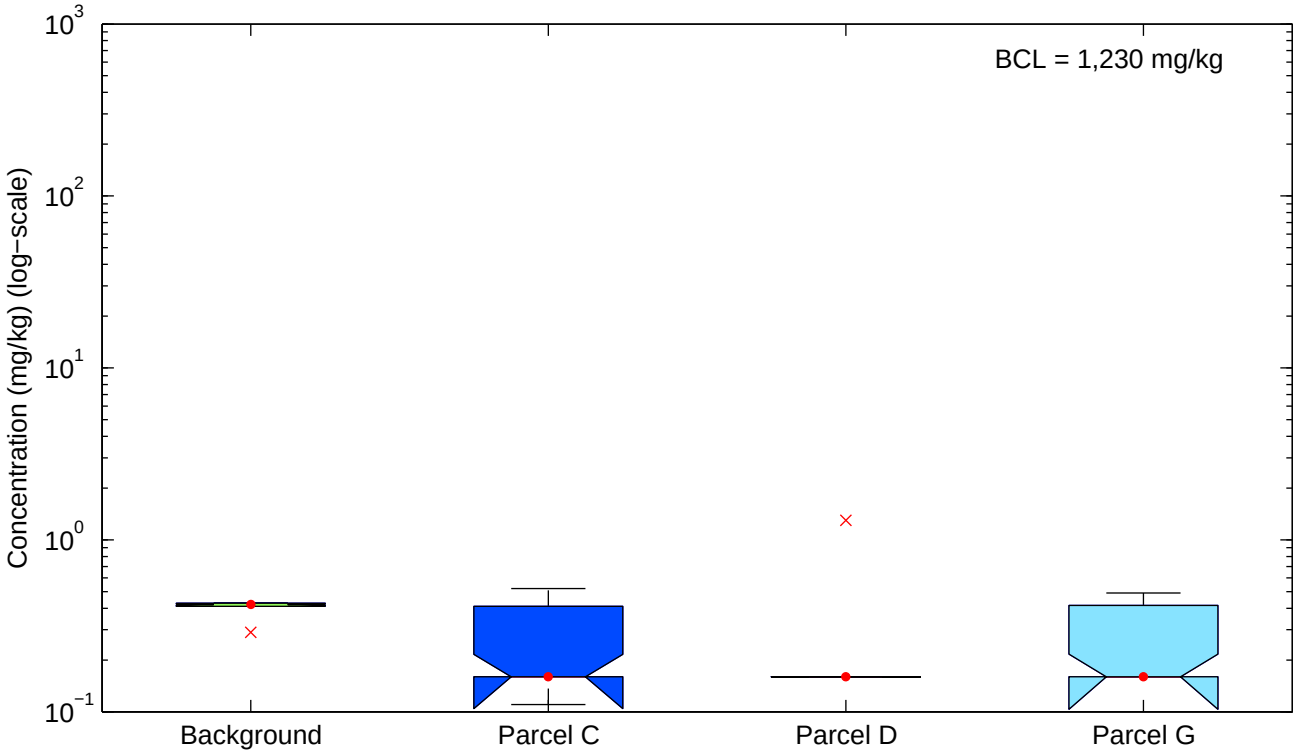
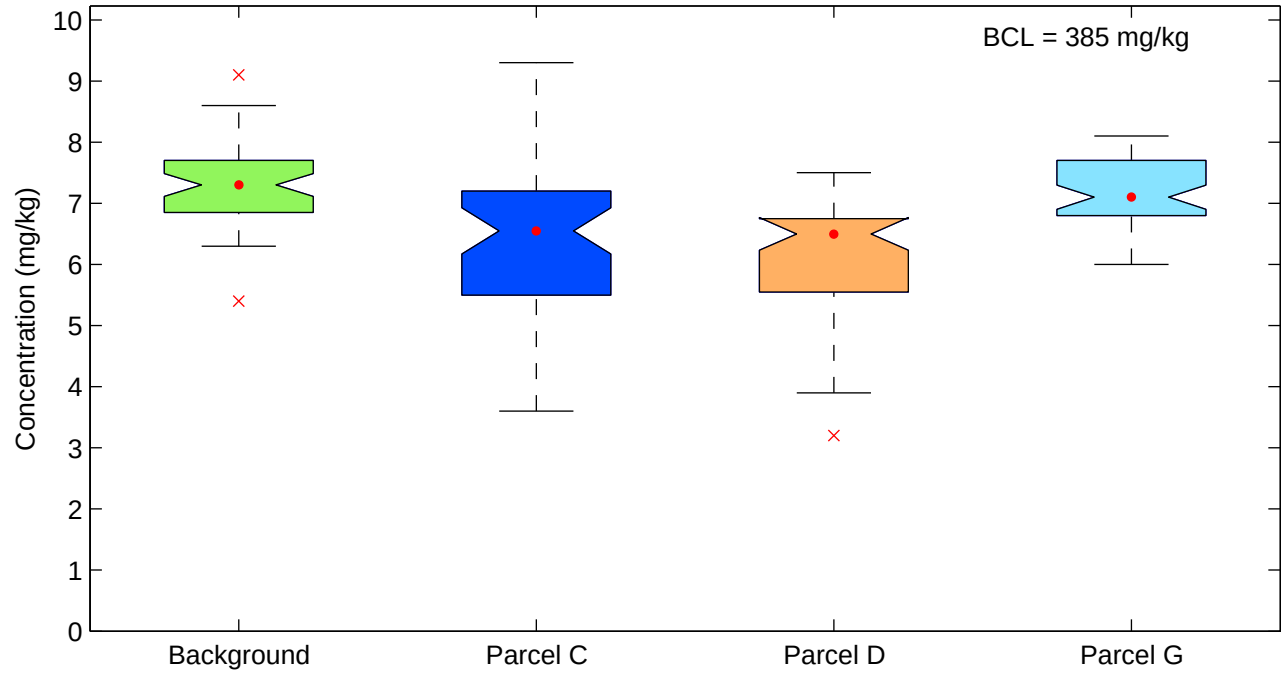


Figure I1−11. Background vs. Parcels C, D, and G Boxplots
Cobalt



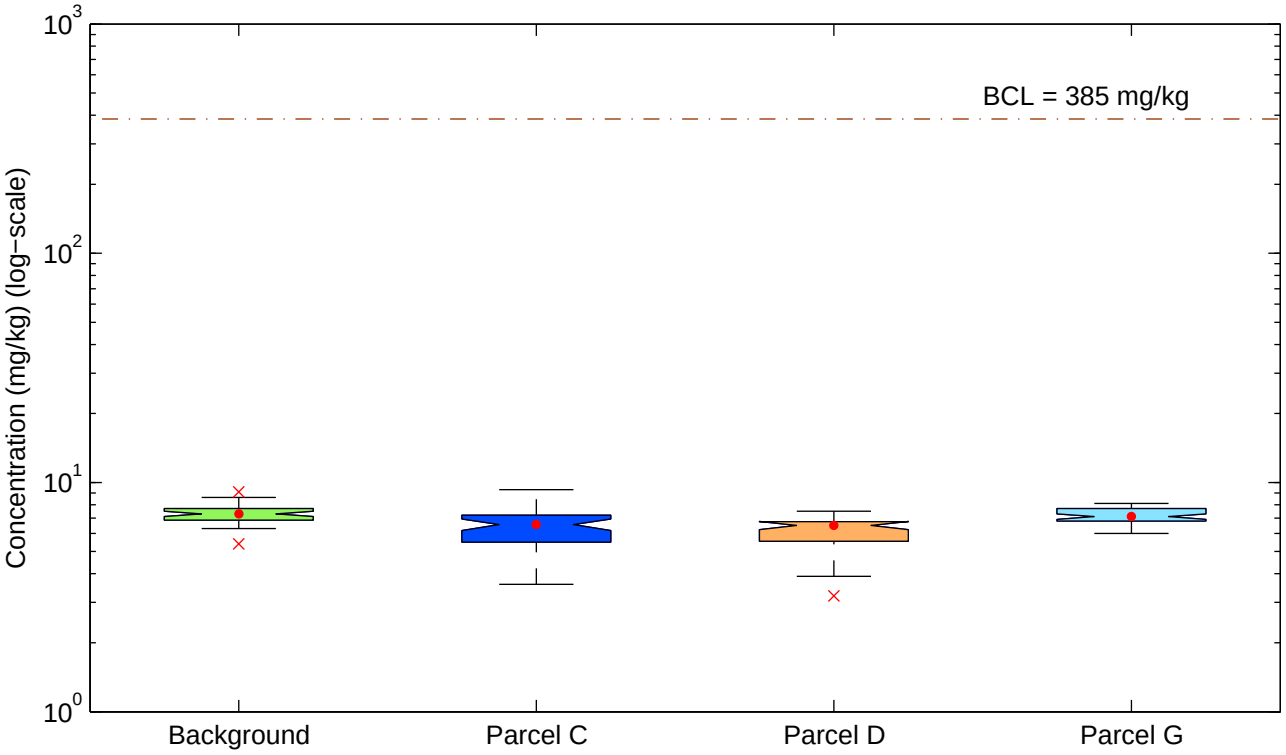
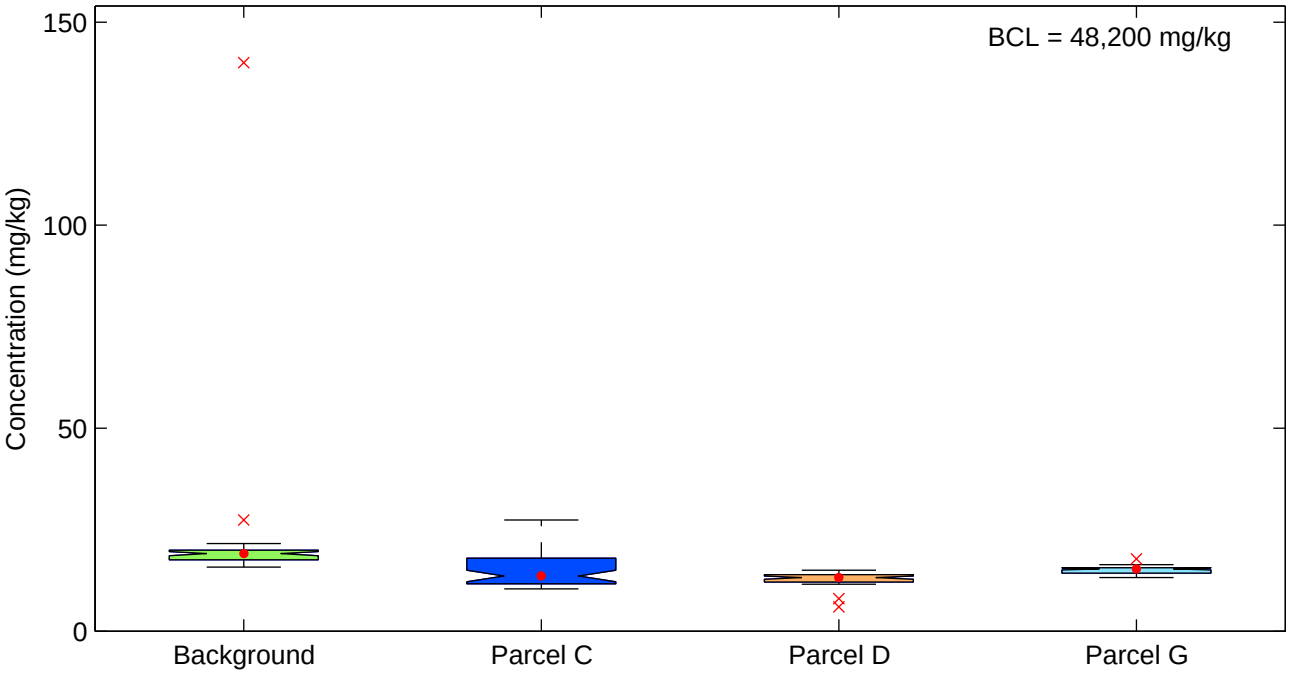


Figure I1−12. Background vs. Parcels C, D, and G Boxplots
Copper



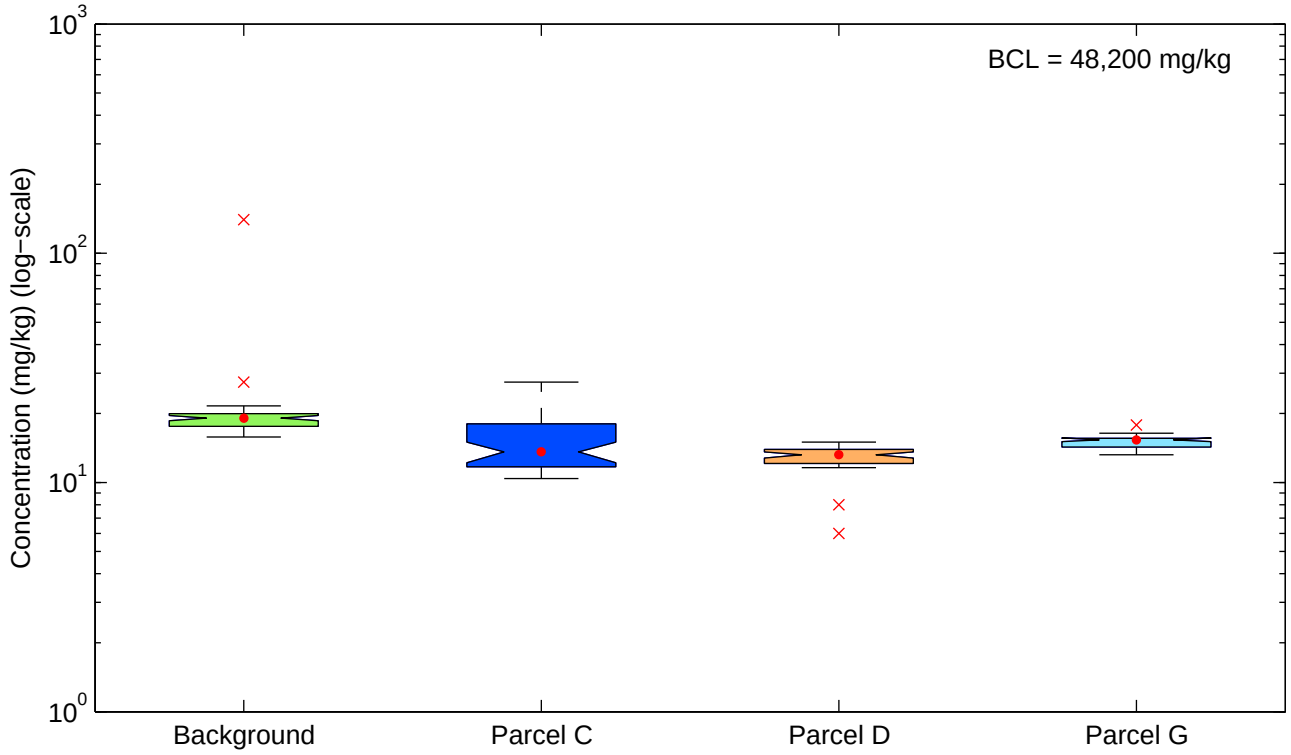
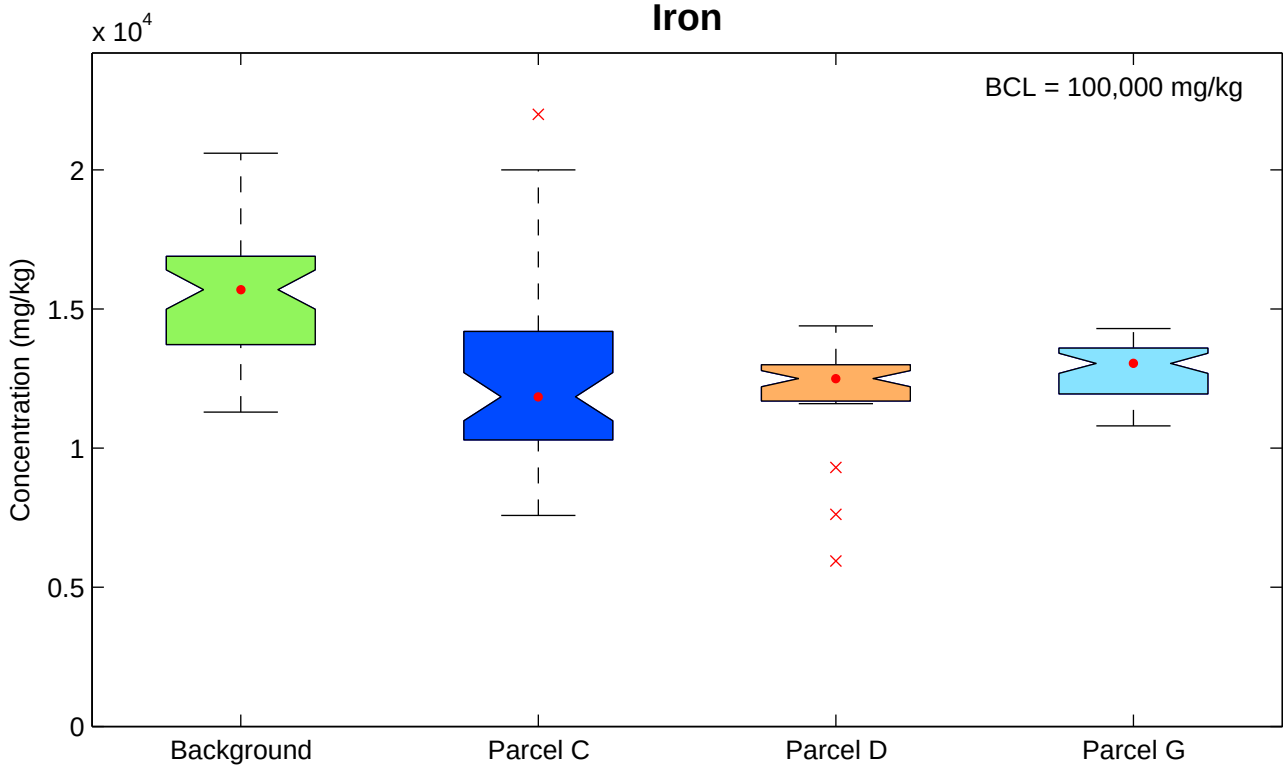


Figure I1−13. Background vs. Parcels C, D, and G Boxplots
Iron



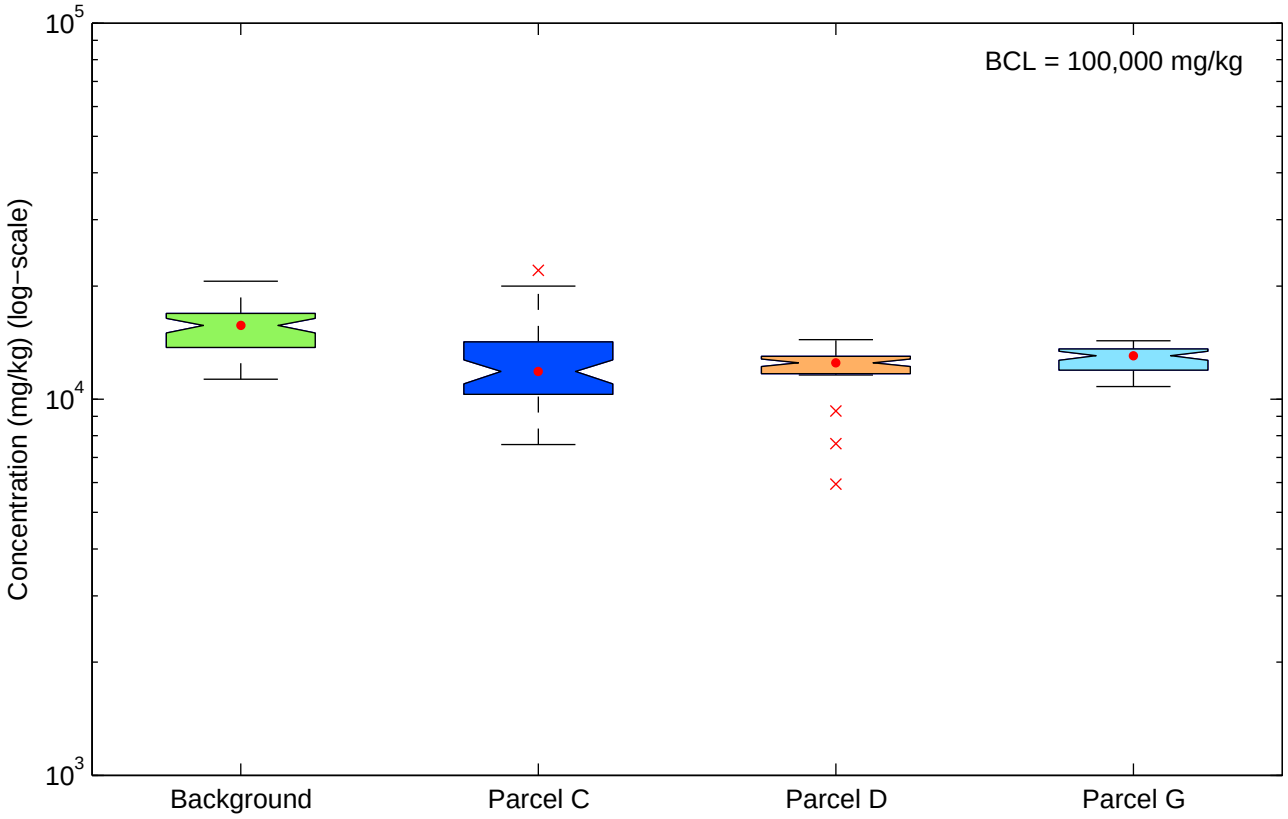
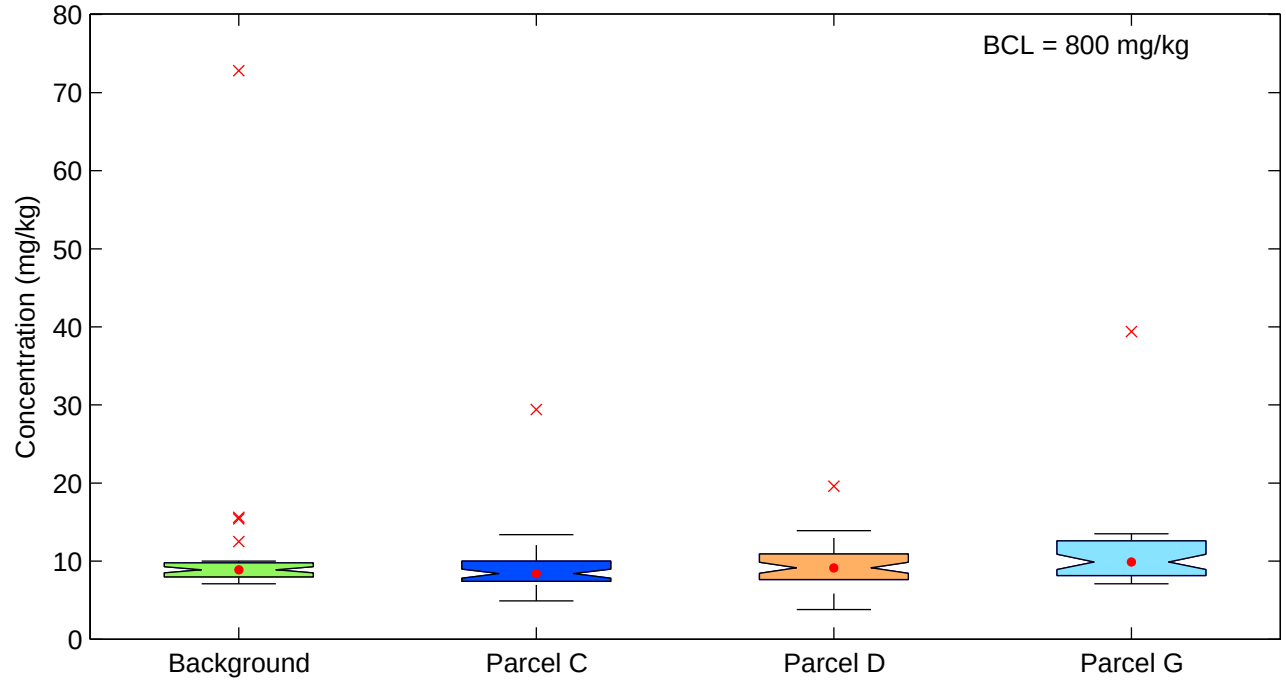


Figure I1−14. Background vs. Parcels C, D, and G Boxplots
Lead



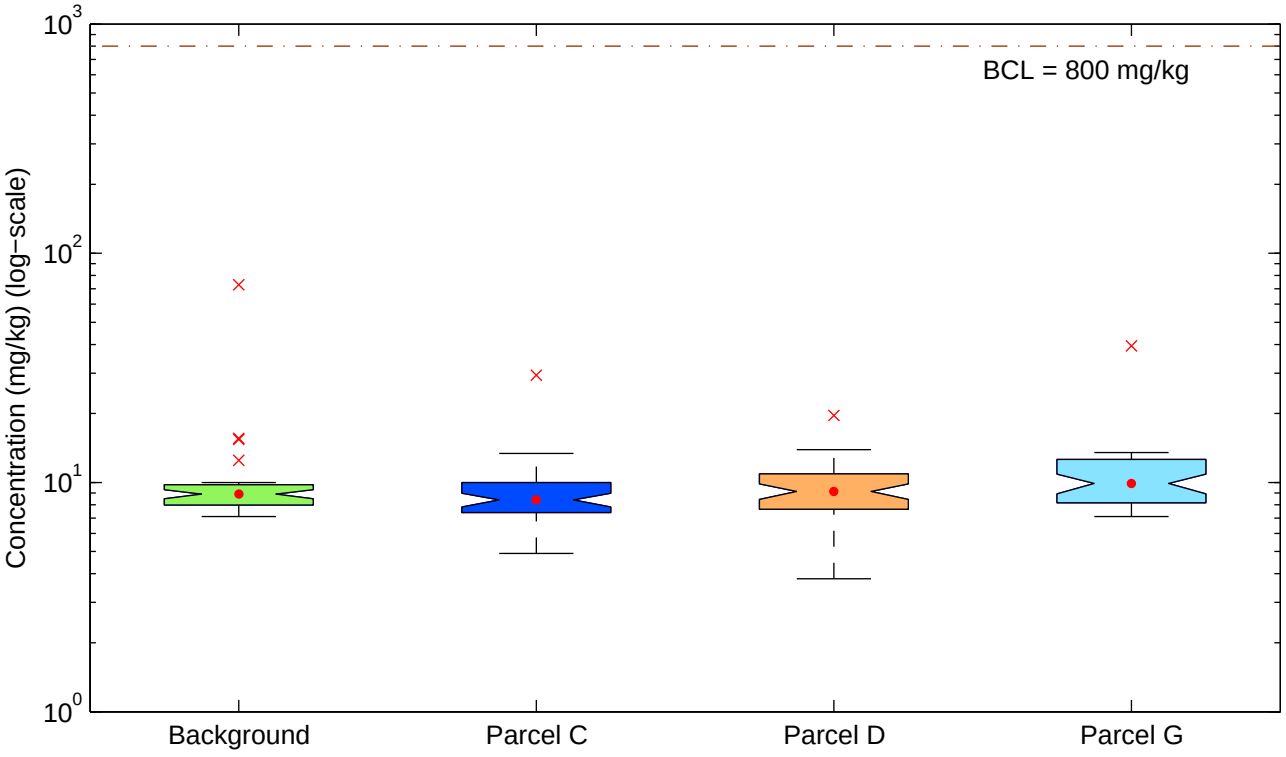
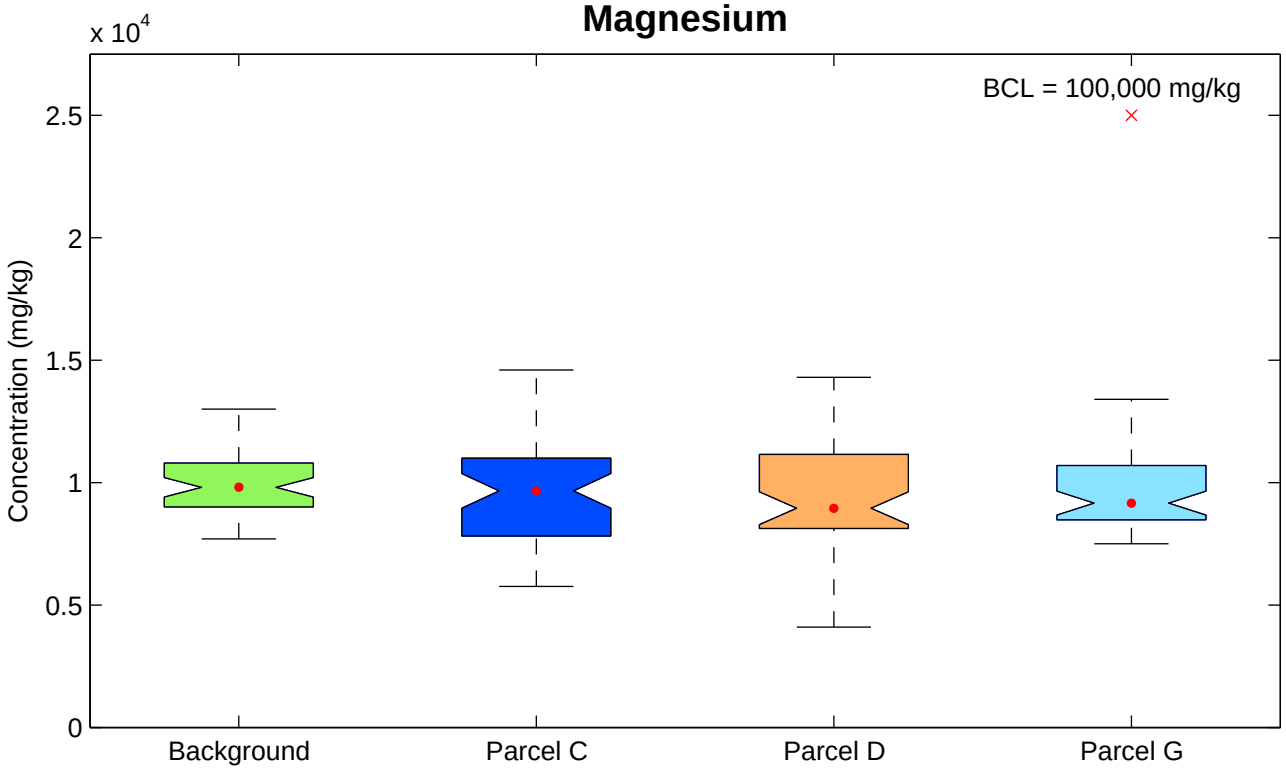


Figure I1−15. Background vs. Parcels C, D, and G Boxplots
Magnesium



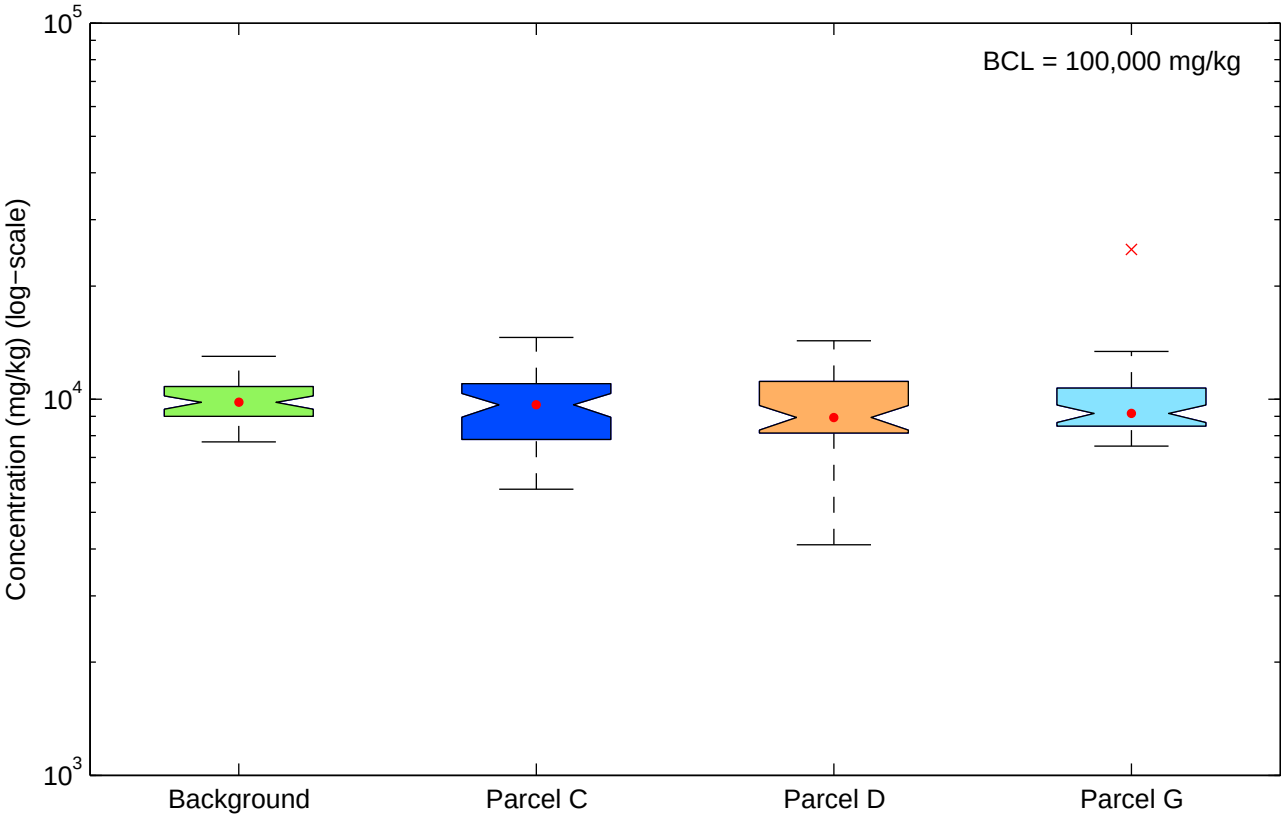
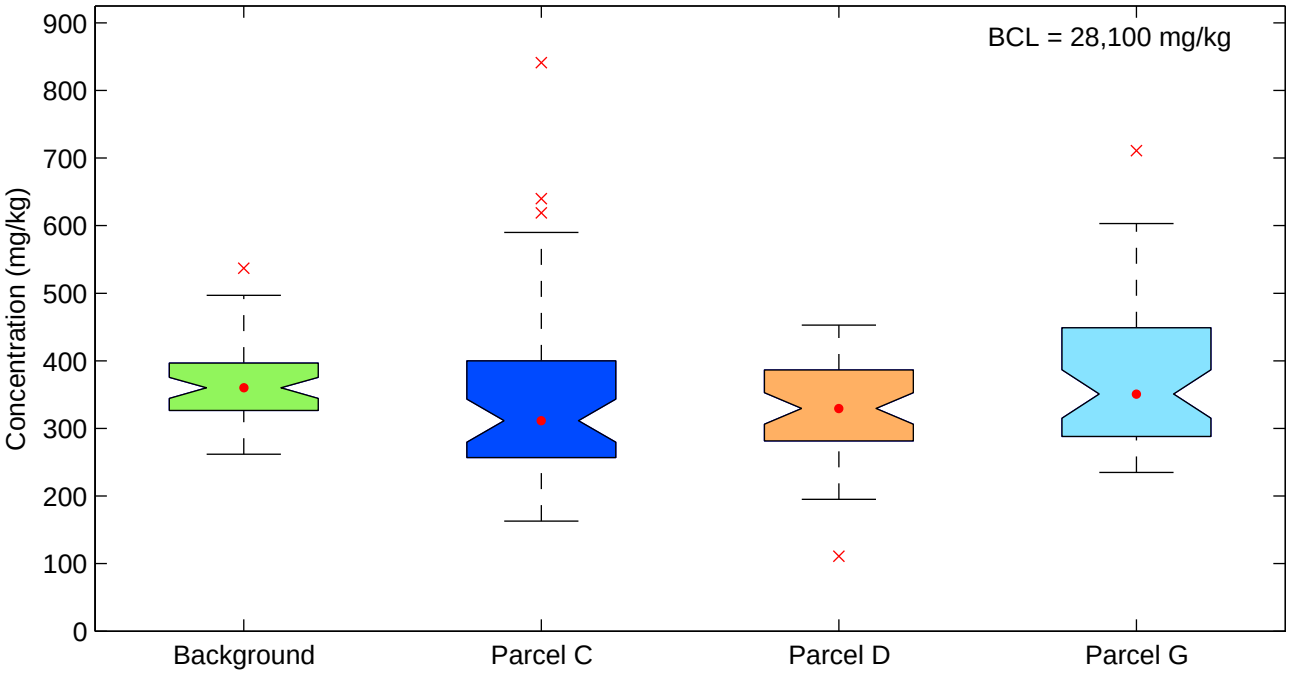


Figure I1−16. Background vs. Parcels C, D, and G Boxplots
Manganese



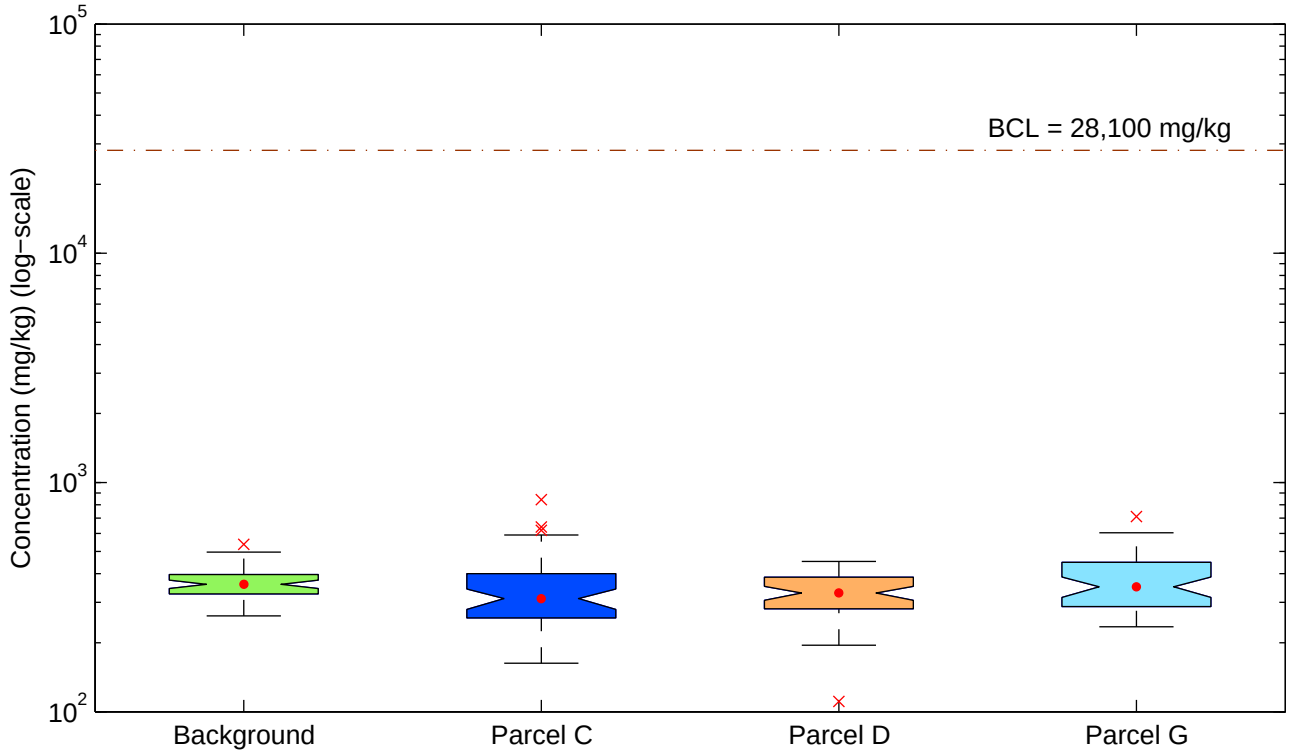
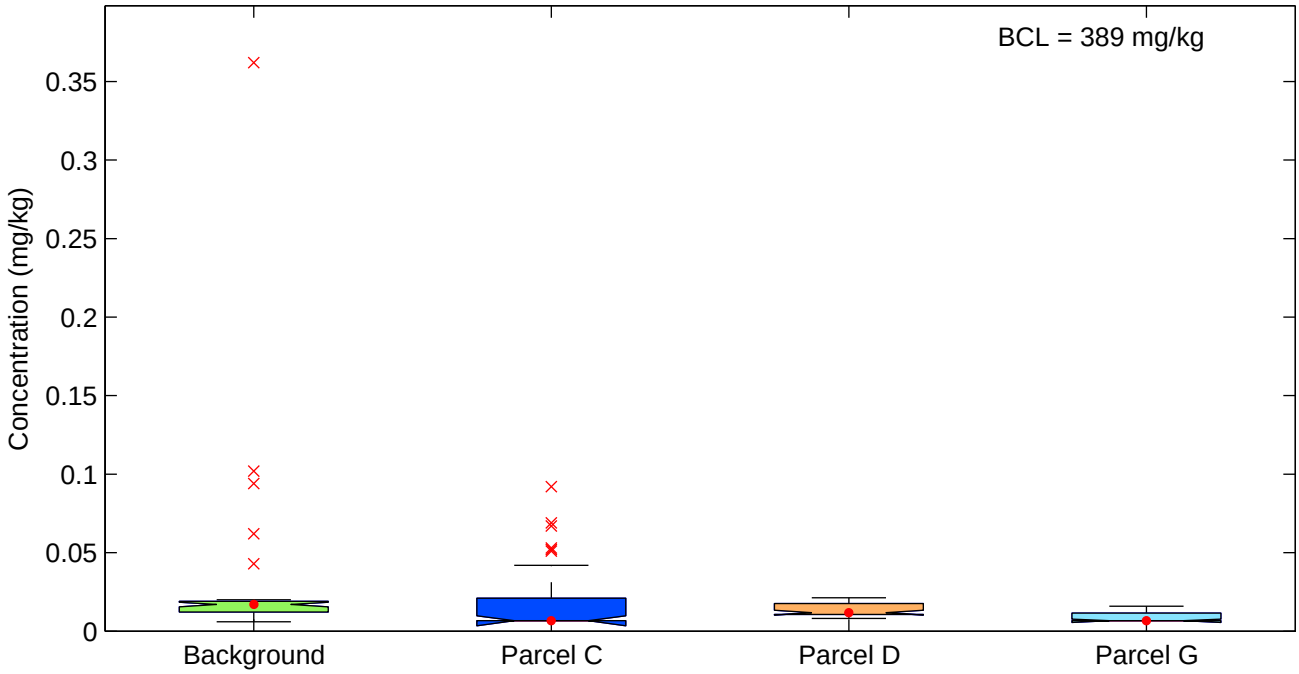


Figure I1−17. Background vs. Parcels C, D, and G Boxplots
Mercury



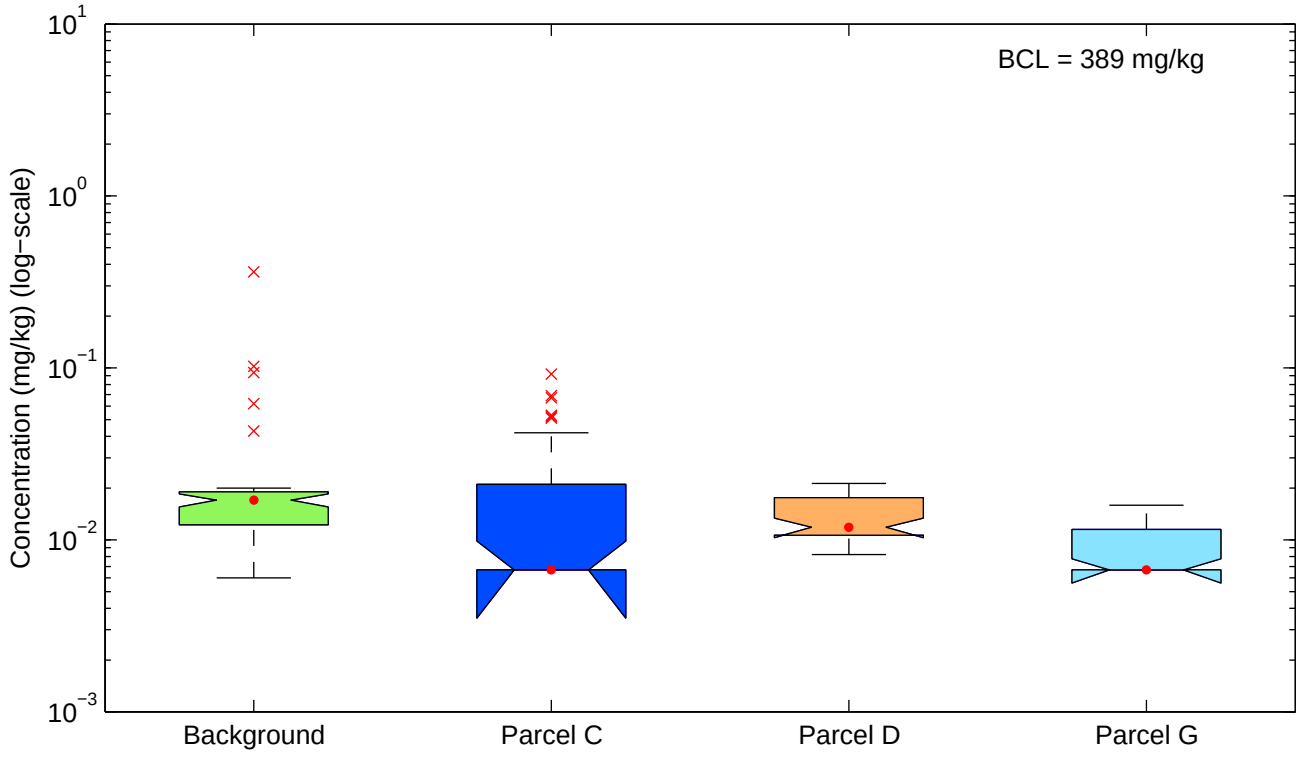
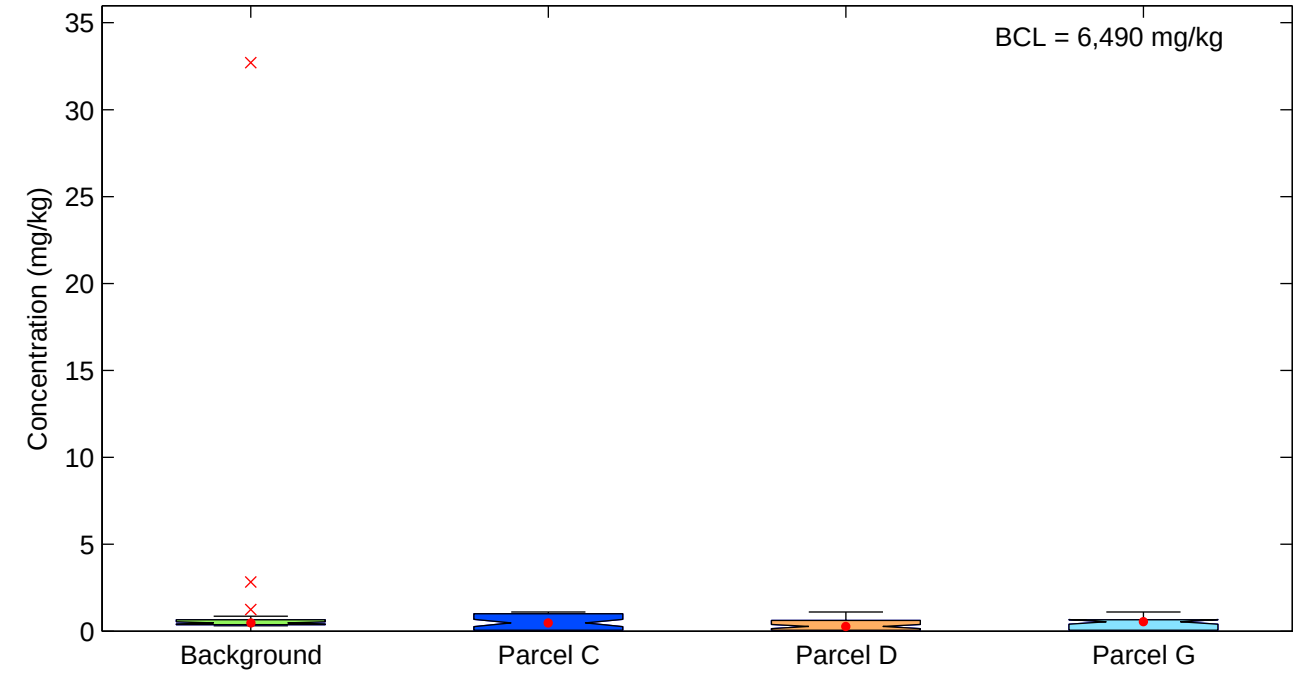


Figure I1−18. Background vs. Parcels C, D, and G Boxplots
Molybdenum



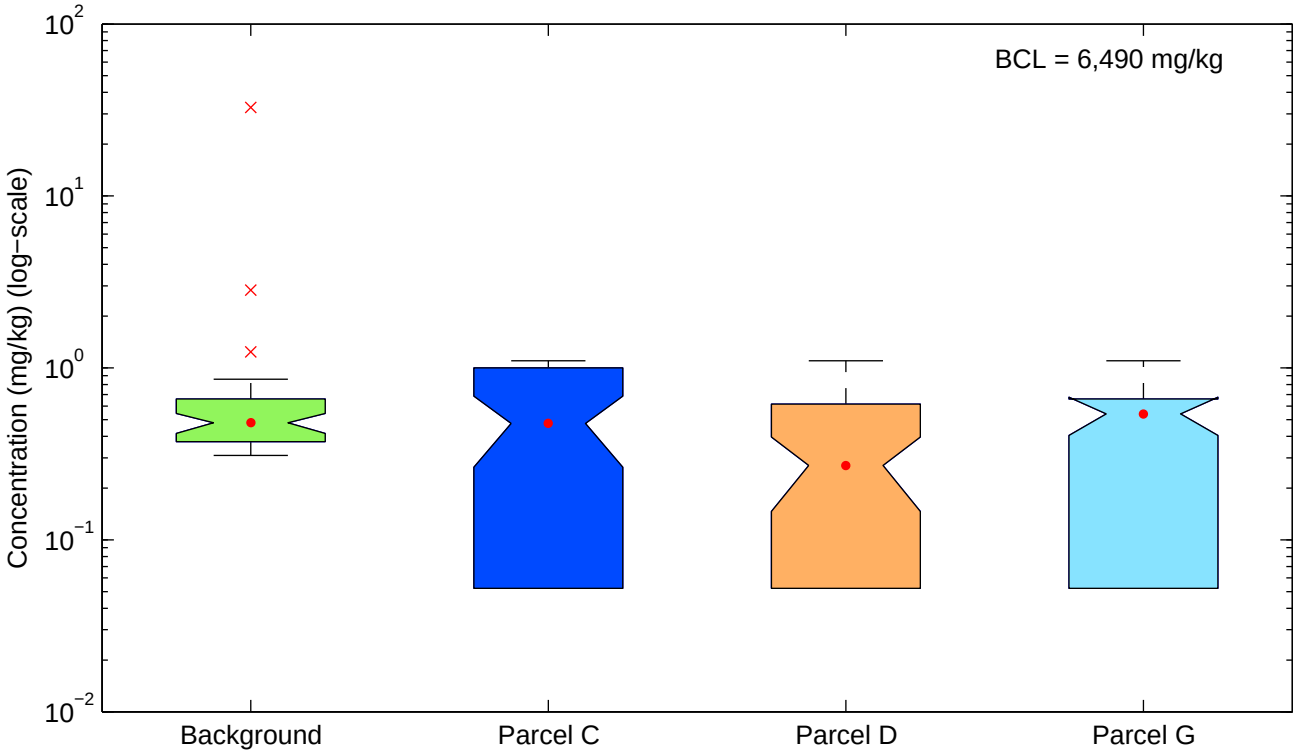
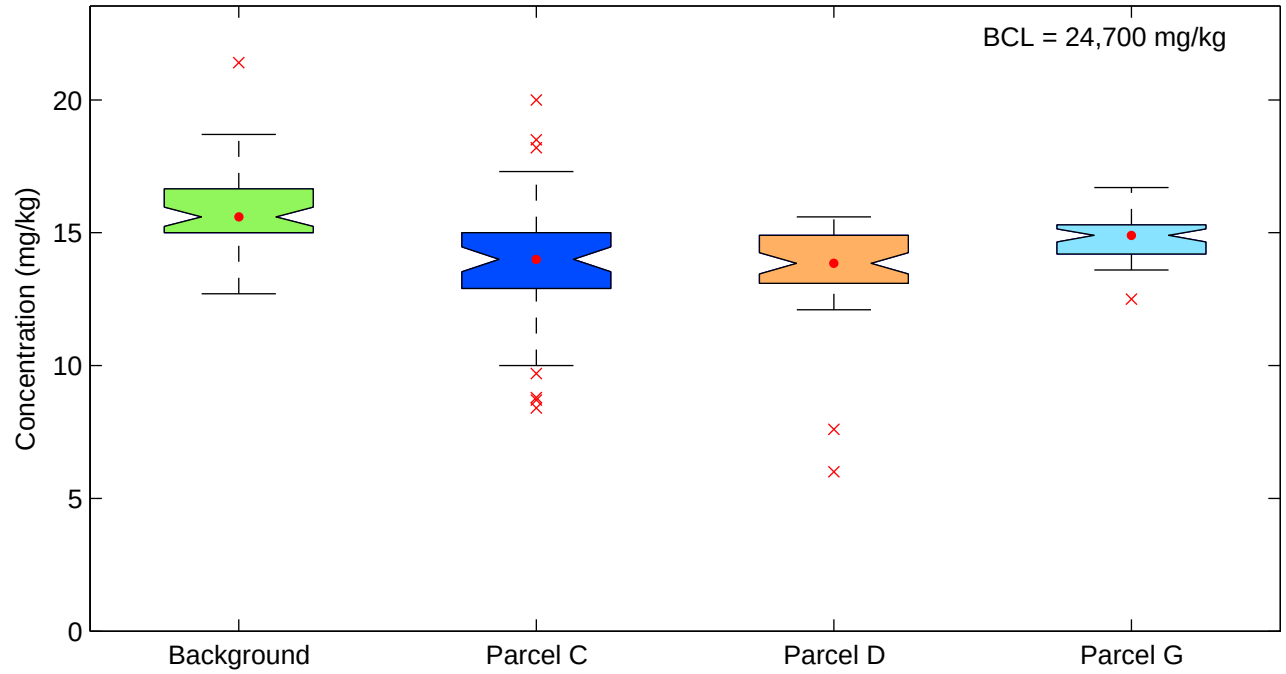


Figure I1−19. Background vs. Parcels C, D, and G Boxplots
Nickel



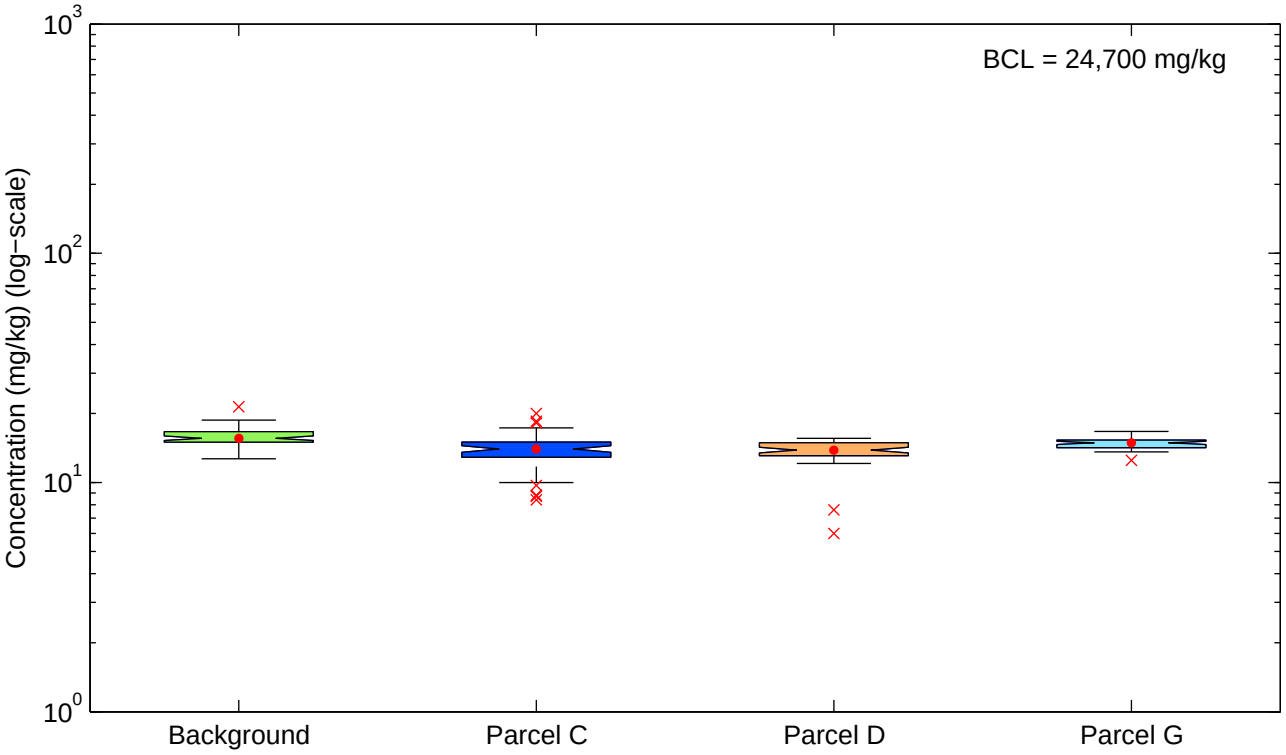
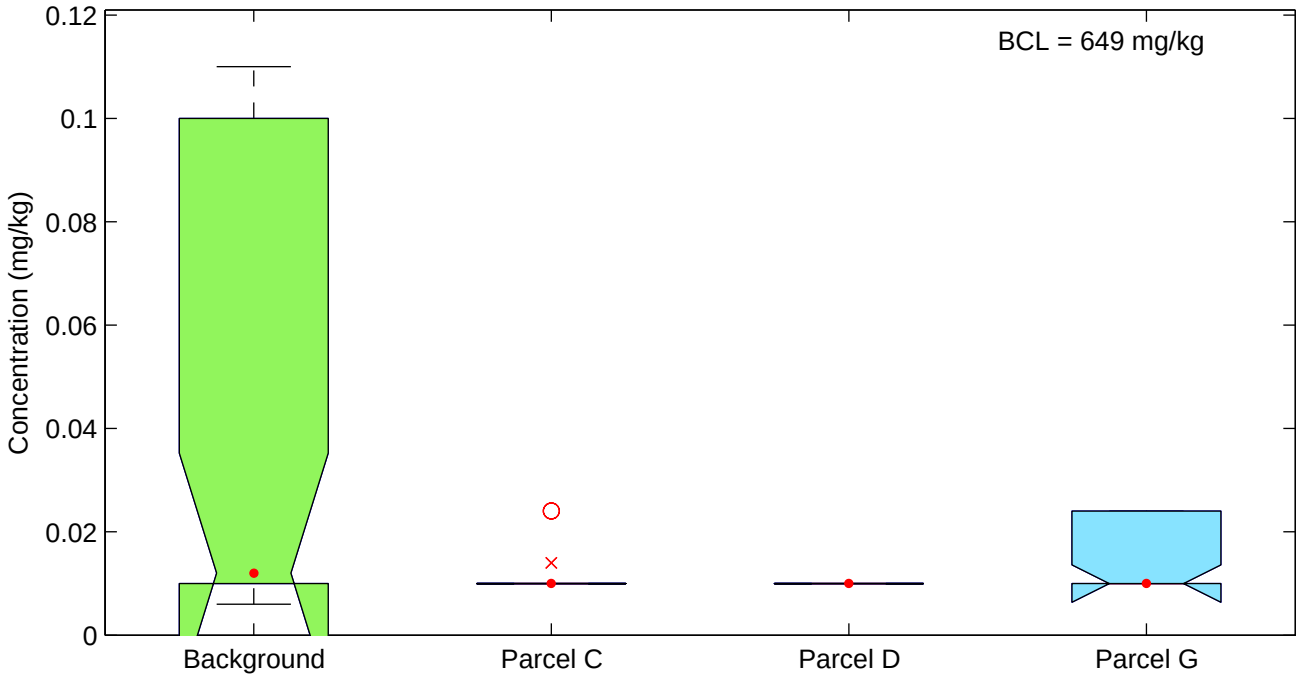


Figure I1−20. Background vs. Parcels C, D, and G Boxplots
Platinum



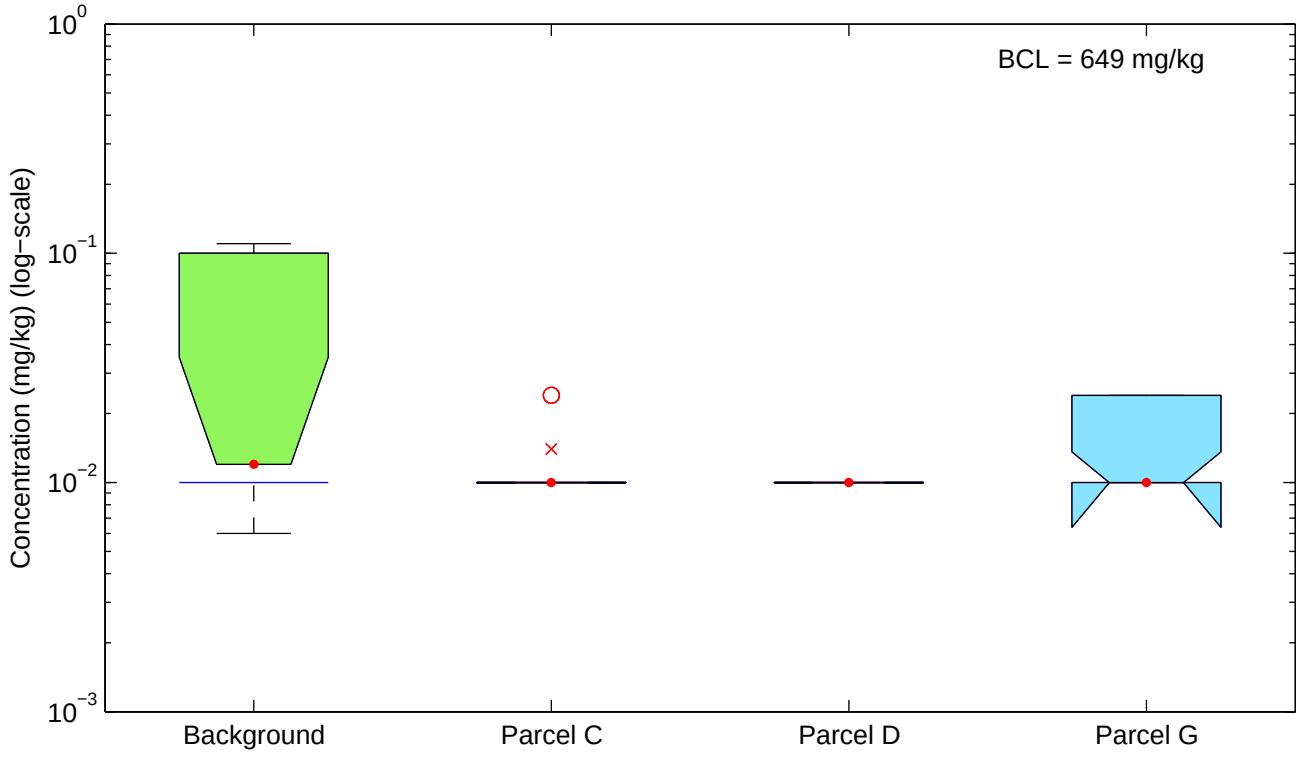
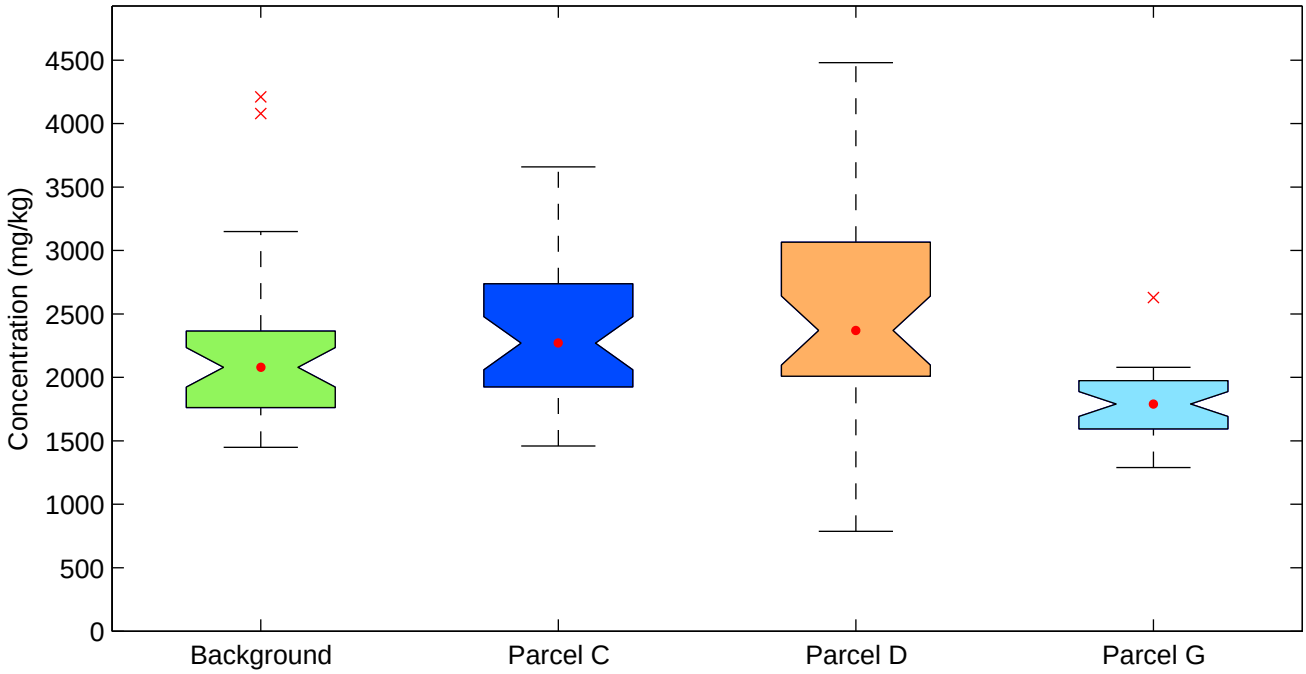


Figure I1−21. Background vs. Parcels C, D, and G Boxplots
Potassium



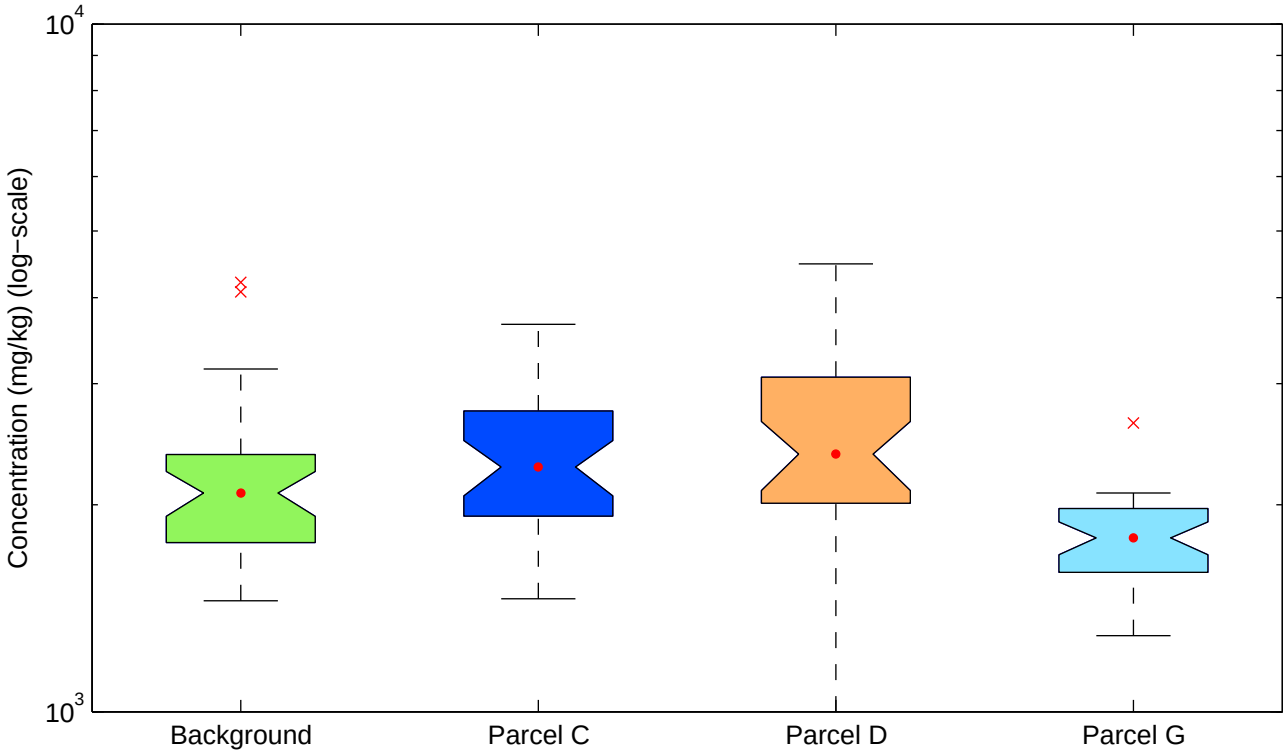
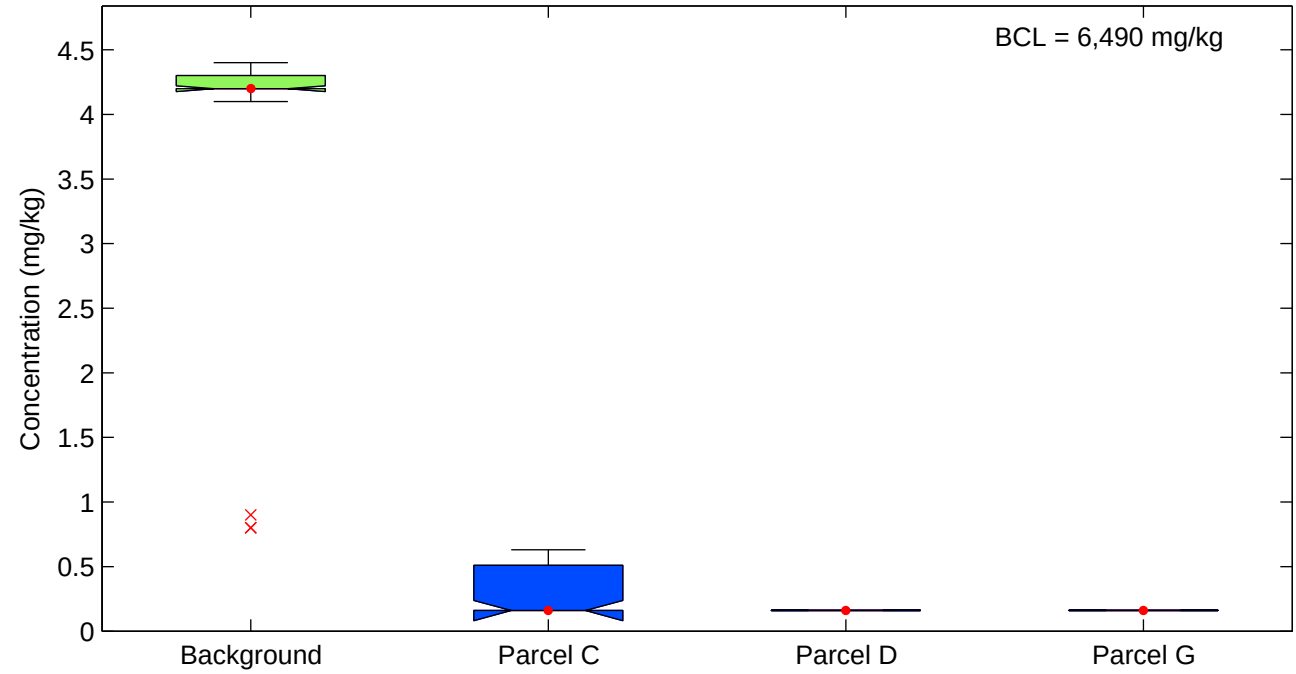


Figure I1−22. Background vs. Parcels C, D, and G Boxplots
Selenium



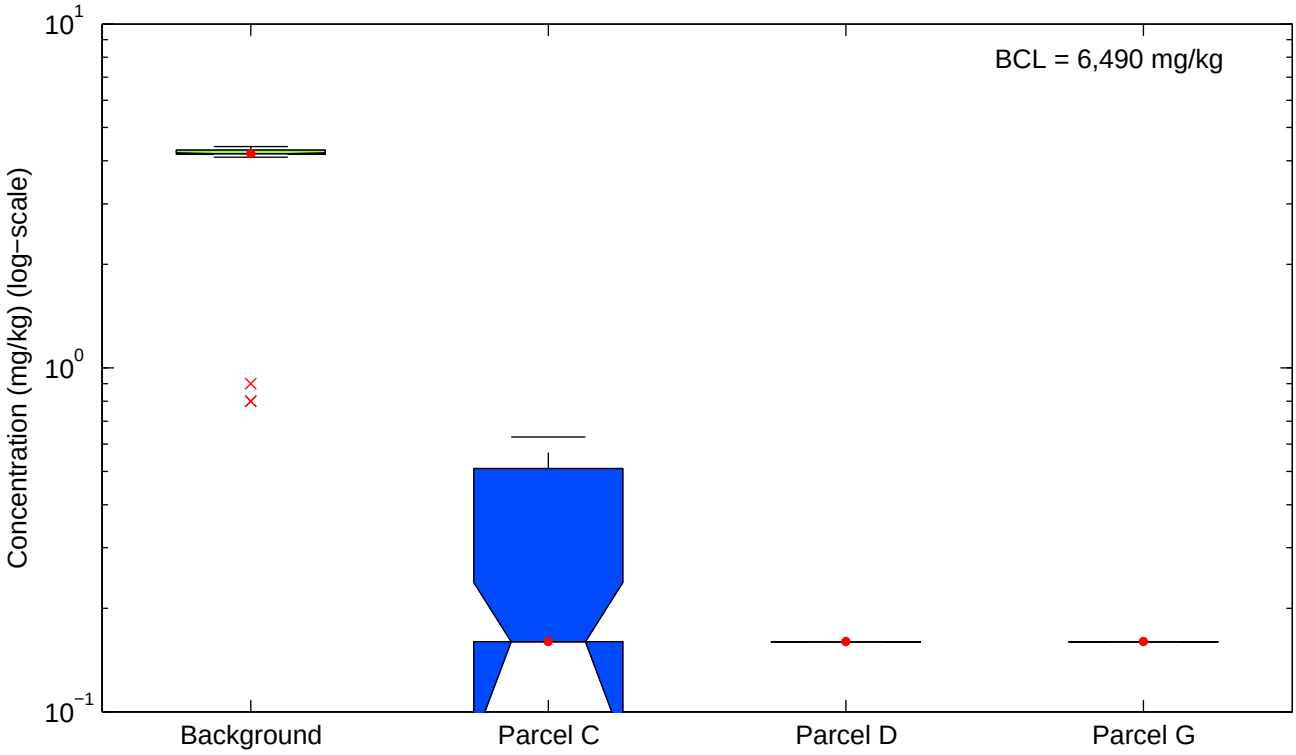
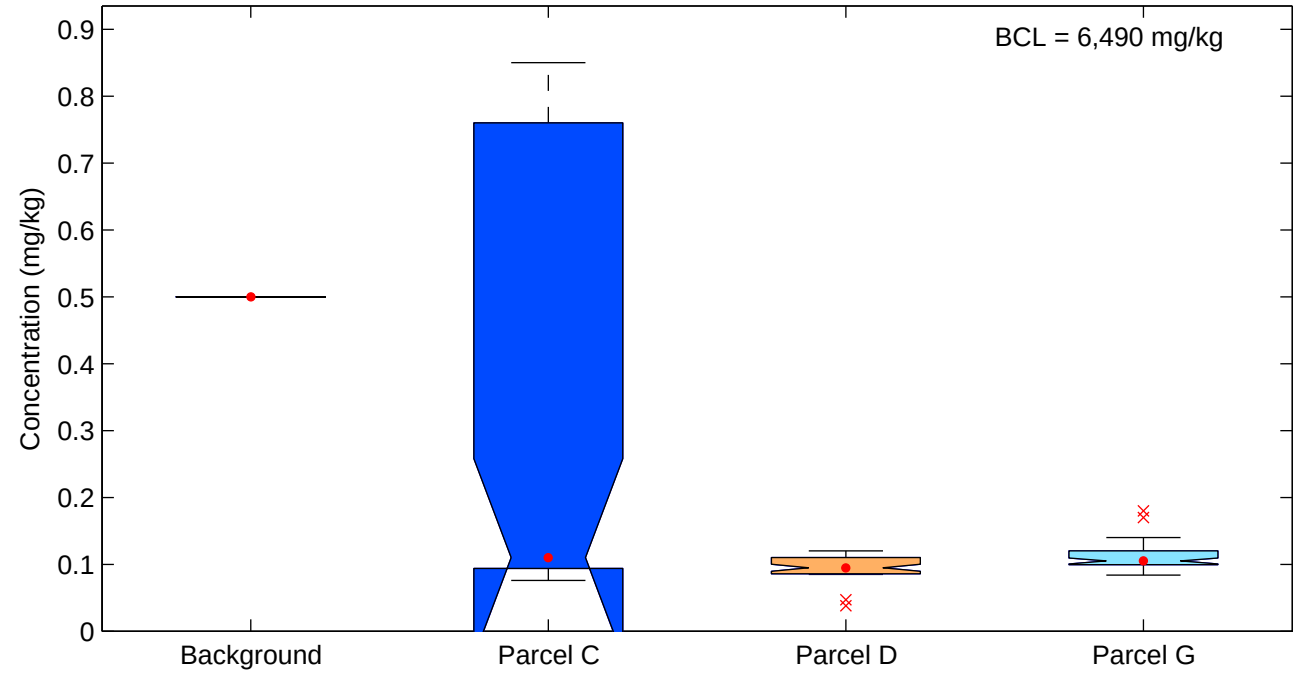


Figure I1−23. Background vs. Parcels C, D, and G Boxplots
Silver



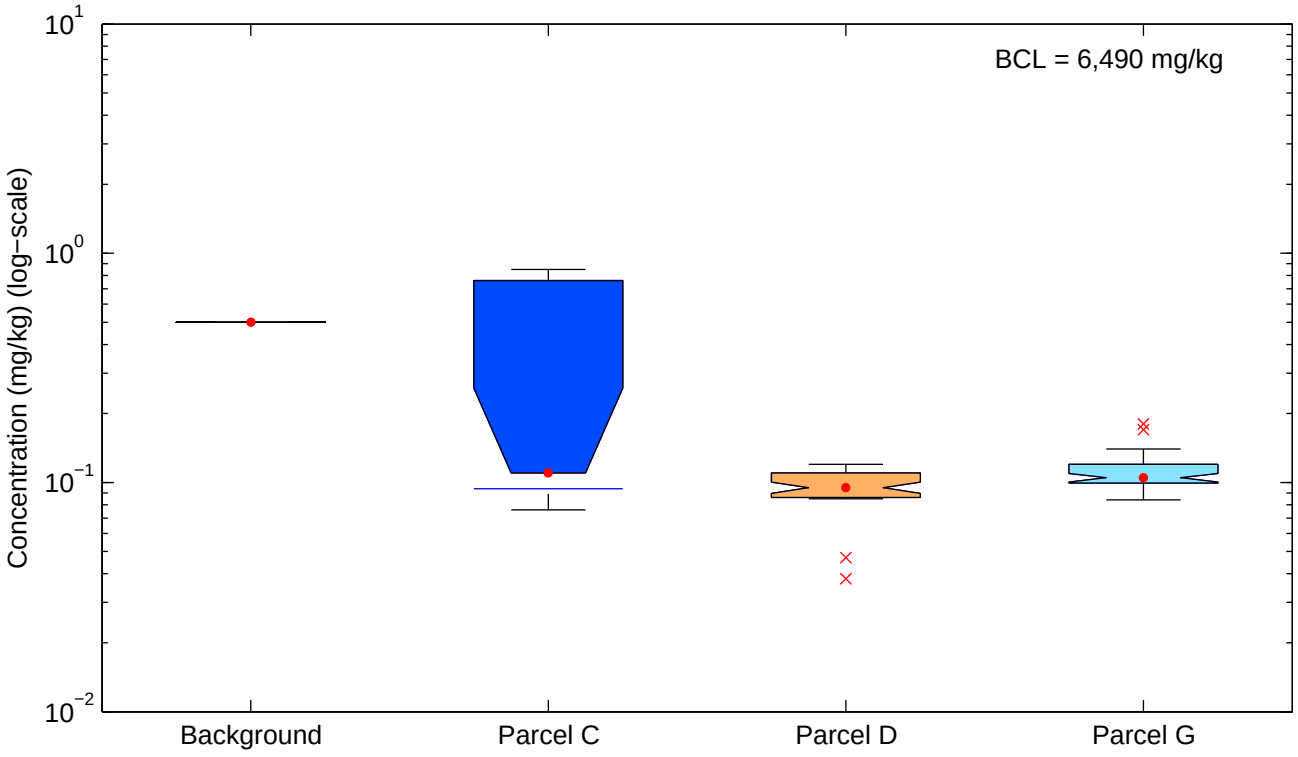
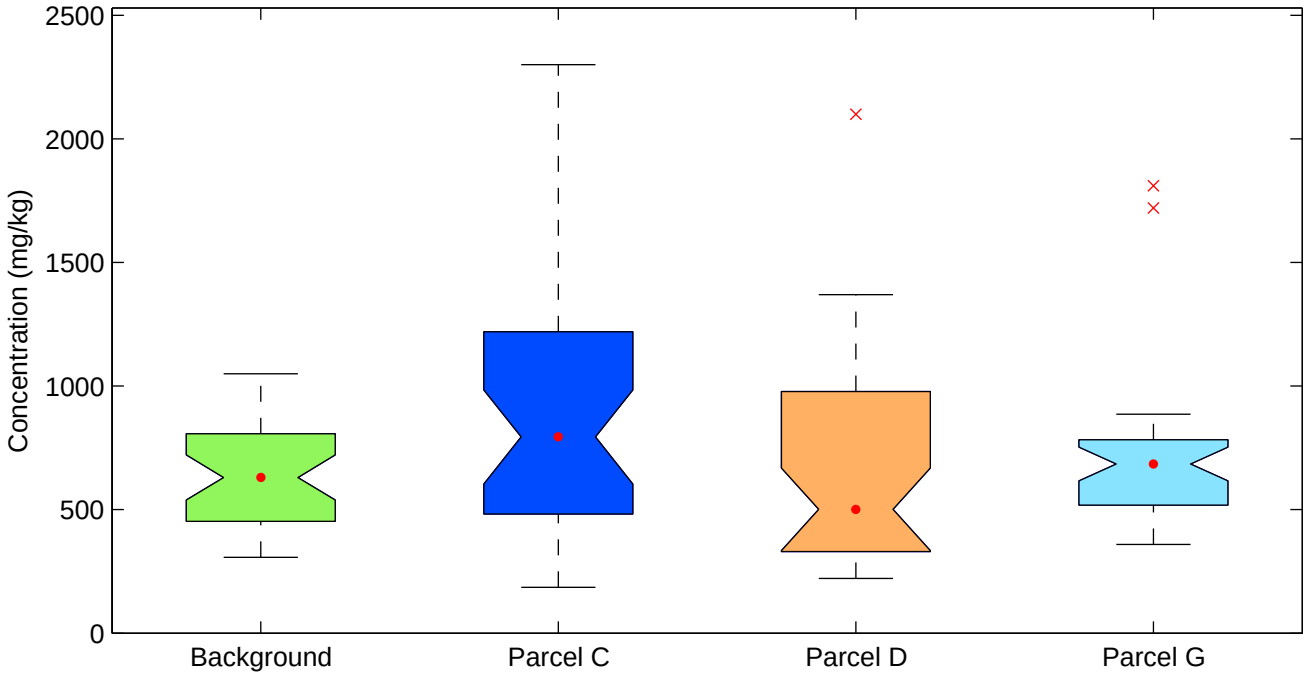


Figure I1−24. Background vs. Parcels C, D, and G Boxplots
Sodium



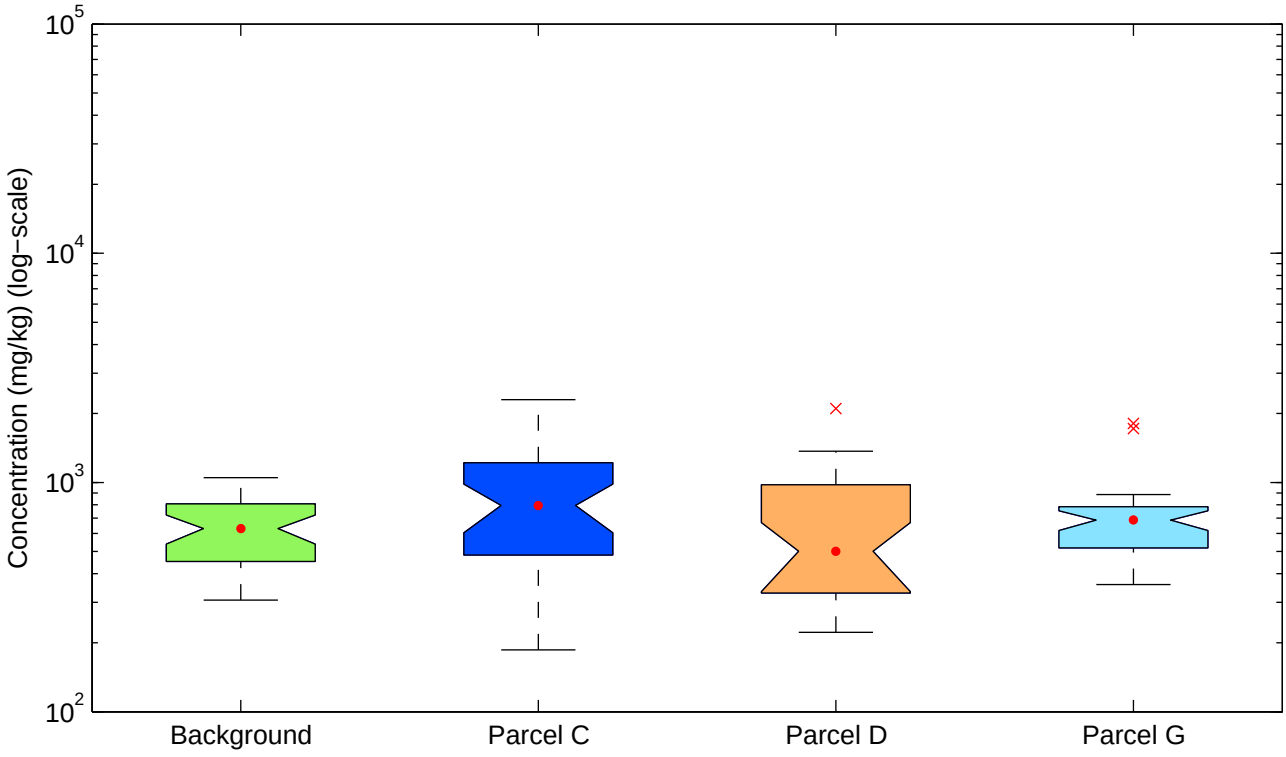
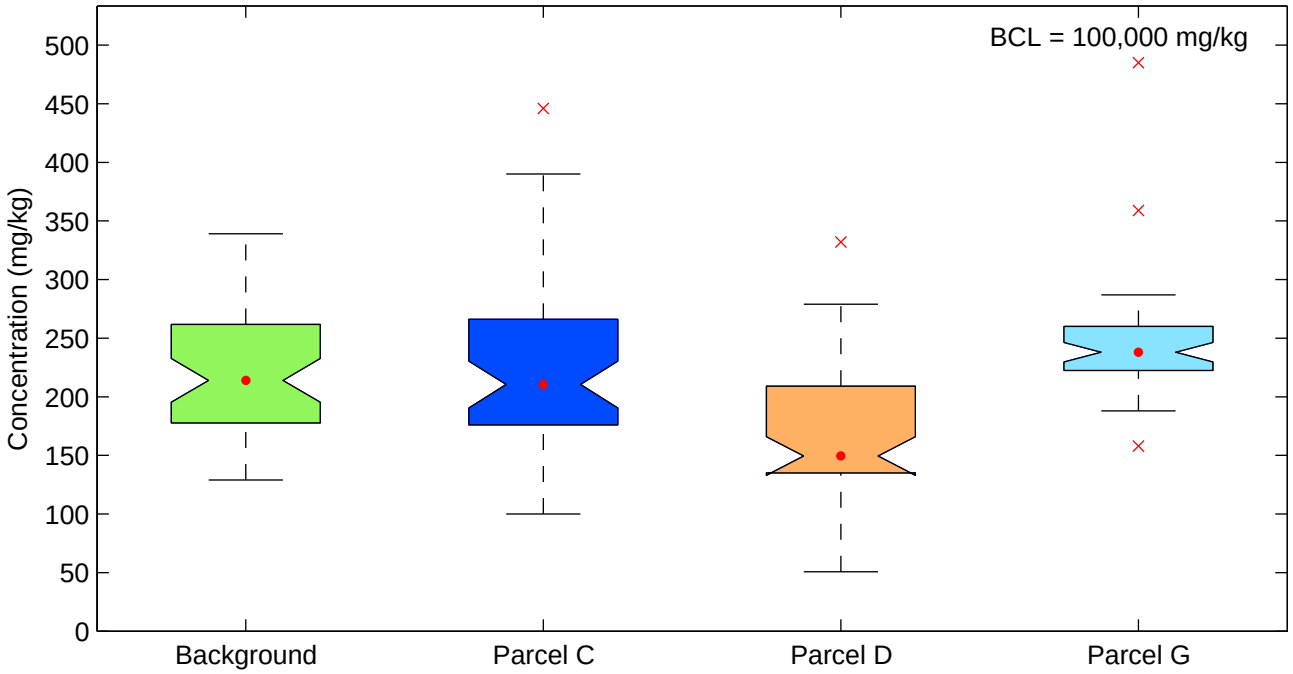


Figure I1−25. Background vs. Parcels C, D, and G Boxplots
Strontium



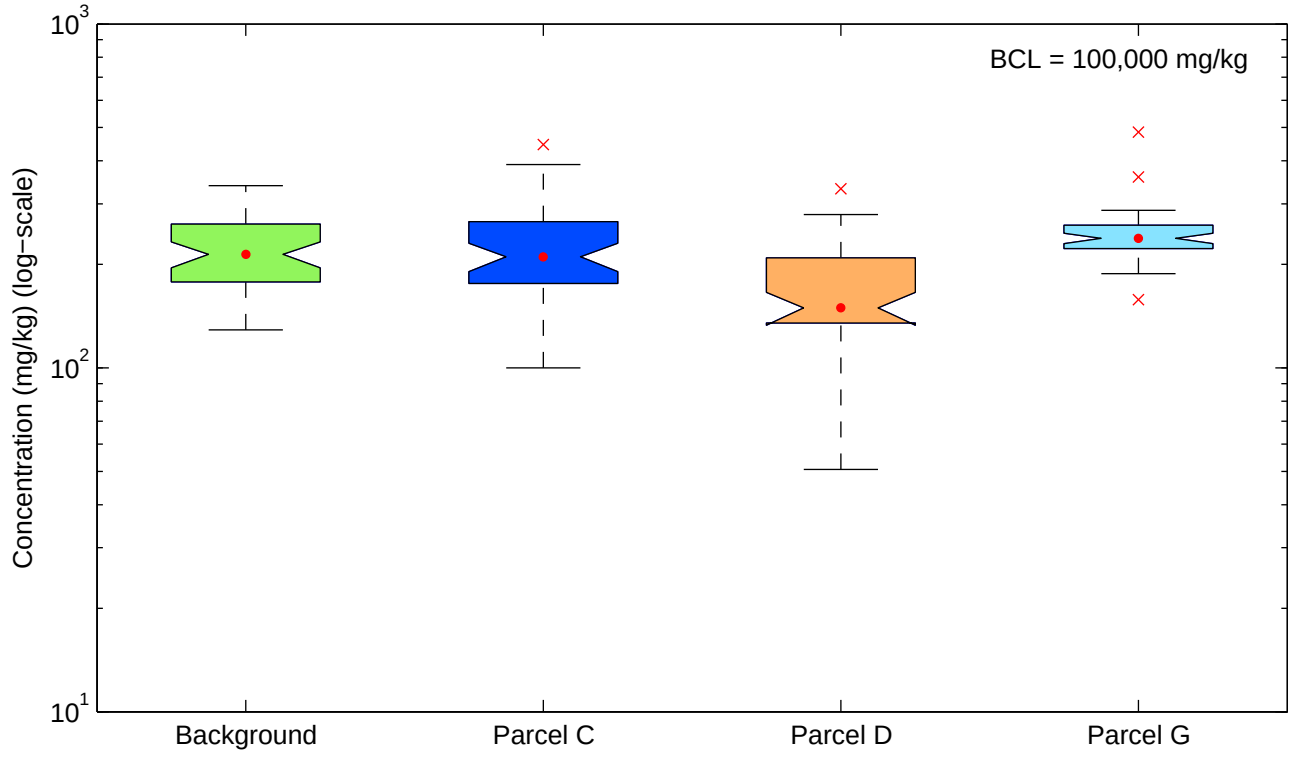
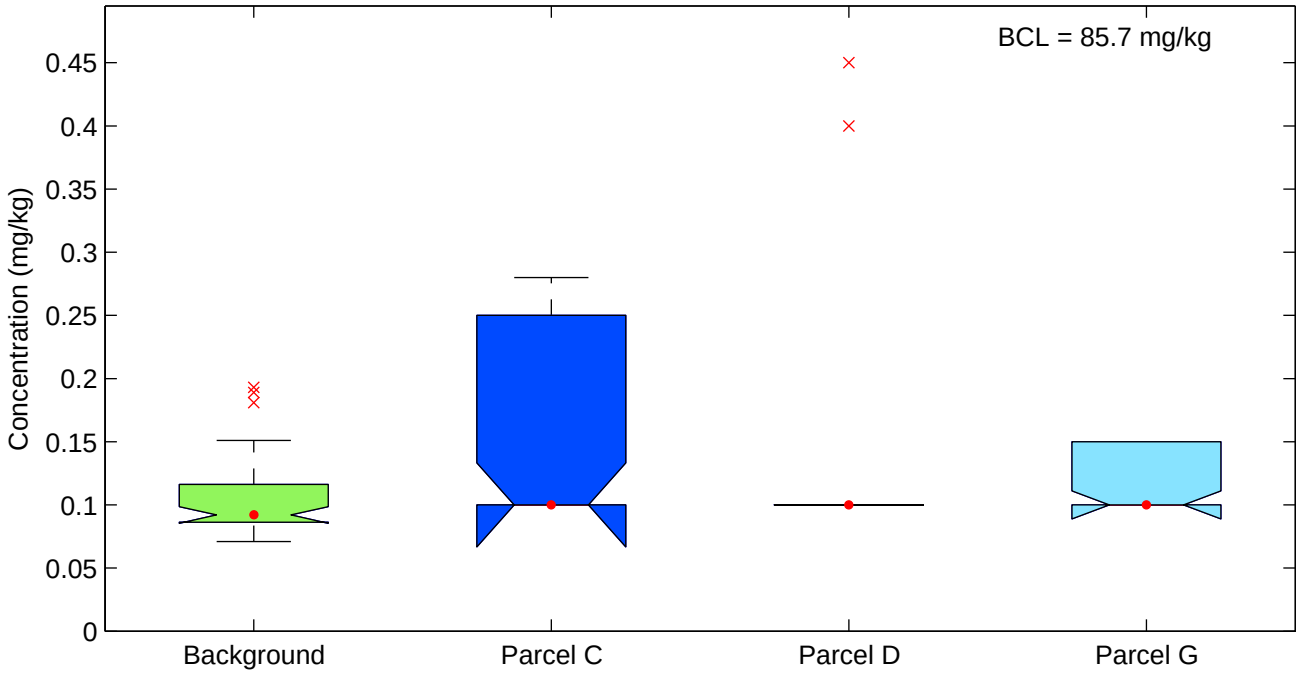


Figure I1−26. Background vs. Parcels C, D, and G Boxplots
Thallium



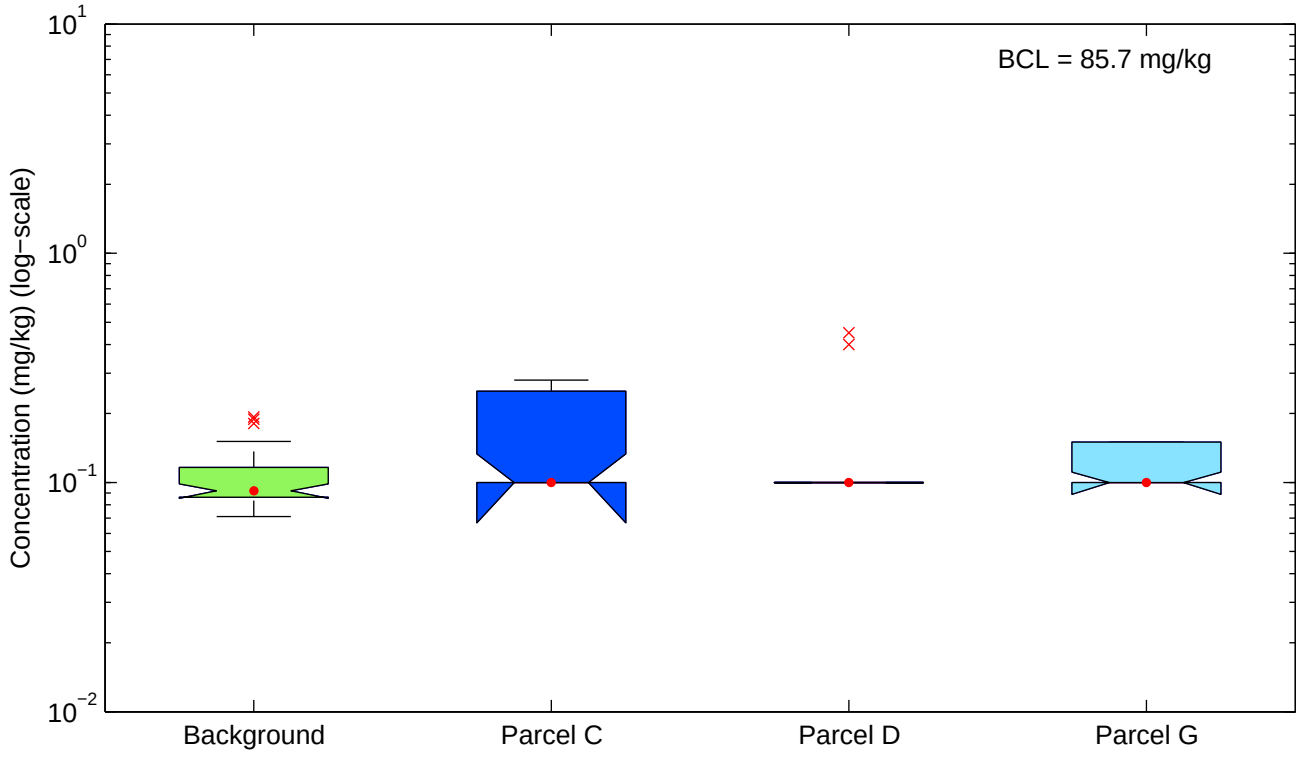
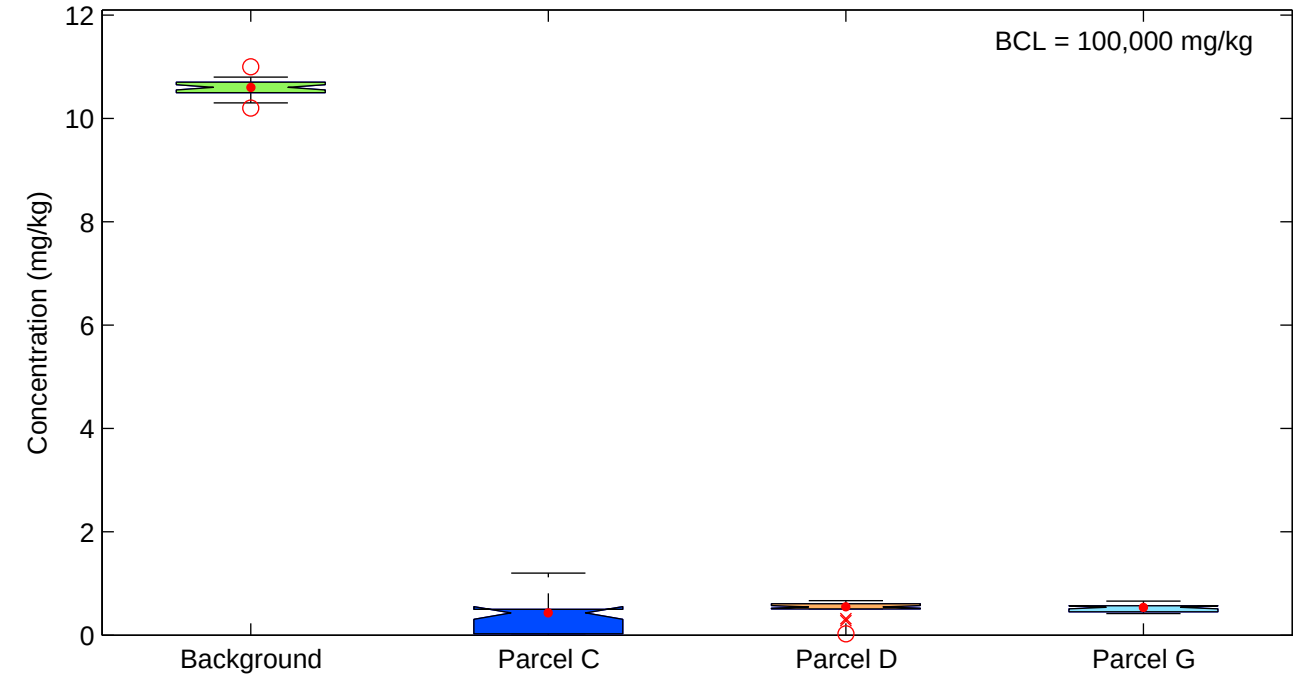


Figure I1−27. Background vs. Parcels C, D, and G Boxplots
Tin



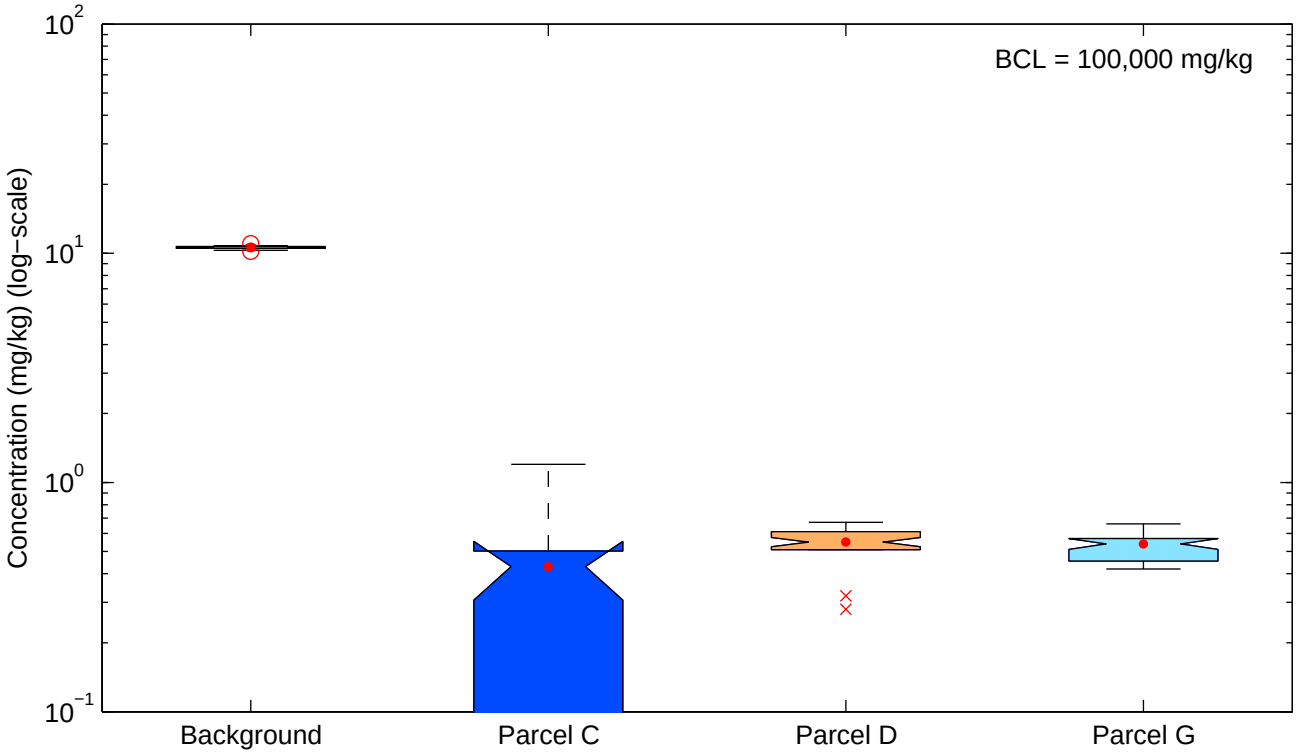
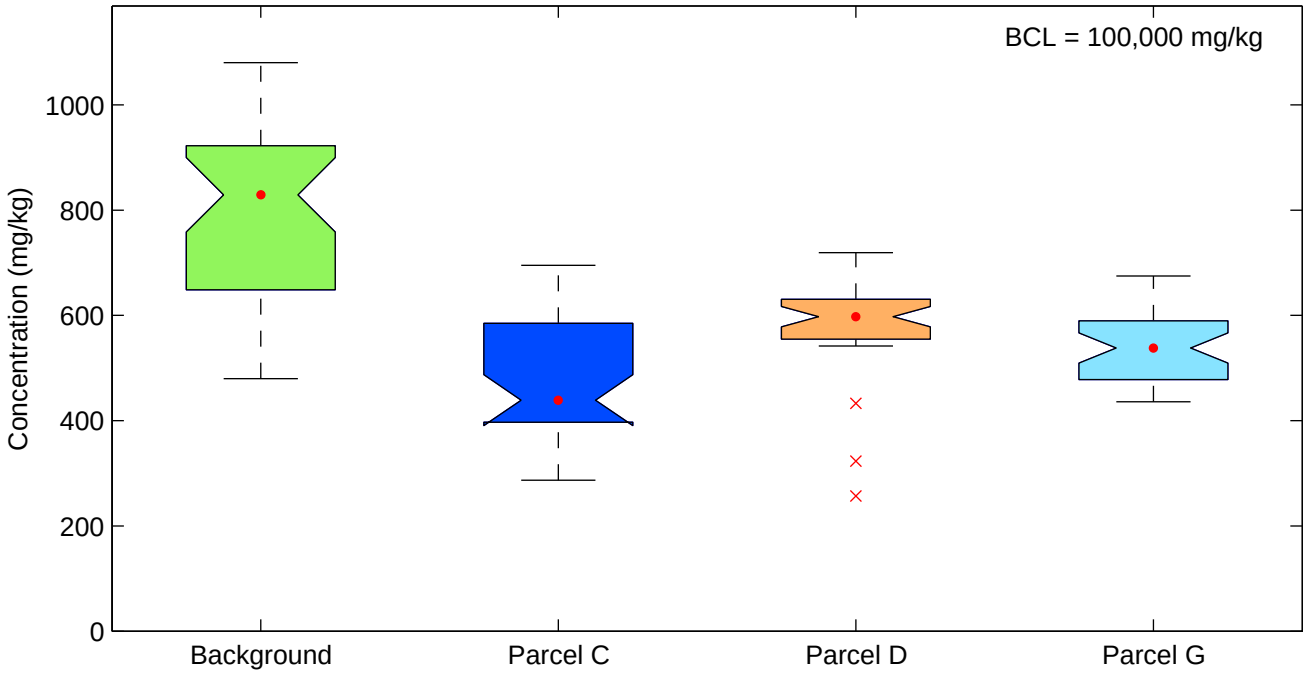


Figure I1−28. Background vs. Parcels C, D, and G Boxplots
Titanium



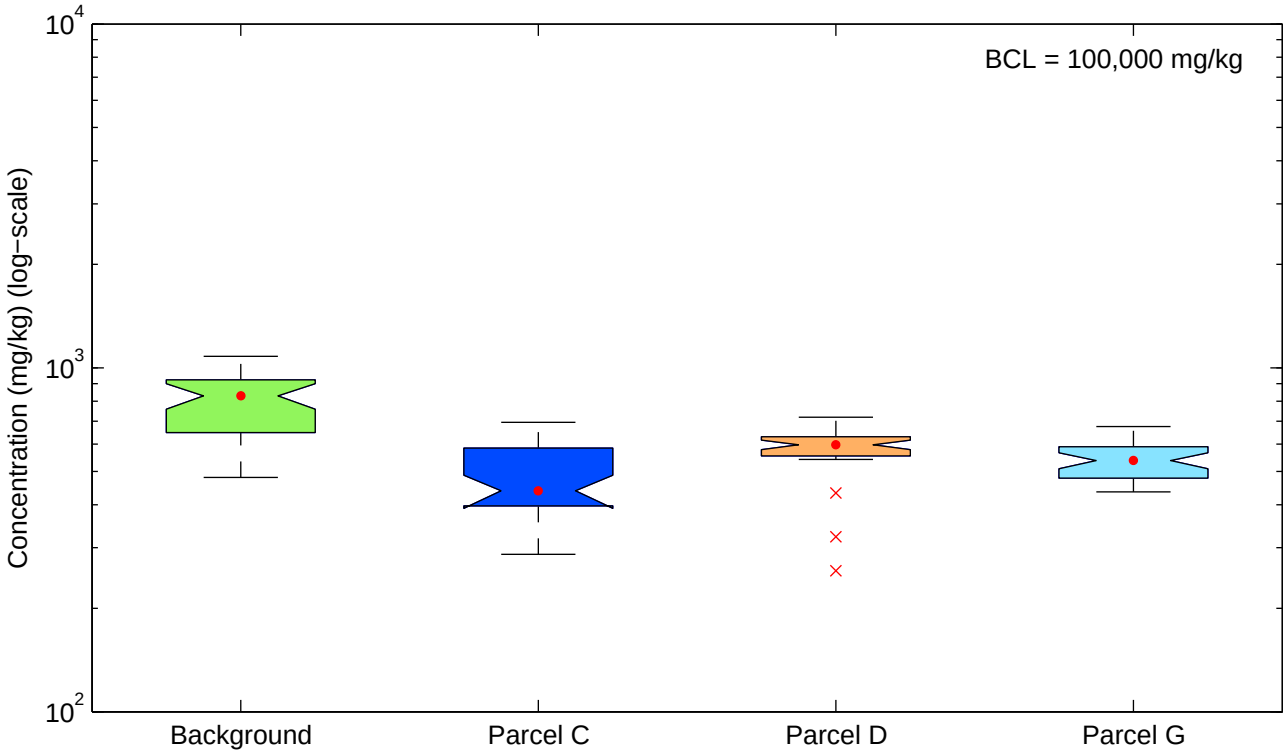
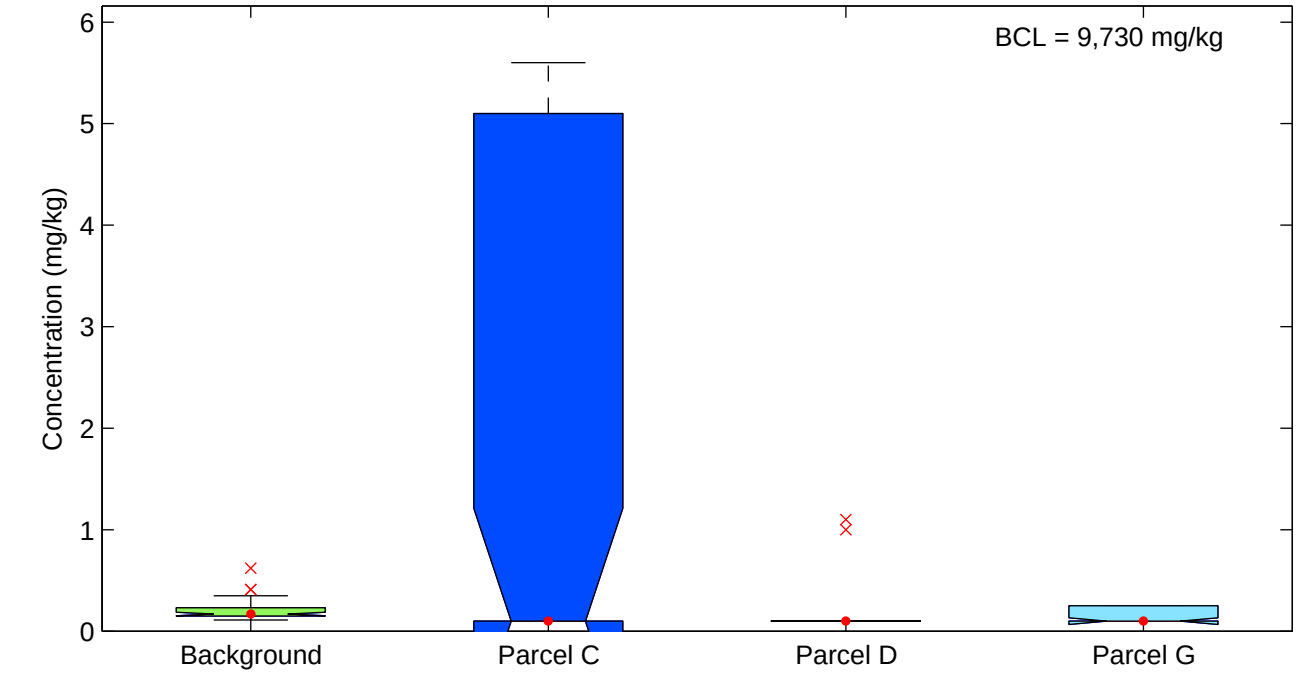


Figure I1−29. Background vs. Parcels C, D, and G Boxplots
Tungsten



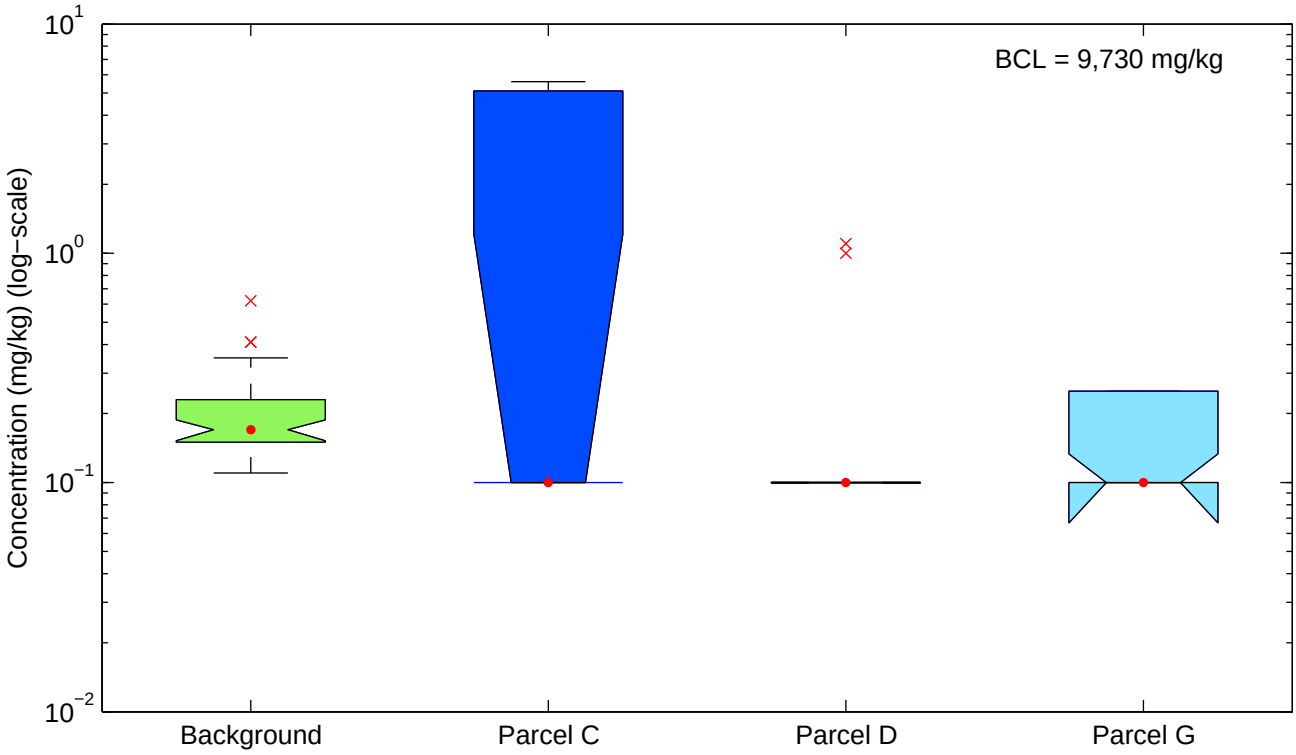
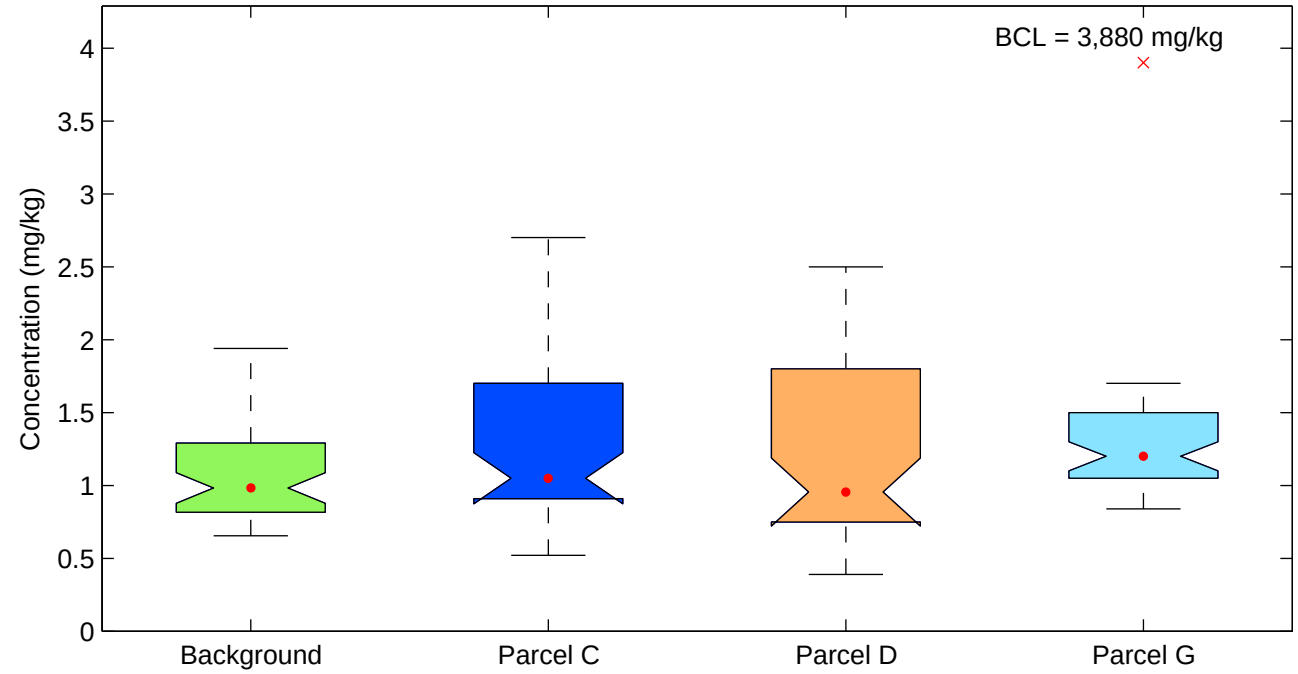


Figure I1−30. Background vs. Parcels C, D, and G Boxplots
Uranium (total)



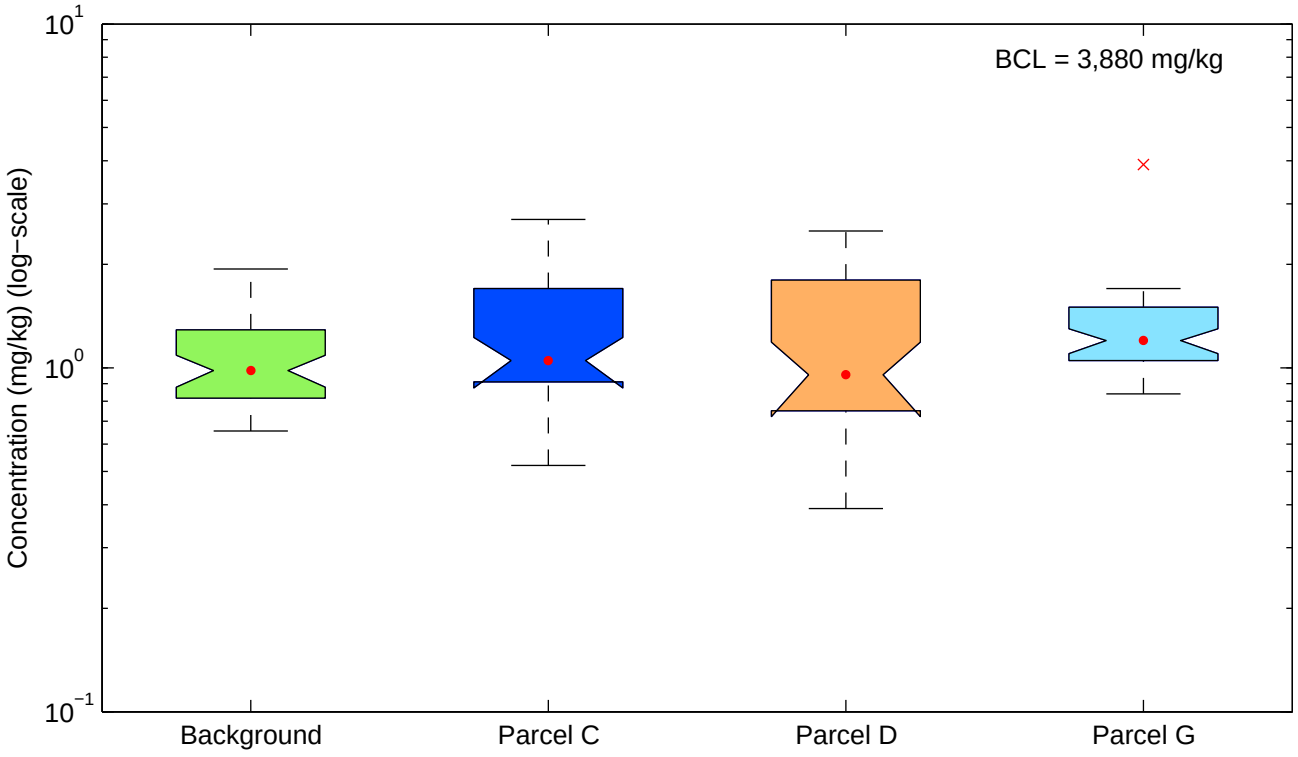
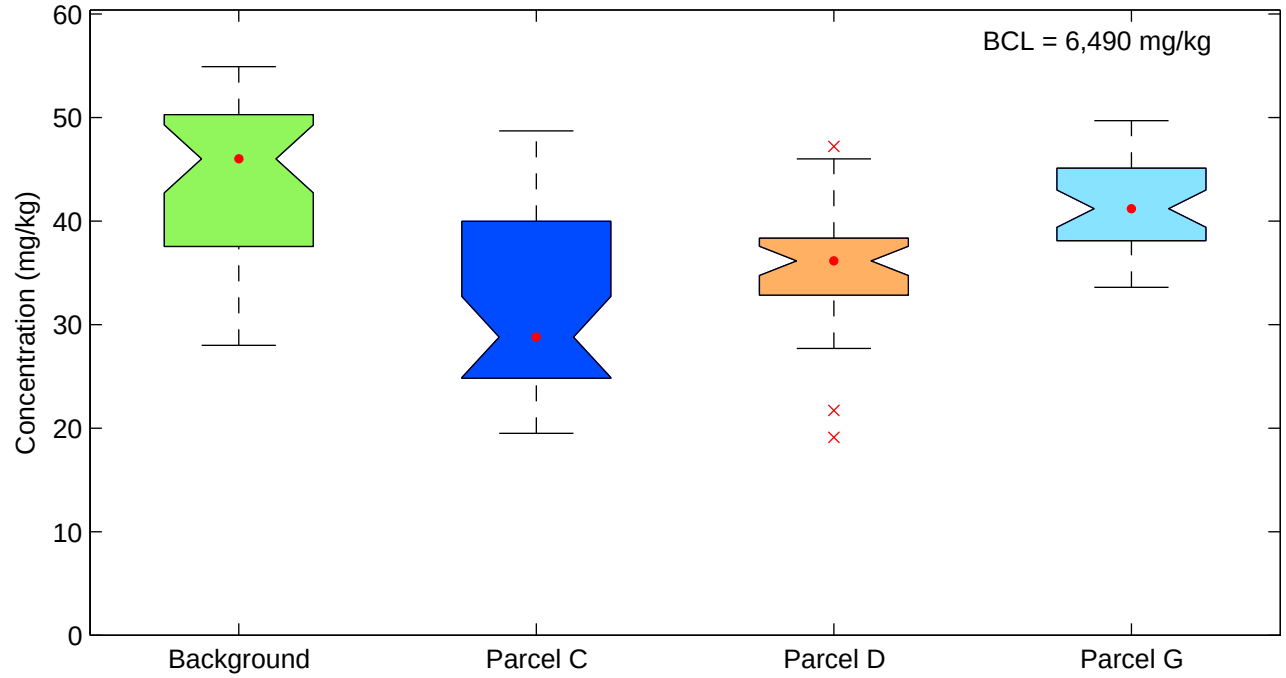


Figure I1−31. Background vs. Parcels C, D, and G Boxplots
Vanadium



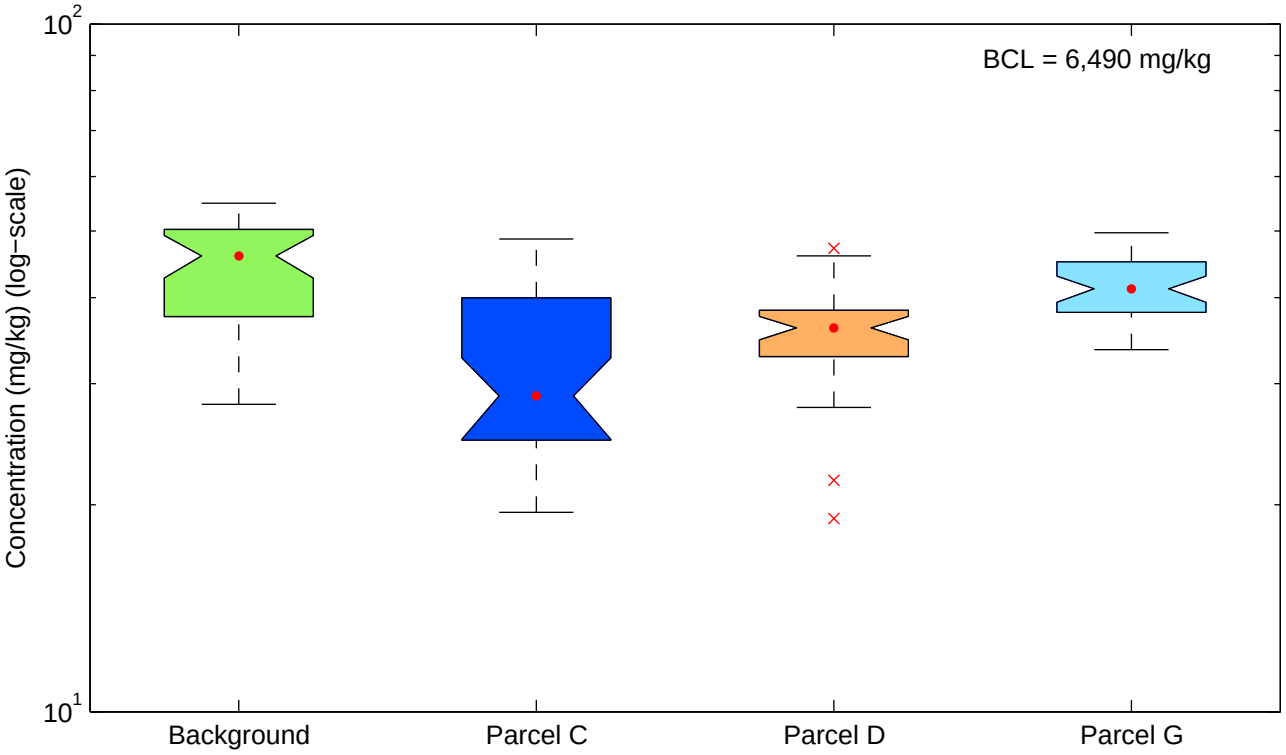
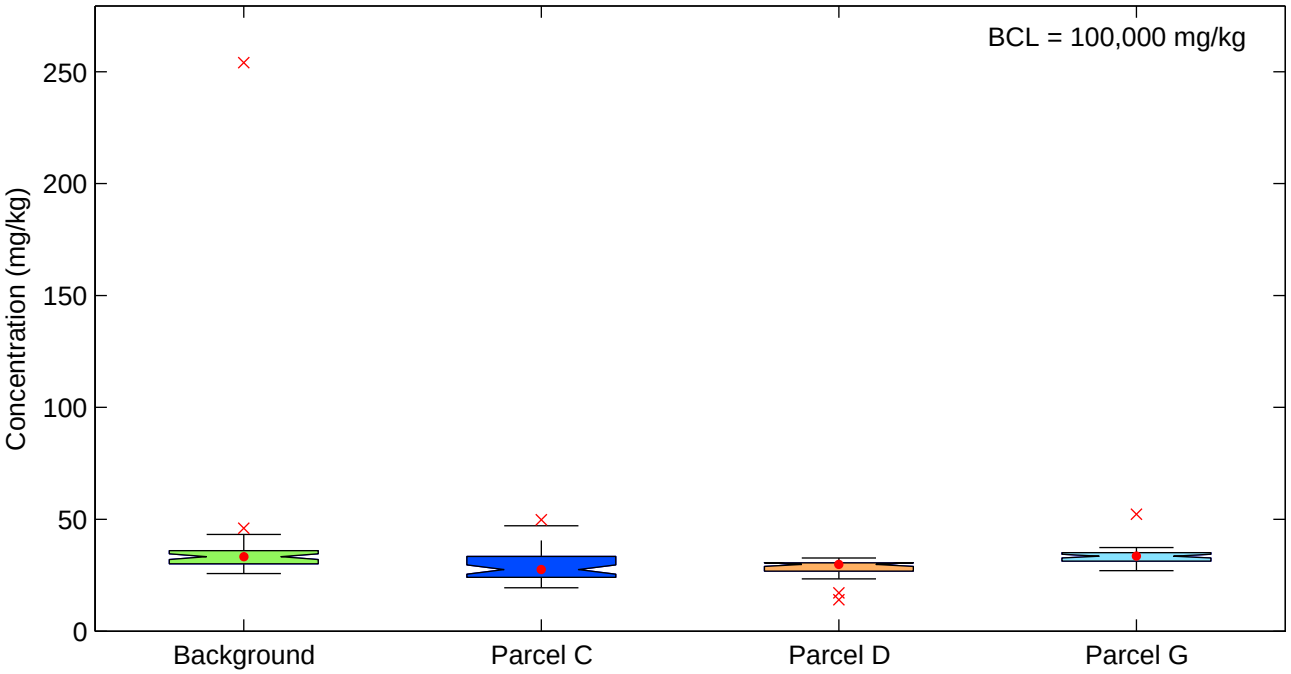


Figure I1−32. Background vs. Parcels C, D, and G Boxplots
Zinc



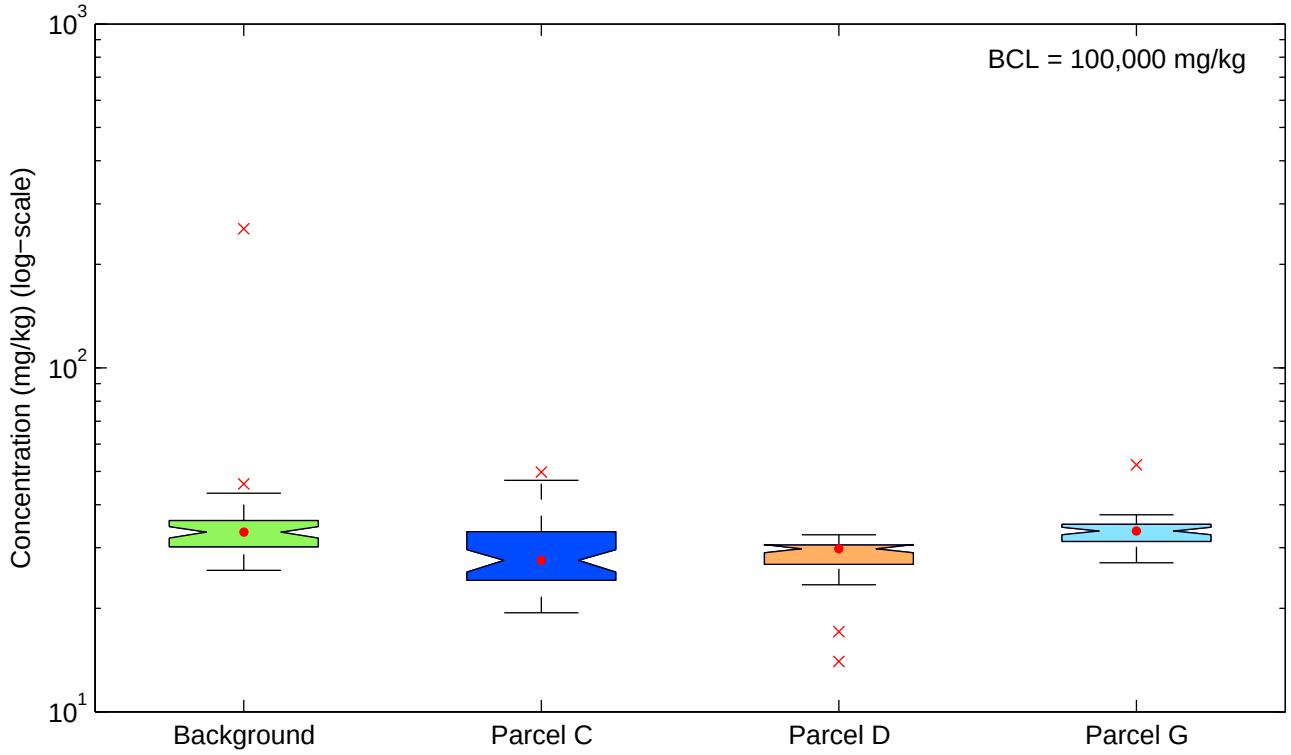
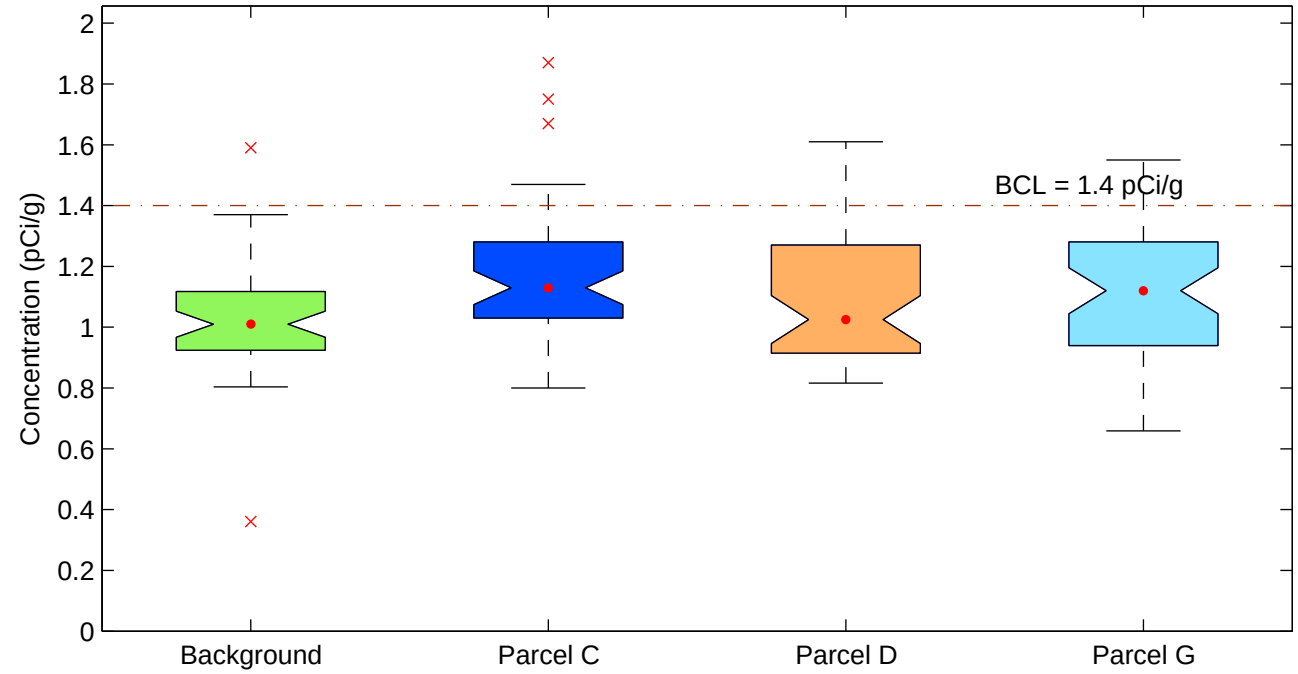


Figure I1−33. Background vs. Parcels C, D, and G Boxplots
Uranium−238



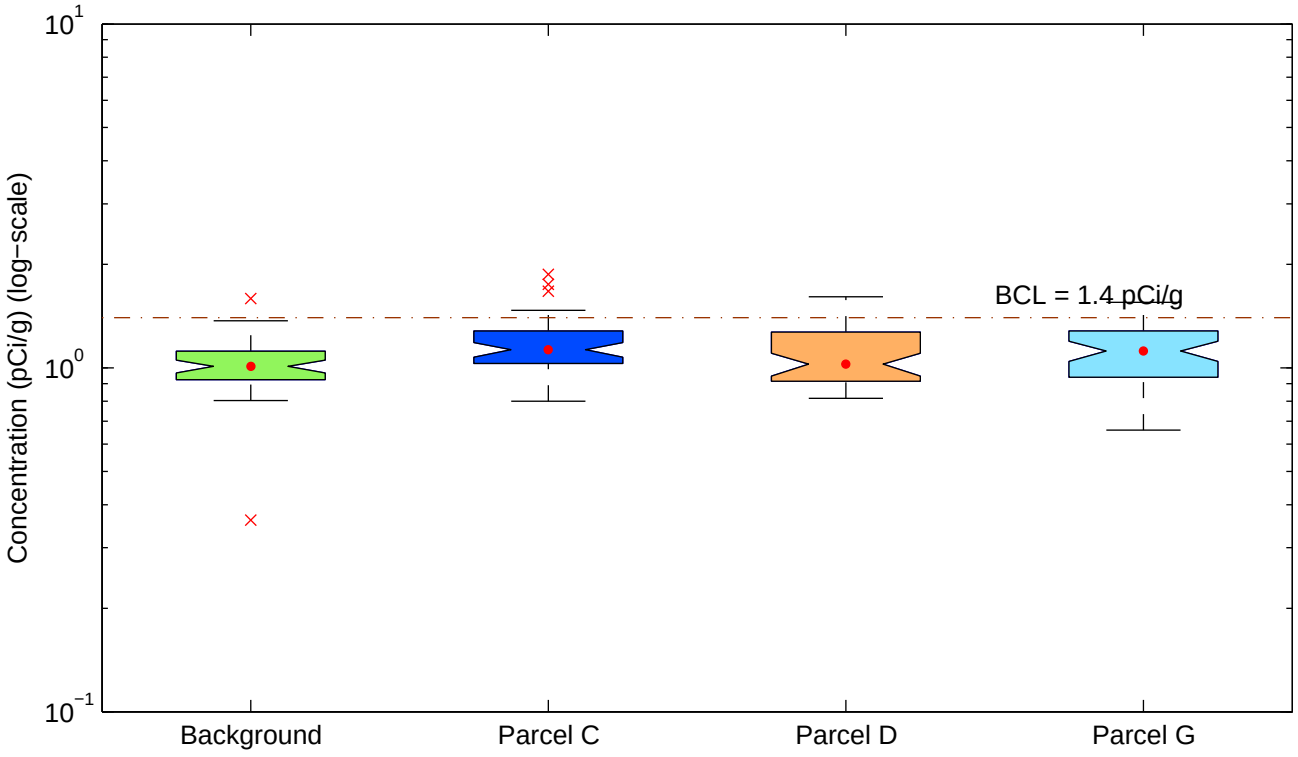
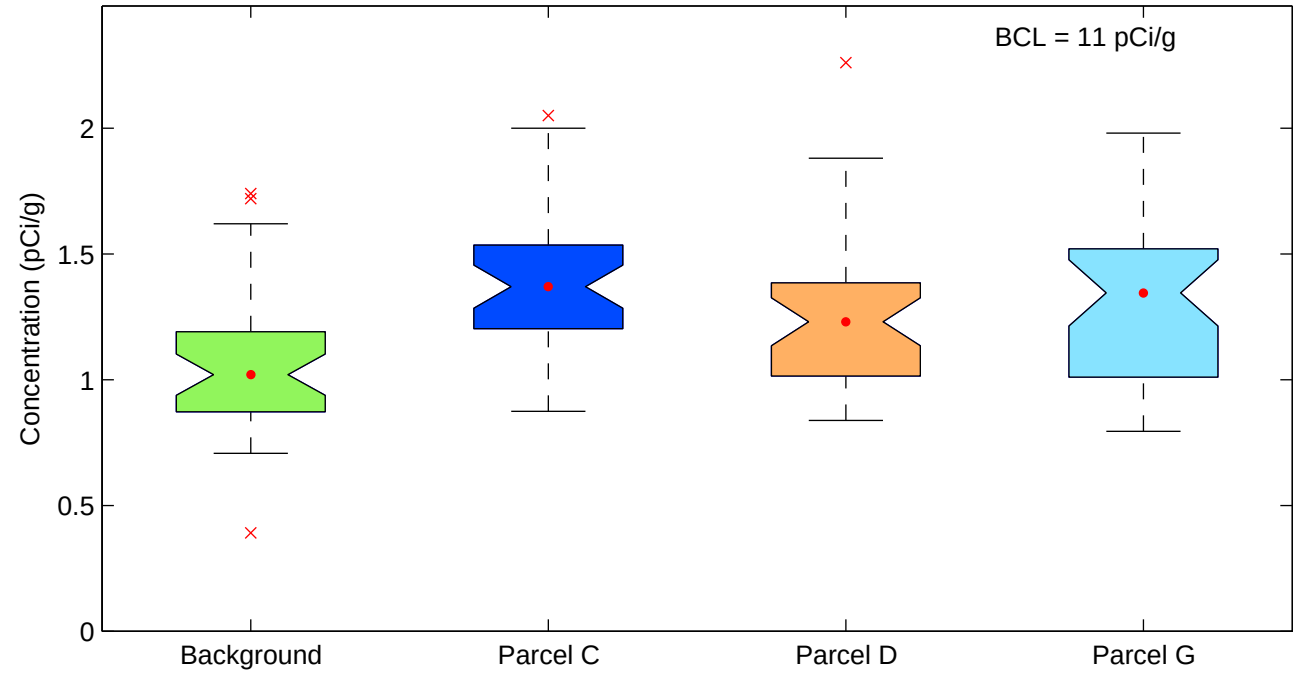


Figure I1−34. Background vs. Parcels C, D, and G Boxplots
Uranium−234



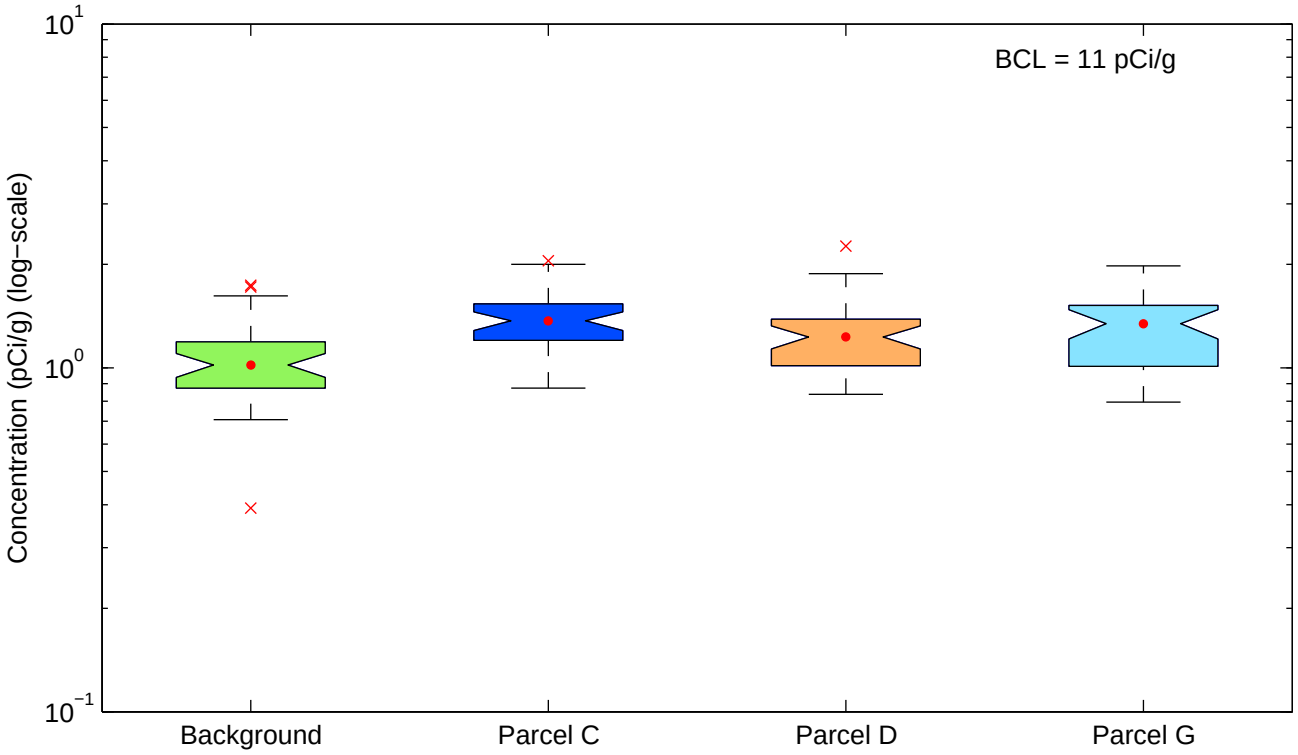
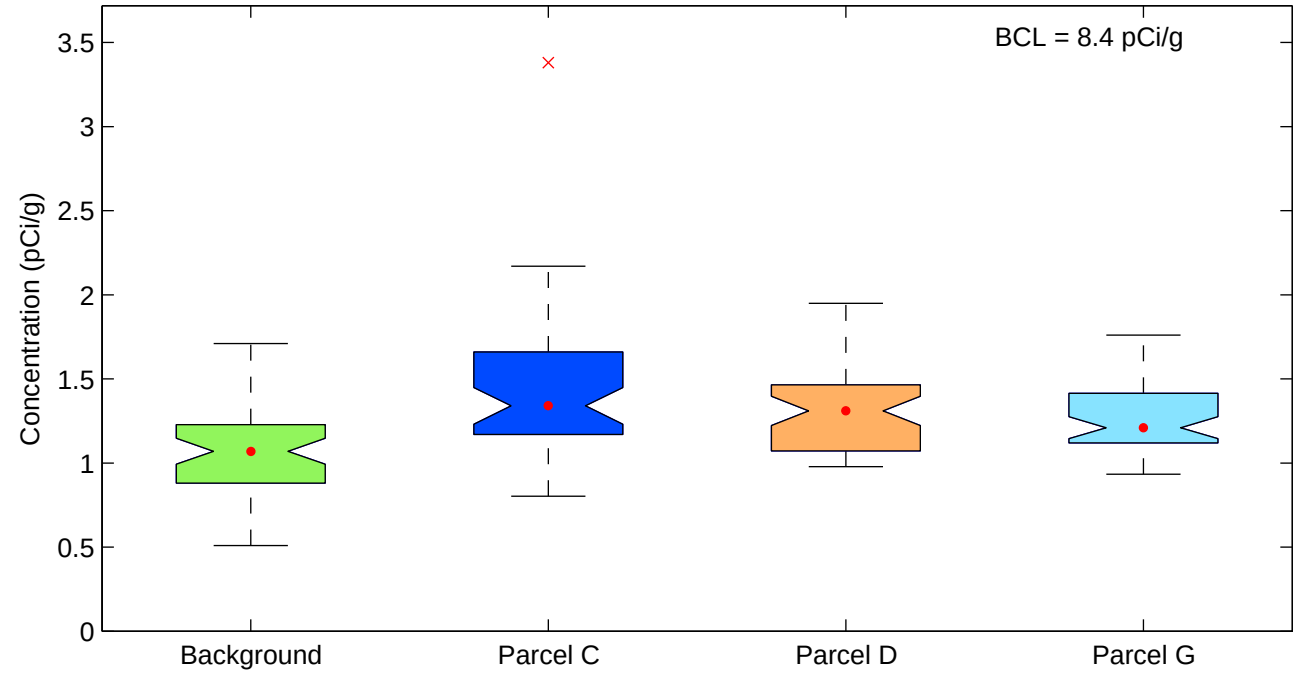


Figure I1−35. Background vs. Parcels C, D, and G Boxplots
Thorium−230



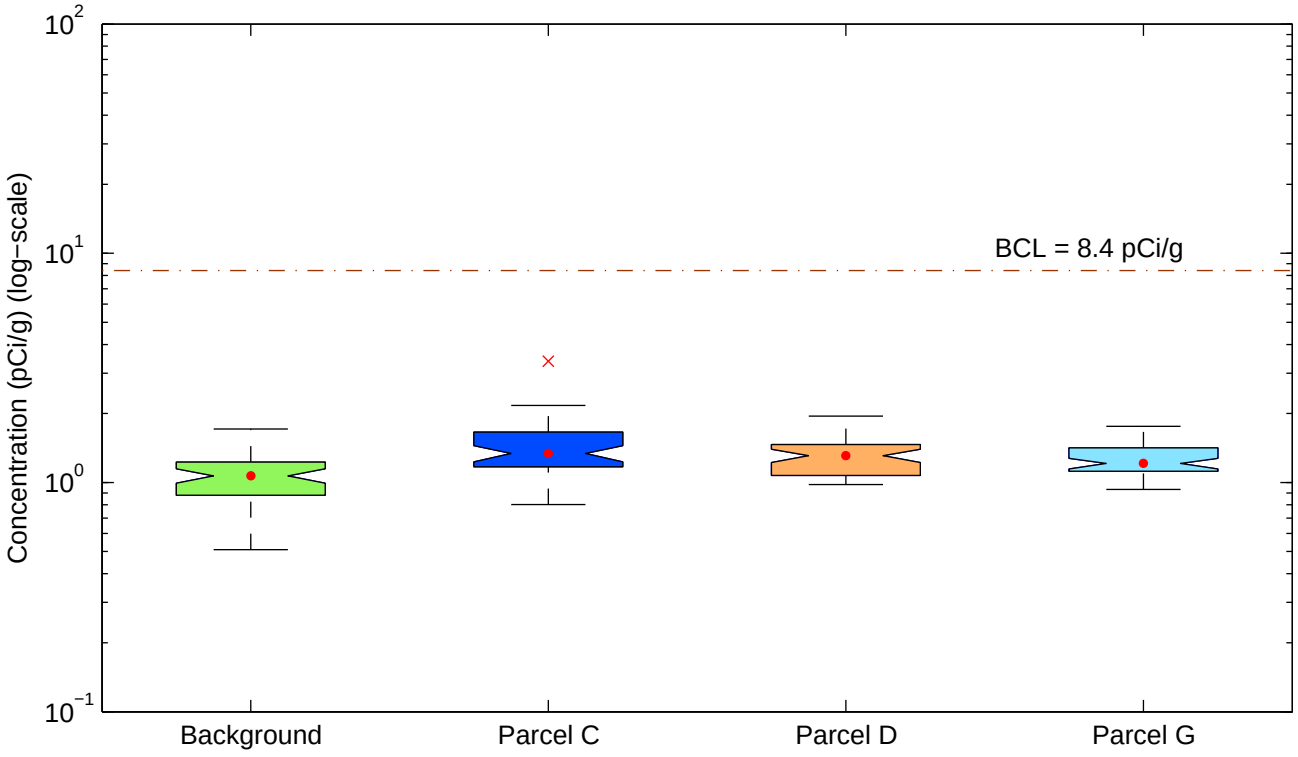
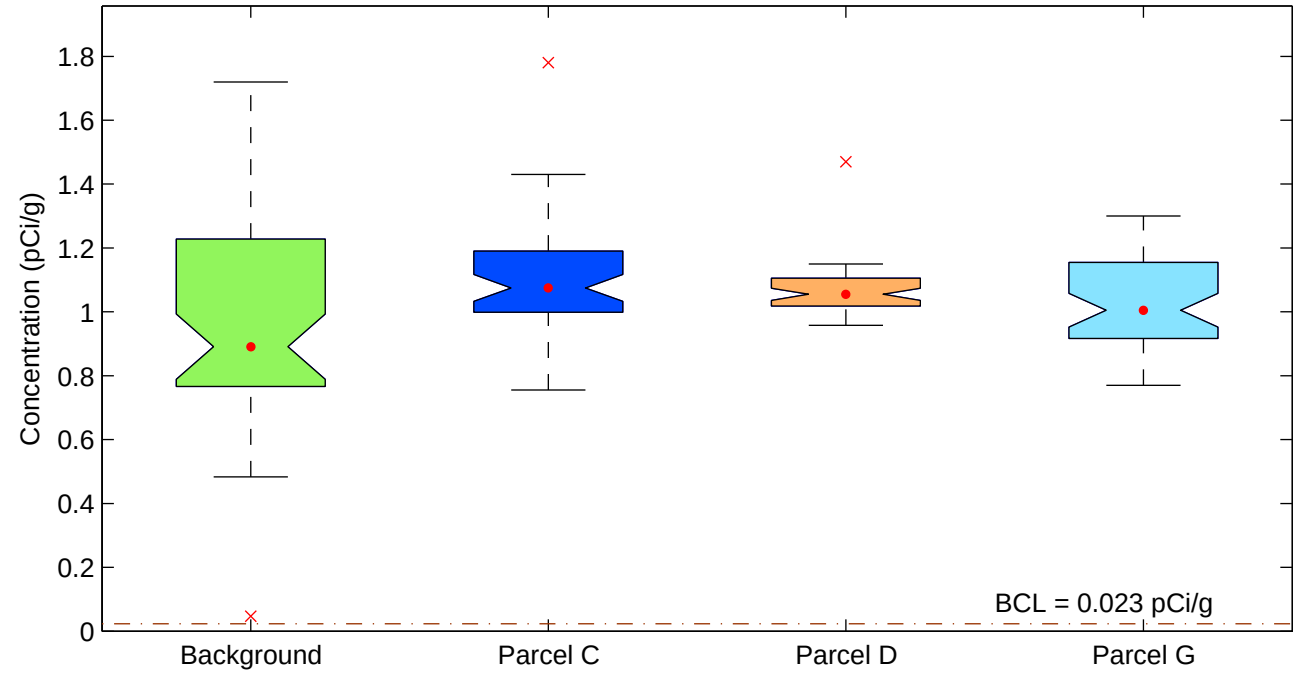


Figure I1−36. Background vs. Parcels C, D, and G Boxplots
Radium−226



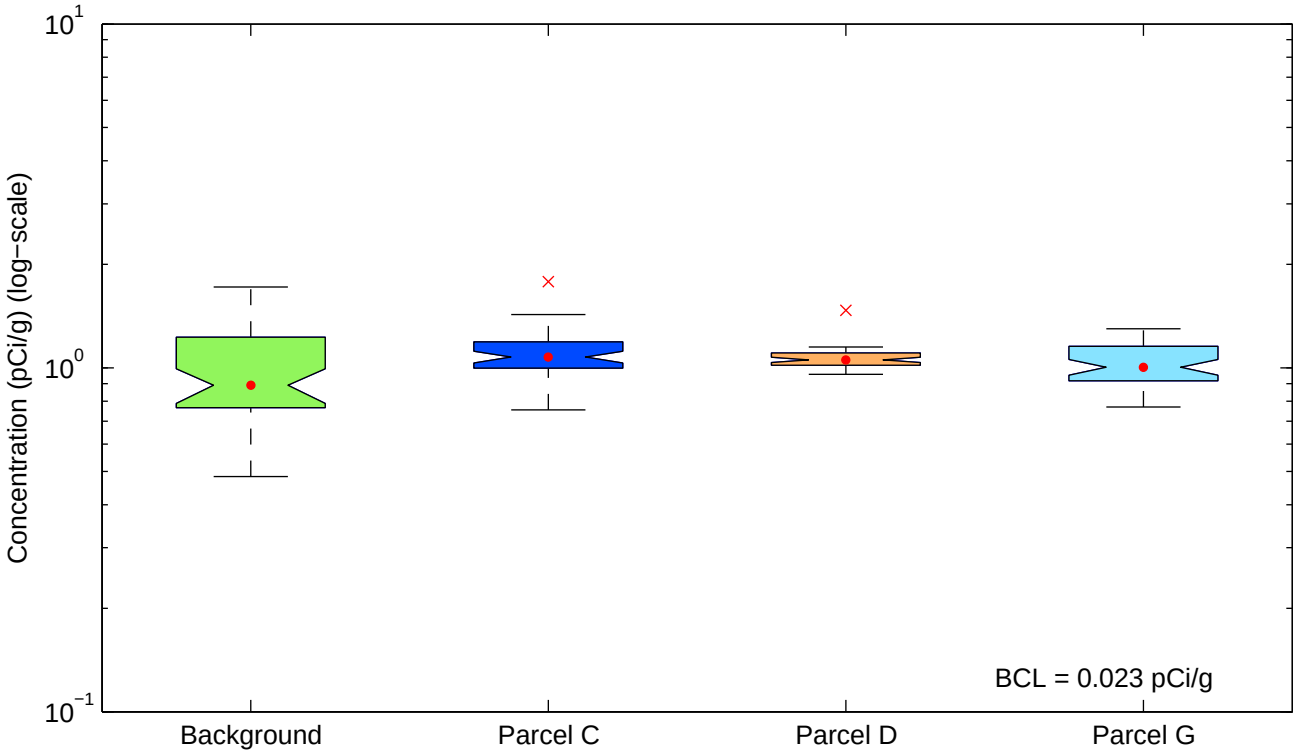
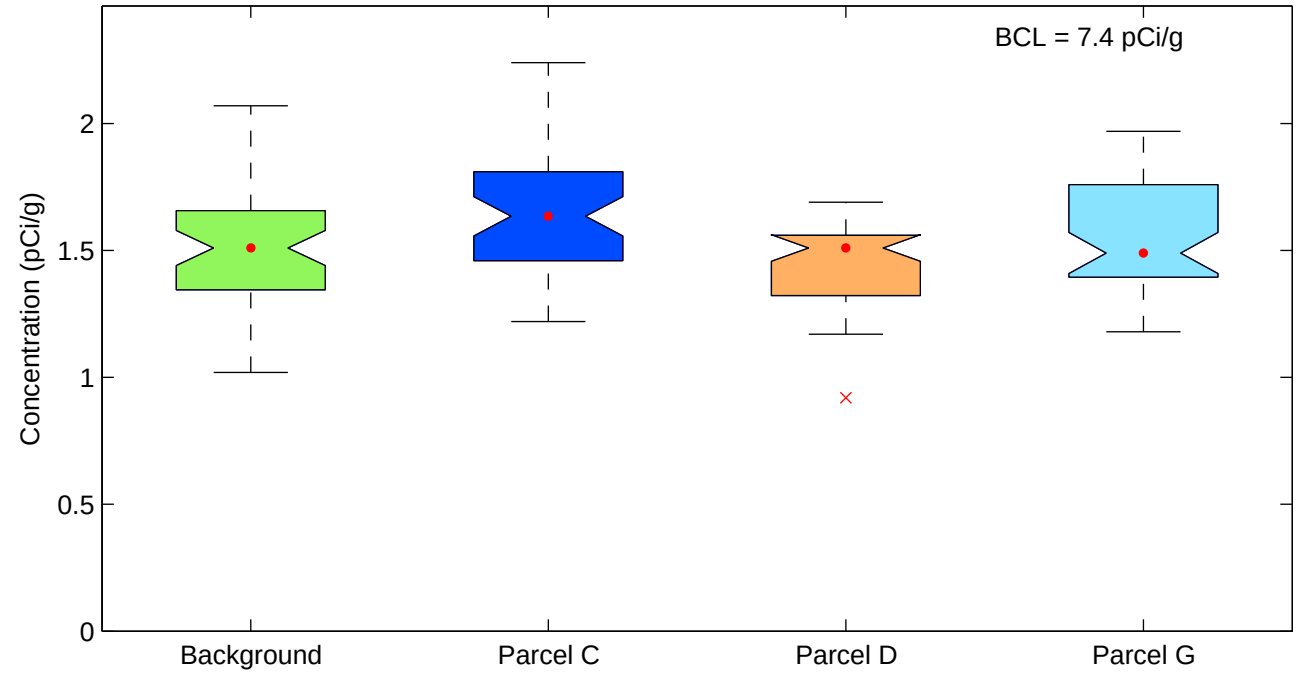


Figure I1−37. Background vs. Parcels C, D, and G Boxplots
Thorium−232



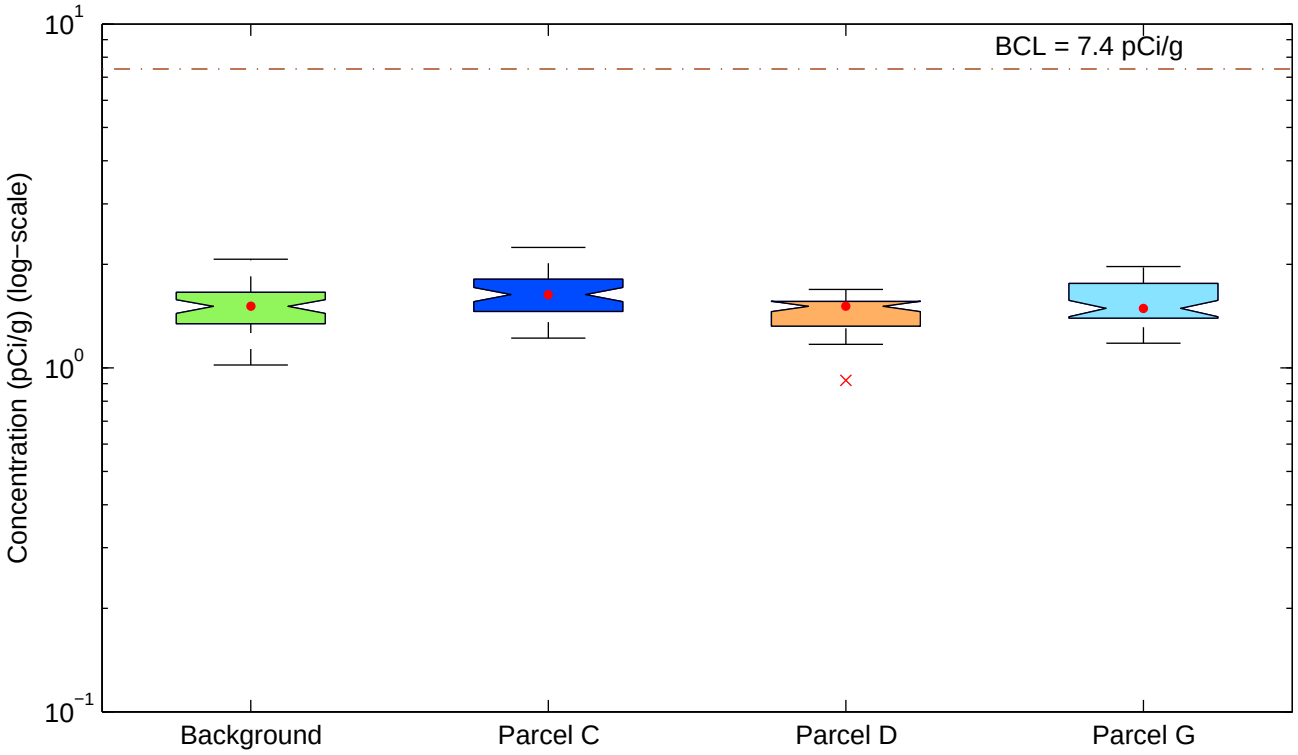
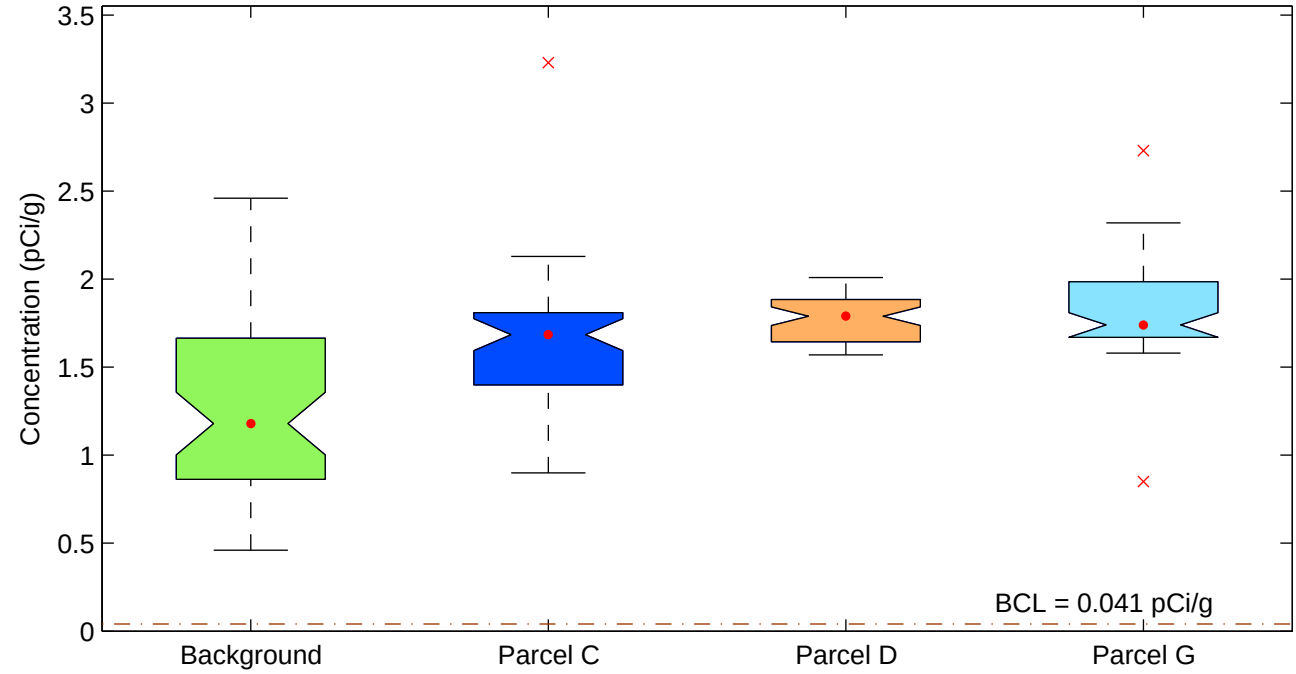


Figure I1−38. Background vs. Parcels C, D, and G Boxplots
Radium−228



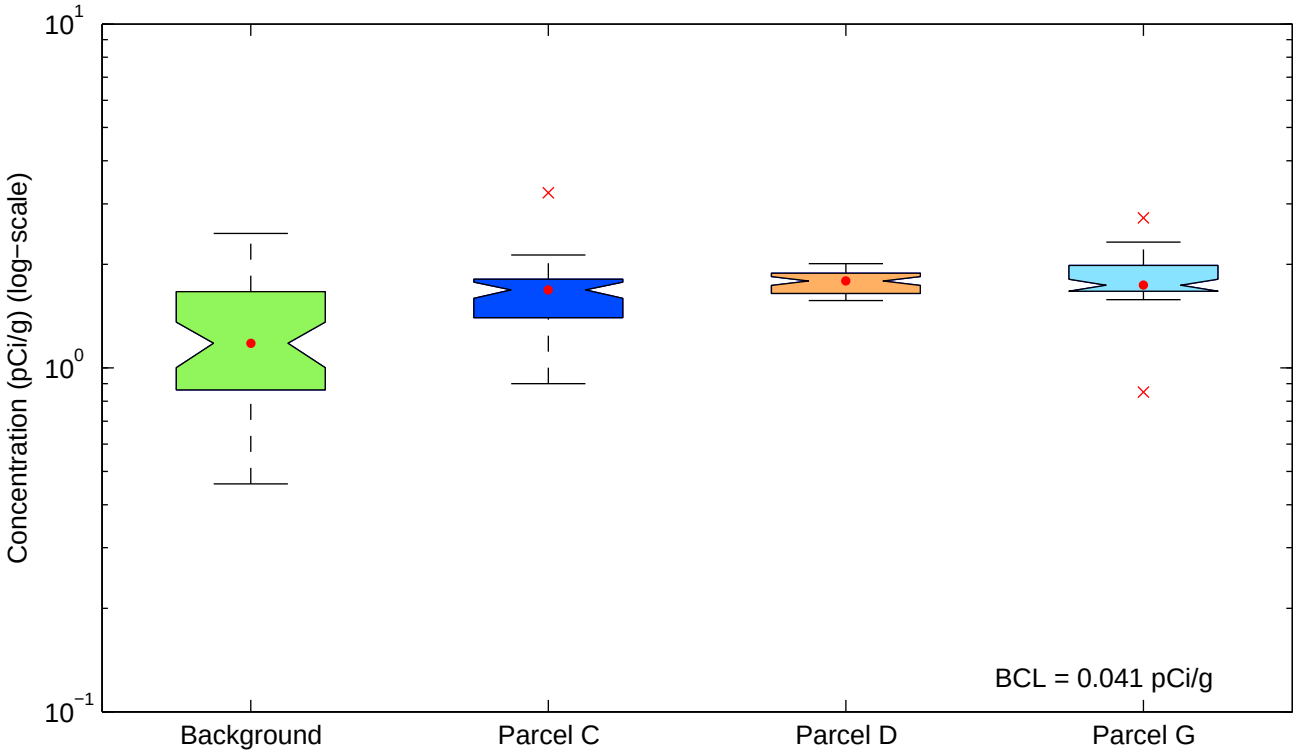
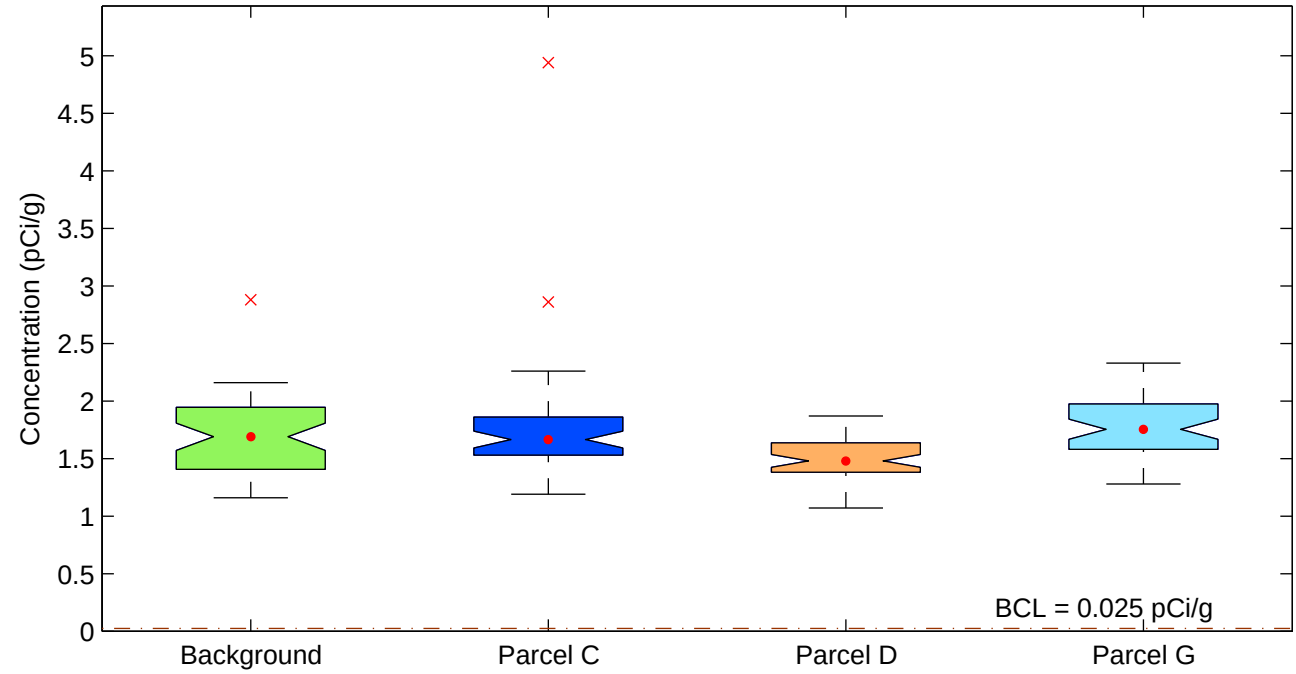


Figure I1−39. Background vs. Parcels C, D, and G Boxplots
Thorium−228



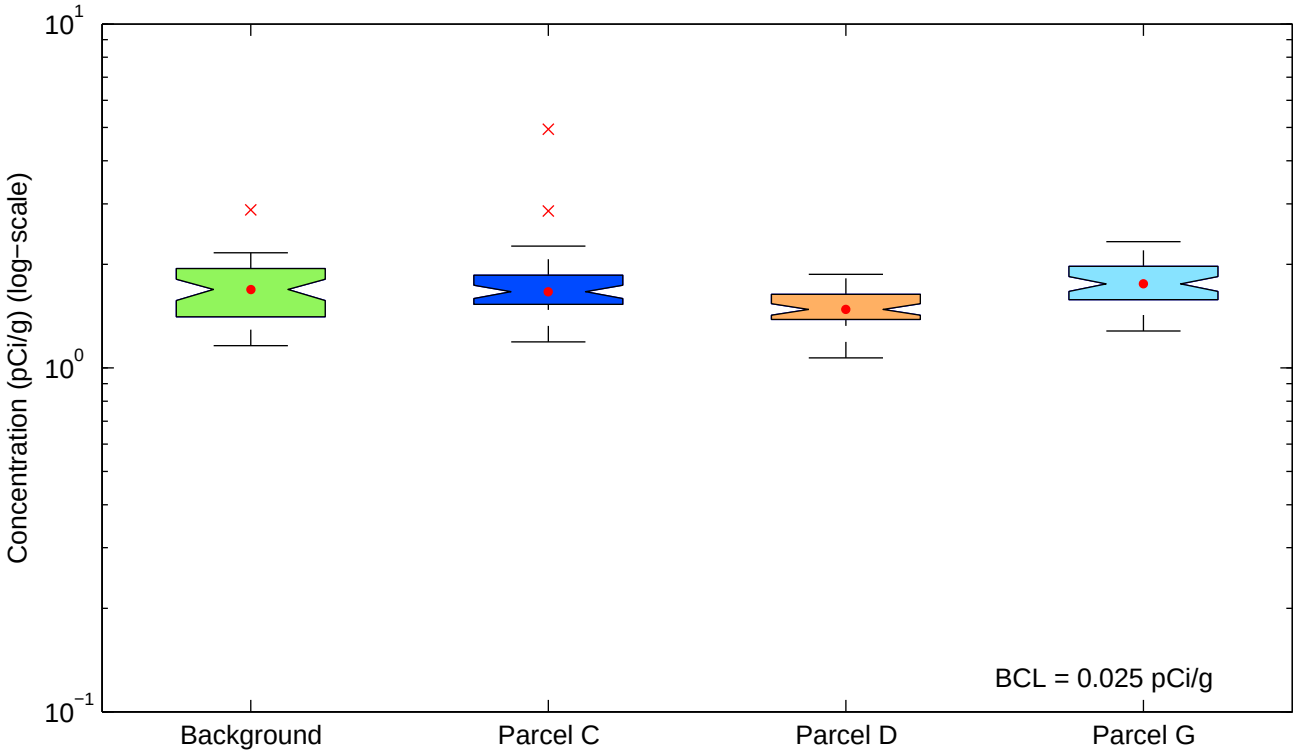
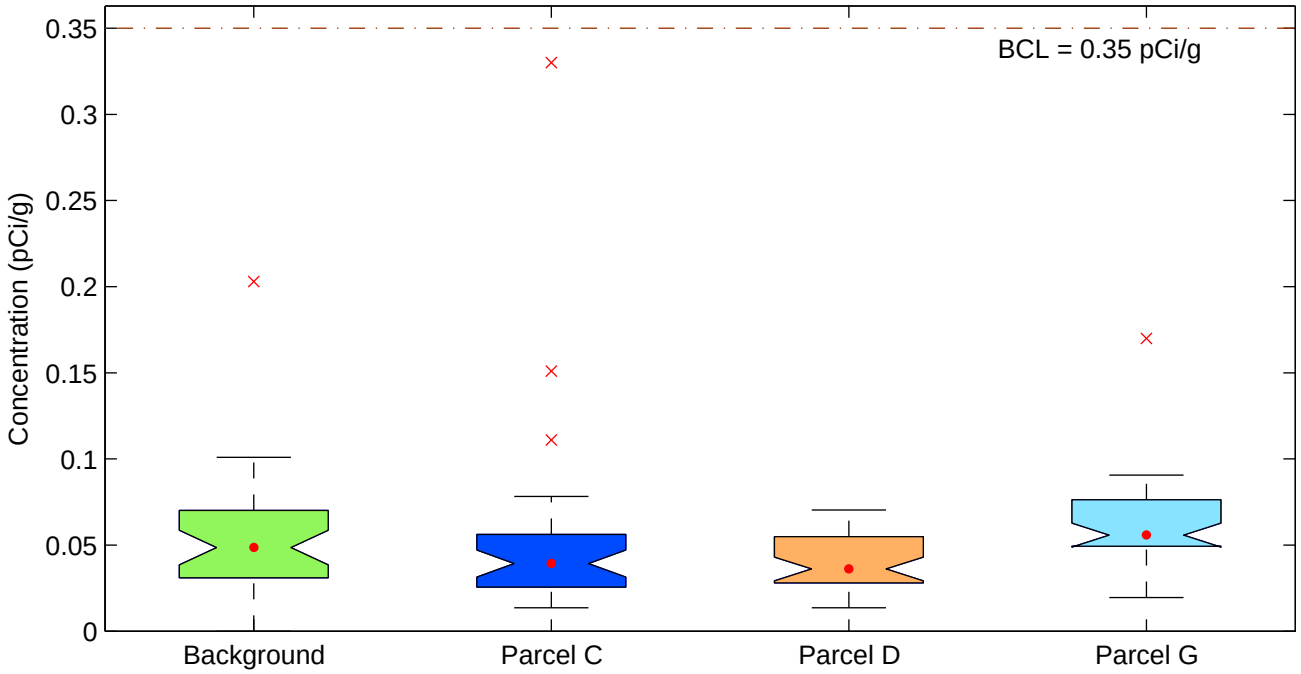


Figure I1−40. Background vs. Parcels C, D, and G Boxplots
Uranium−235



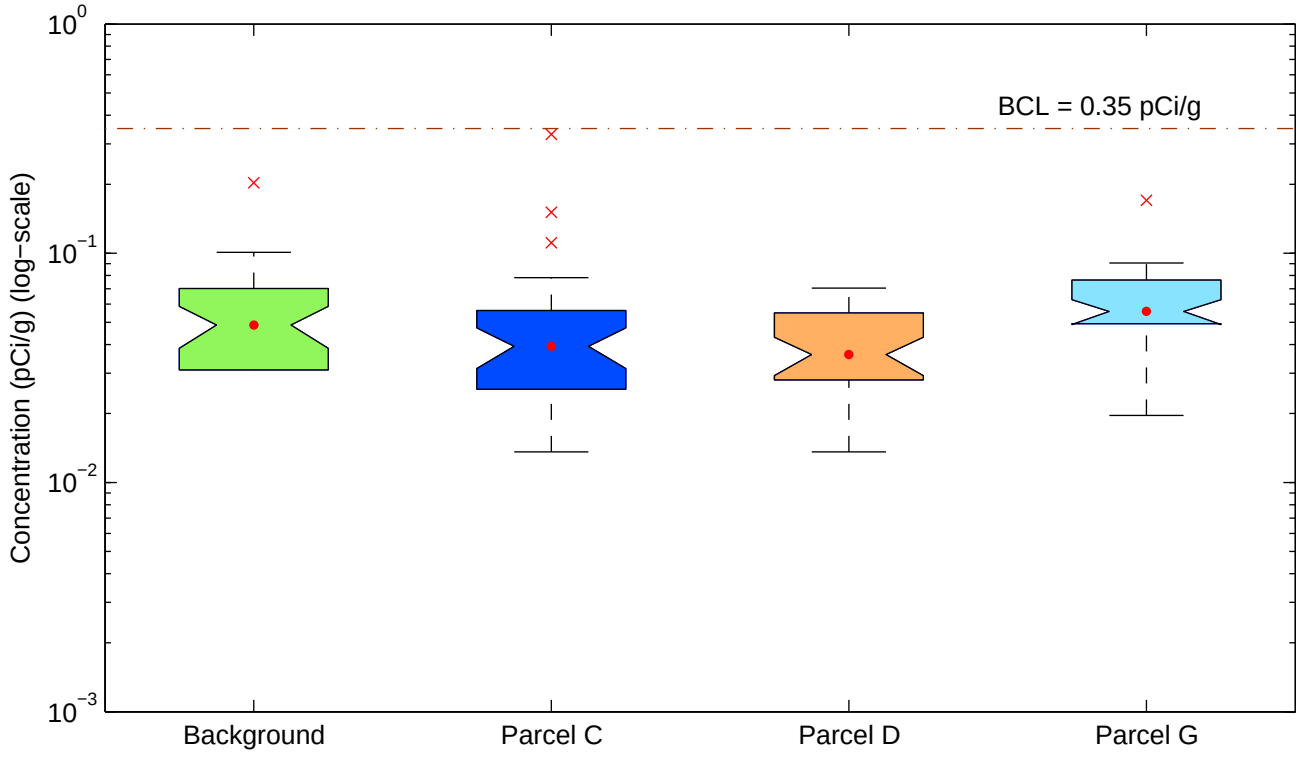
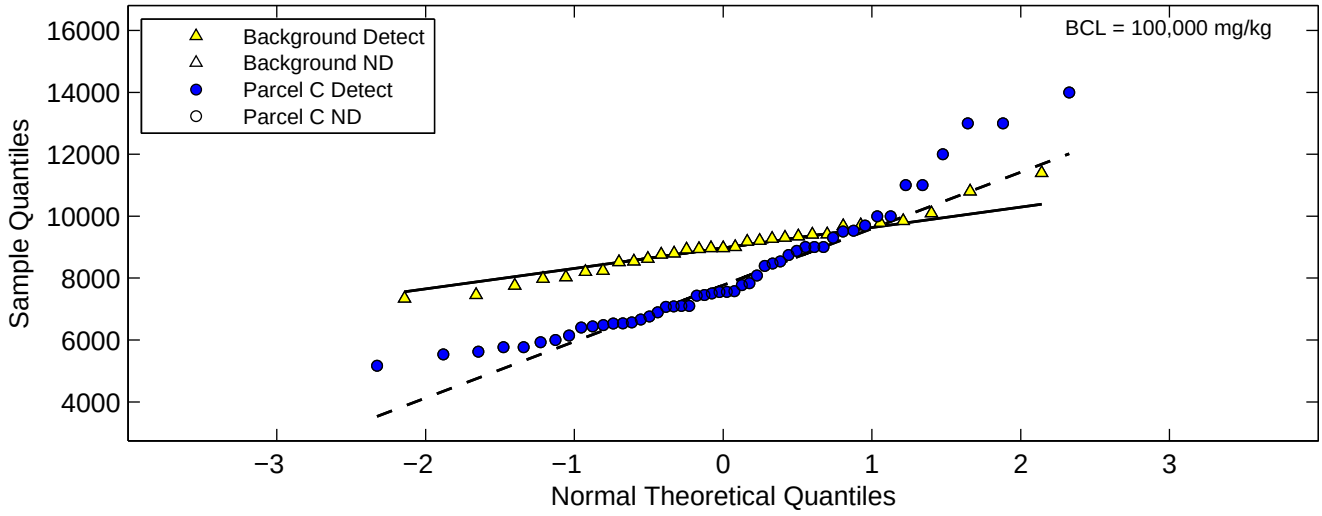
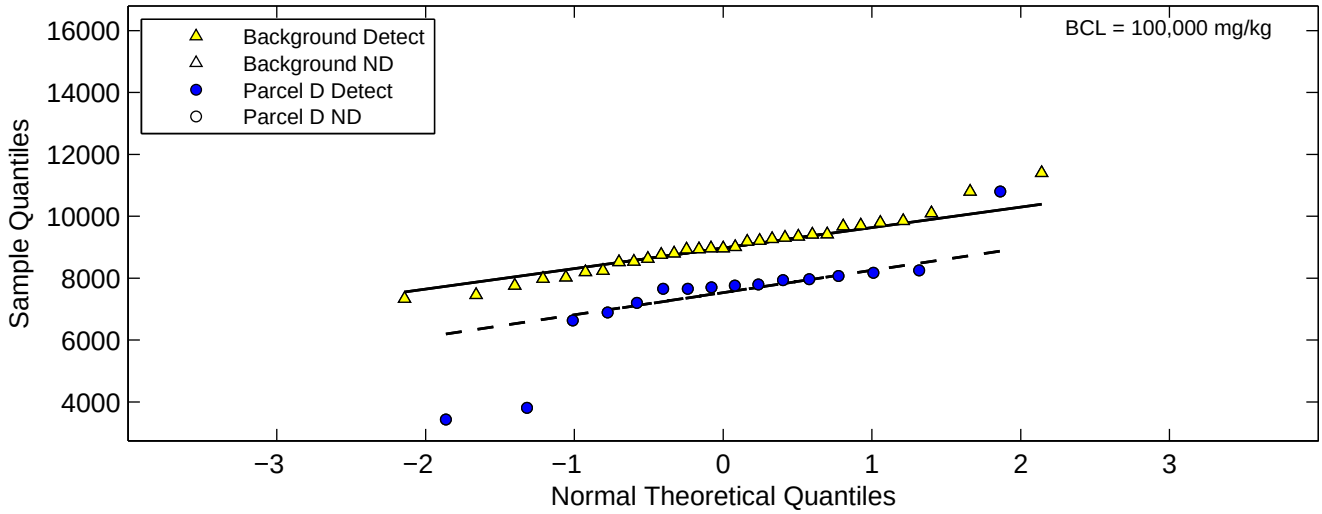


Figure I2−1A. Normal Q−Q Plots
Aluminum





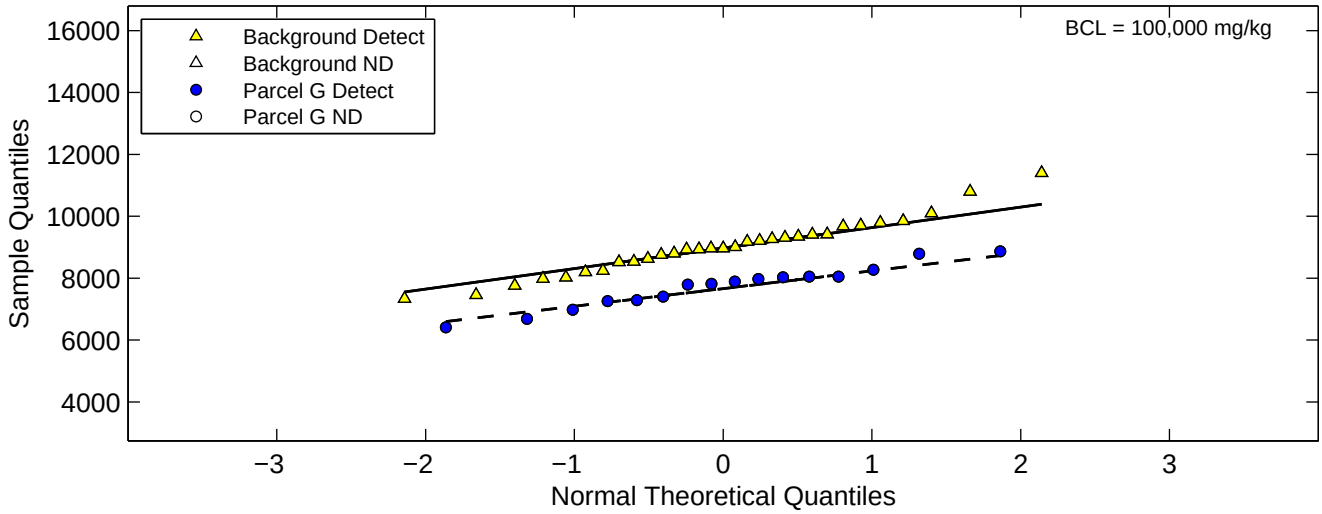
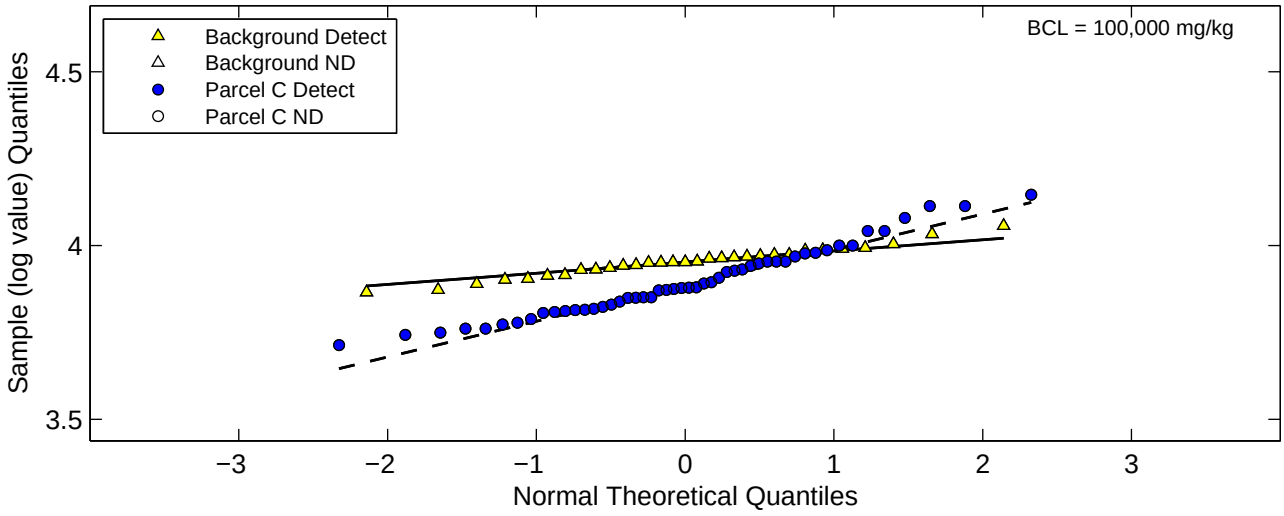
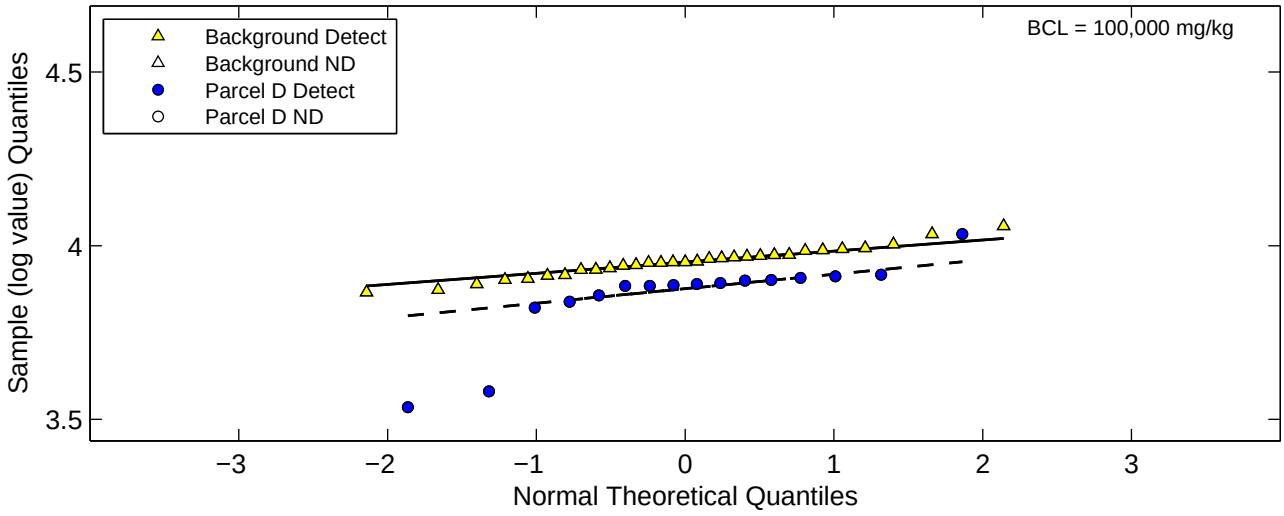


Figure I2−1B. Lognormal Q−Q Plots
Aluminum





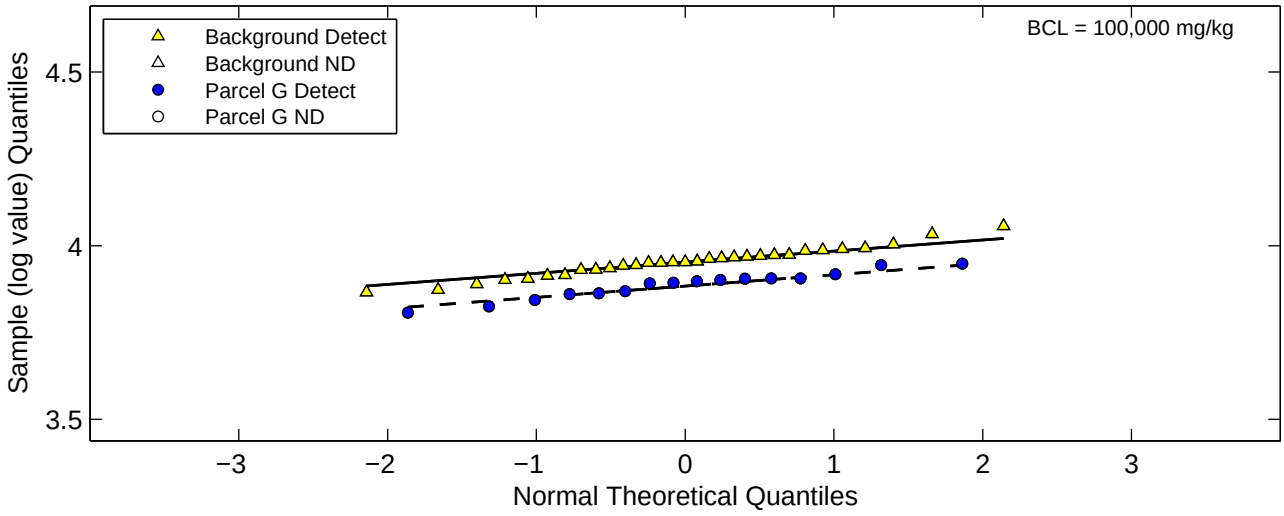
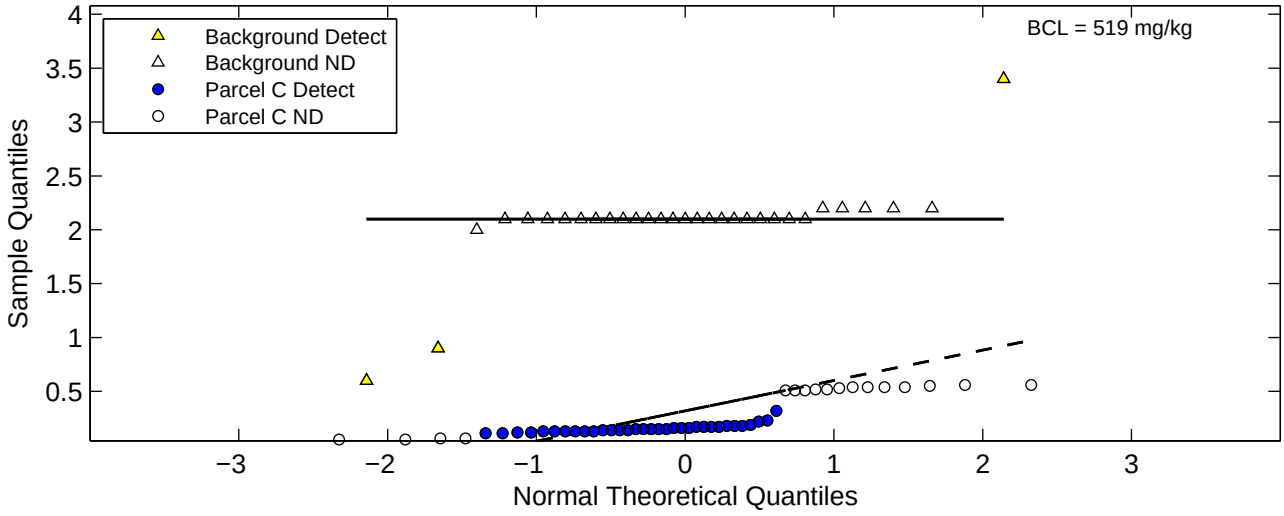
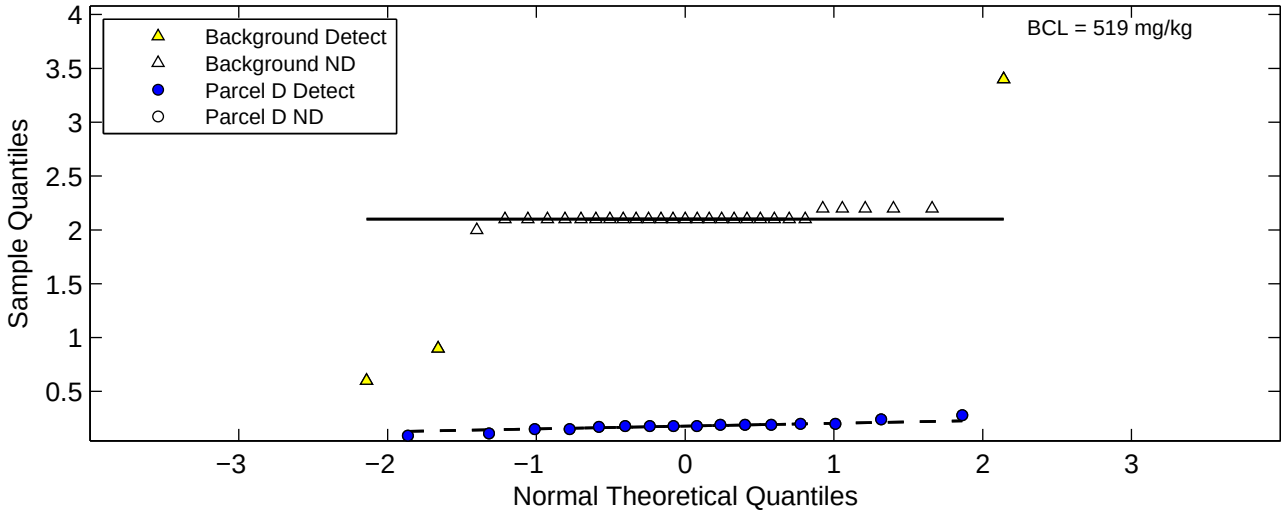


Figure I2−2A. Normal Q−Q Plots
Antimony





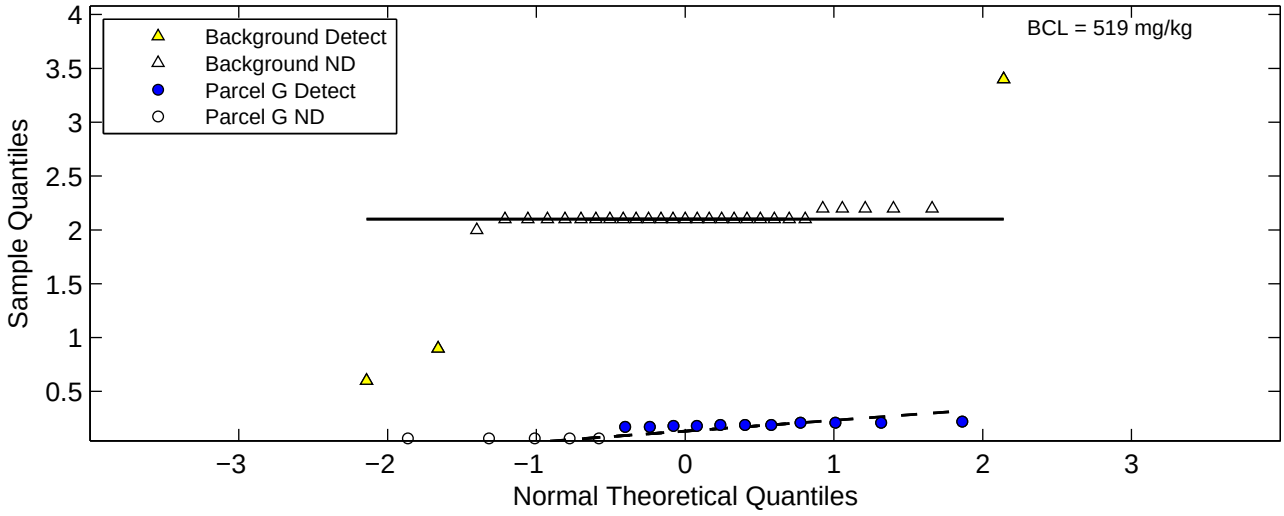
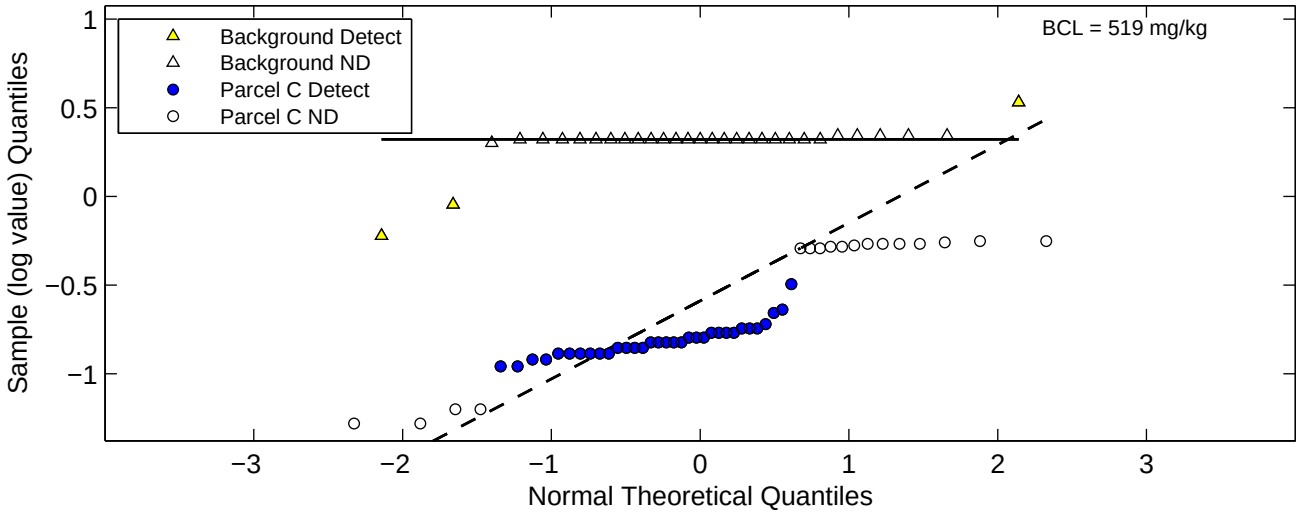
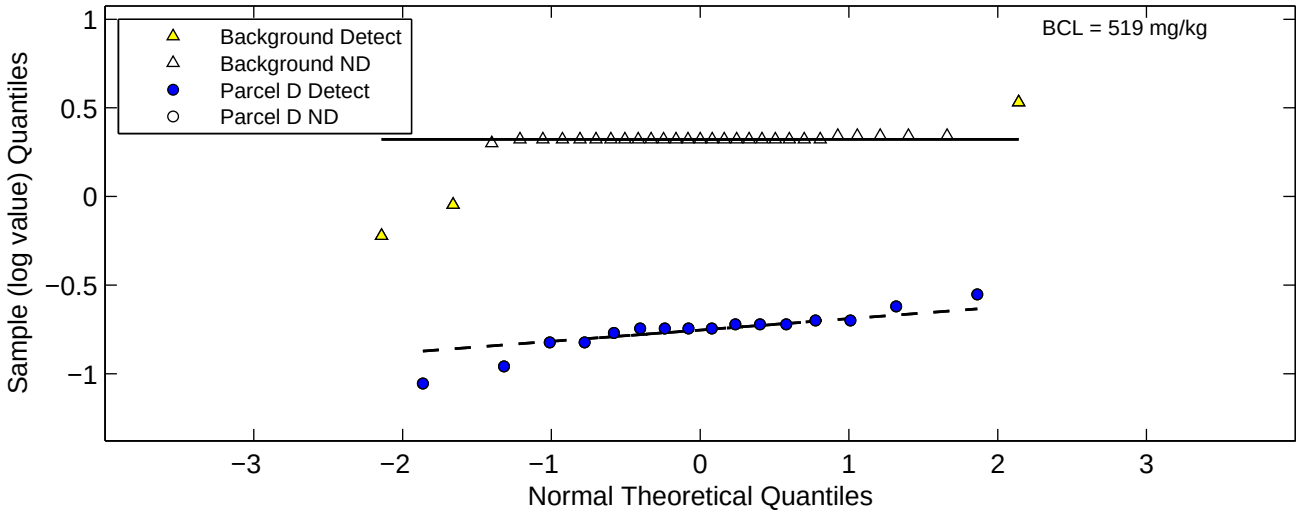


Figure I2−2B. Lognormal Q−Q Plots
Antimony





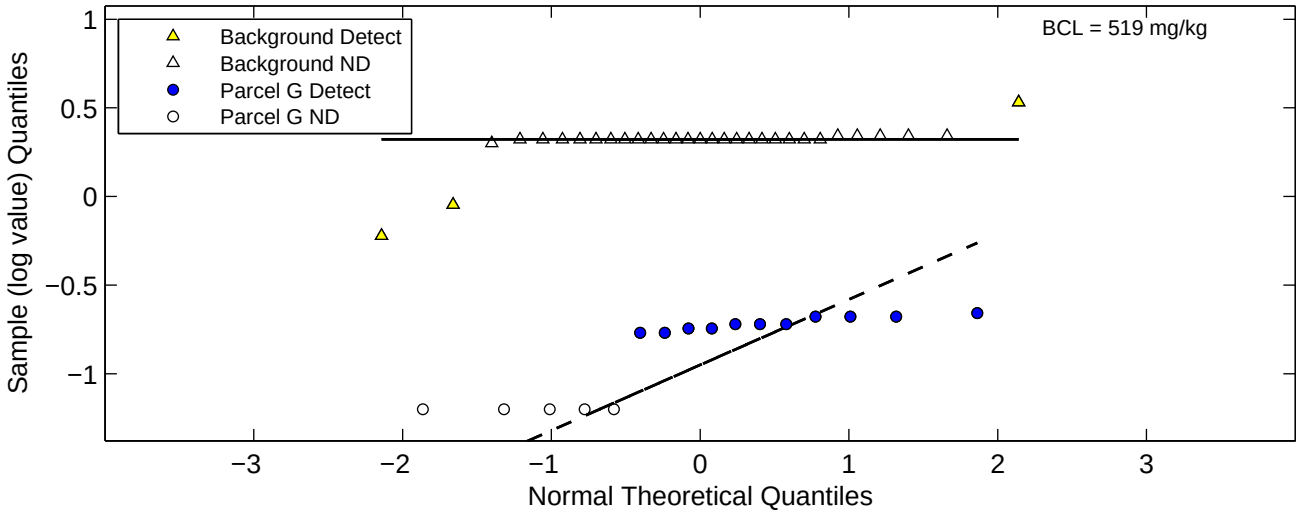
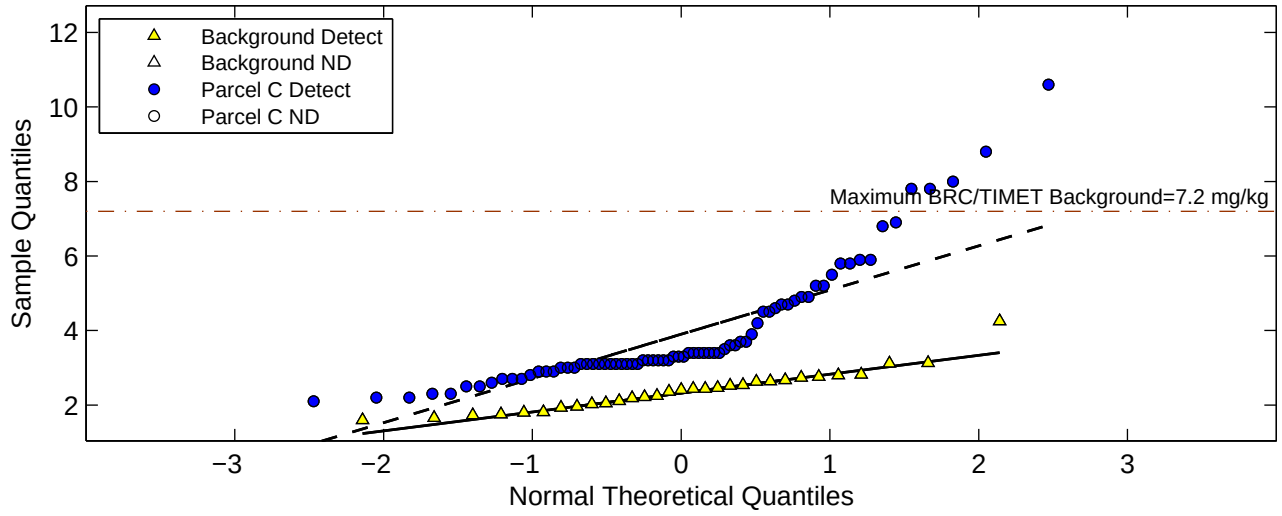
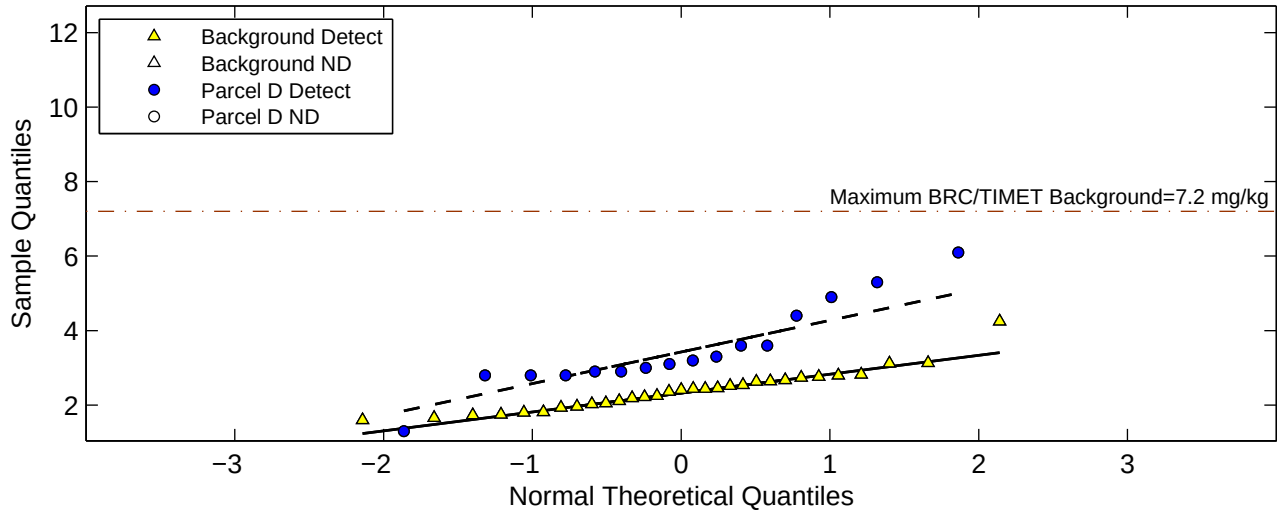


Figure I2−3A. Normal Q−Q Plots
Arsenic





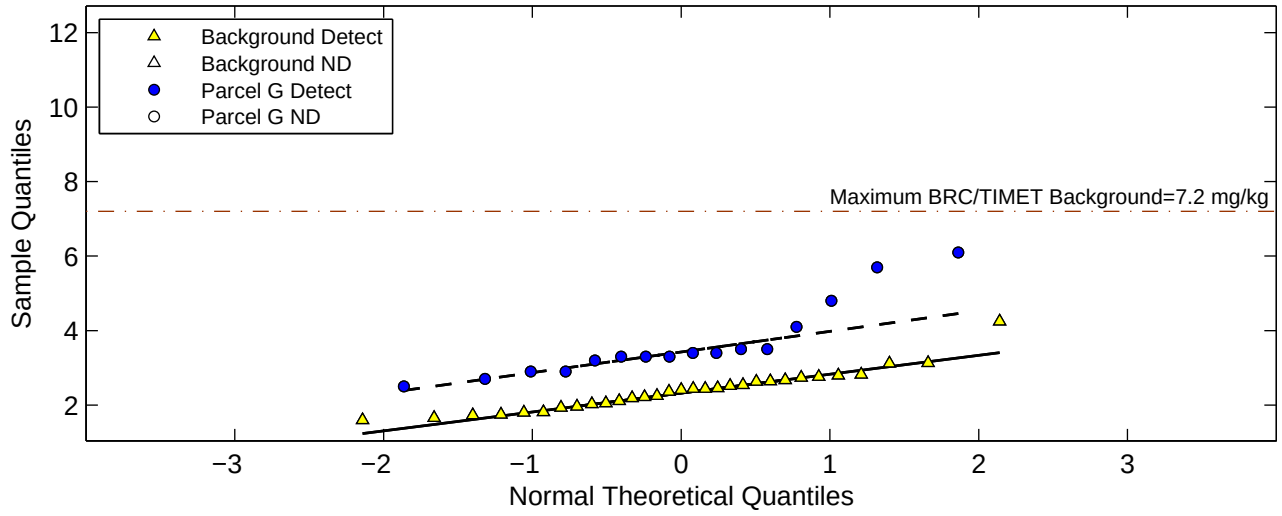
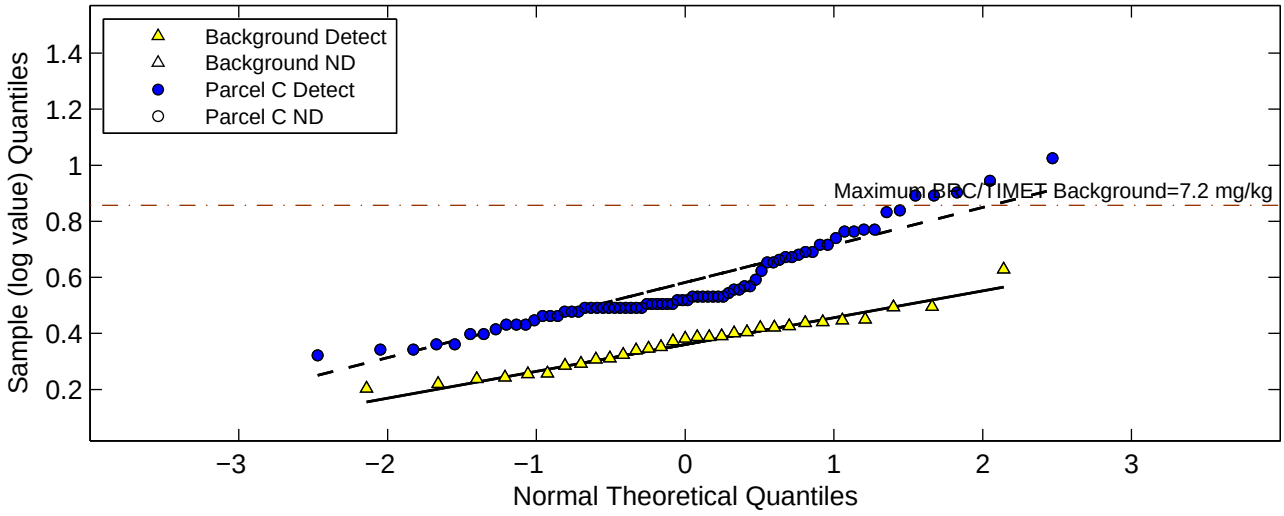
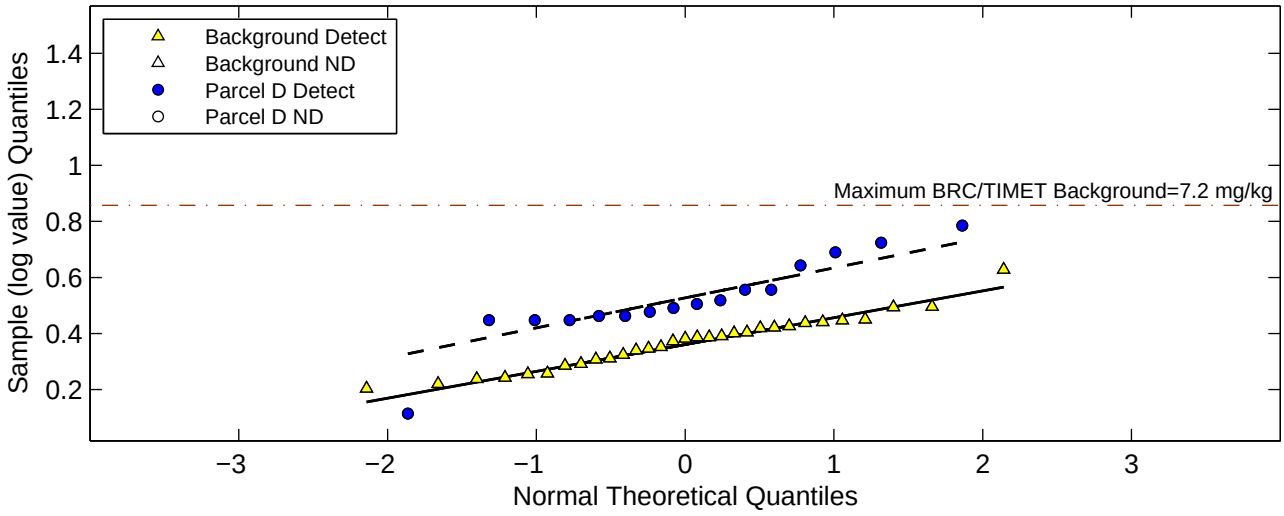


Figure I2−3B. Lognormal Q−Q Plots
Arsenic





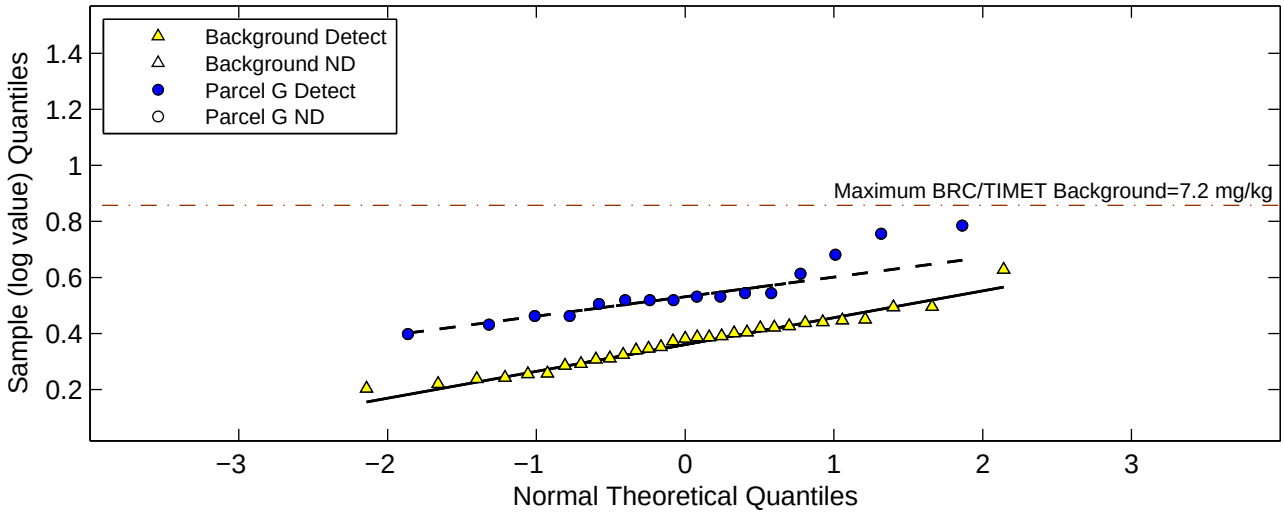
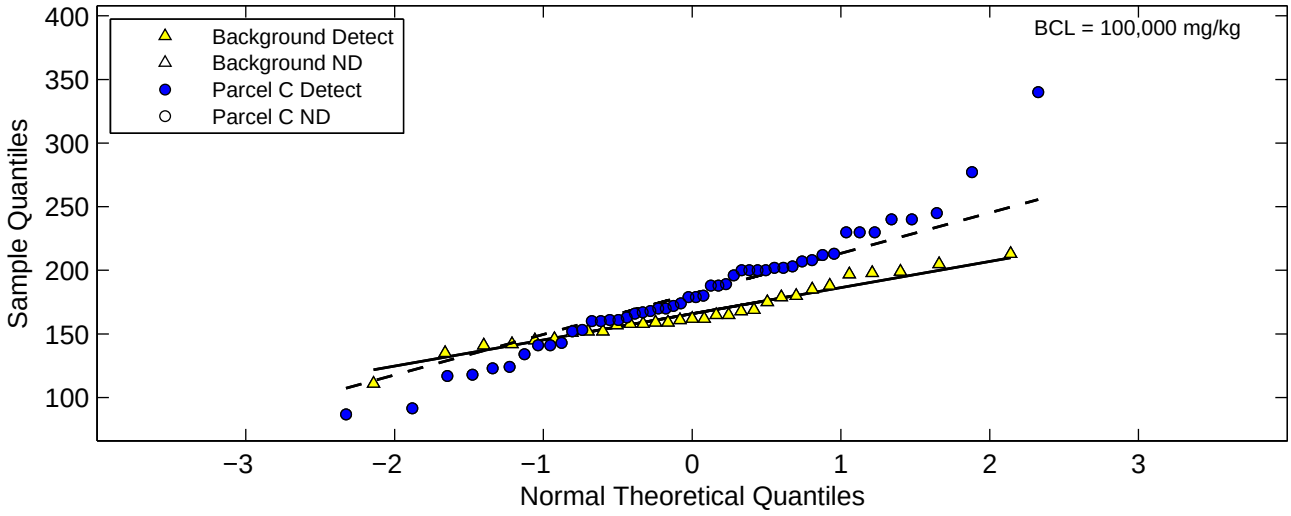
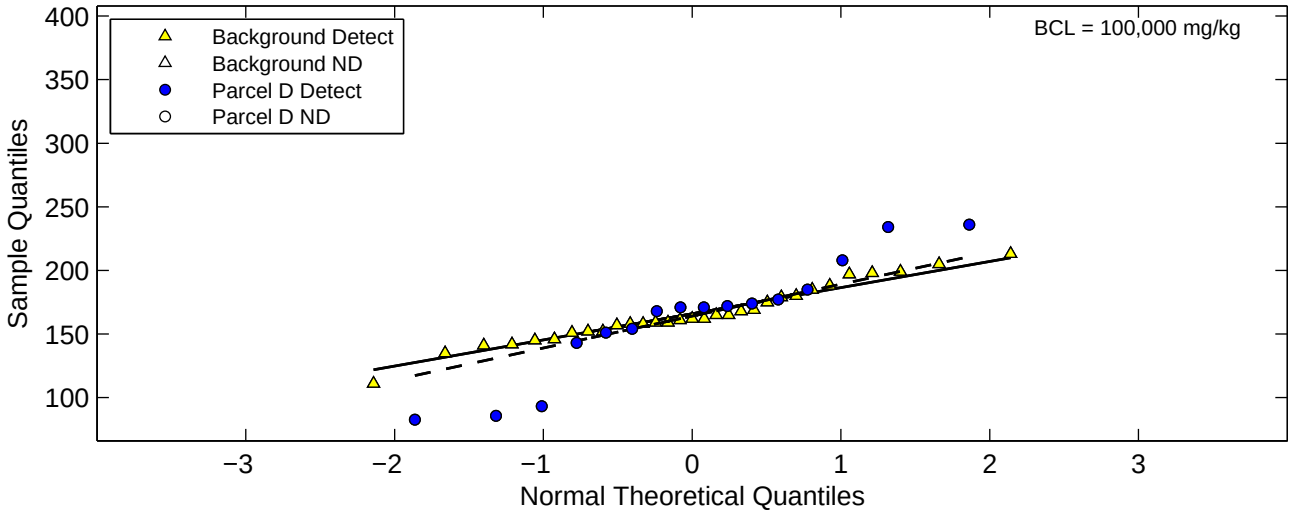


Figure I2−4A. Normal Q−Q Plots
Barium





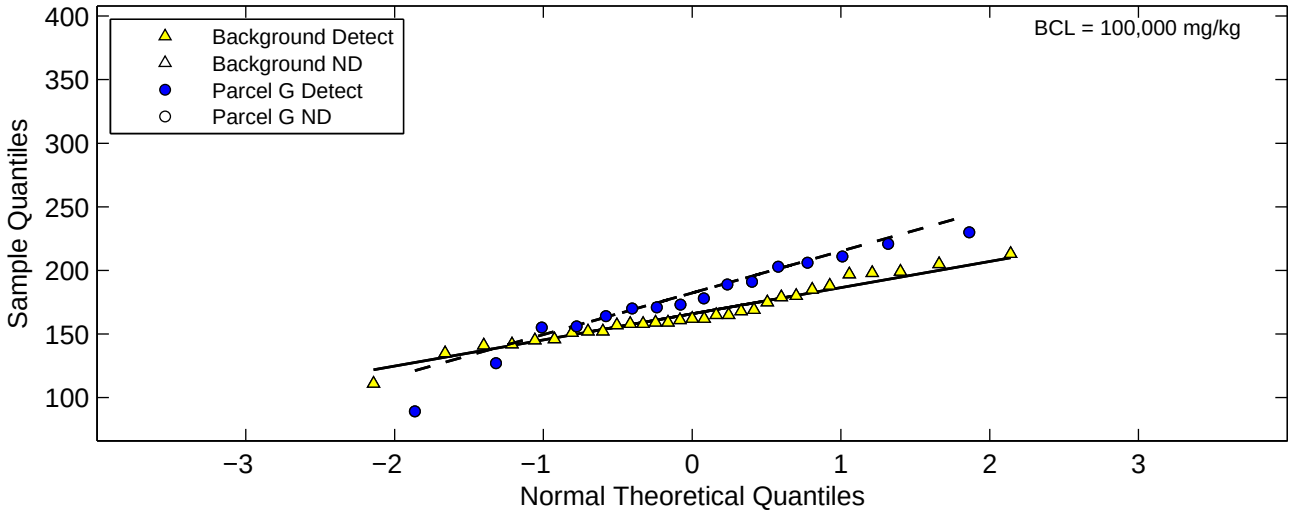
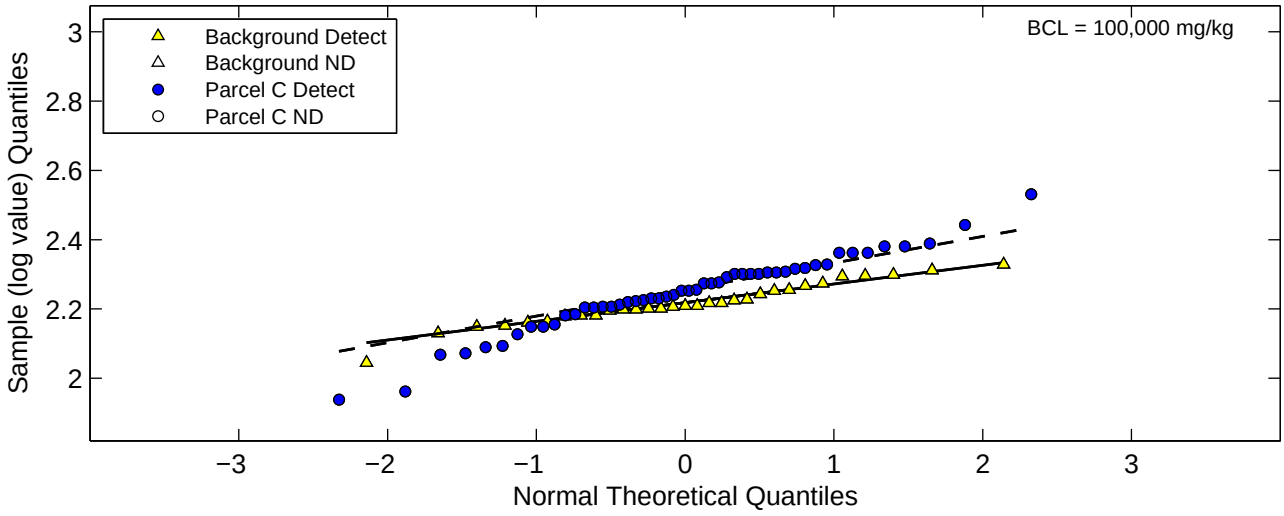
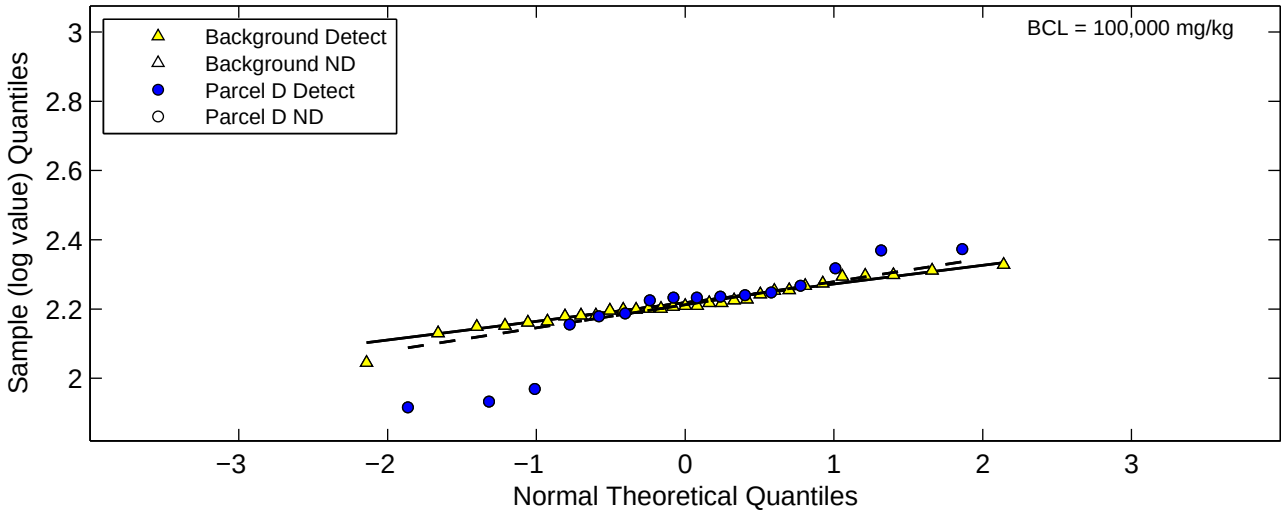


Figure I2−4B. Lognormal Q−Q Plots
Barium





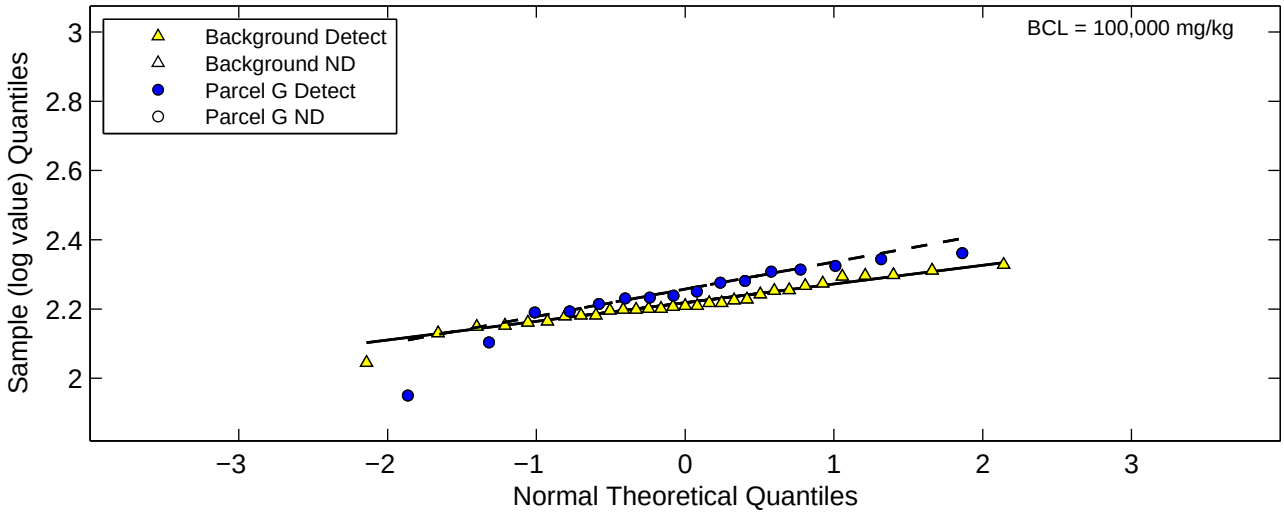
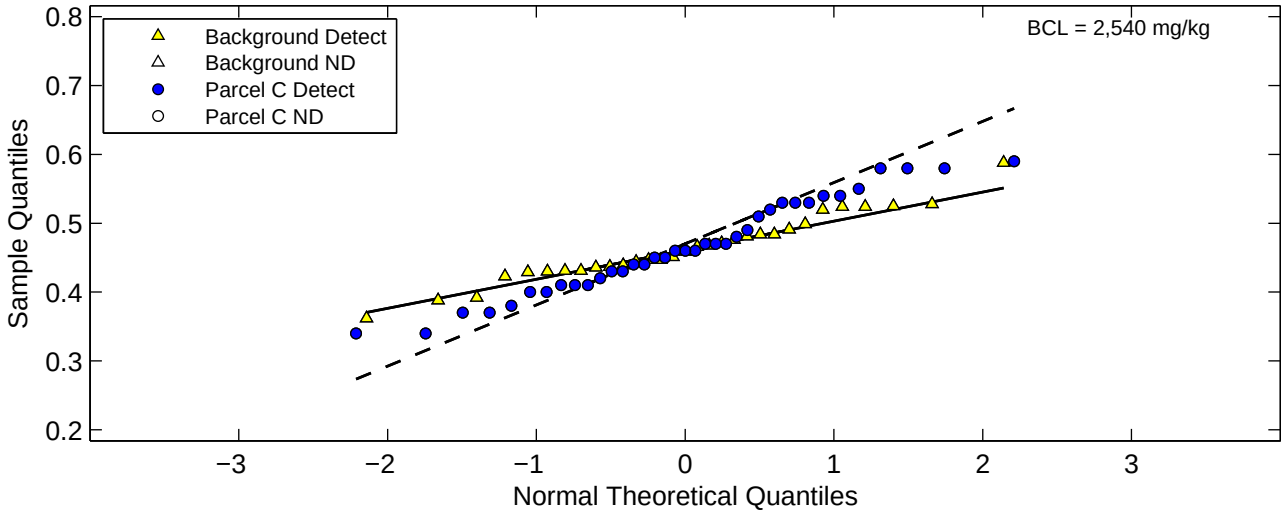
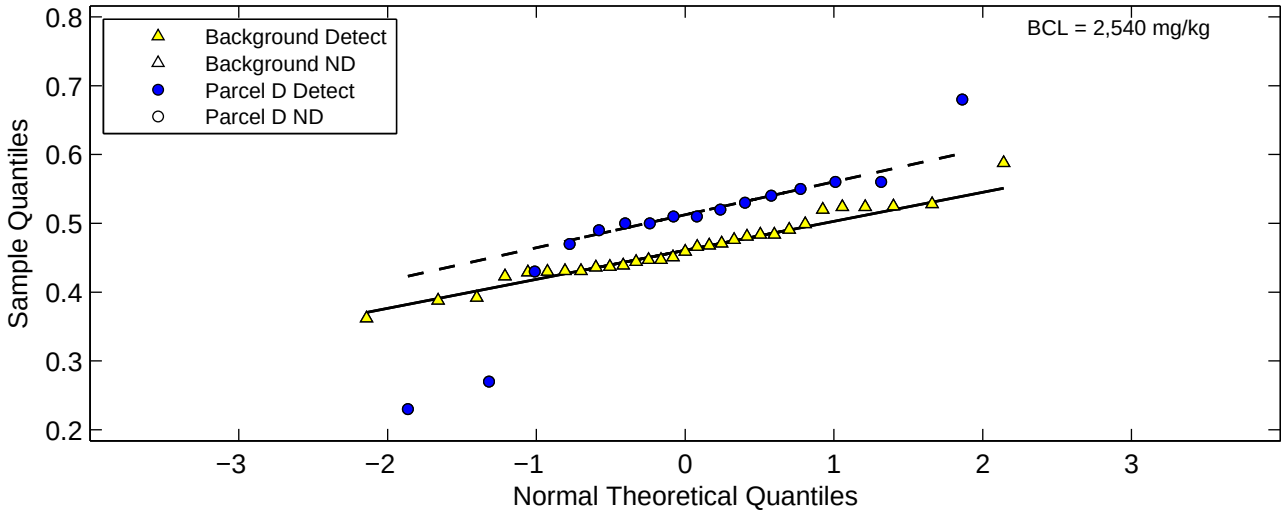


Figure I2−5A. Normal Q−Q Plots
Beryllium





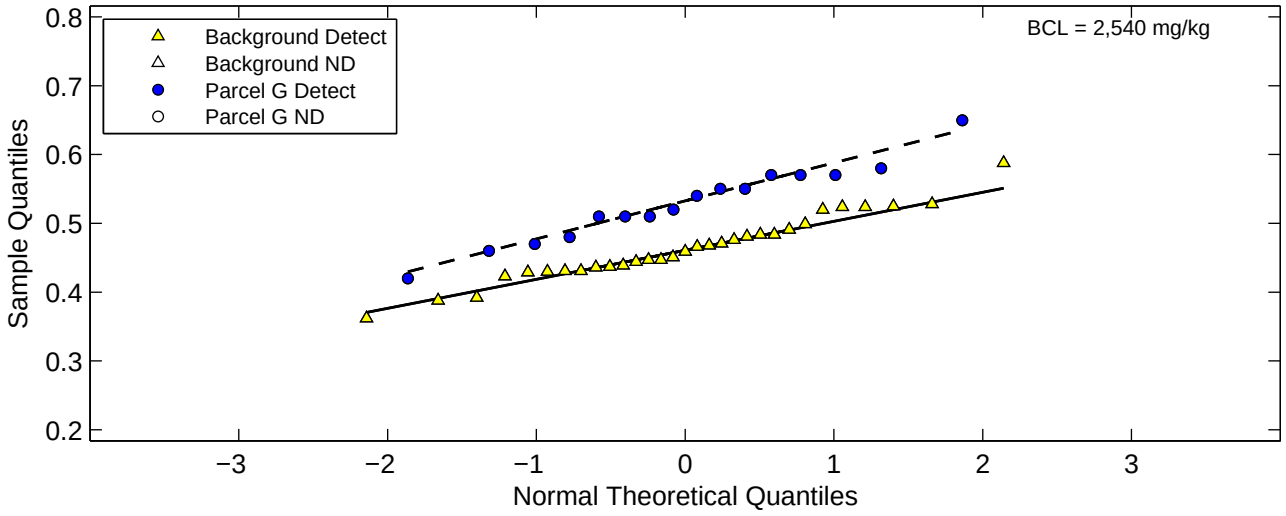
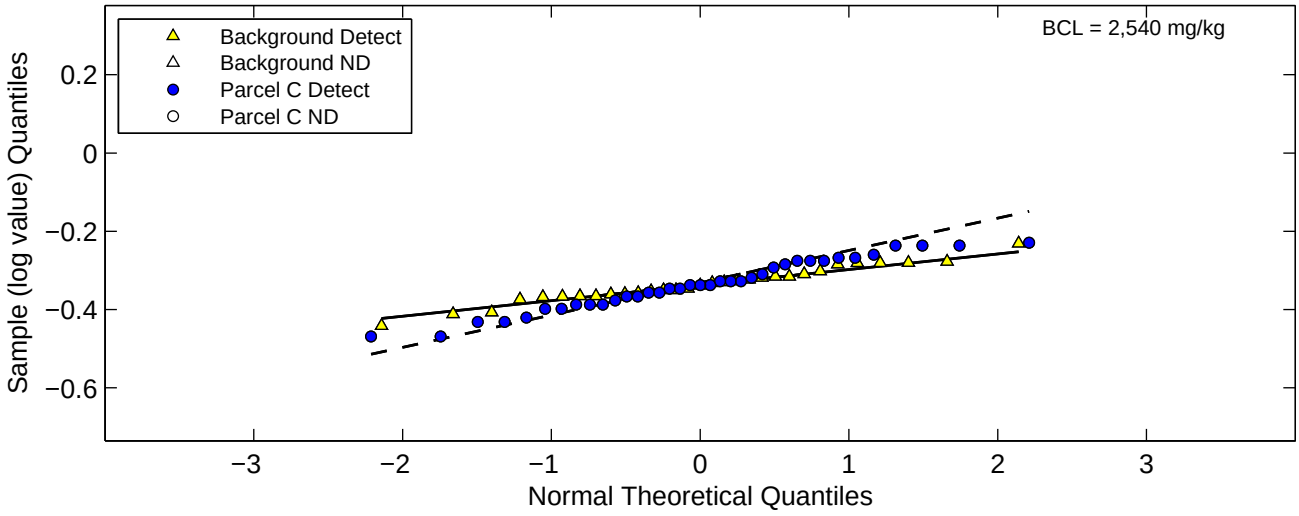
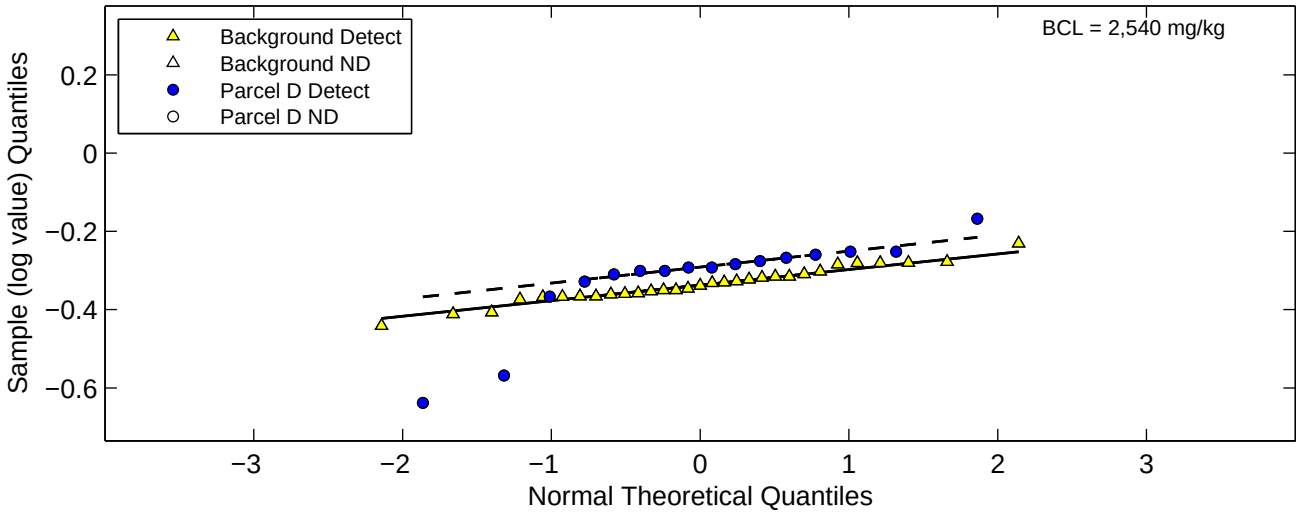
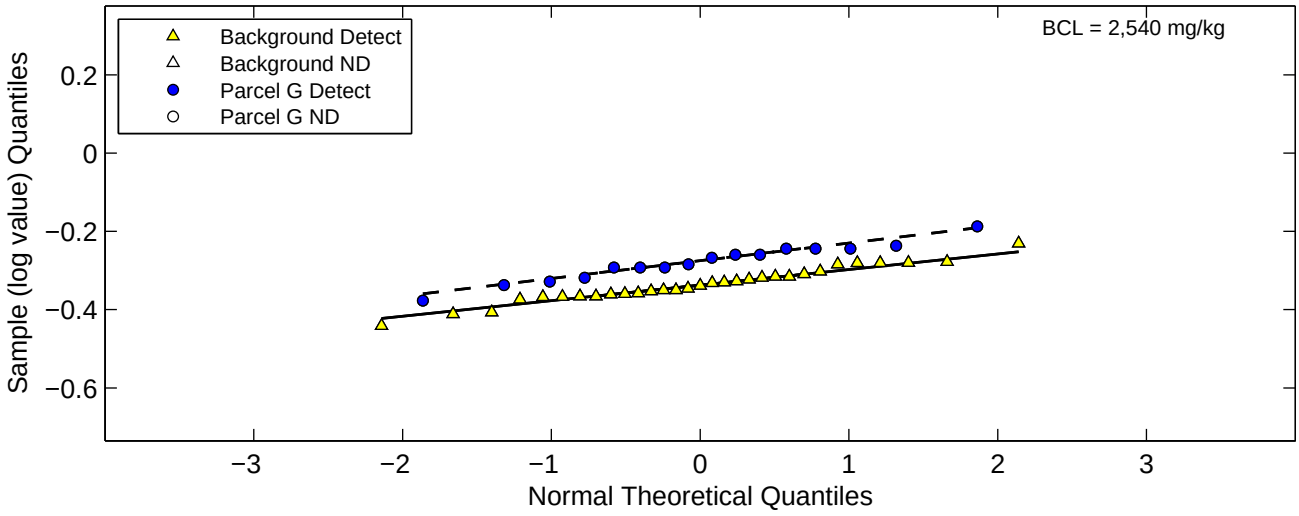


Figure I2−5B. Lognormal Q−Q Plots
Beryllium

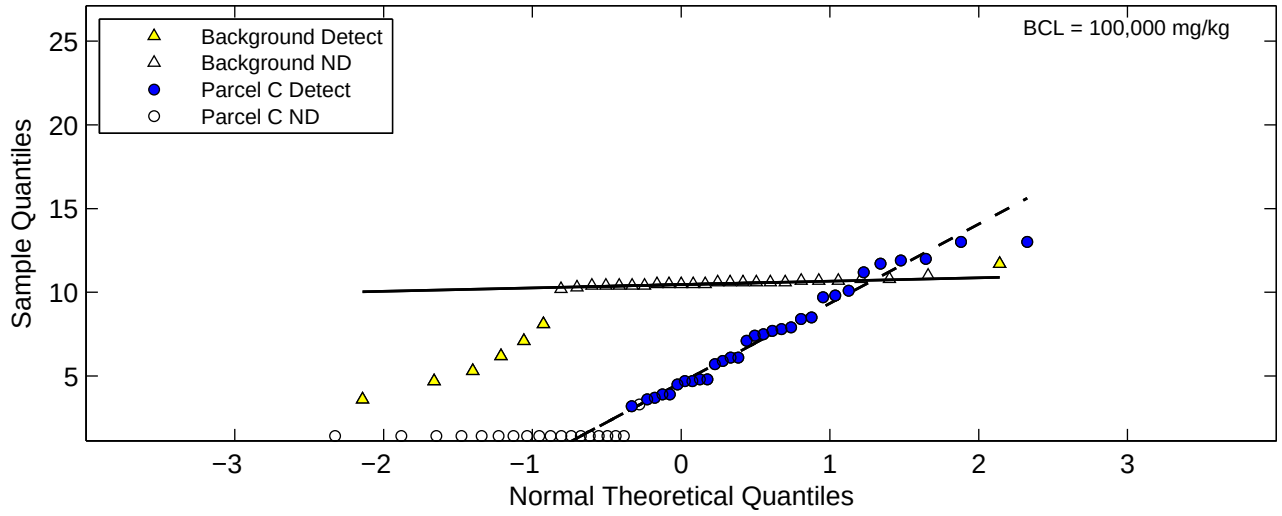


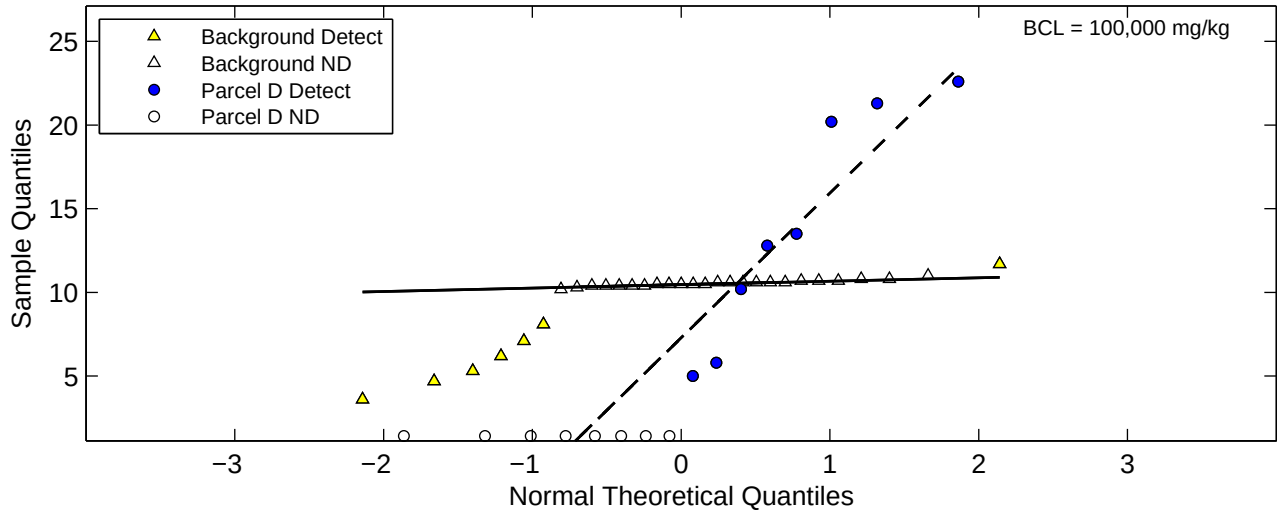




Ramboll Environ

Figure I2−6A. Normal Q−Q Plots
Boron





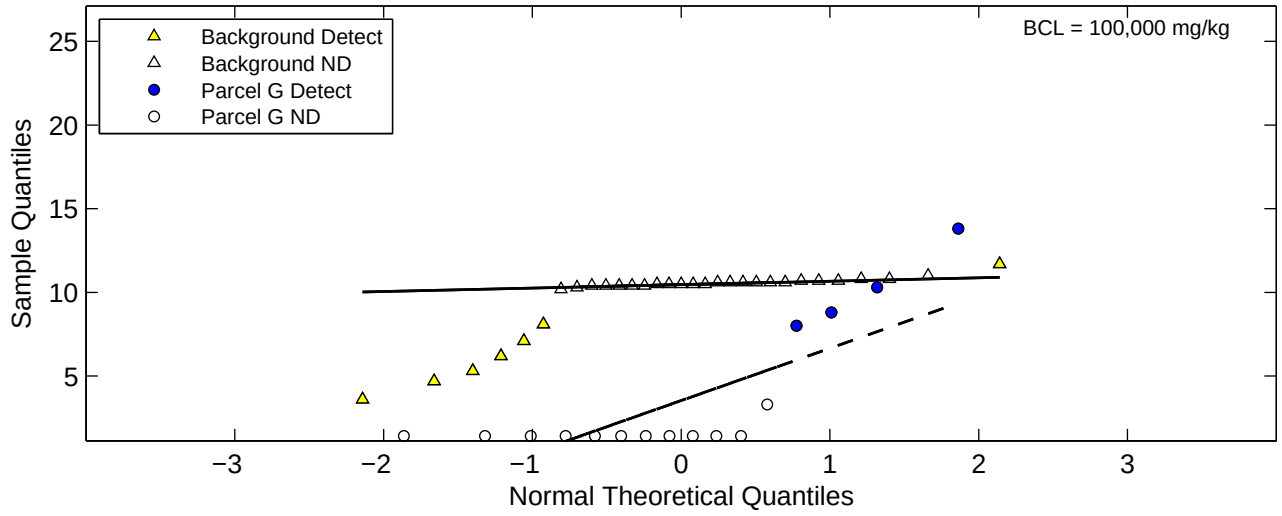
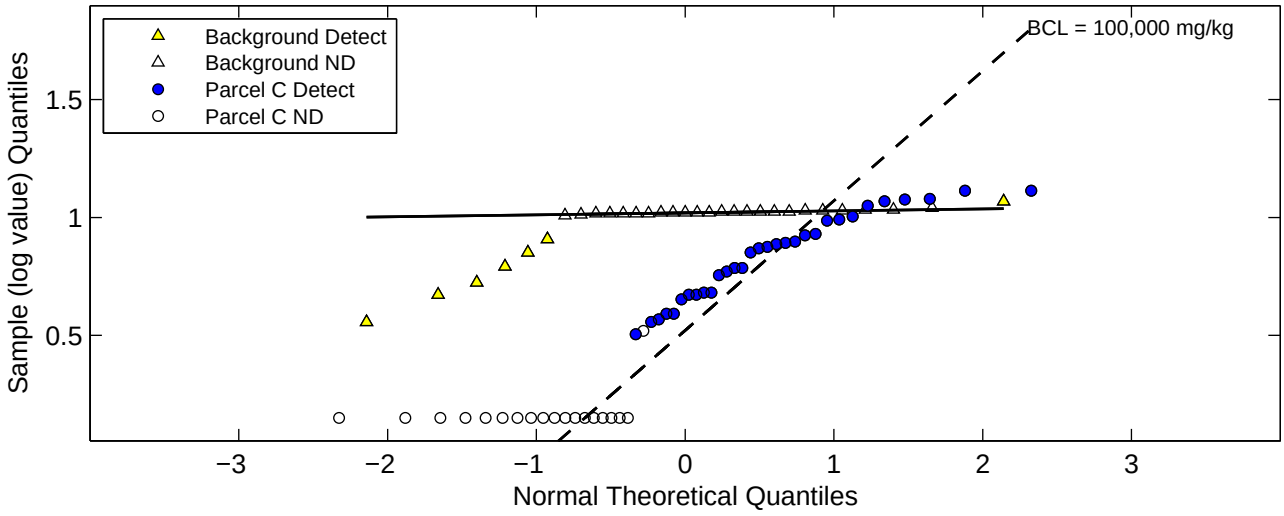
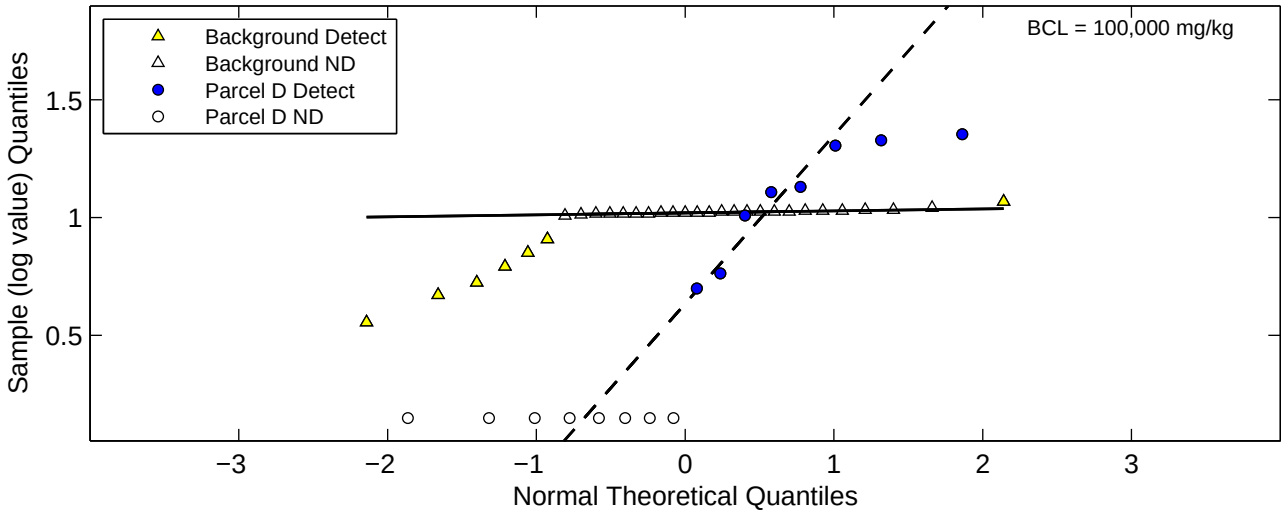


Figure I2−6B. Lognormal Q−Q Plots
Boron





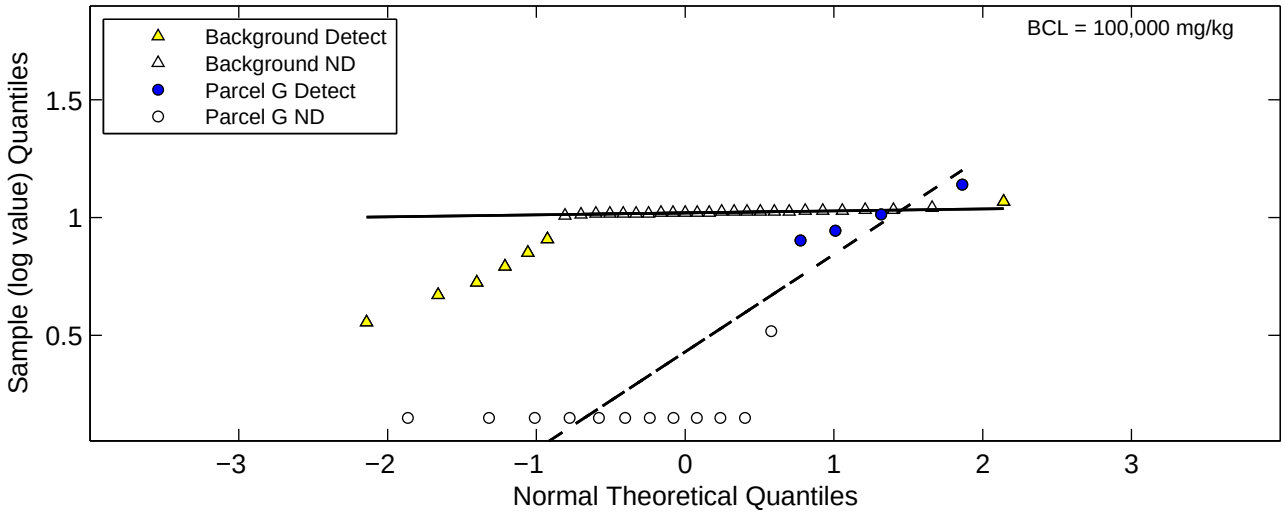
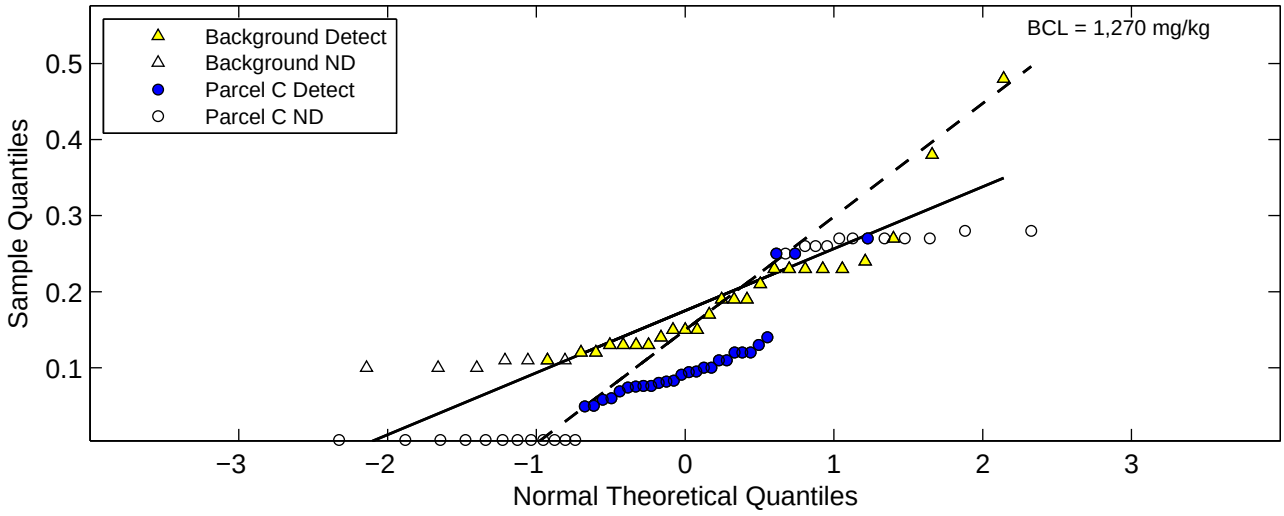
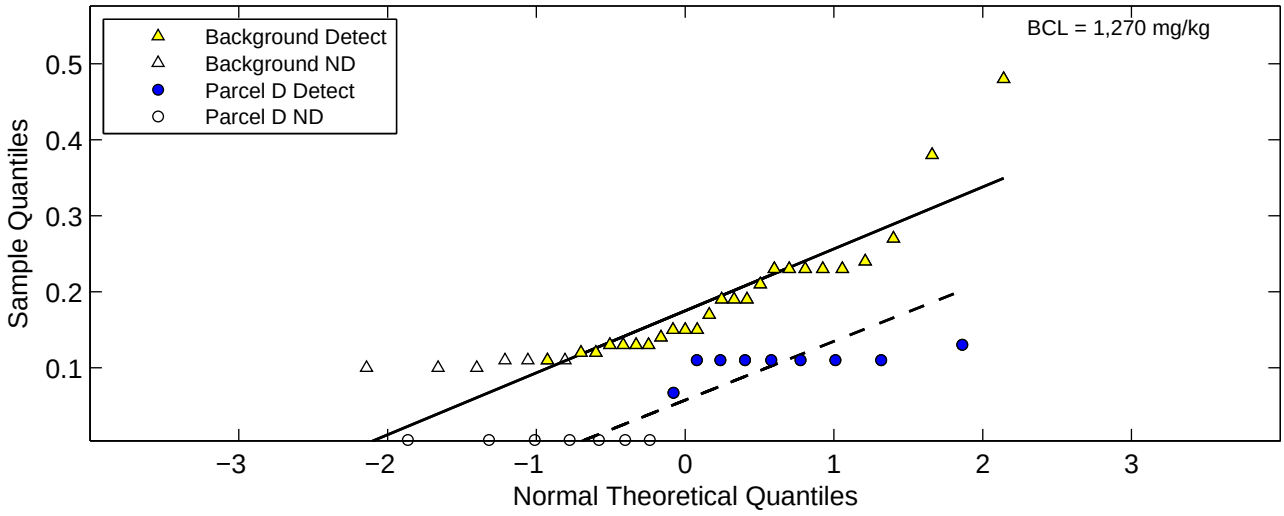


Figure I2−7A. Normal Q−Q Plots
Cadmium





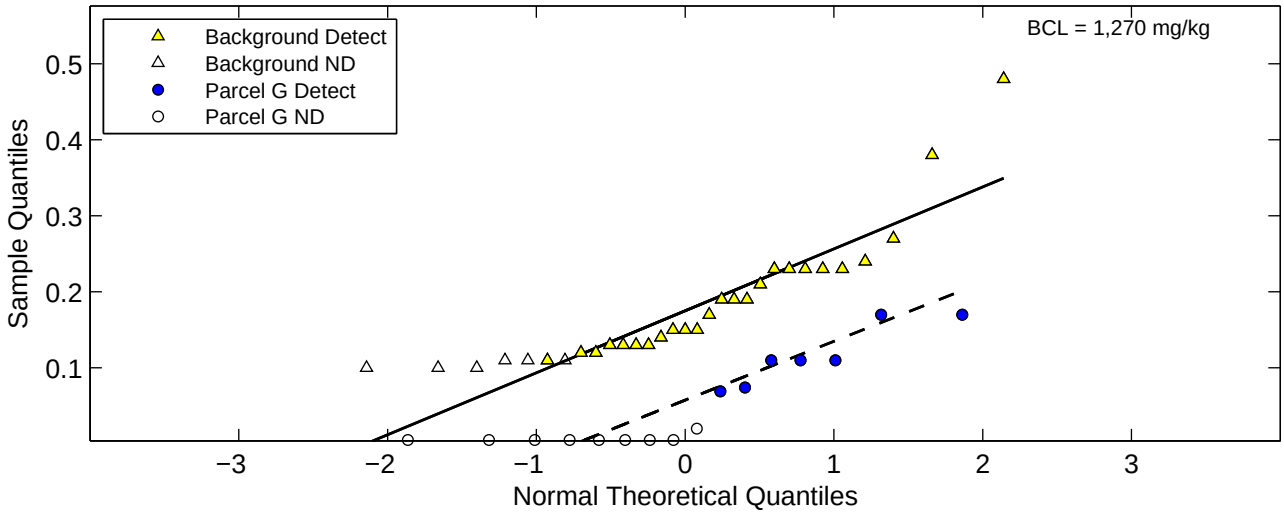
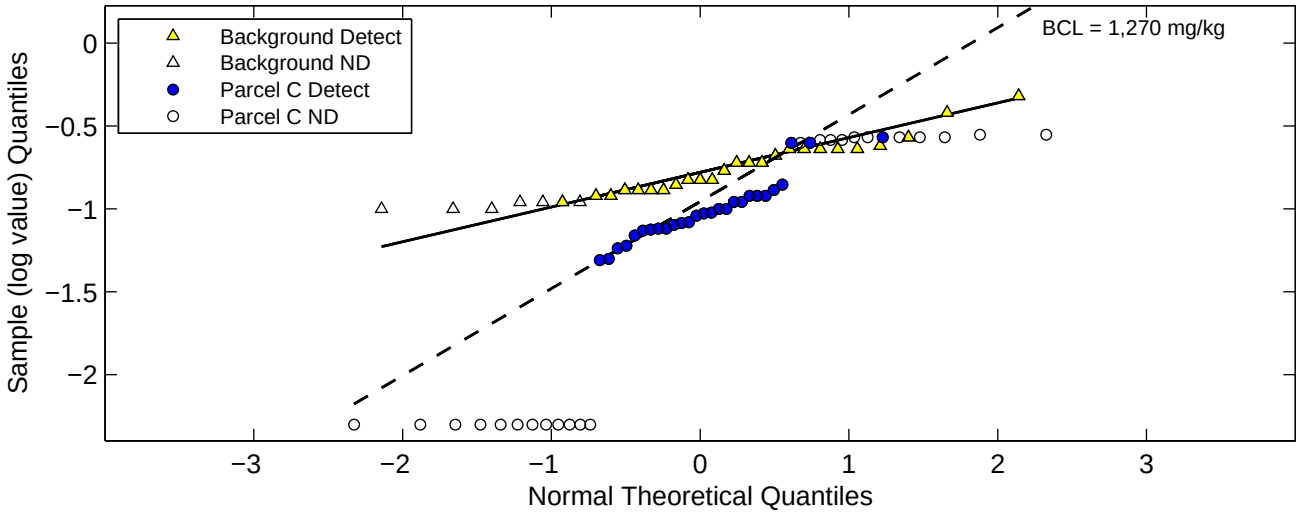
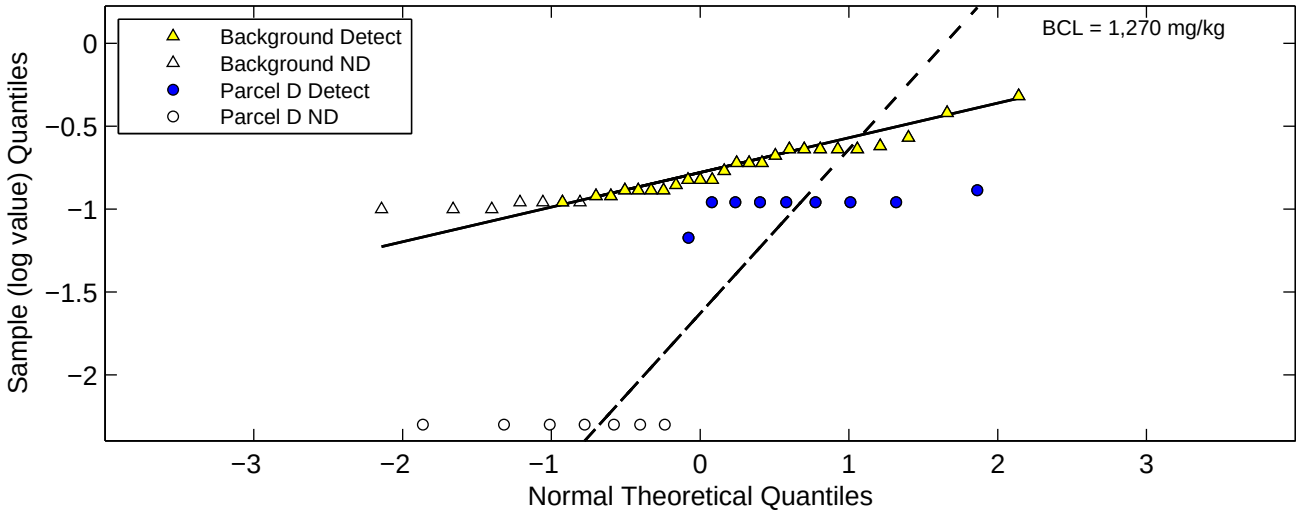


Figure I2−7B. Lognormal Q−Q Plots
Cadmium





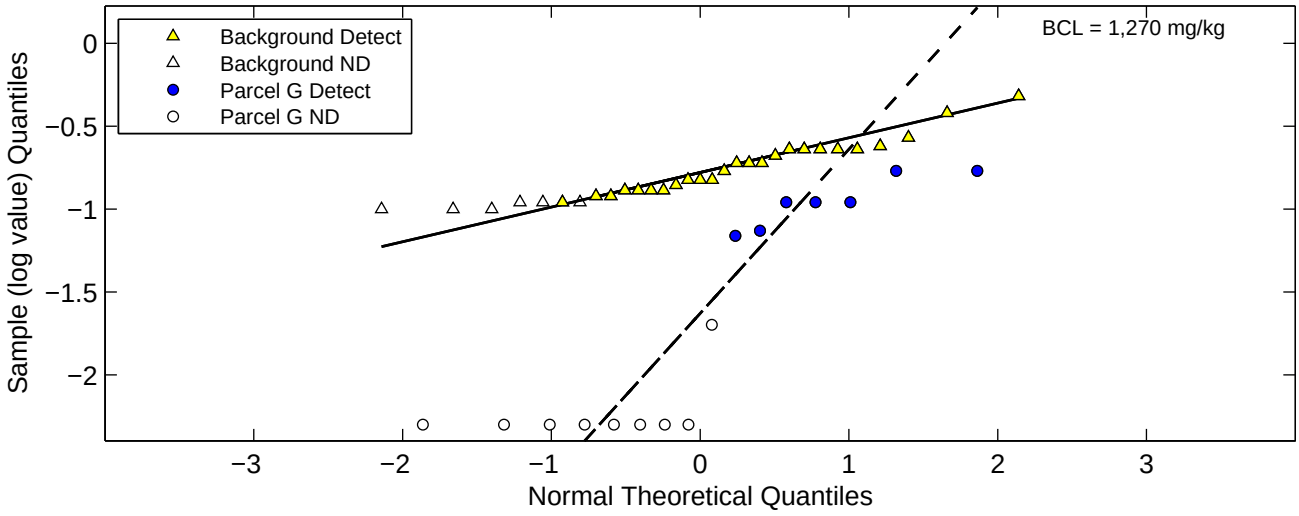
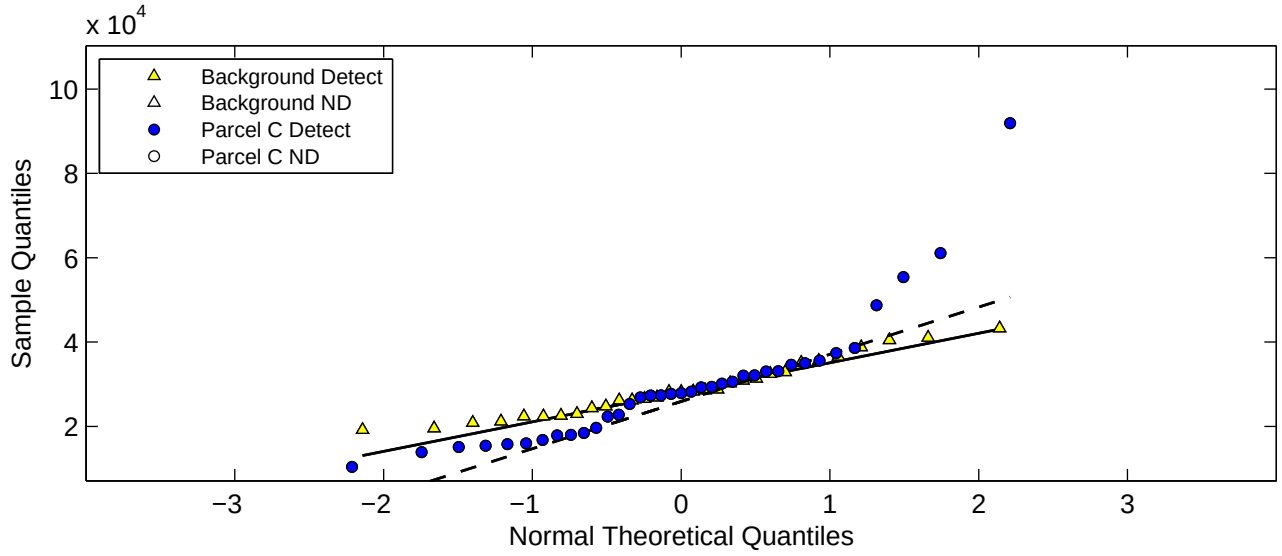
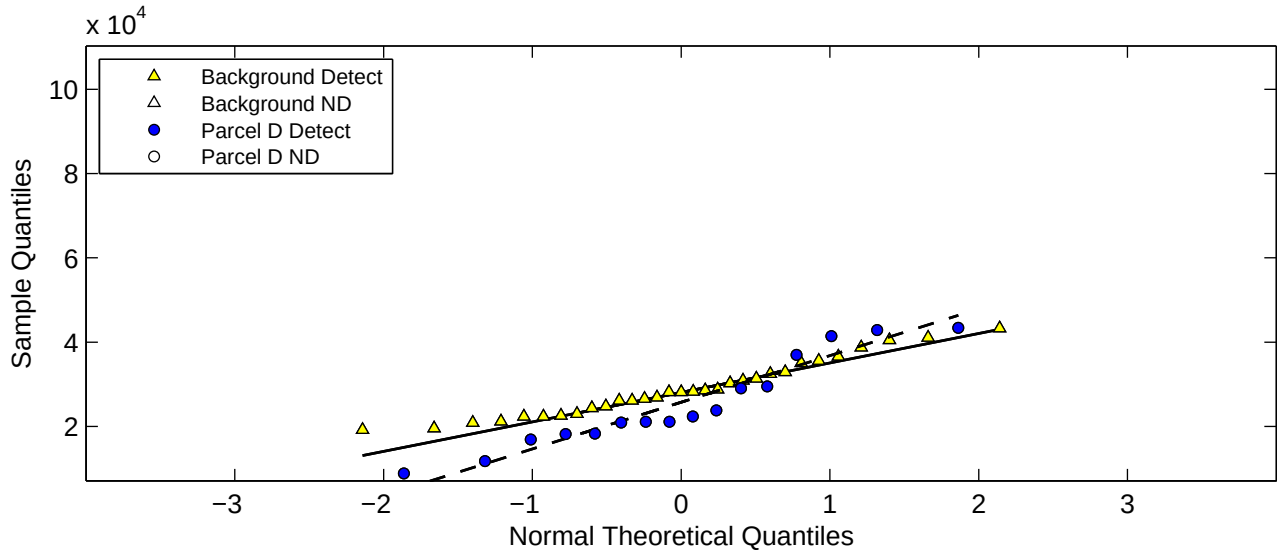


Figure I2−8A. Normal Q−Q Plots
Calcium





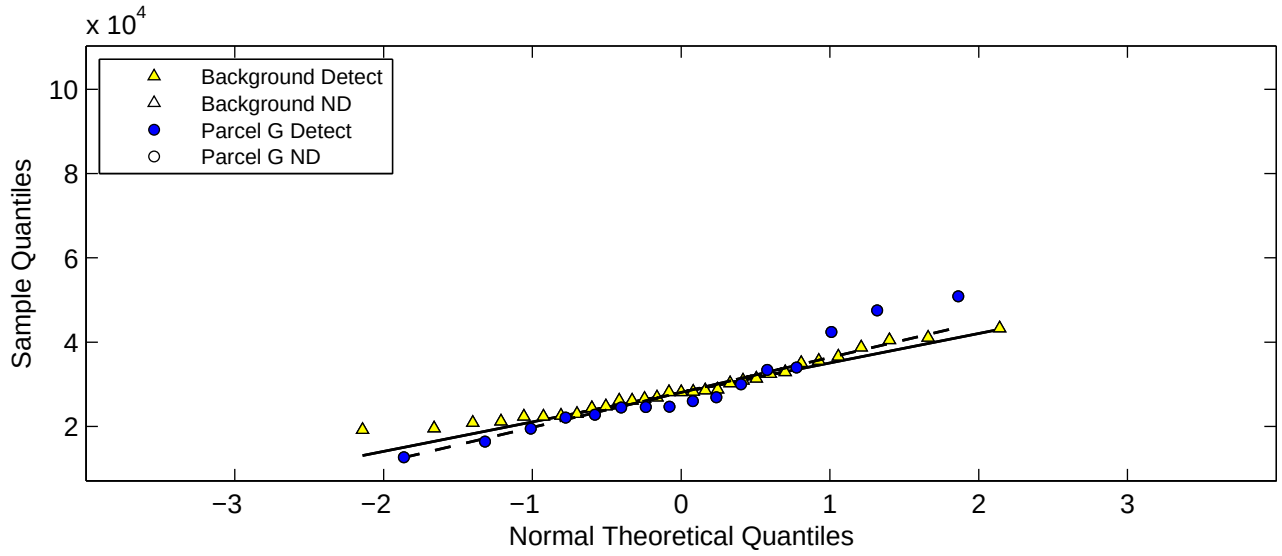
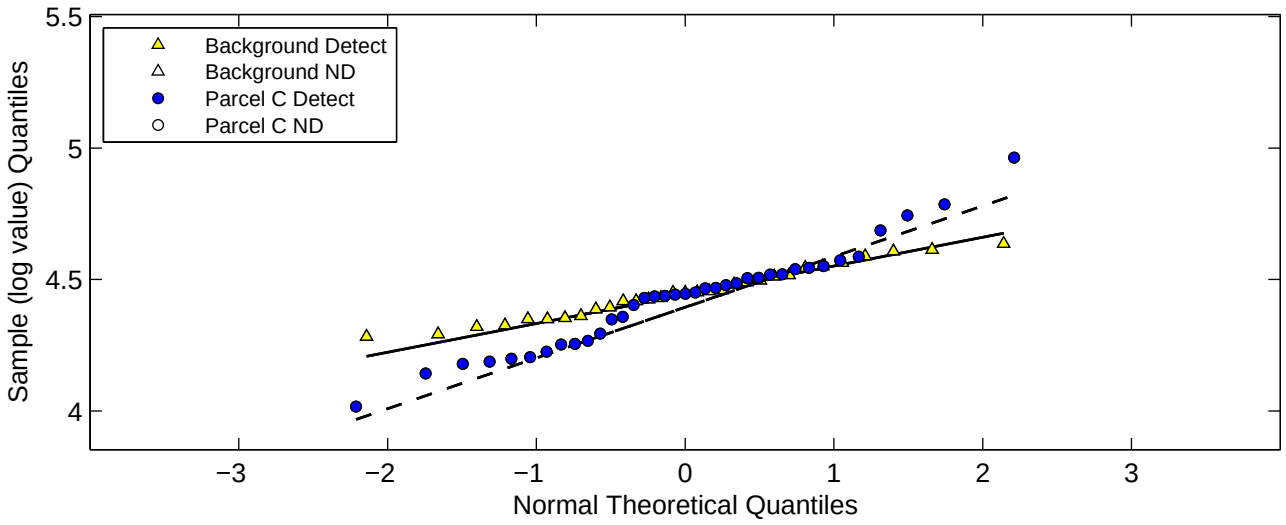
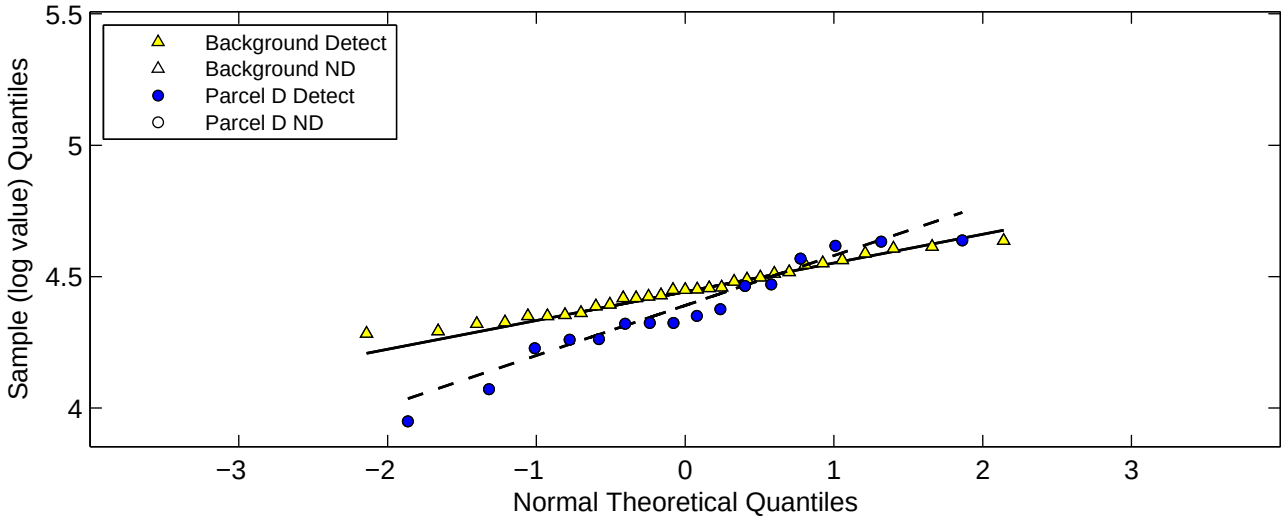


Figure I2−8B. Lognormal Q−Q Plots
Calcium





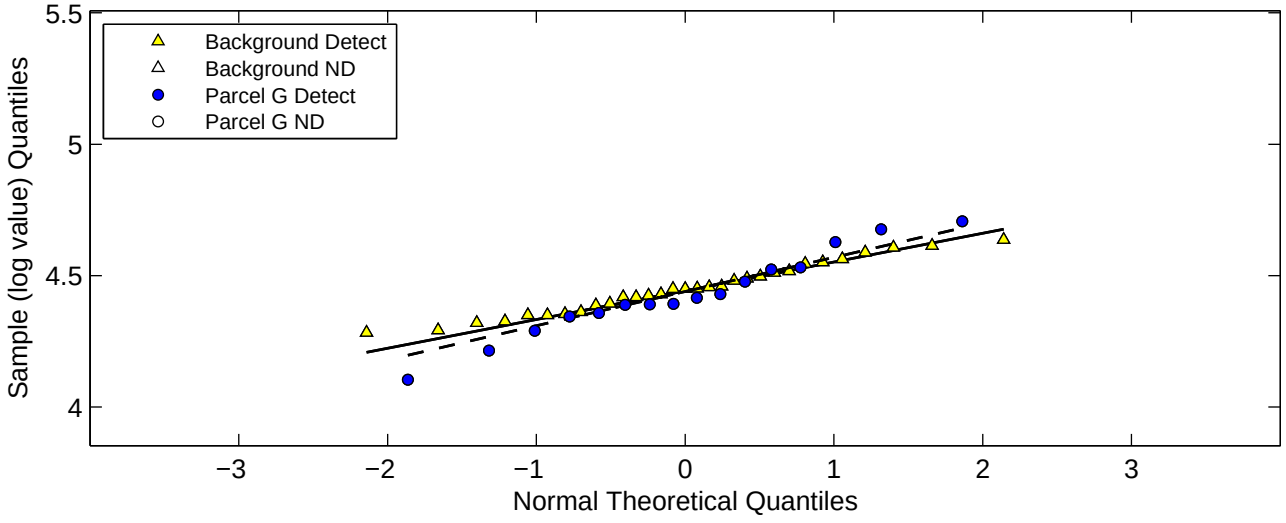
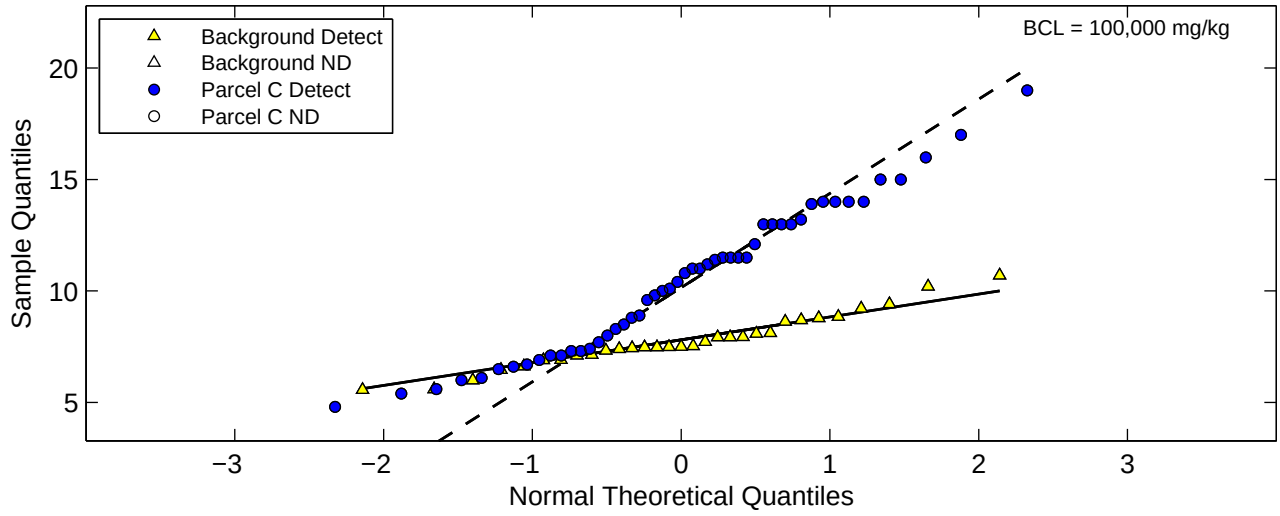
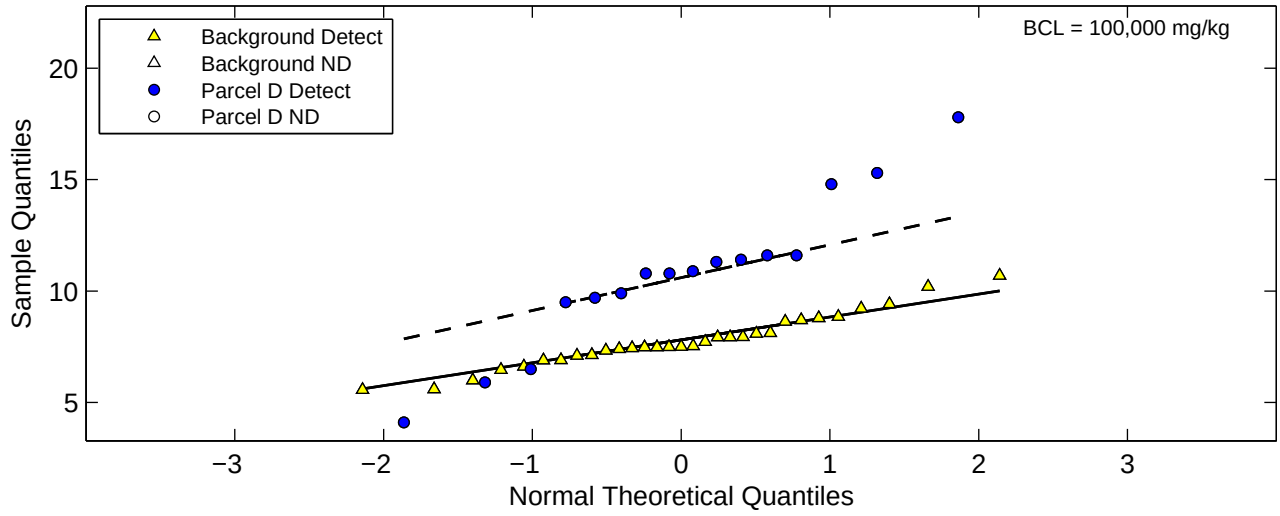


Figure I2−9A. Normal Q−Q Plots
Chromium (total)





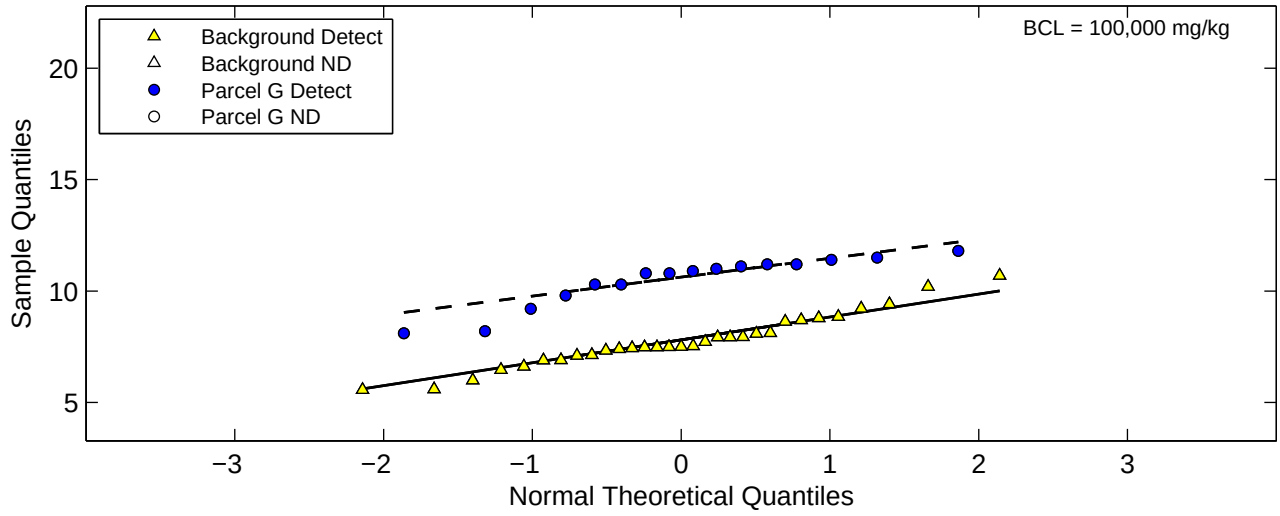
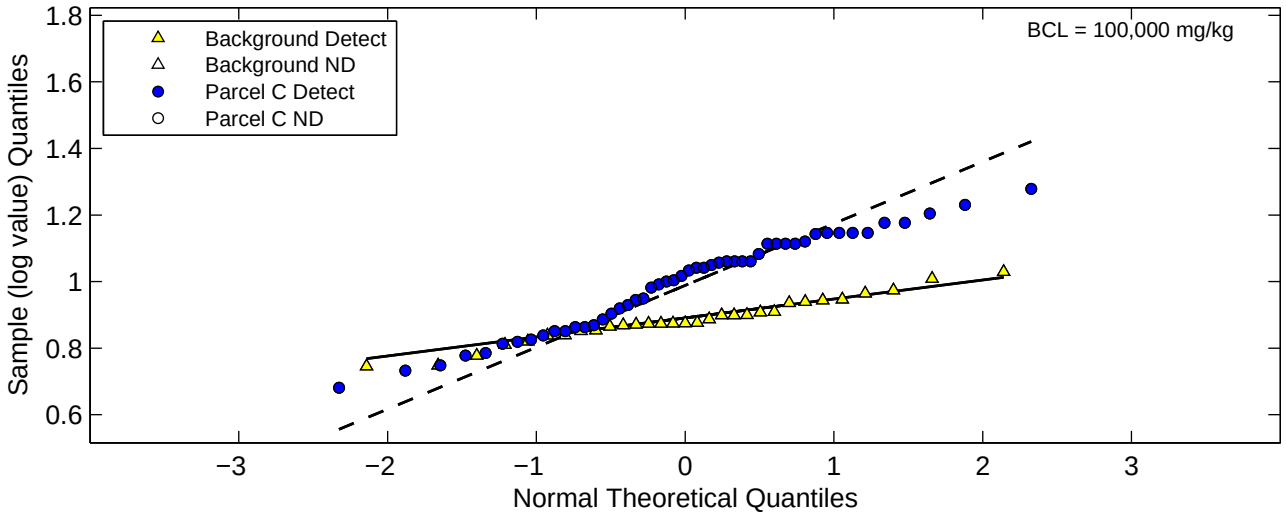
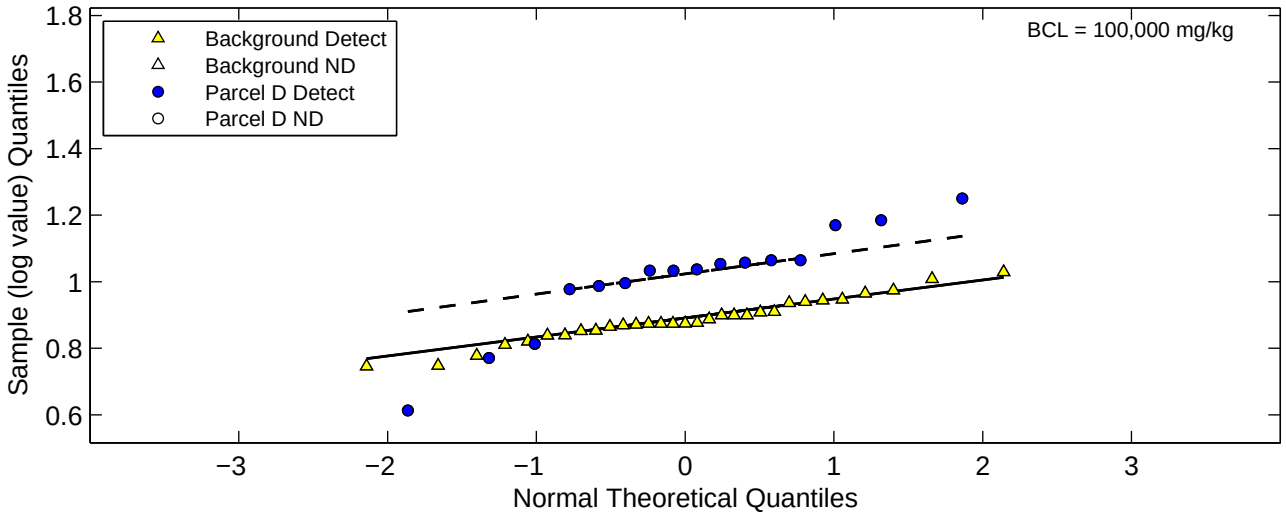


Figure I2−9B. Lognormal Q−Q Plots
Chromium (total)





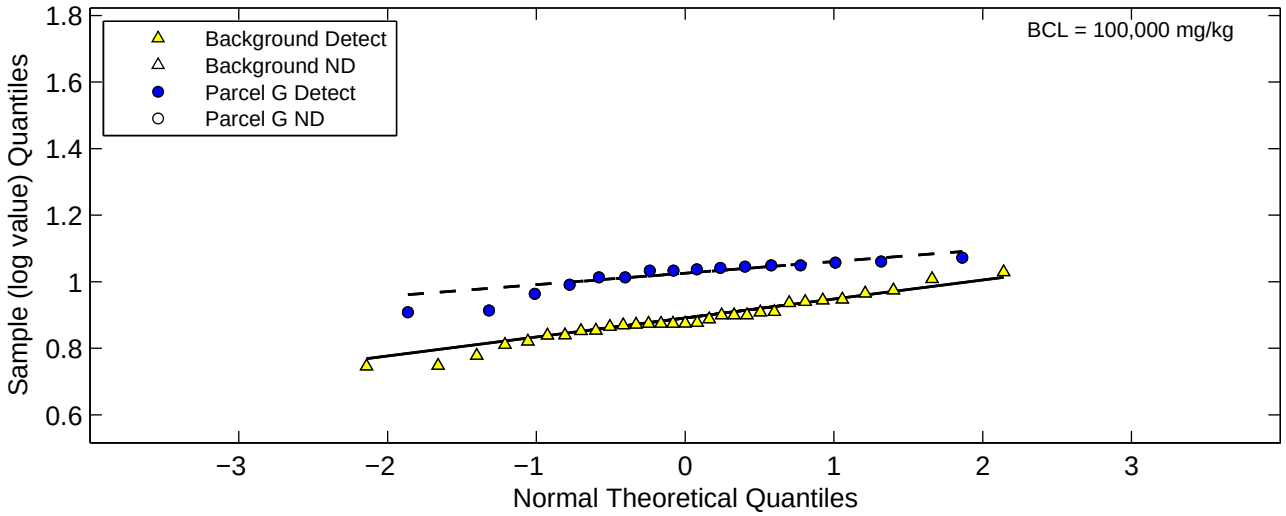
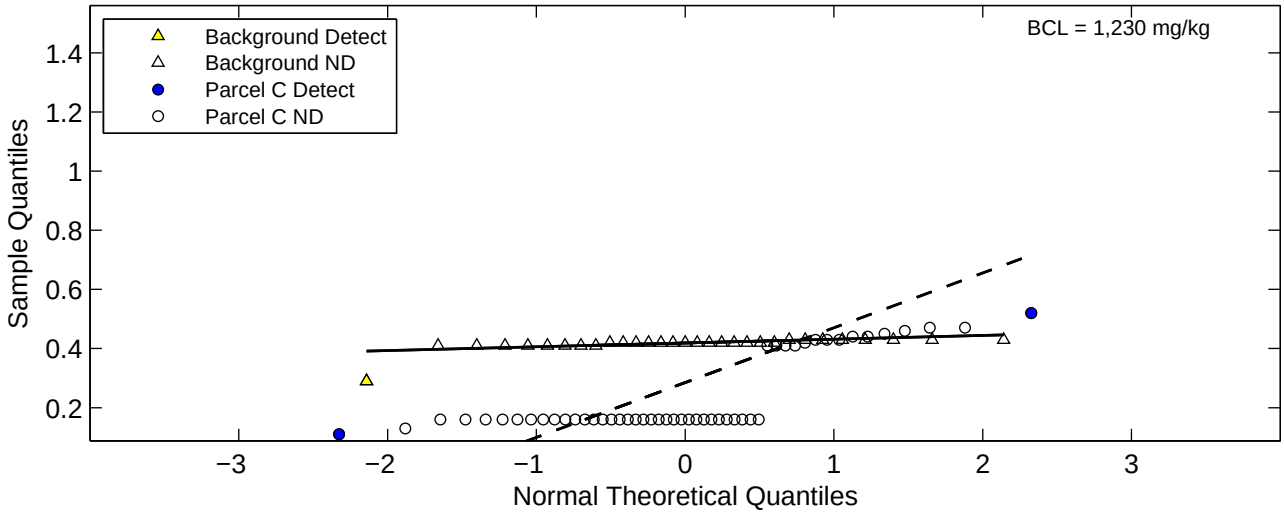
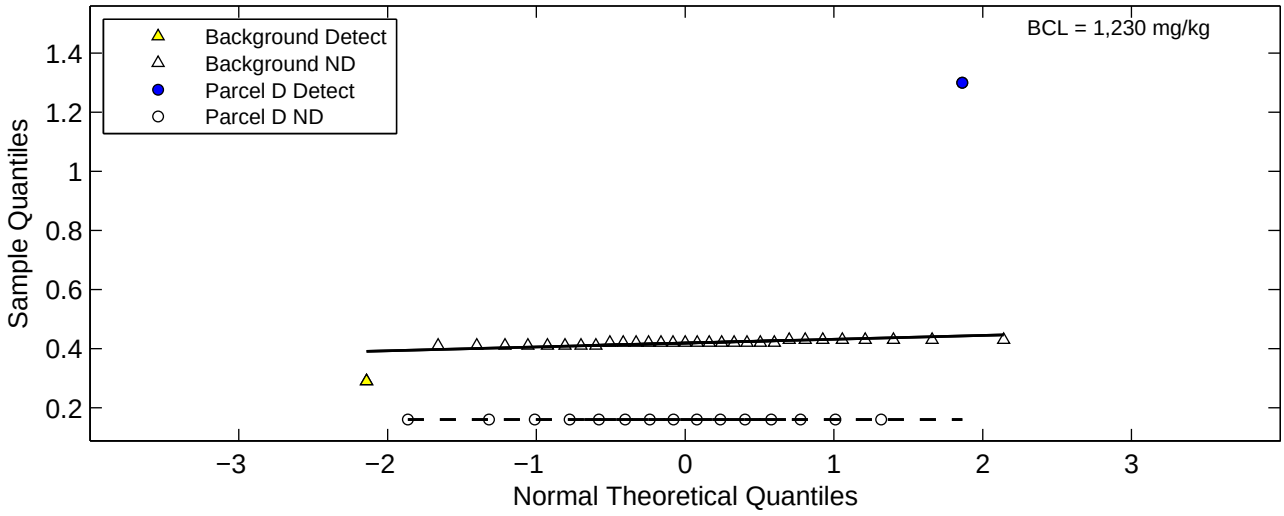


Figure I2−10A. Normal Q−Q Plots
Chromium VI





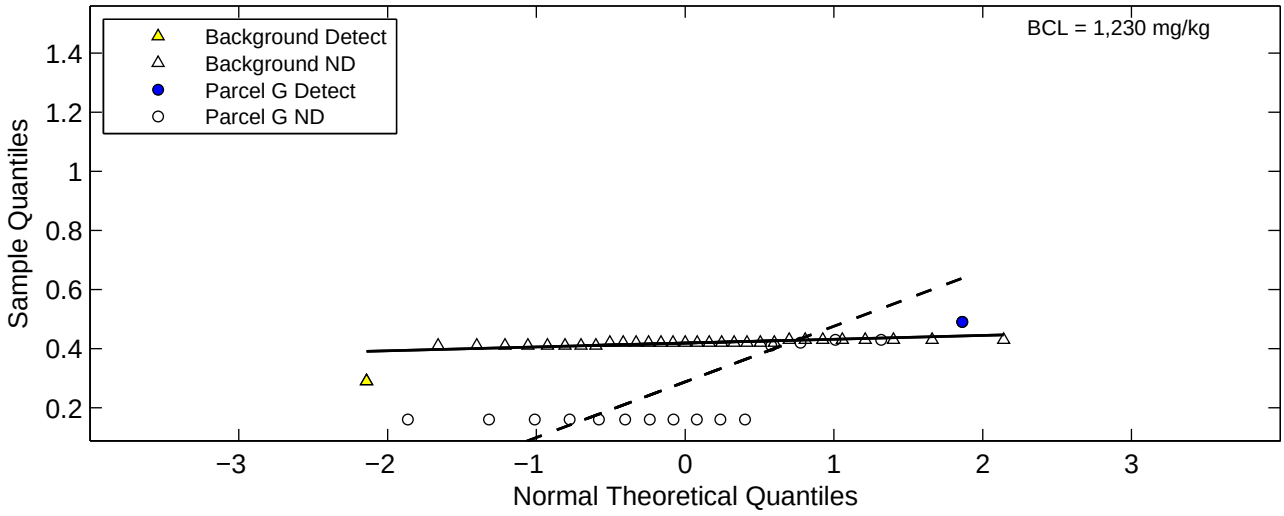
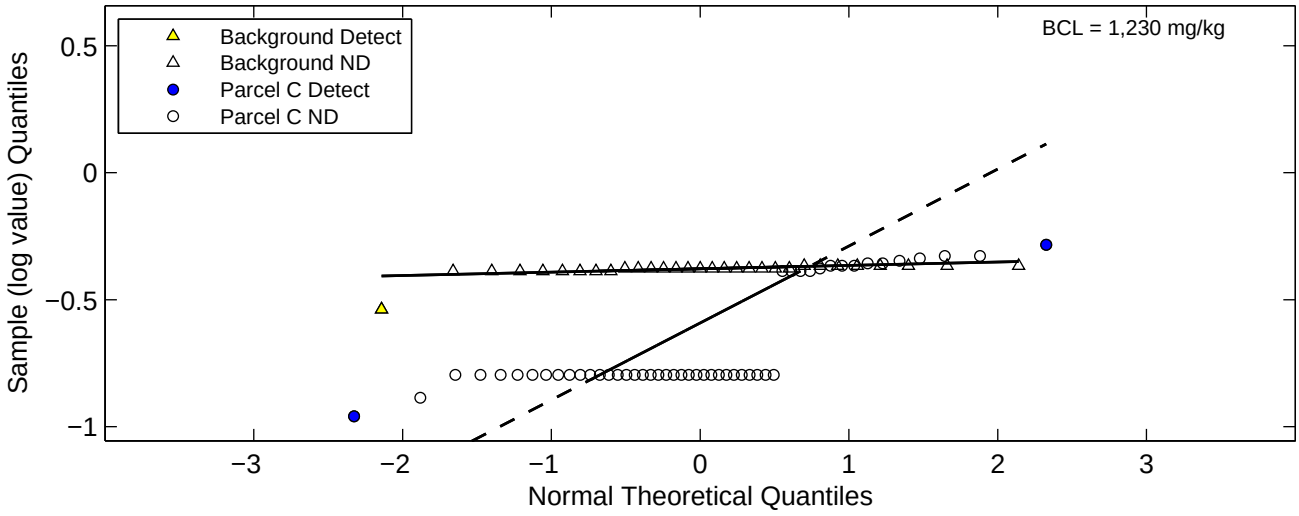
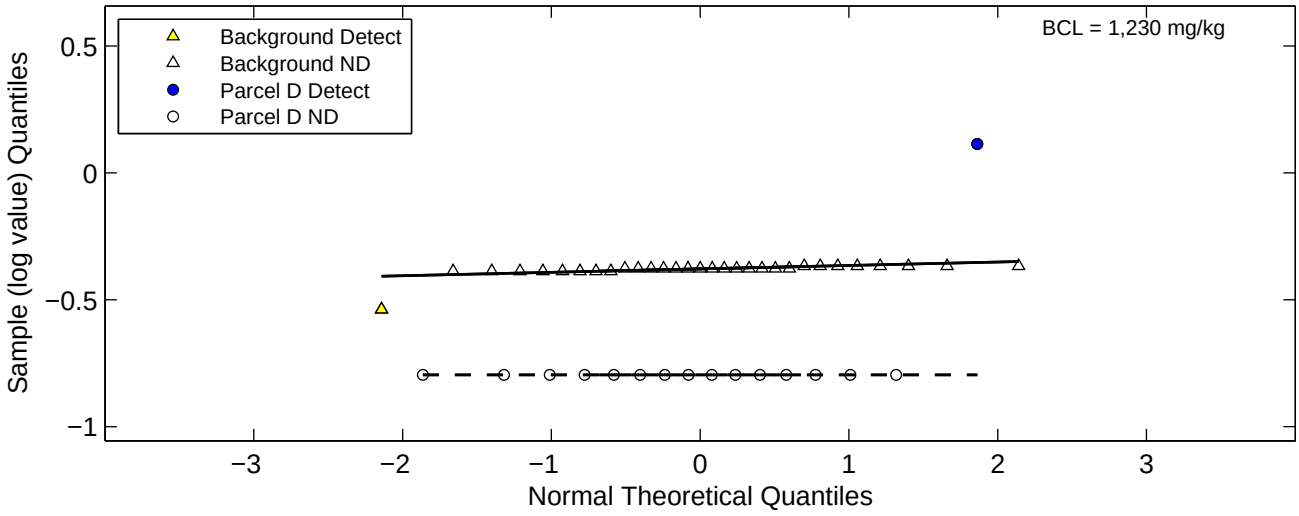


Figure I2−10B. Lognormal Q−Q Plots
Chromium VI





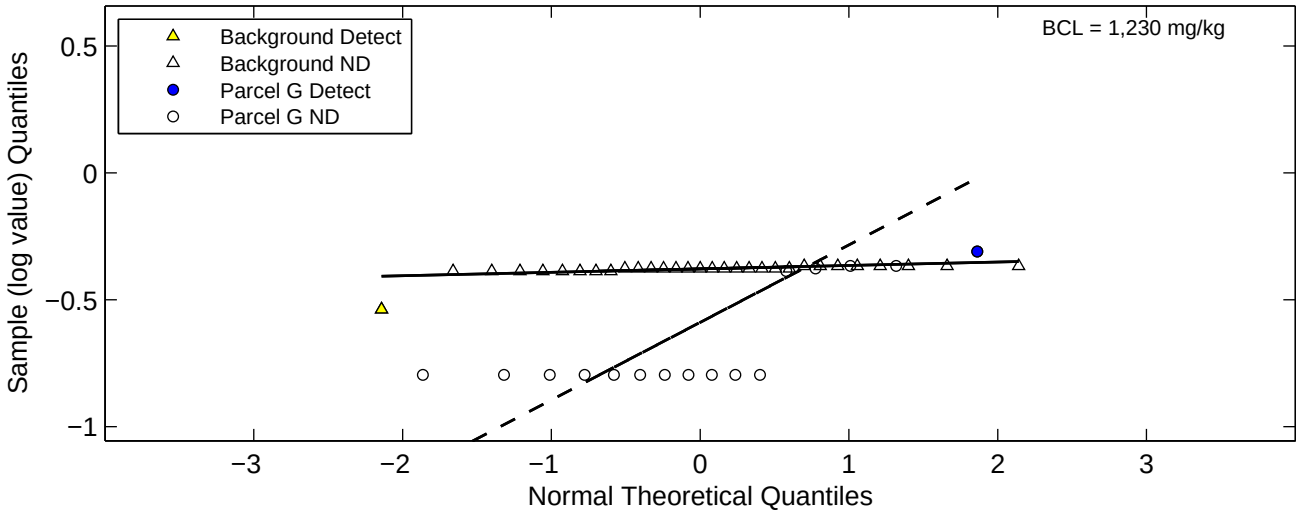
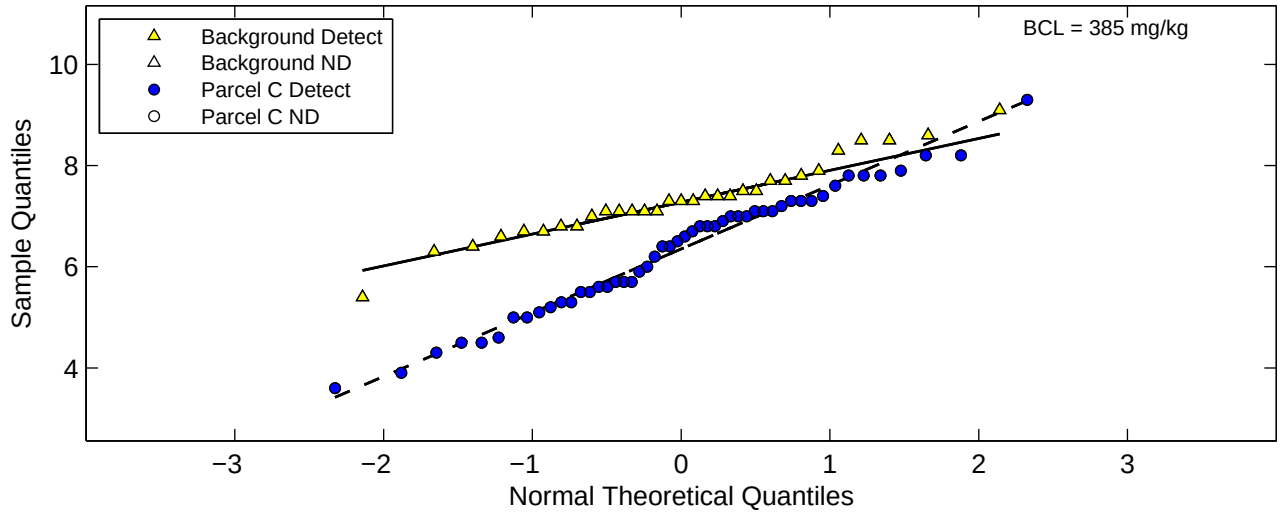
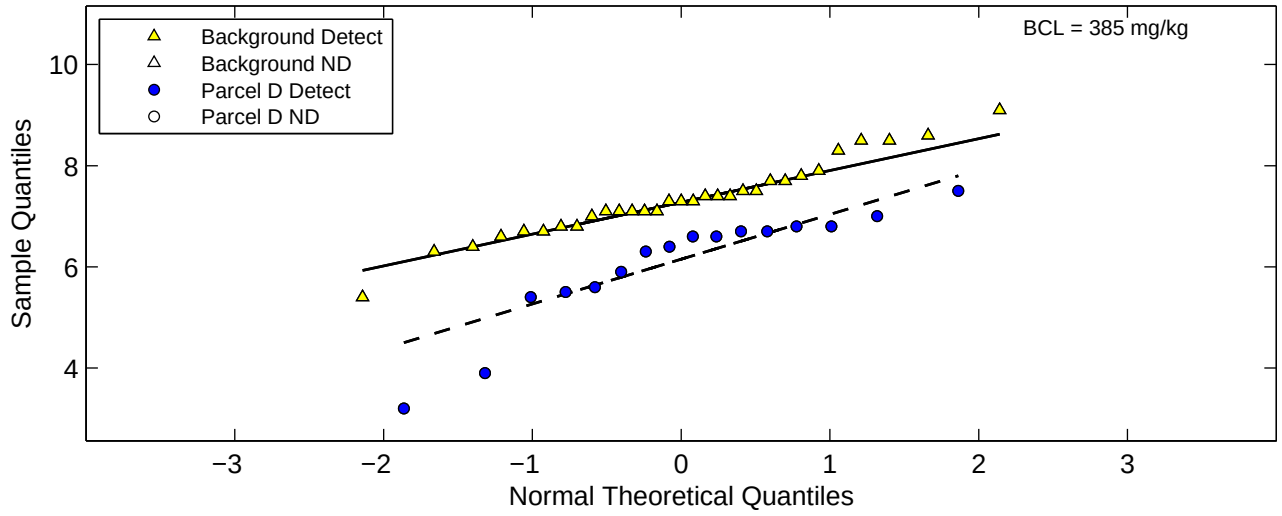


Figure I2−11A. Normal Q−Q Plots
Cobalt





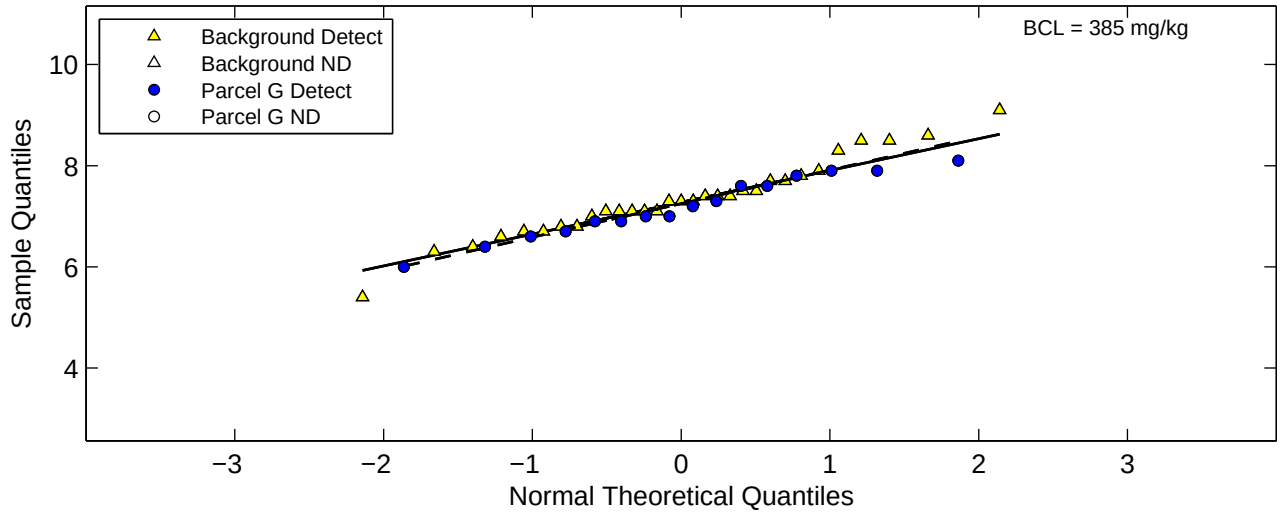
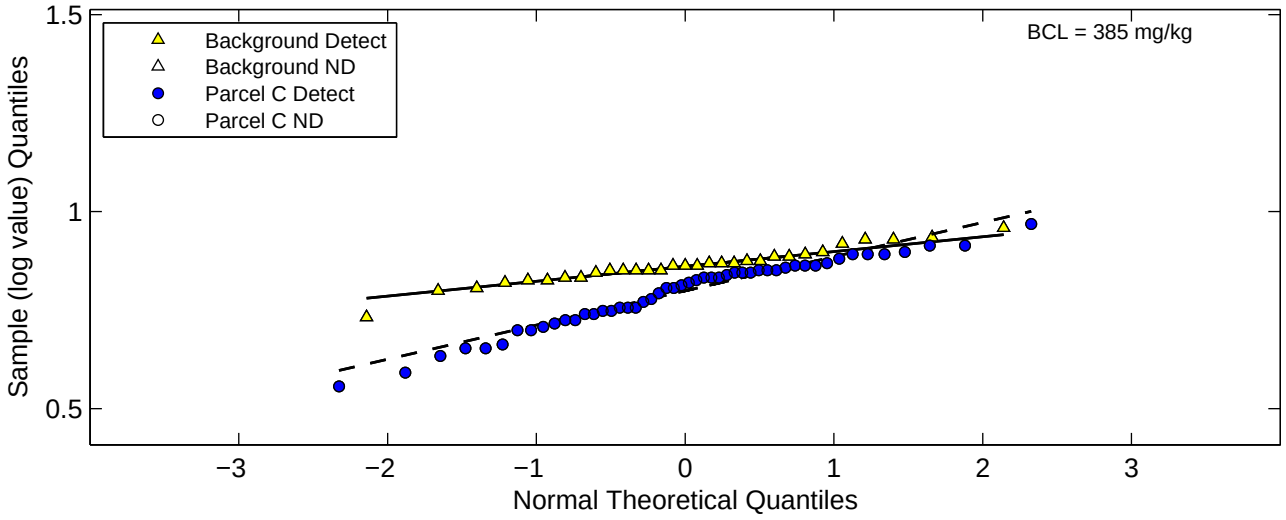
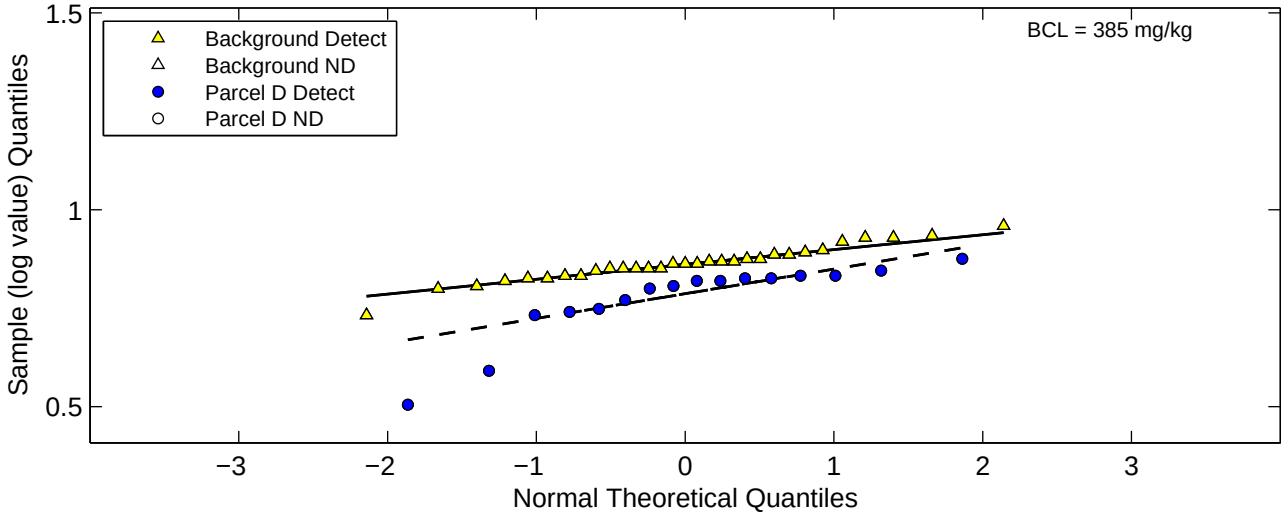


Figure I2−11B. Lognormal Q−Q Plots
Cobalt





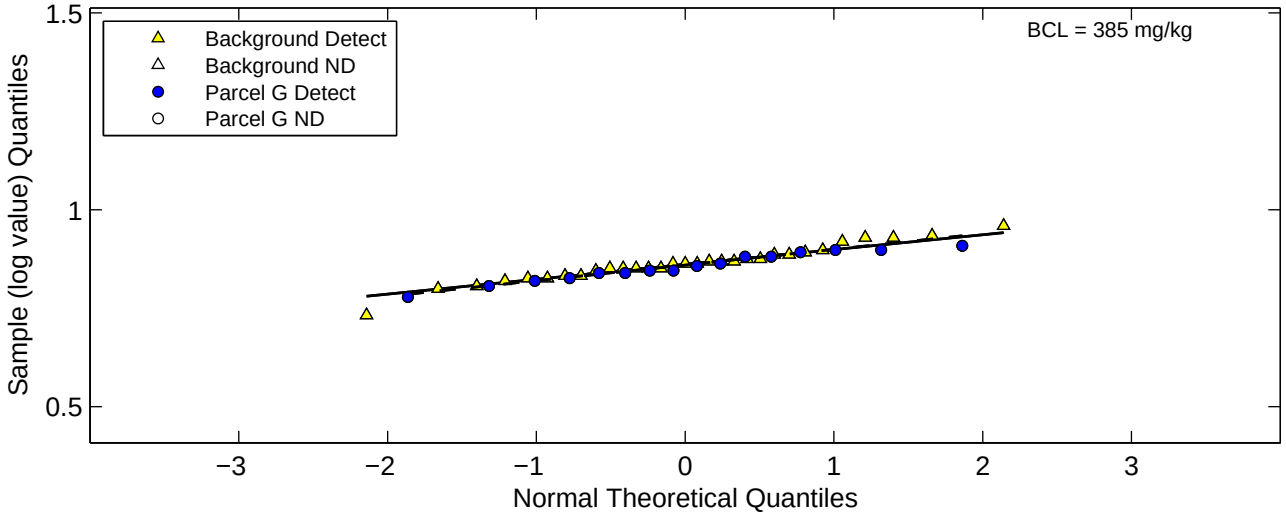
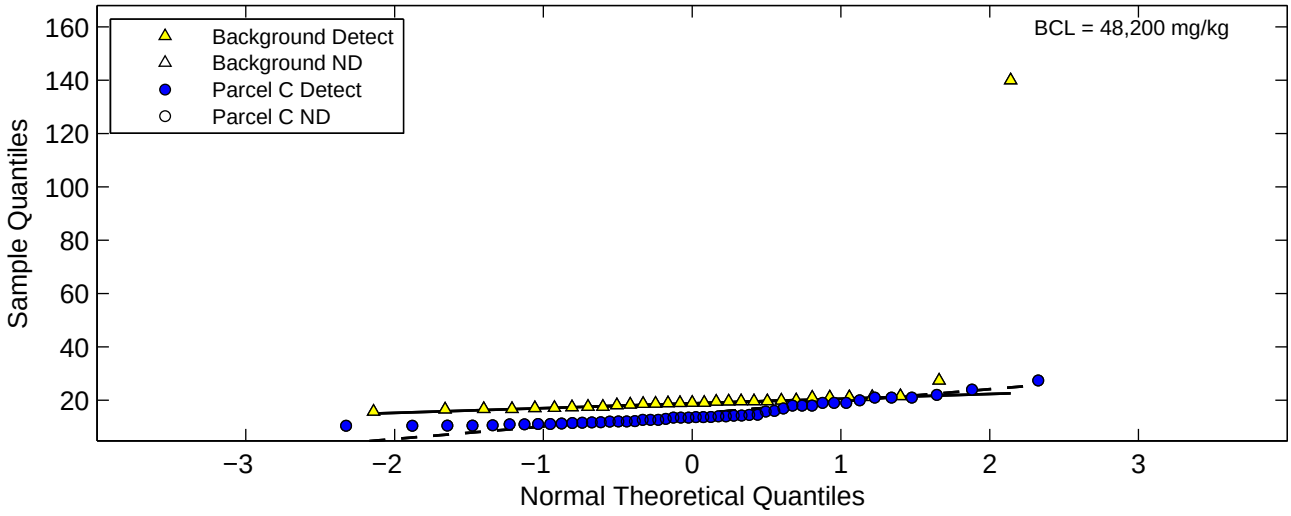
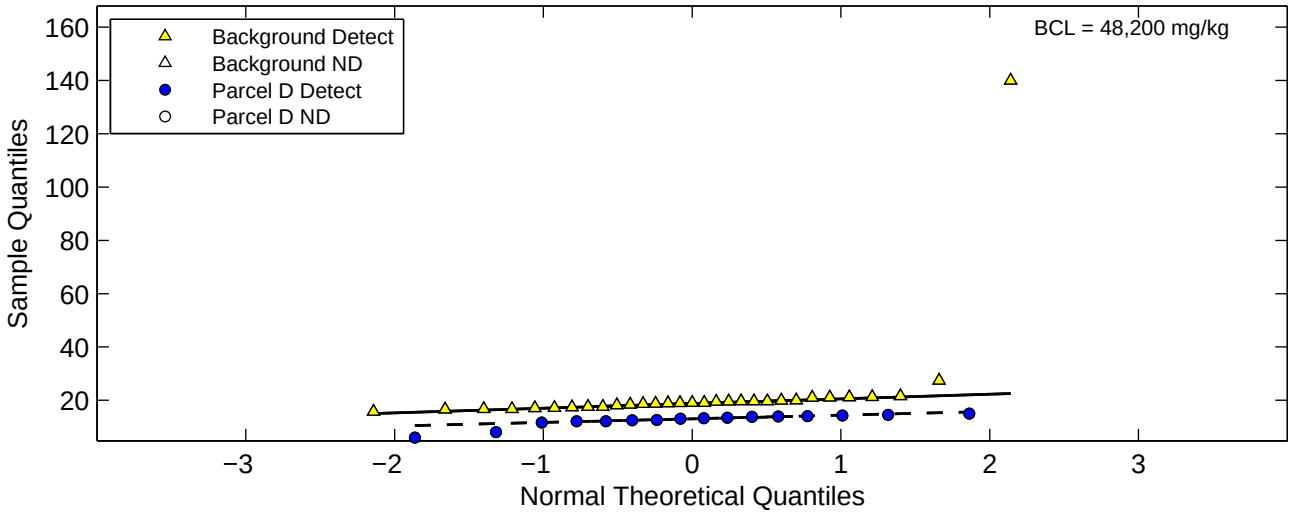


Figure I2−12A. Normal Q−Q Plots
Copper





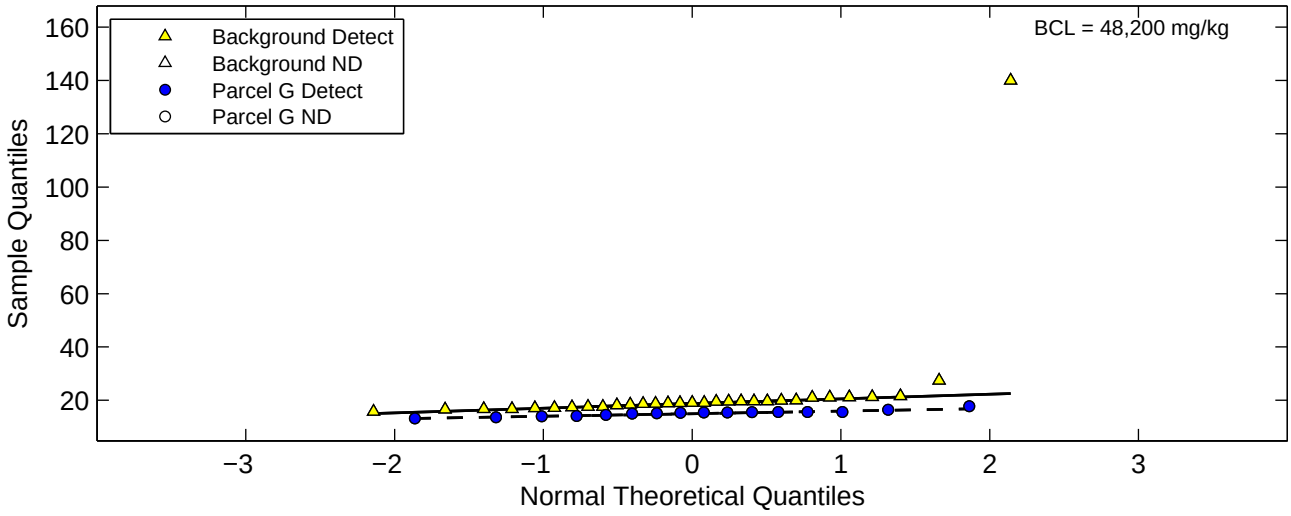
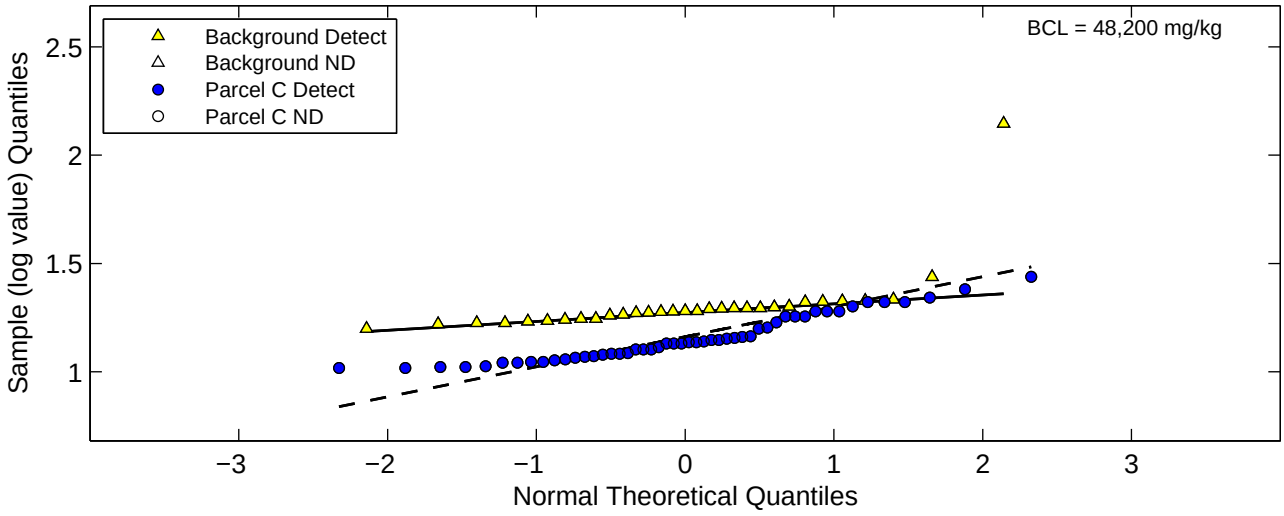
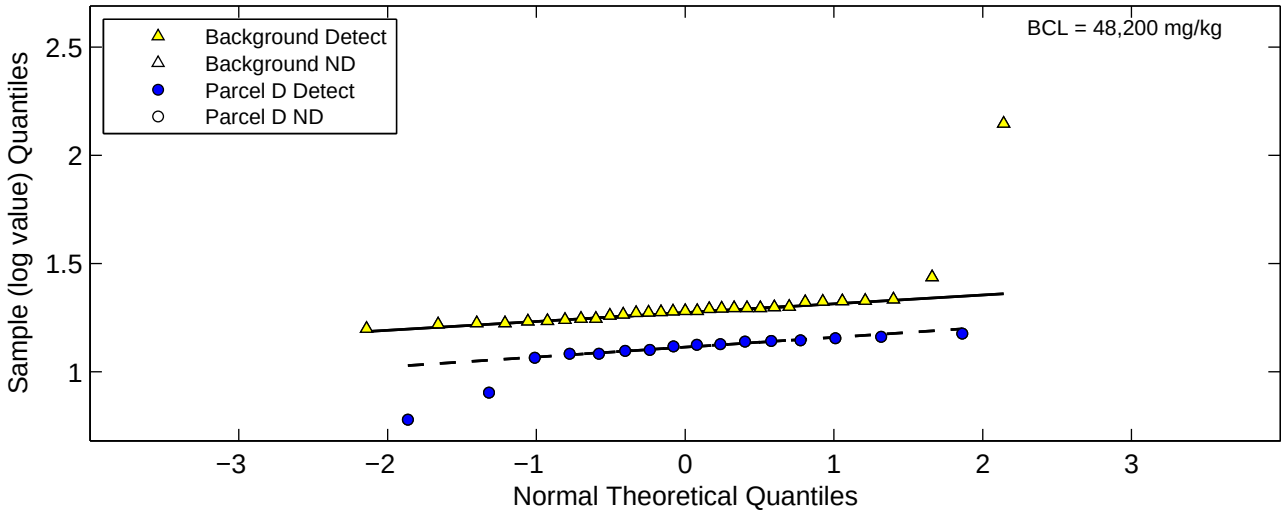


Figure I2−12B. Lognormal Q−Q Plots
Copper





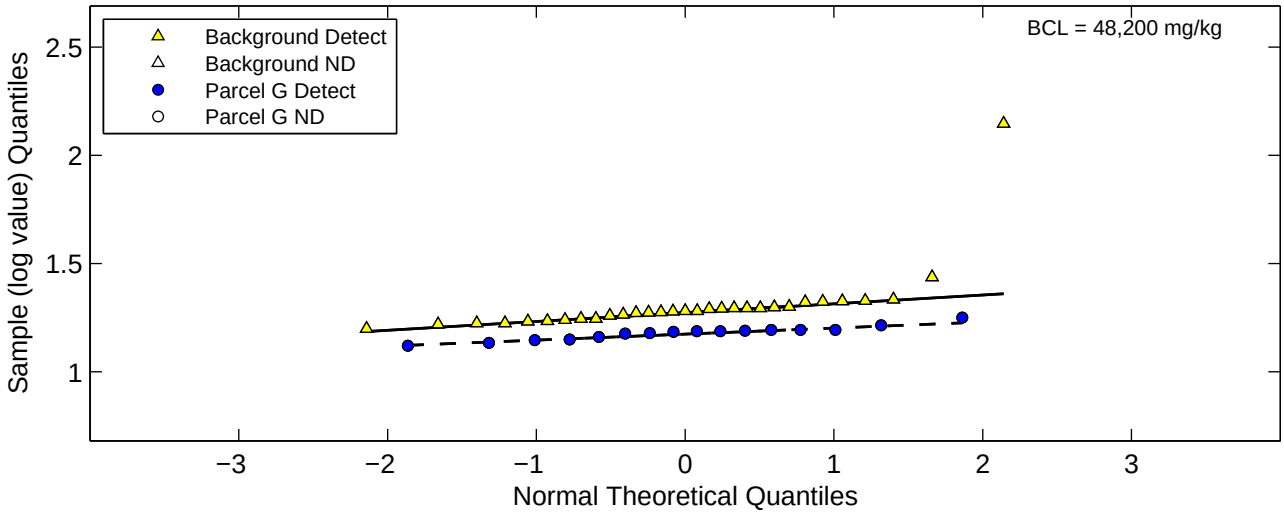
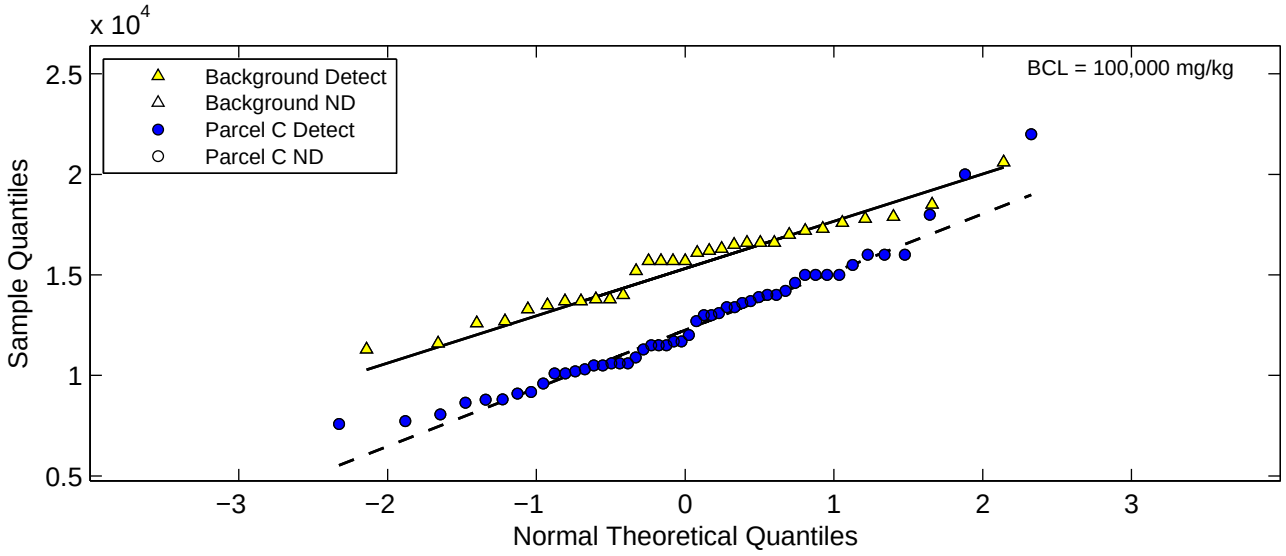
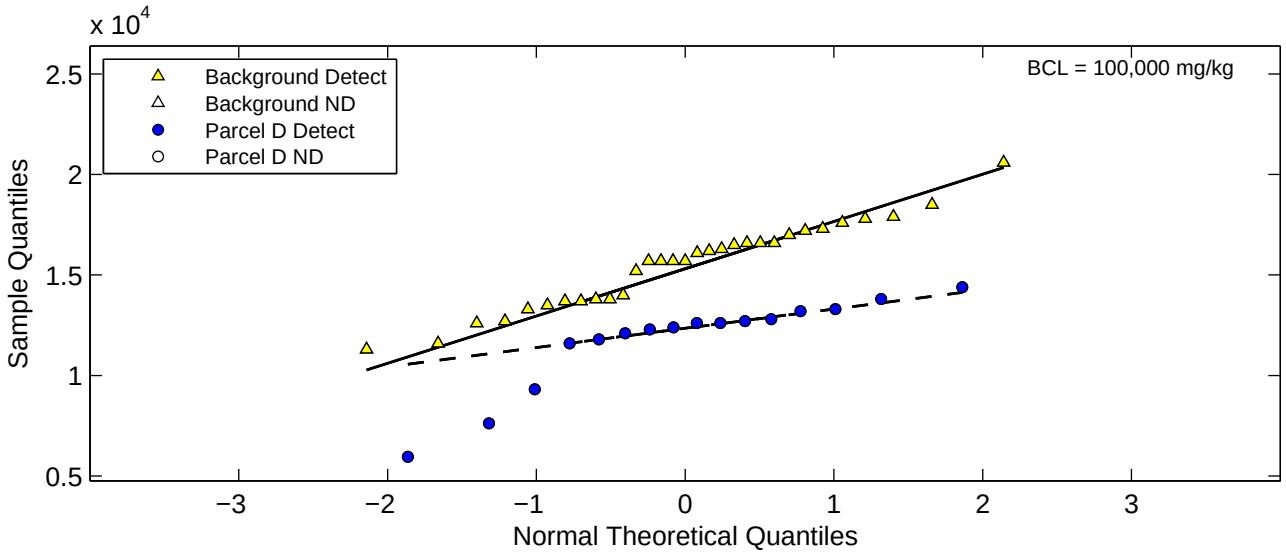


Figure I2−13A. Normal Q−Q Plots
Iron





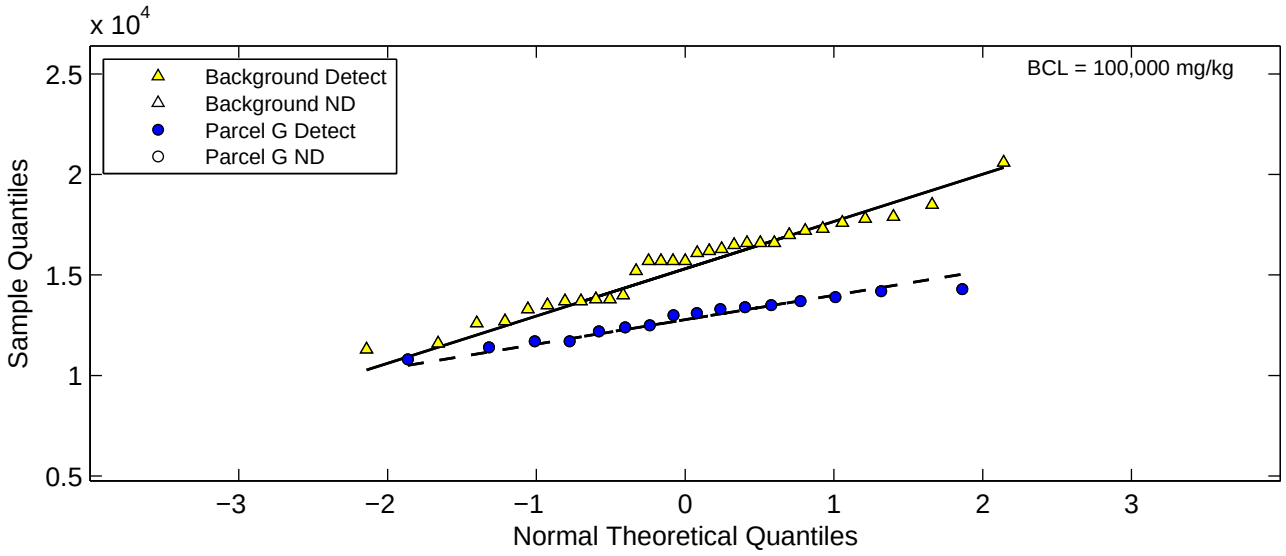
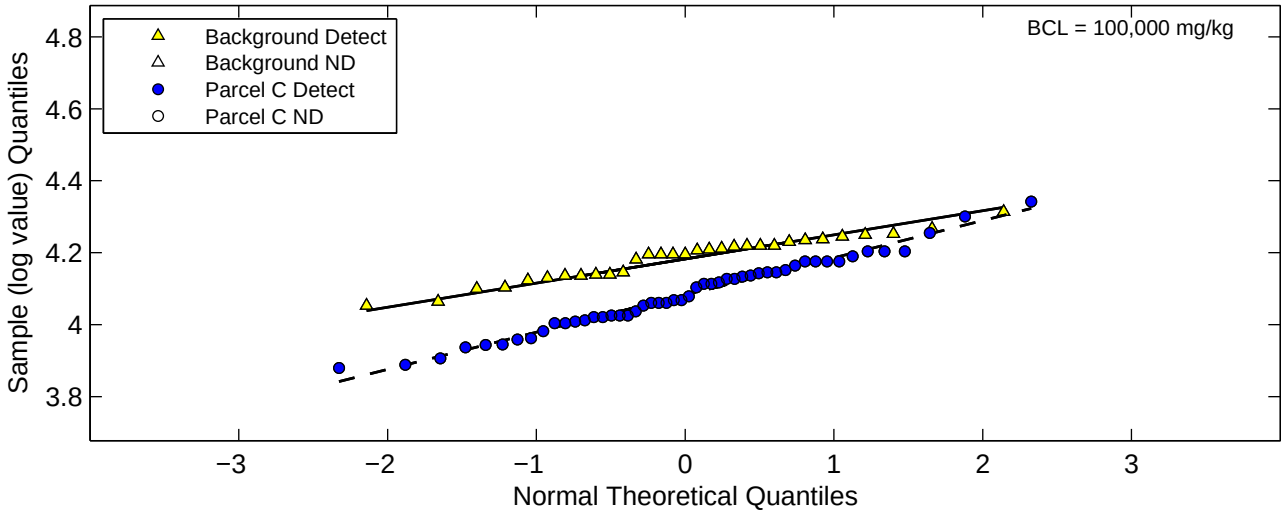
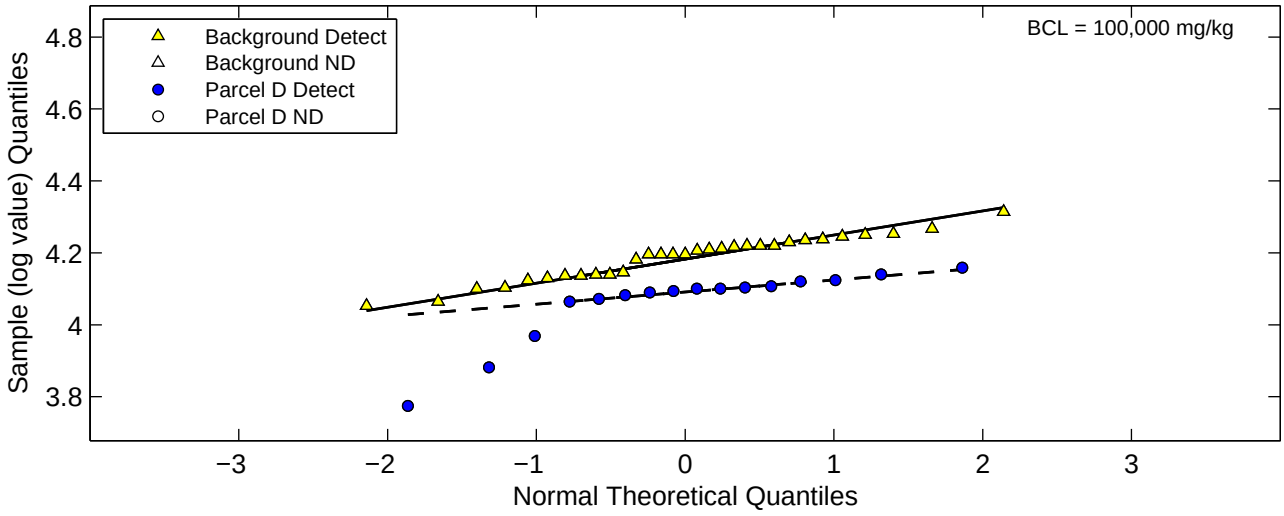


Figure I2−13B. Lognormal Q−Q Plots
Iron





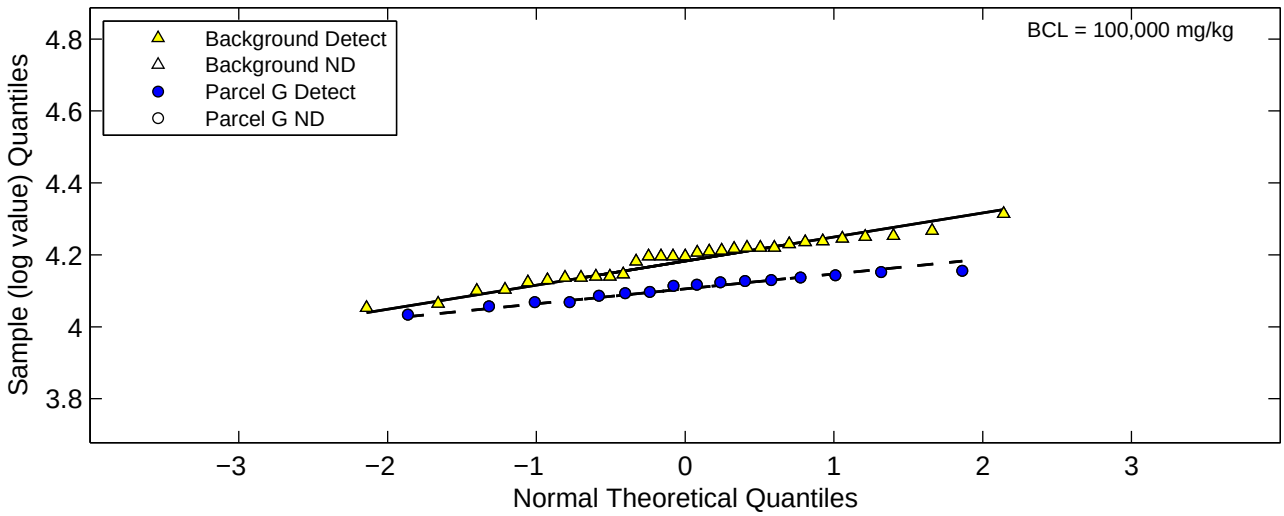
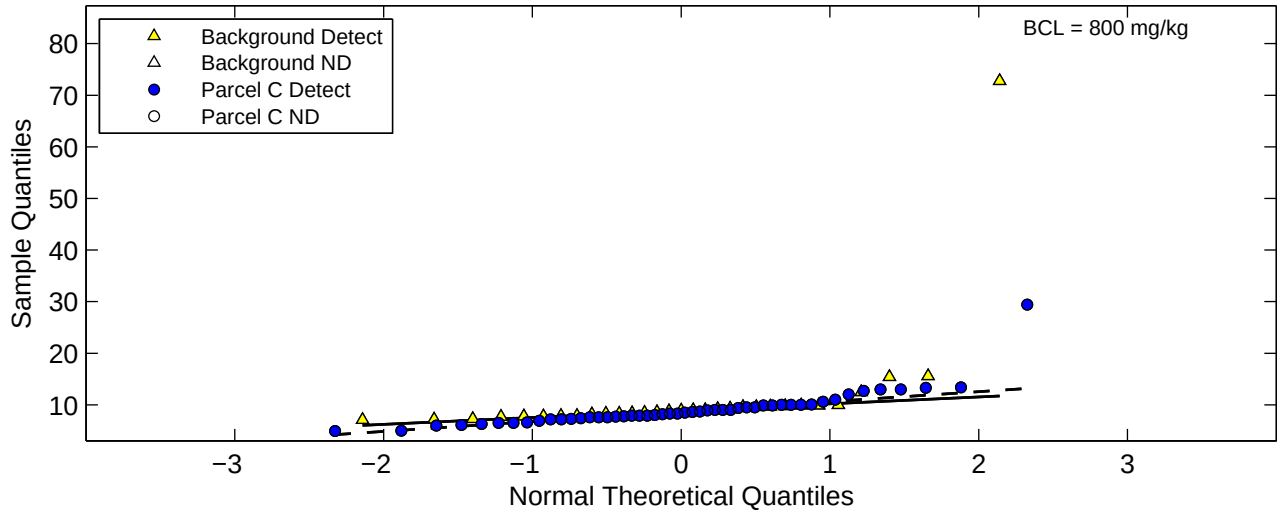
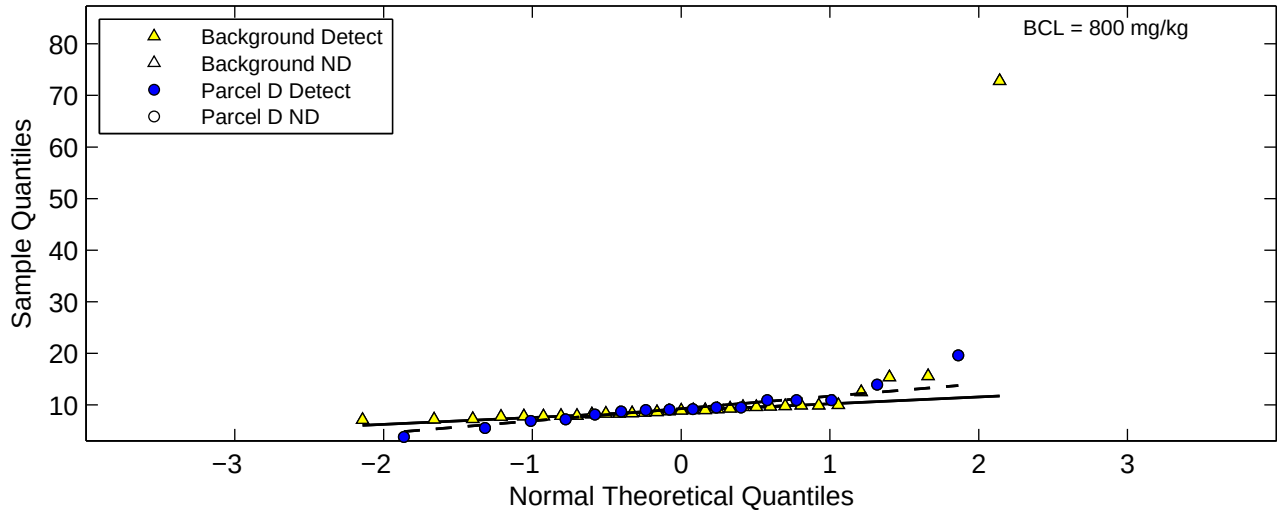


Figure I2−14A. Normal Q−Q Plots
Lead





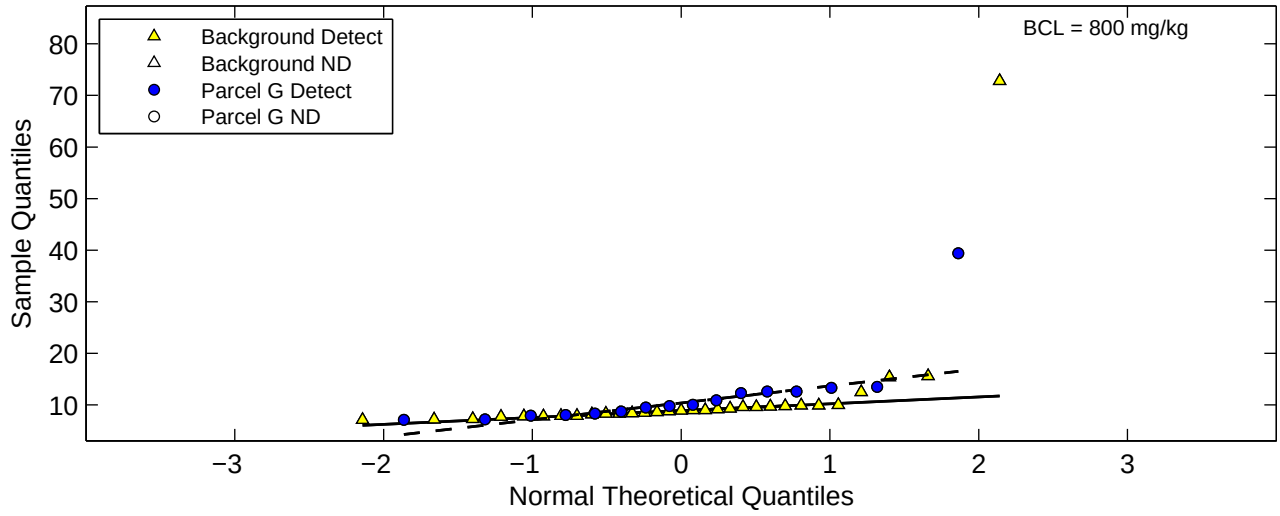
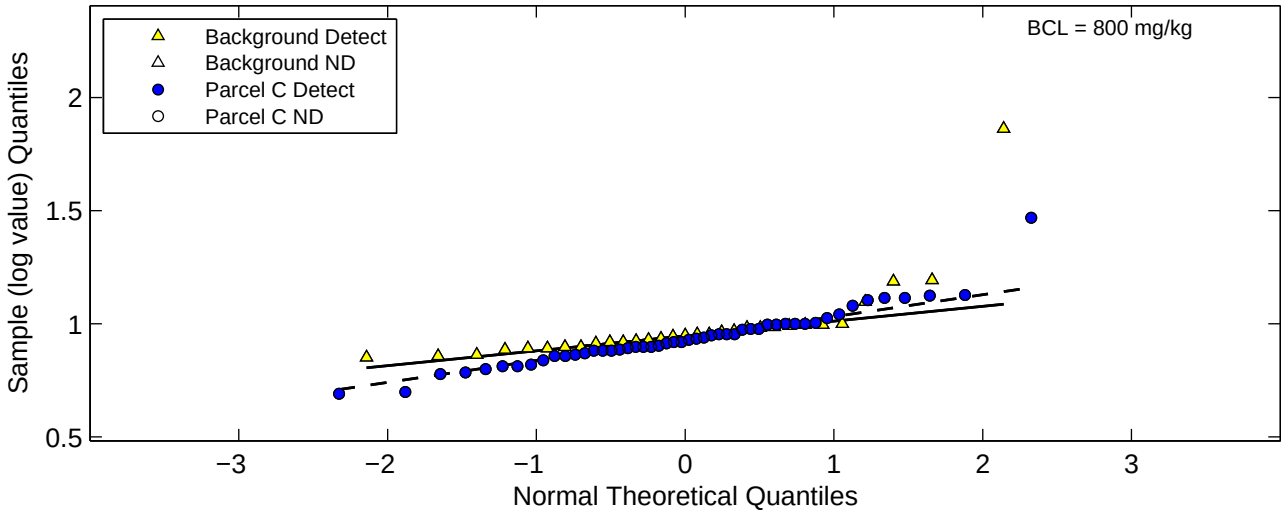
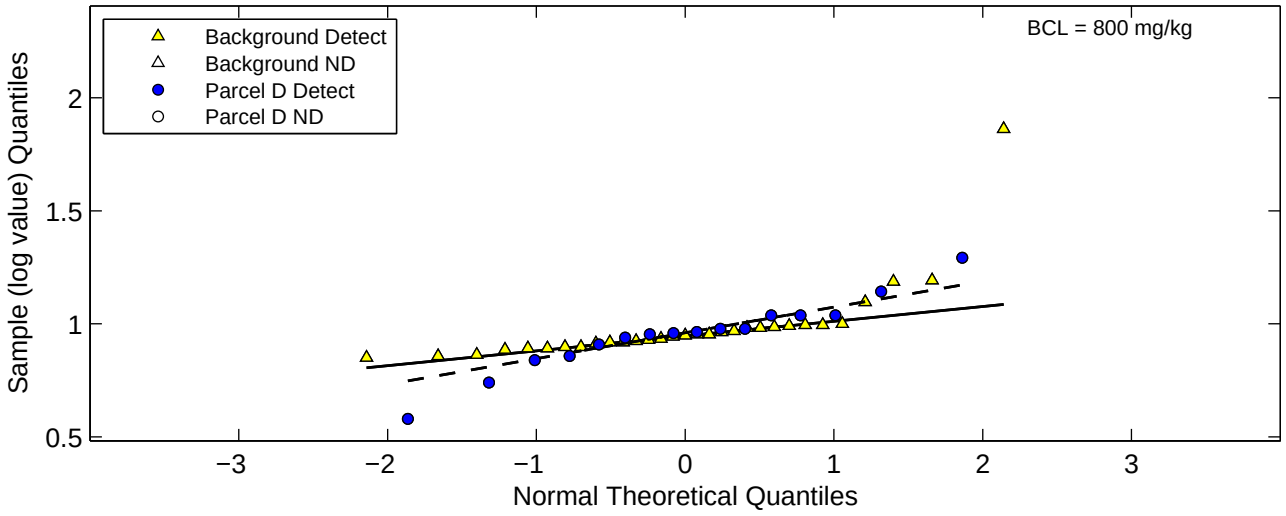


Figure I2−14B. Lognormal Q−Q Plots
Lead





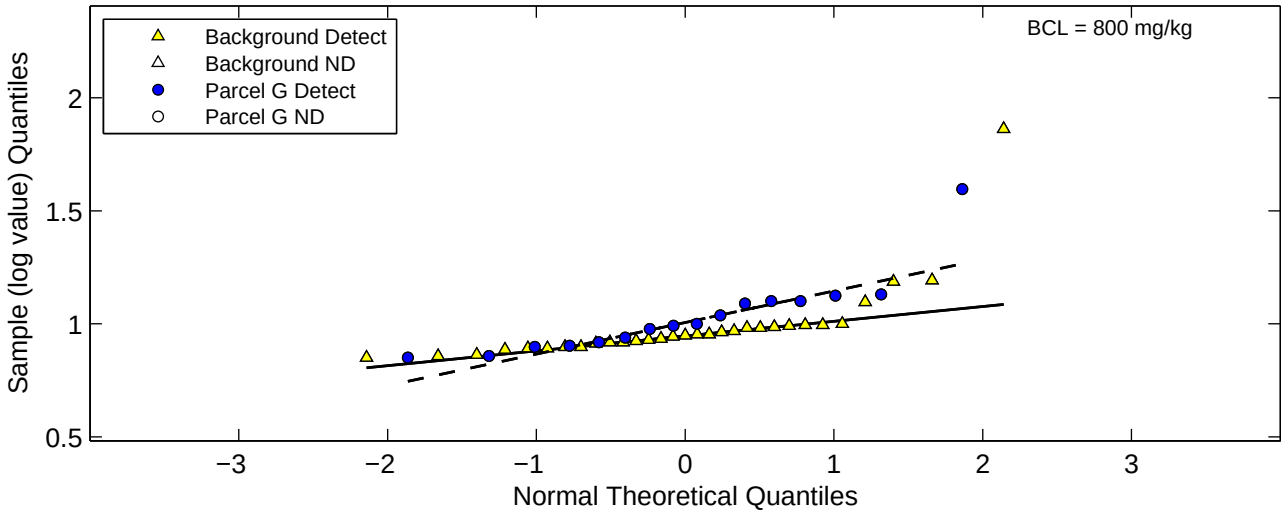
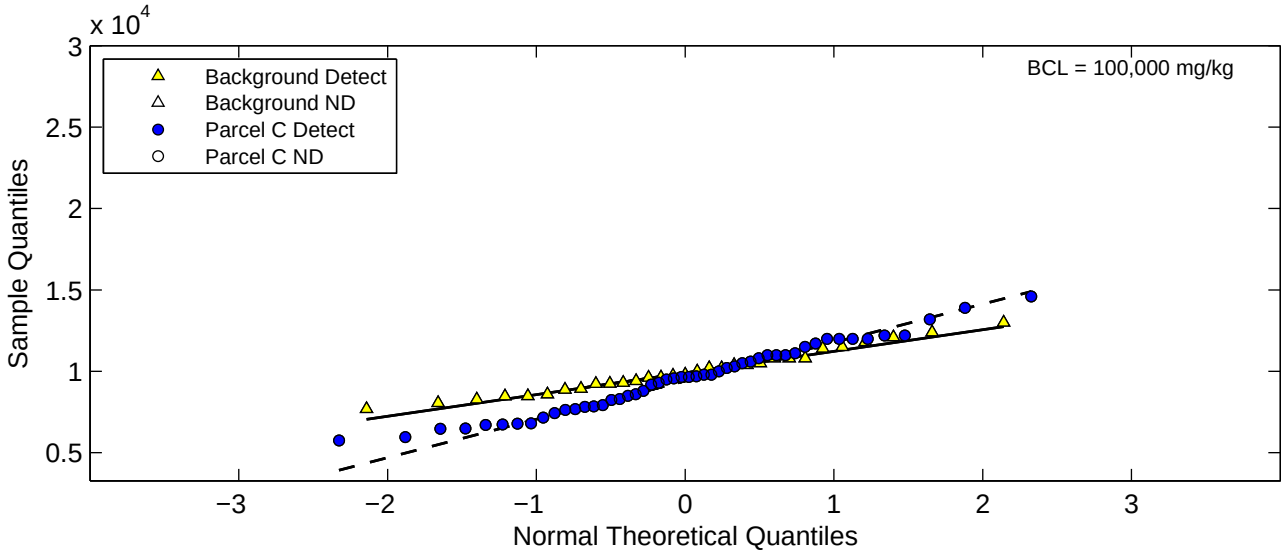
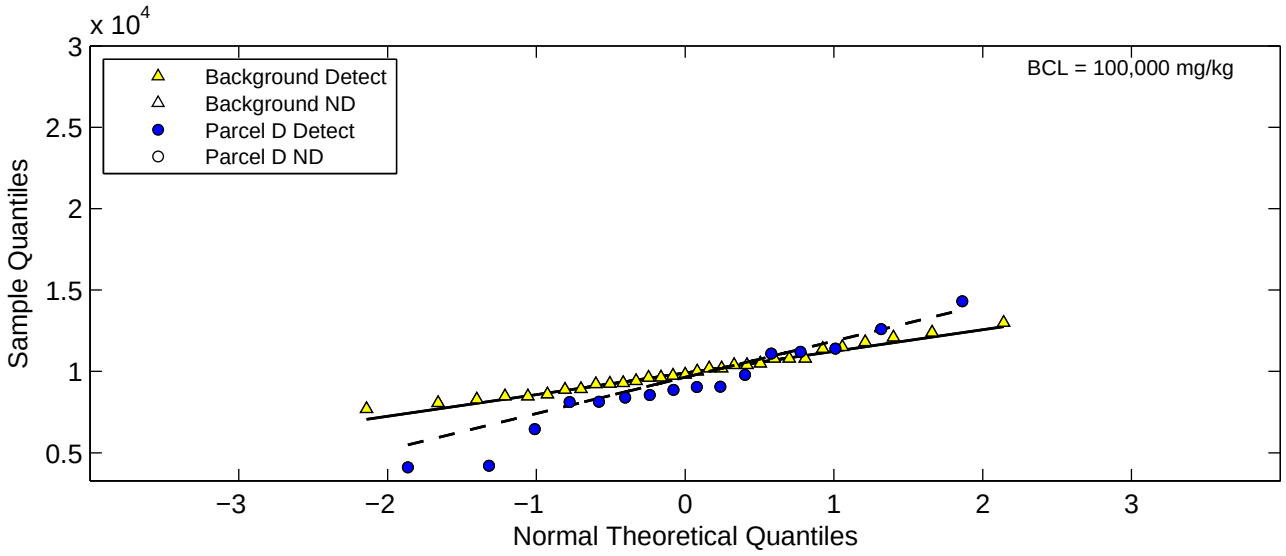


Figure I2−15A. Normal Q−Q Plots
Magnesium





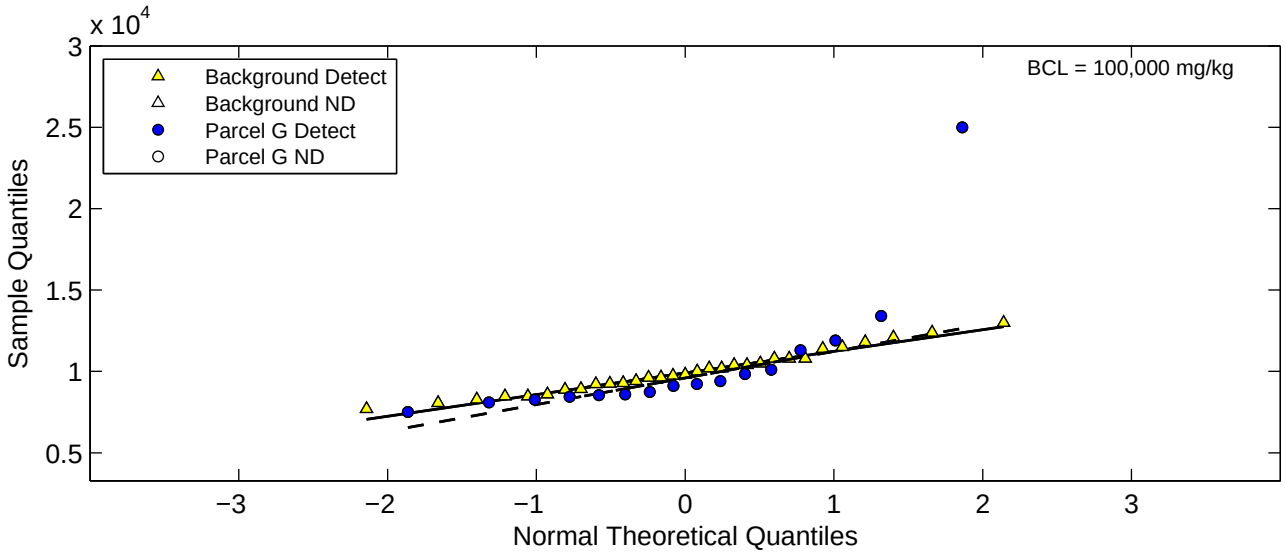
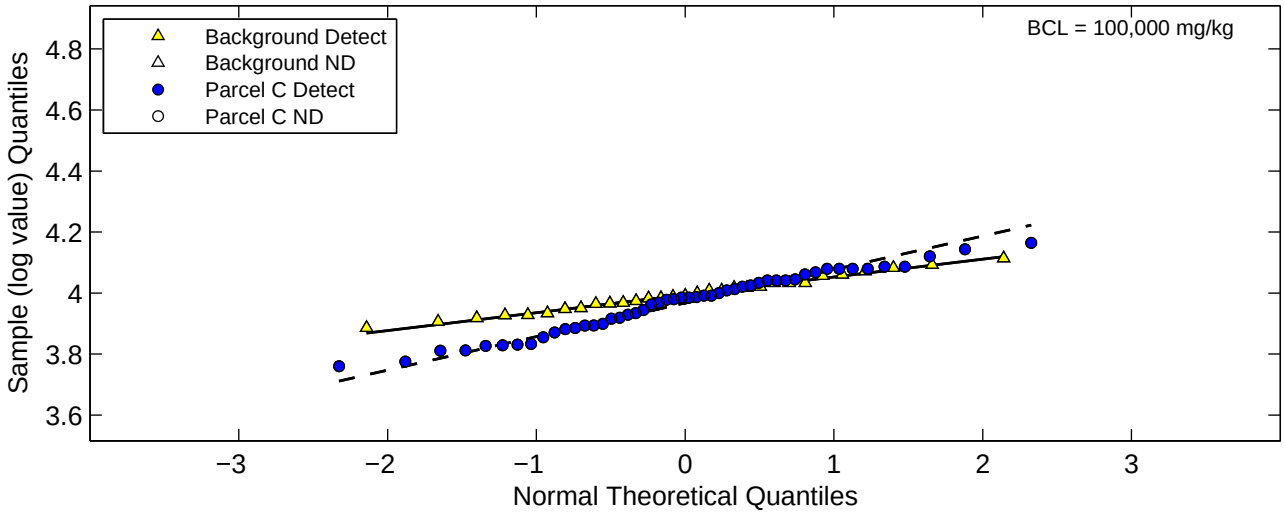
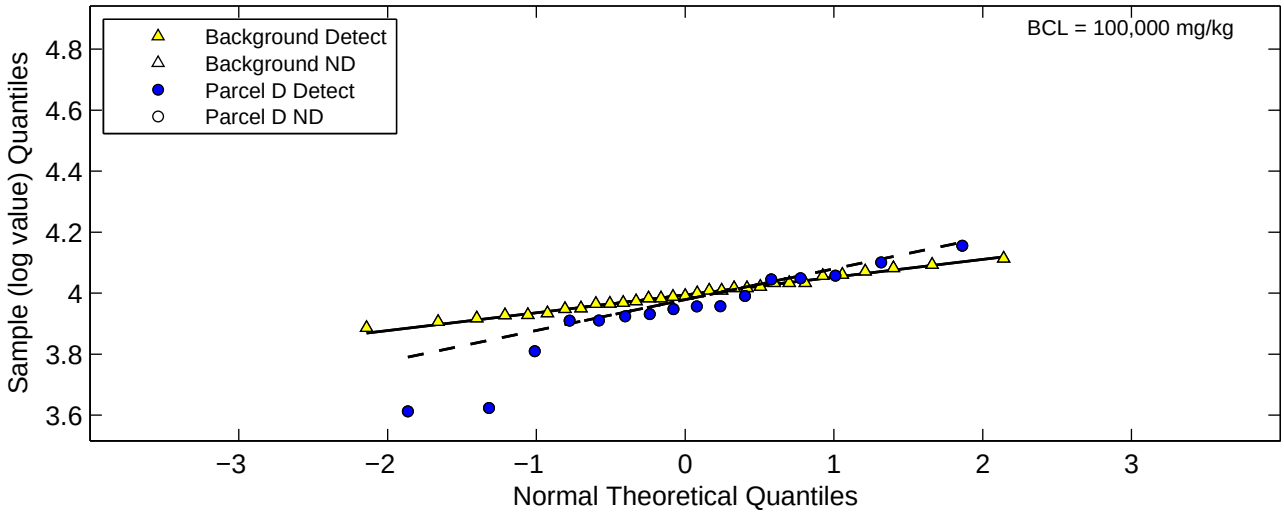


Figure I2−15B. Lognormal Q−Q Plots
Magnesium





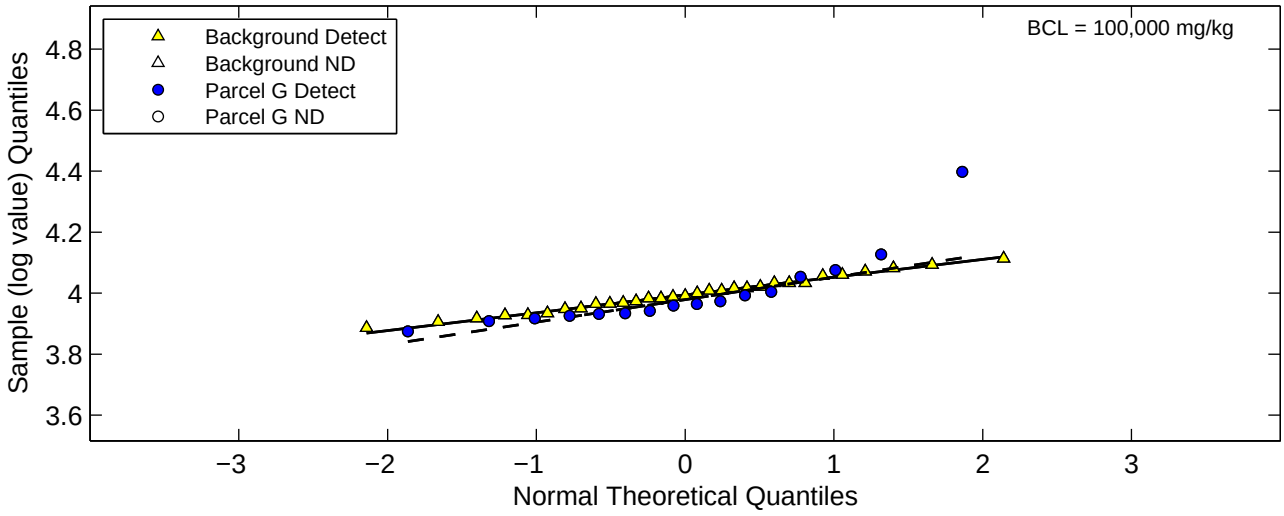
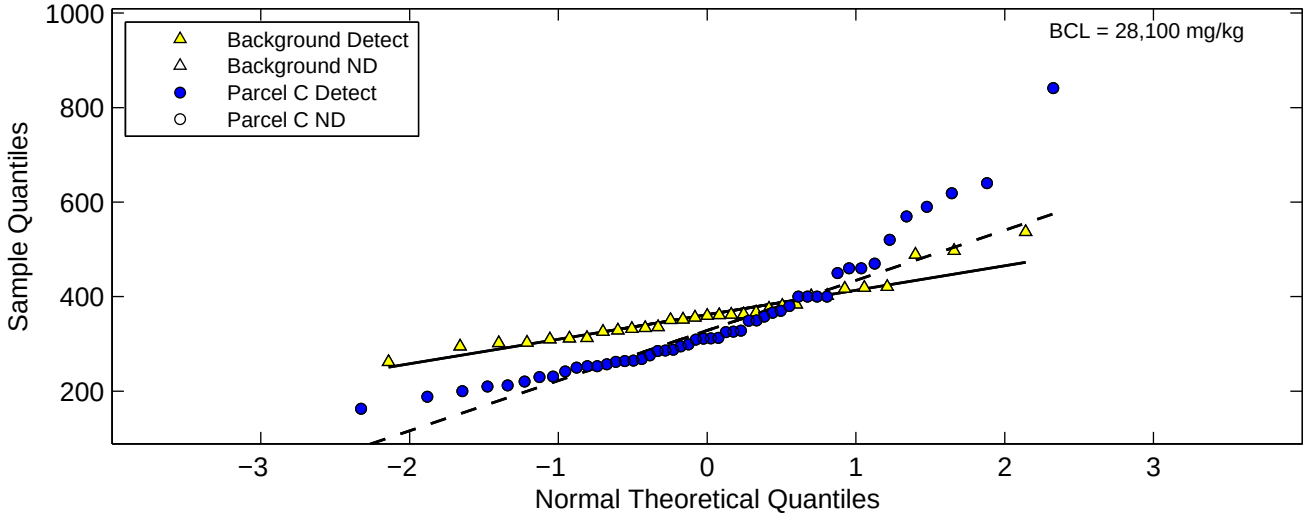
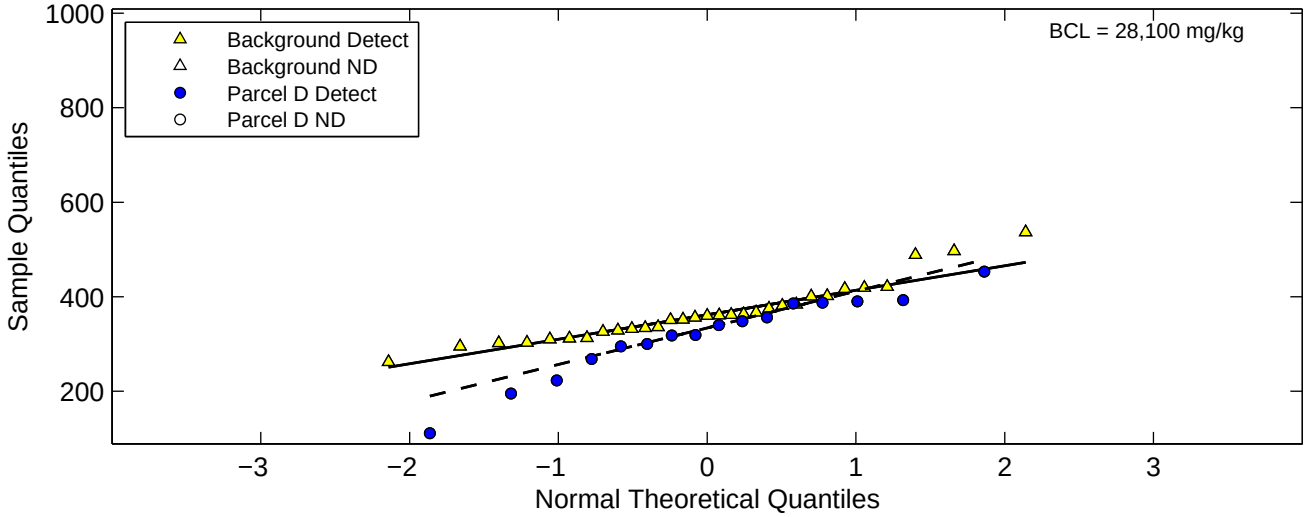


Figure I2−16A. Normal Q−Q Plots
Manganese





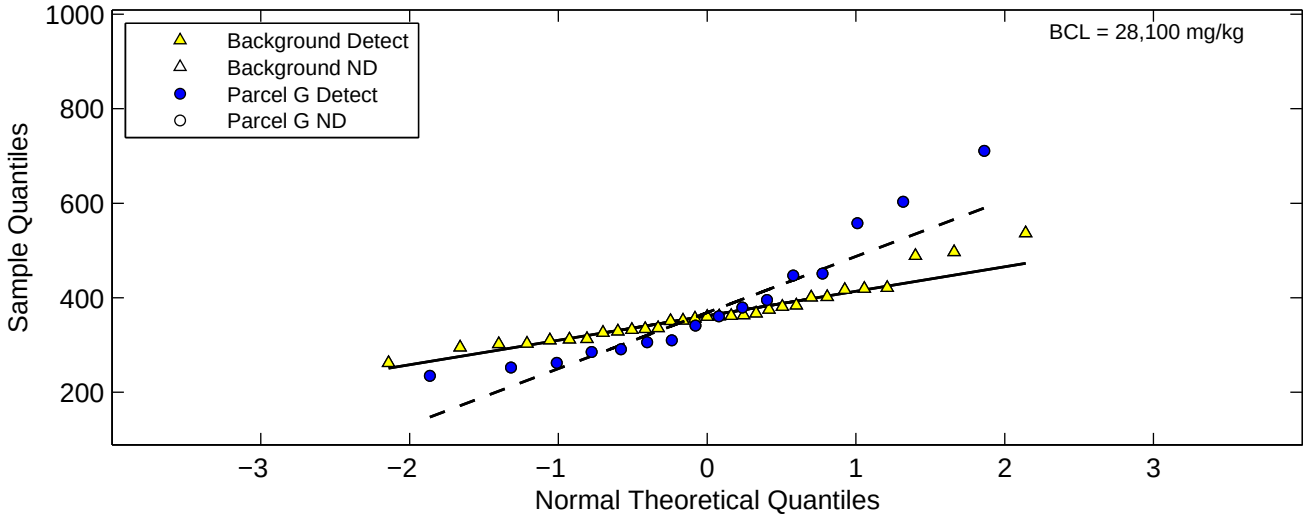
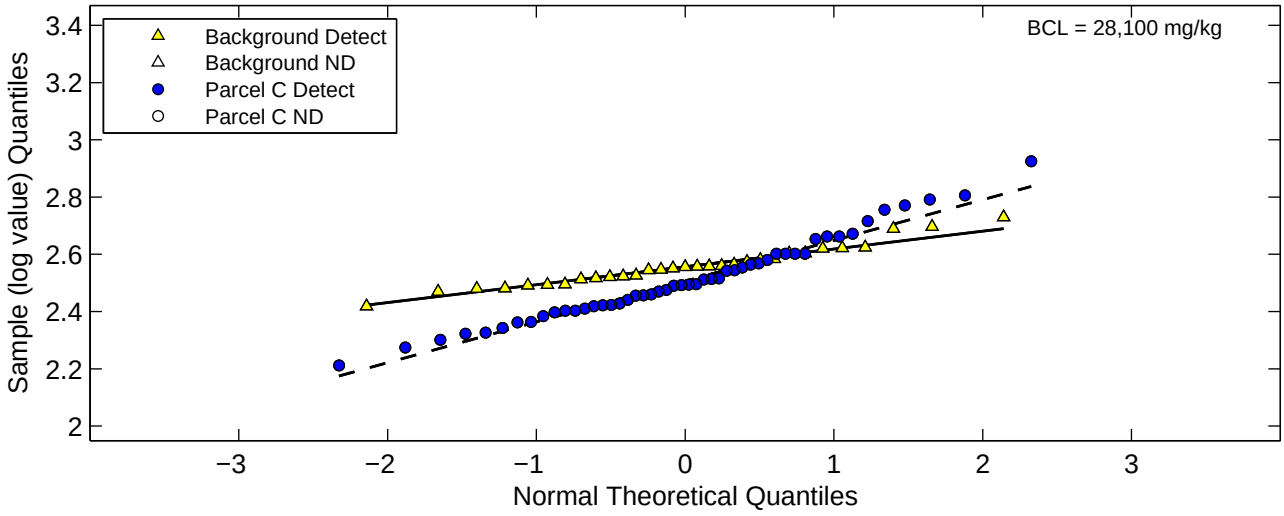
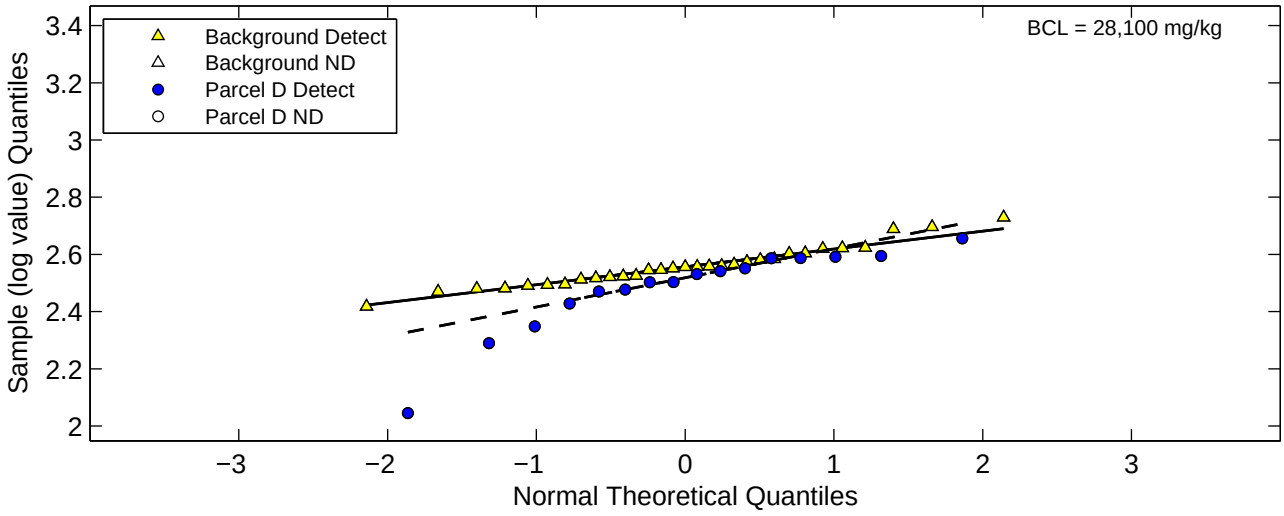


Figure I2−16B. Lognormal Q−Q Plots
Manganese





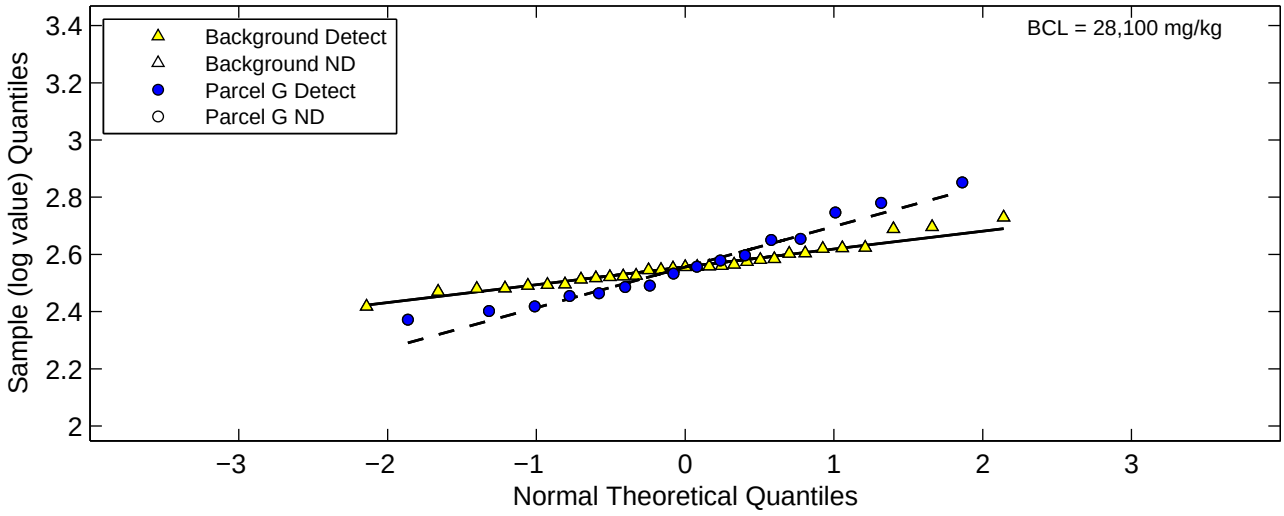
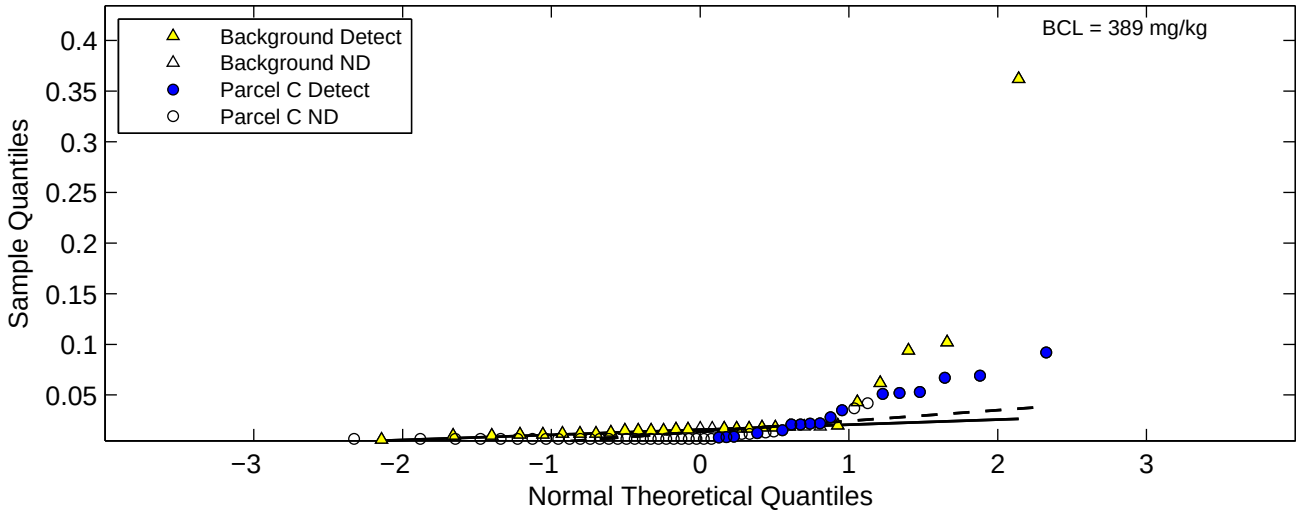
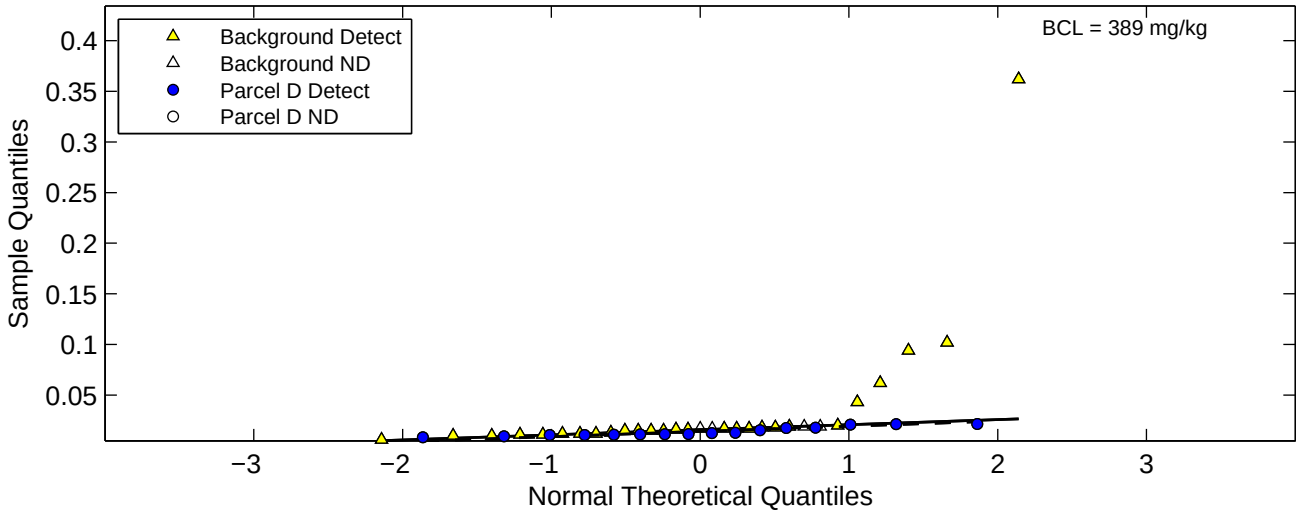


Figure I2−17A. Normal Q−Q Plots
Mercury





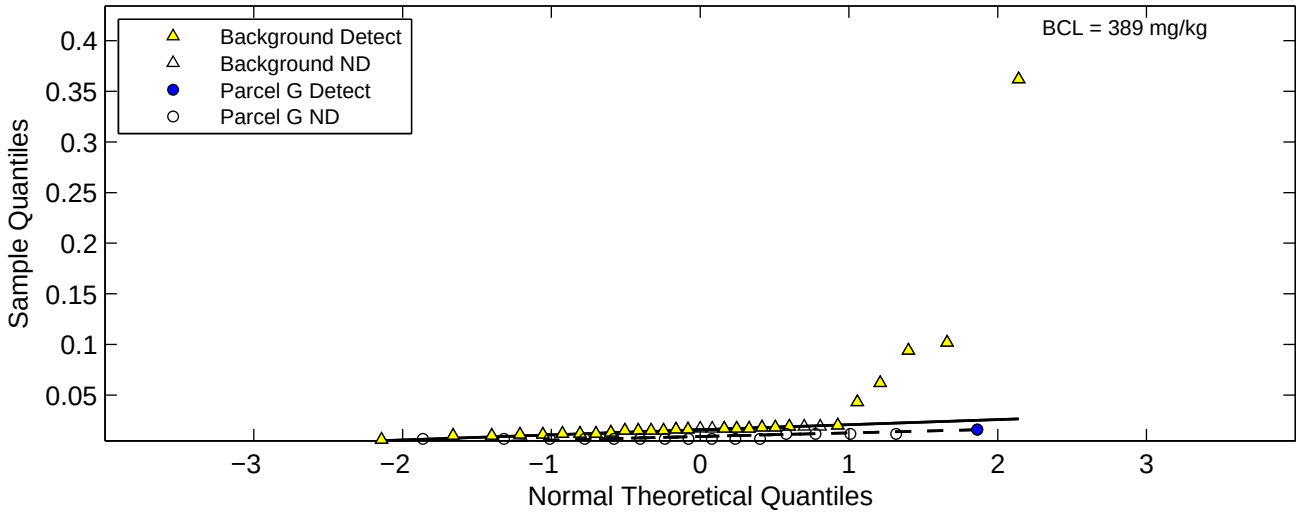
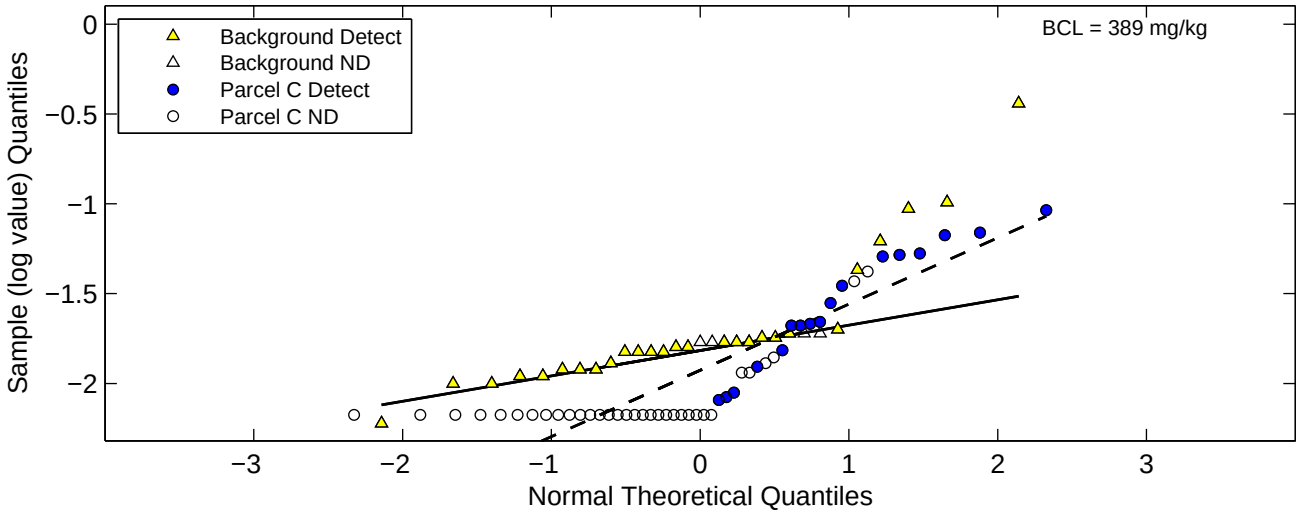
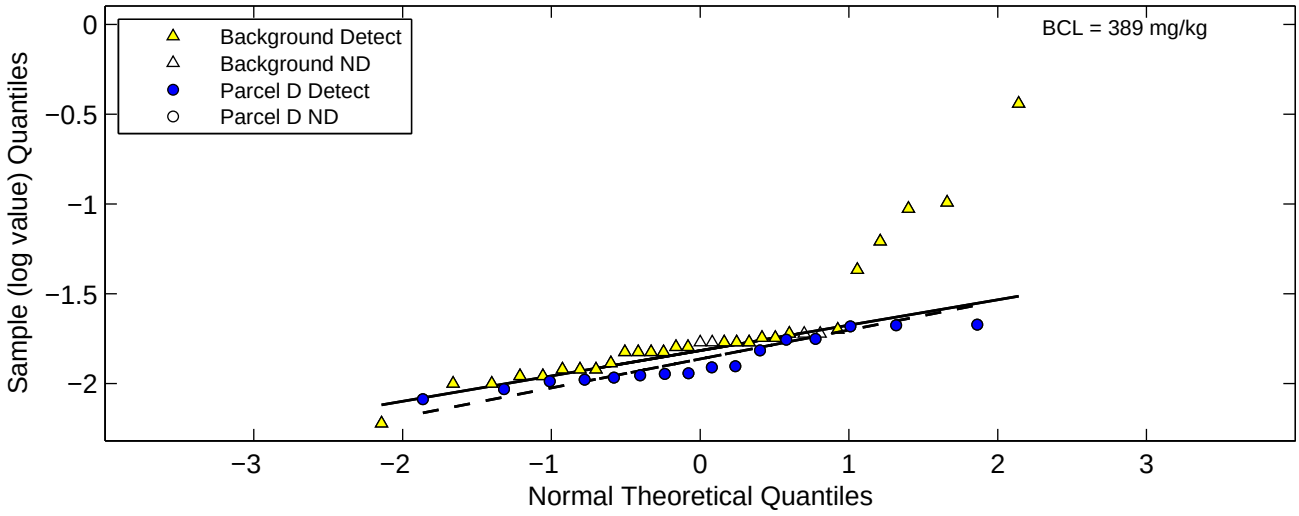


Figure I2−17B. Lognormal Q−Q Plots
Mercury





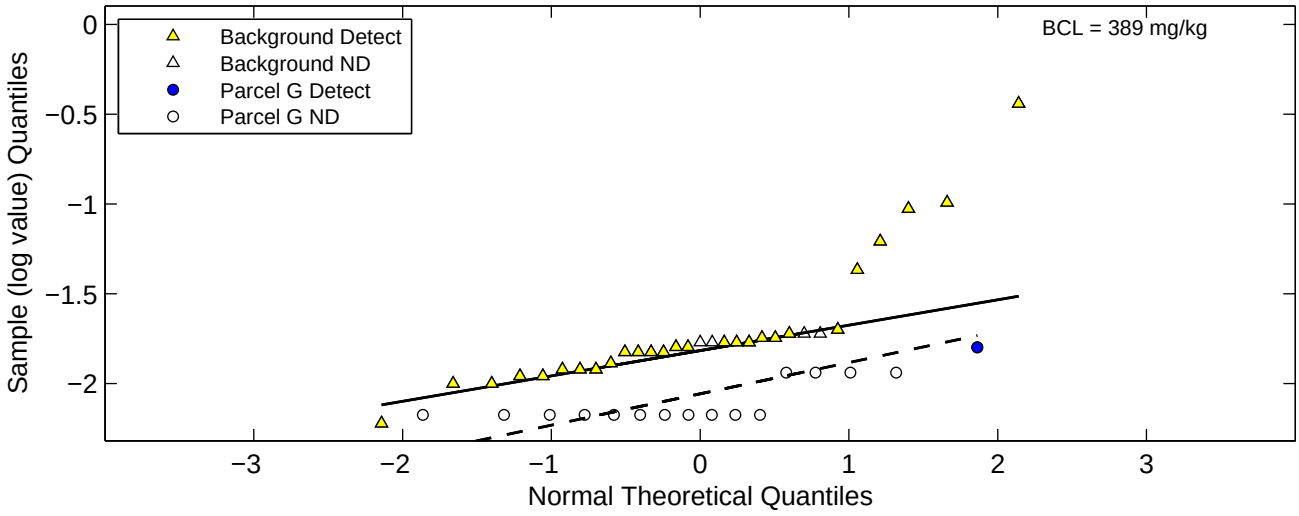
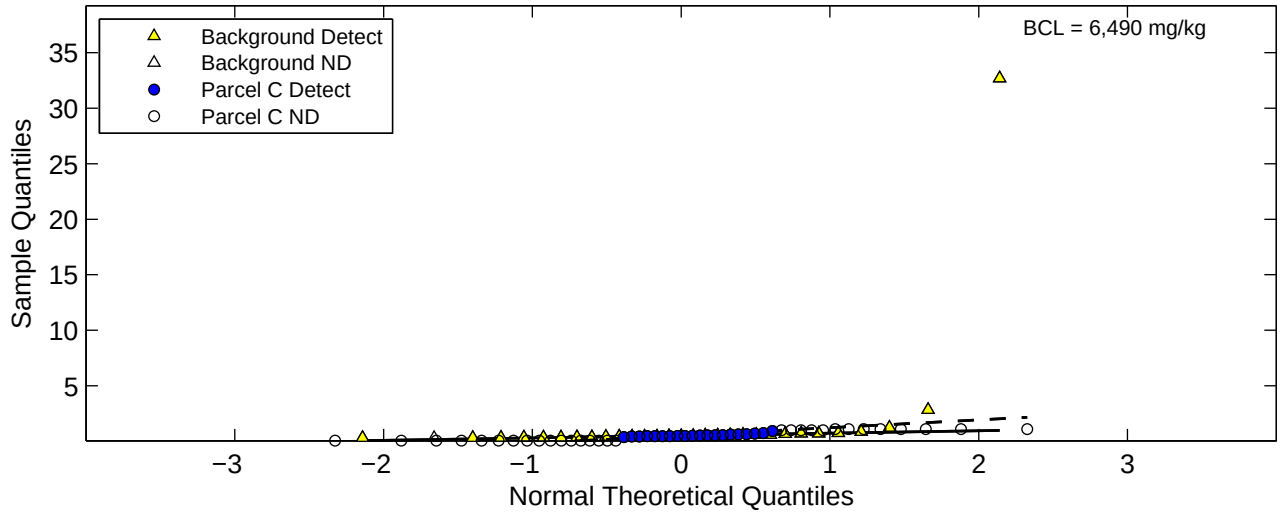
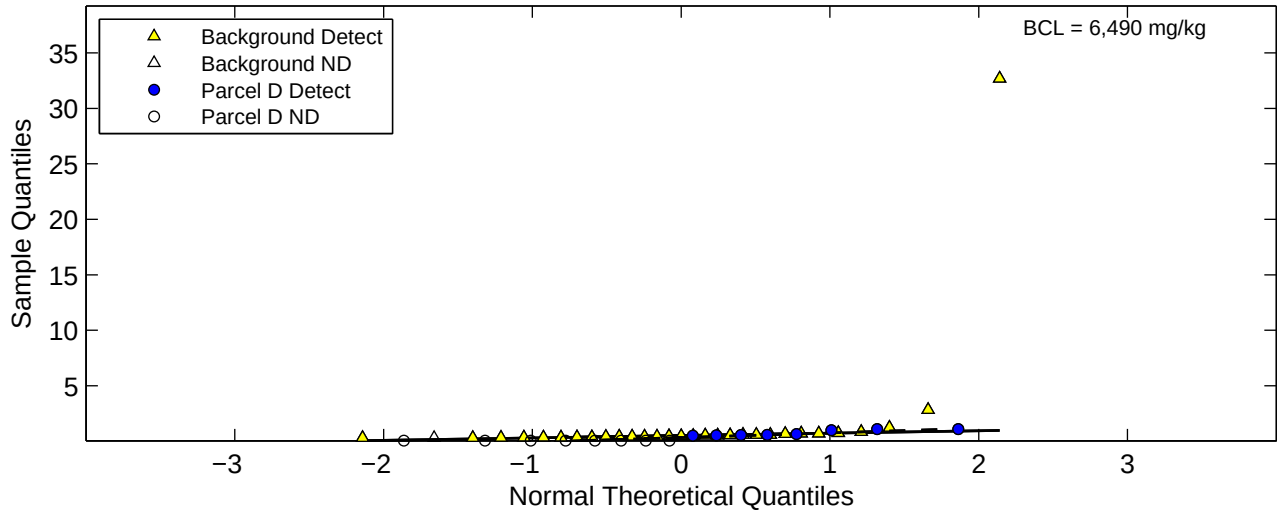


Figure I2−18A. Normal Q−Q Plots
Molybdenum





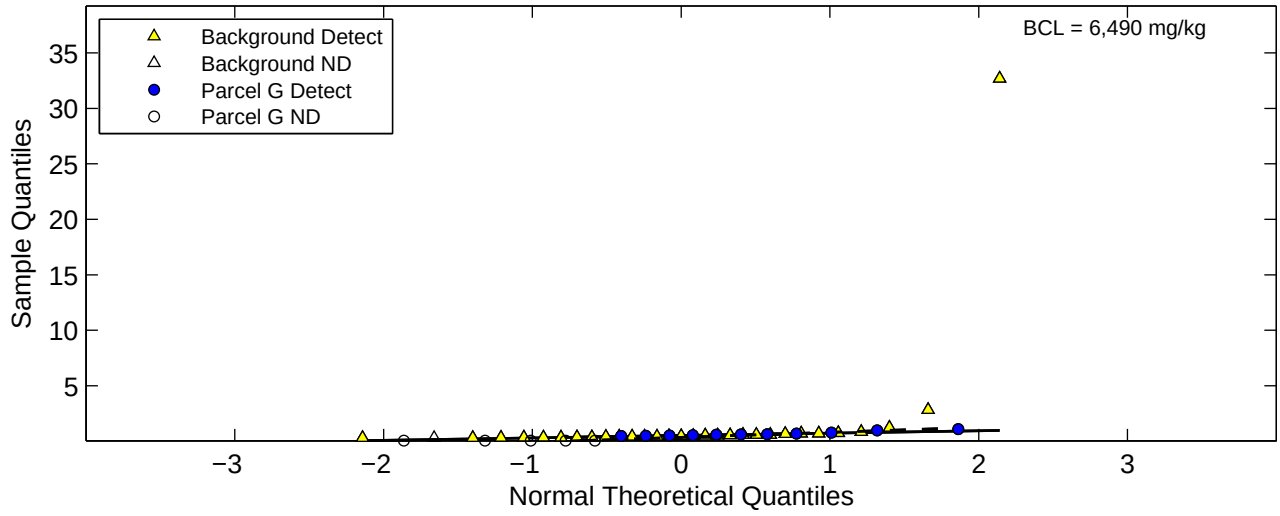
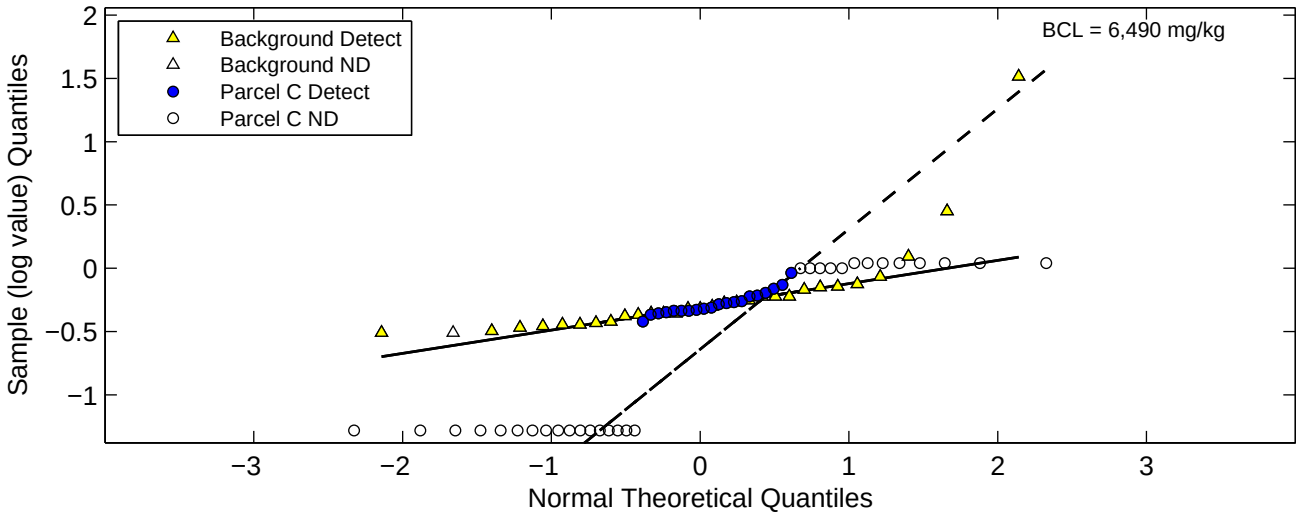
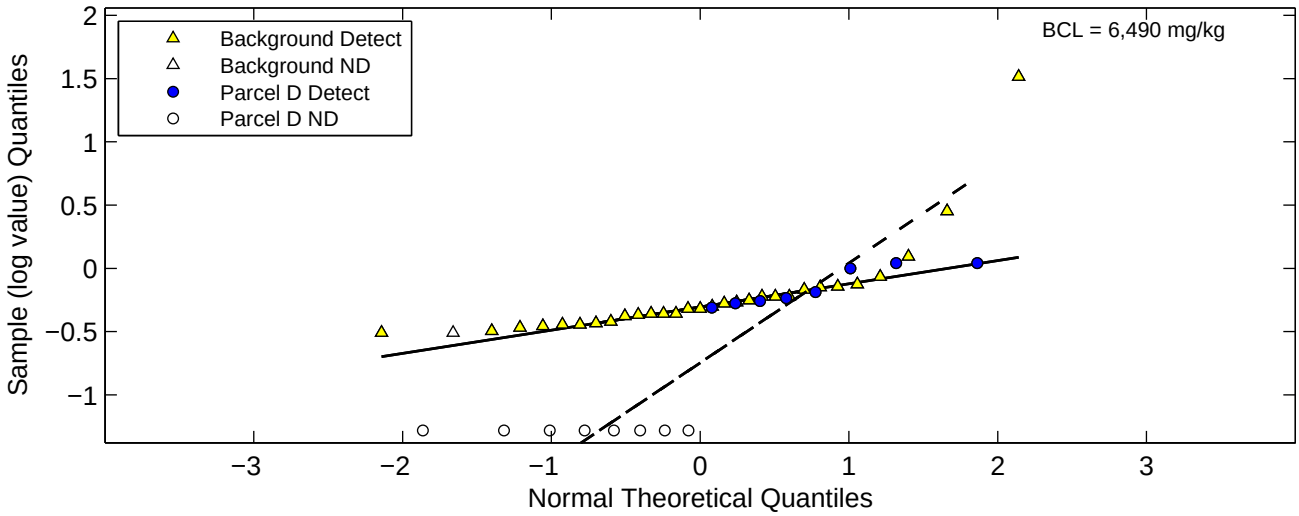


Figure I2−18B. Lognormal Q−Q Plots
Molybdenum





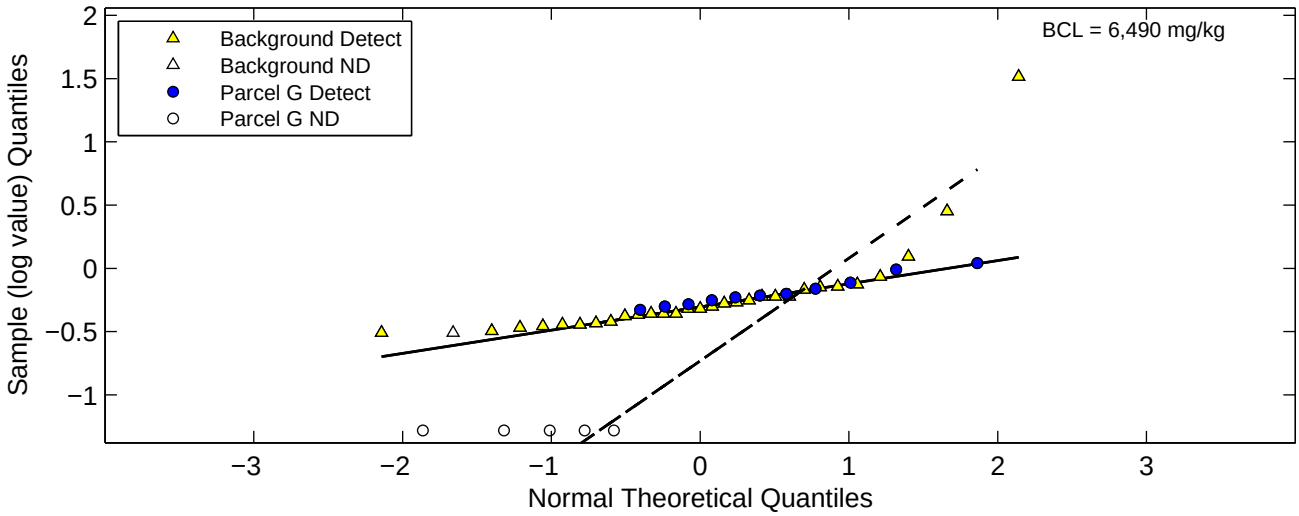
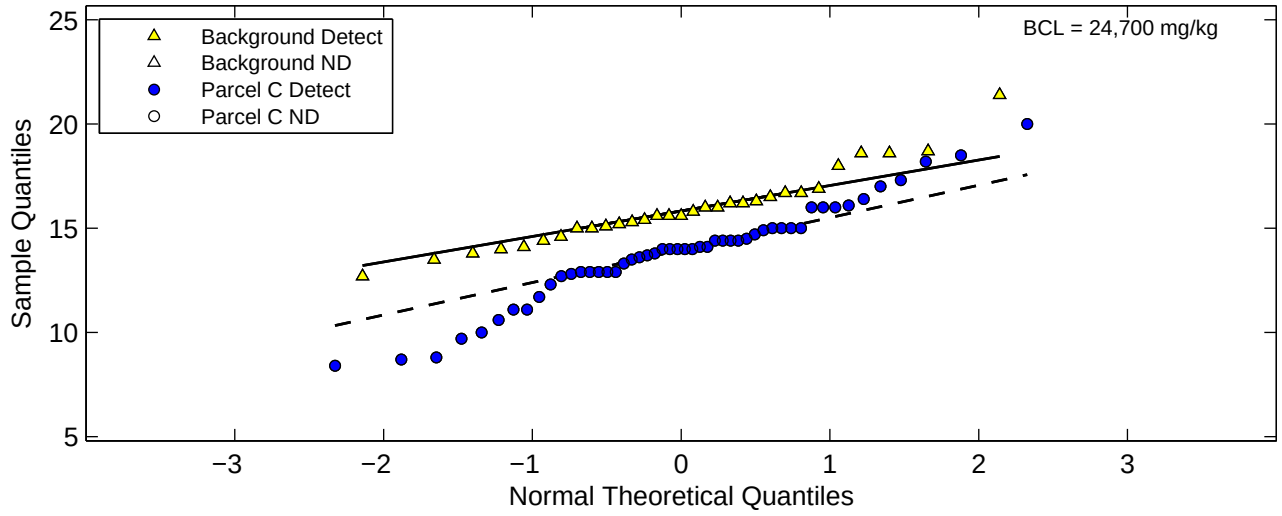
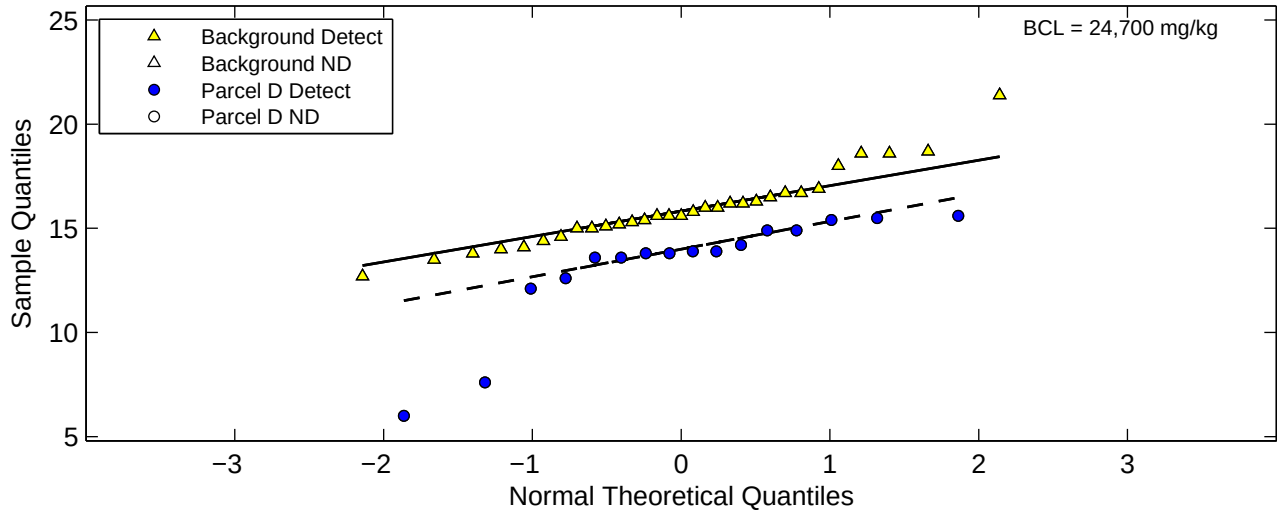


Figure I2−19A. Normal Q−Q Plots
Nickel





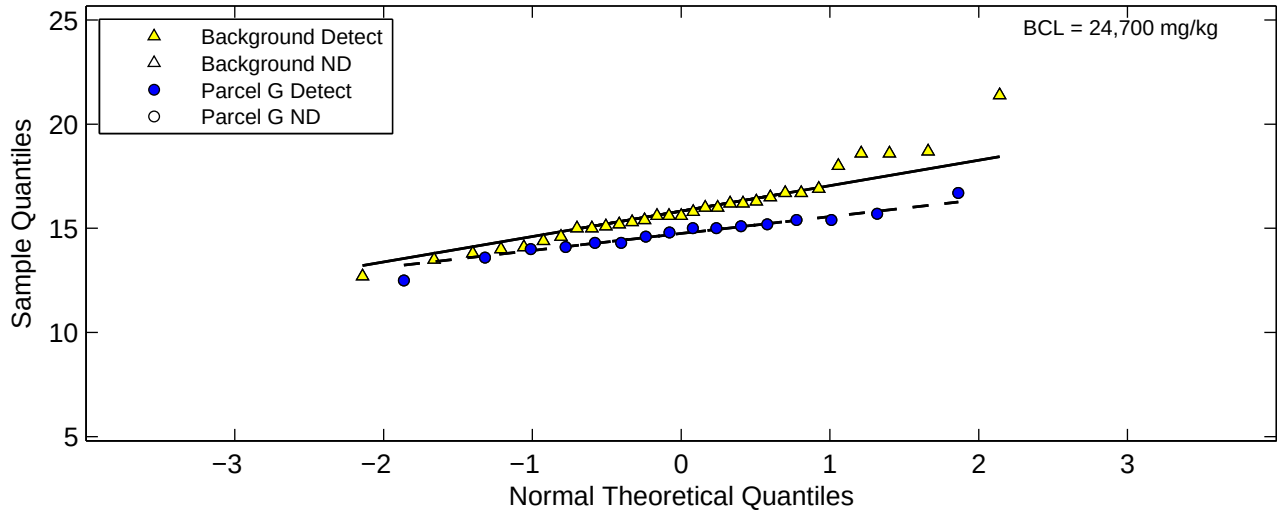
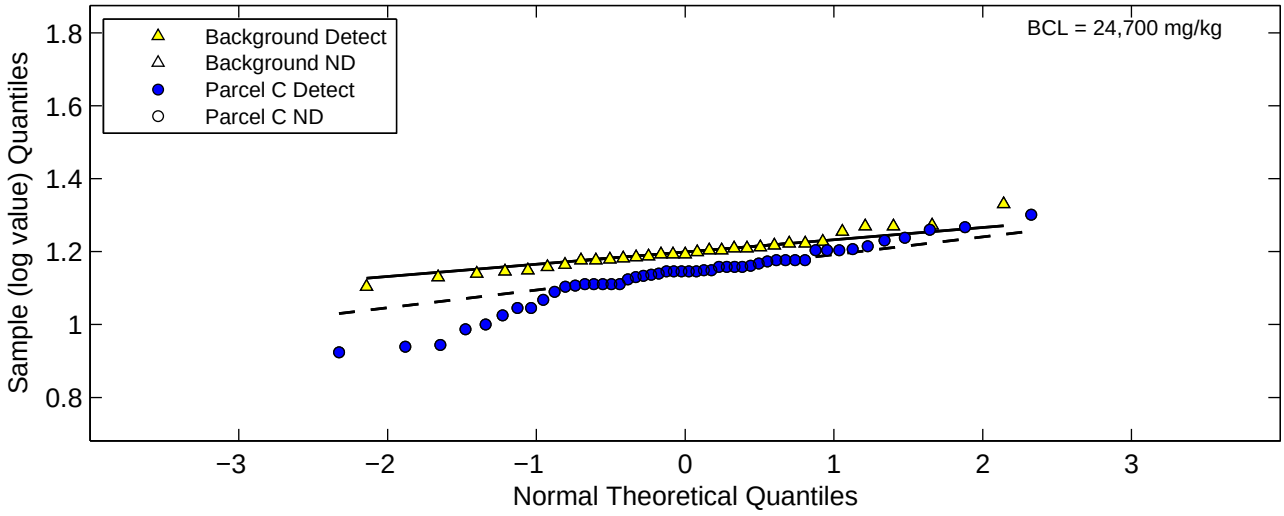
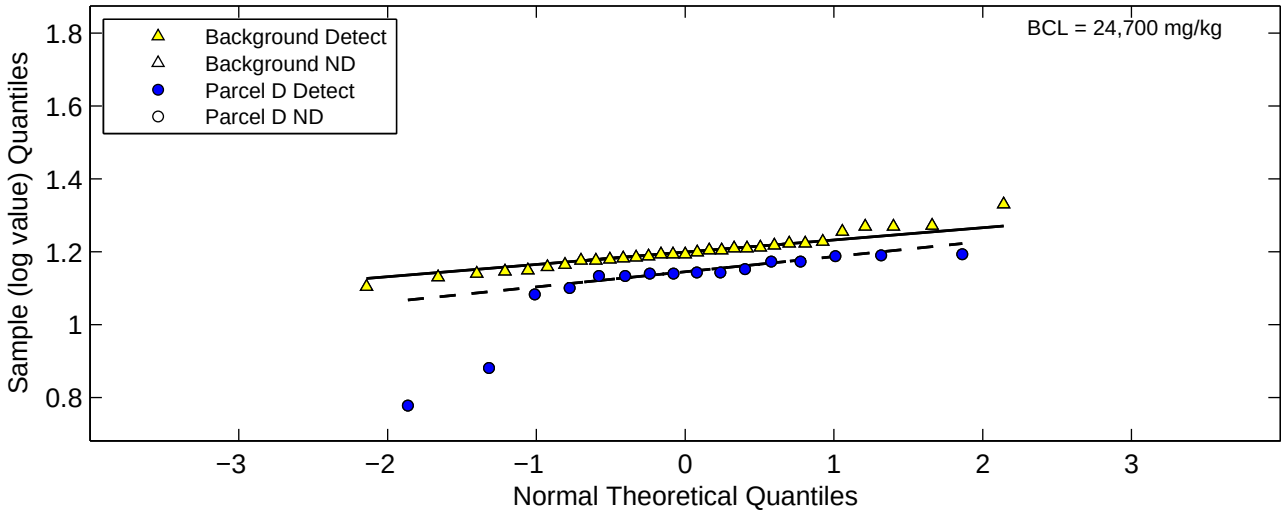


Figure I2−19B. Lognormal Q−Q Plots
Nickel





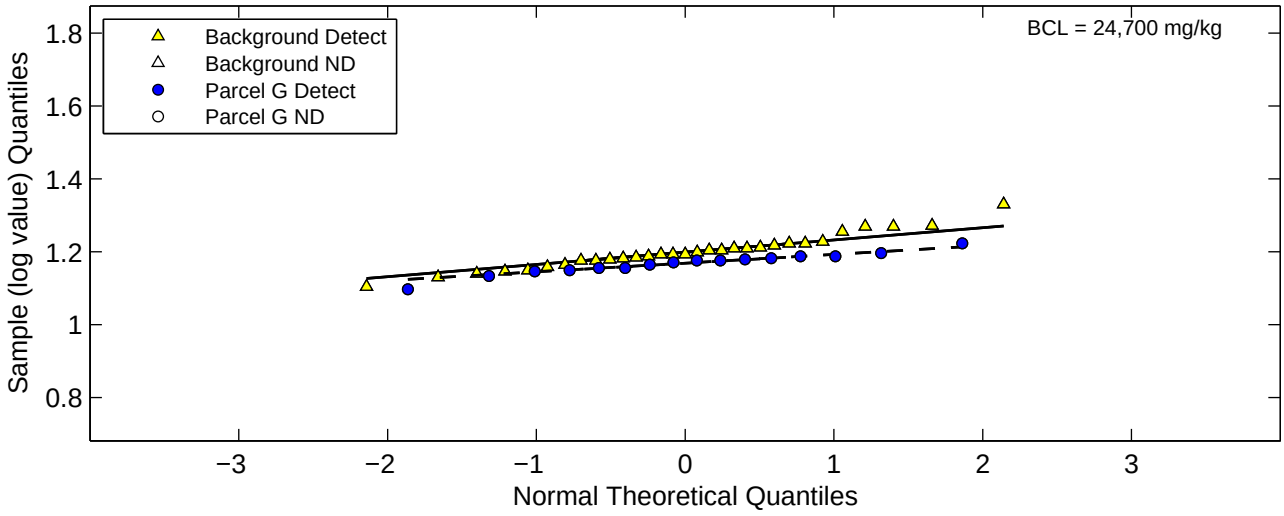
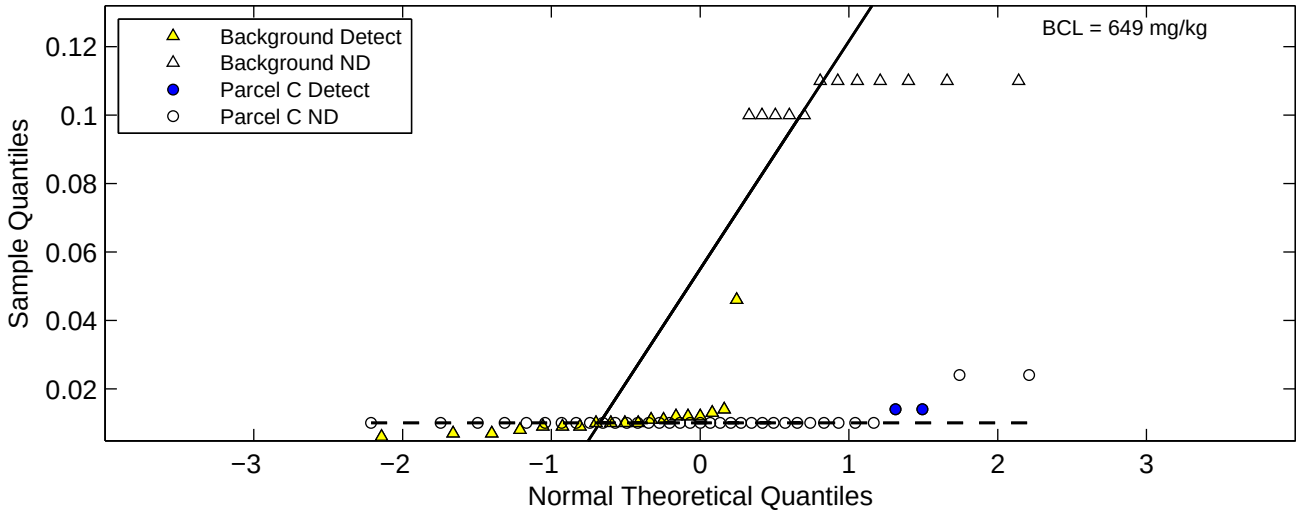
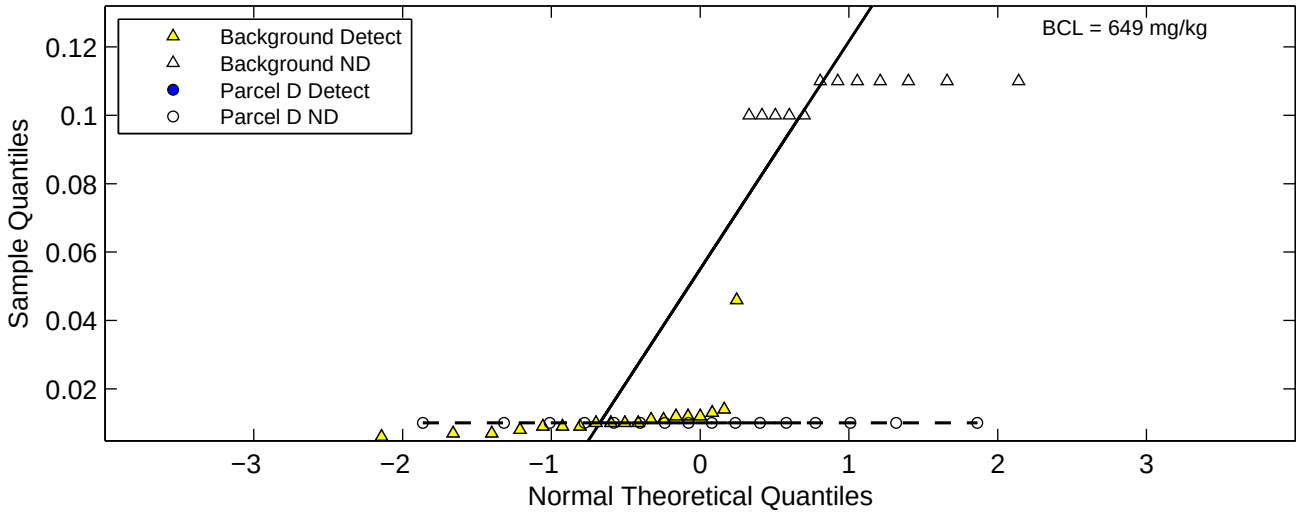


Figure I2−20A. Normal Q−Q Plots
Platinum





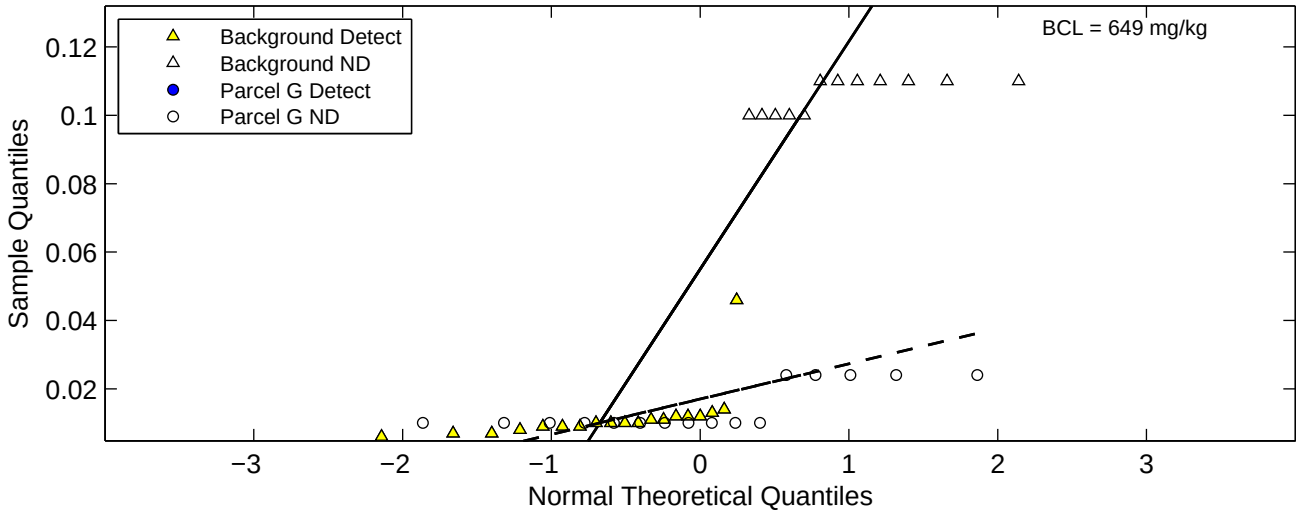
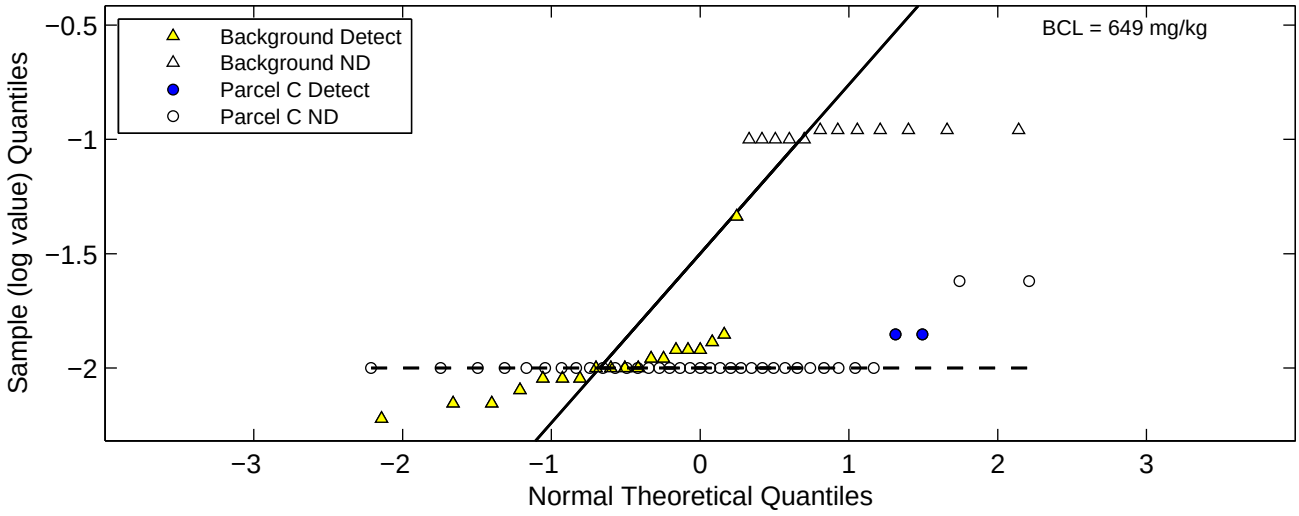
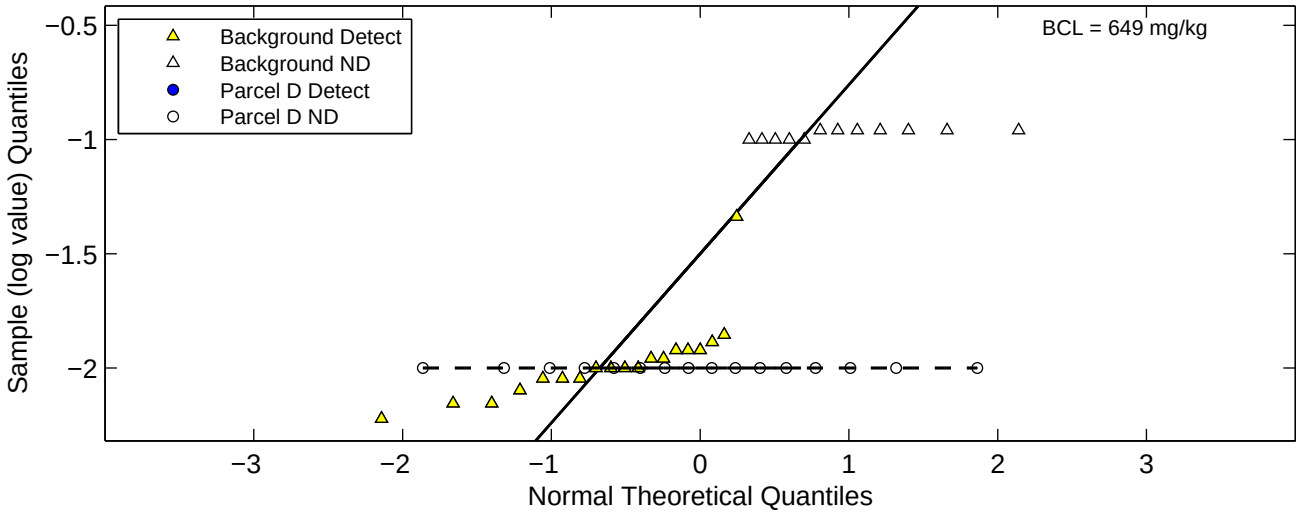


Figure I2−20B. Lognormal Q−Q Plots
Platinum





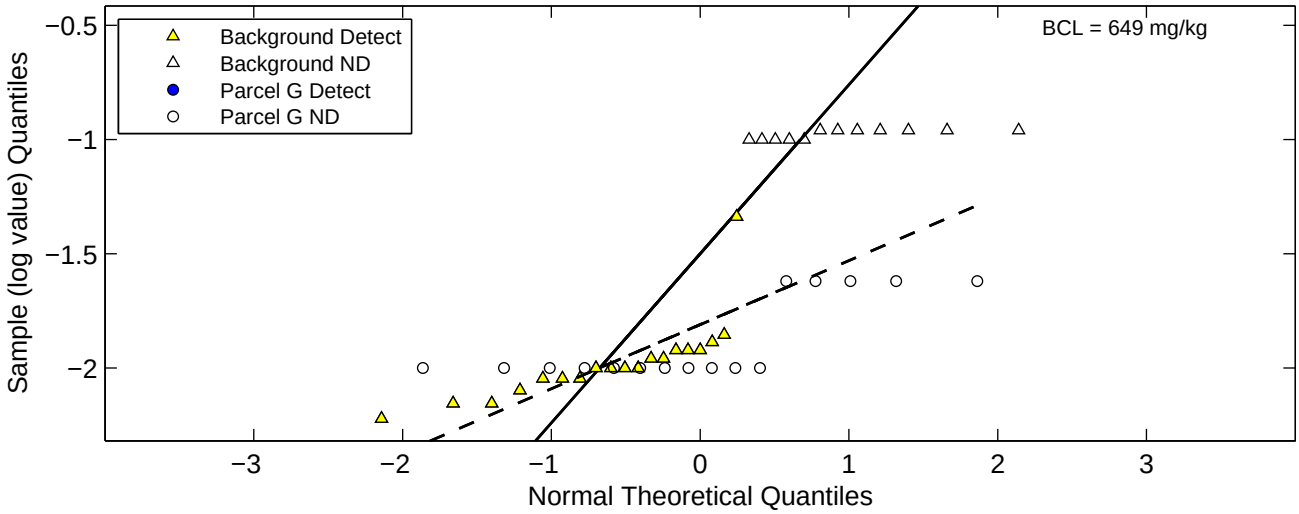
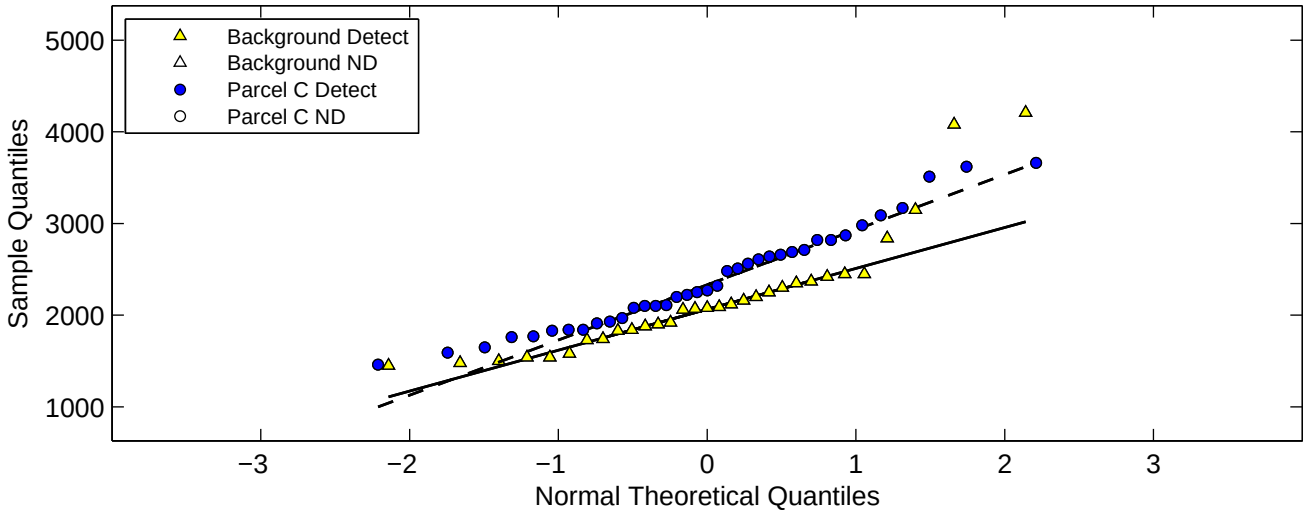
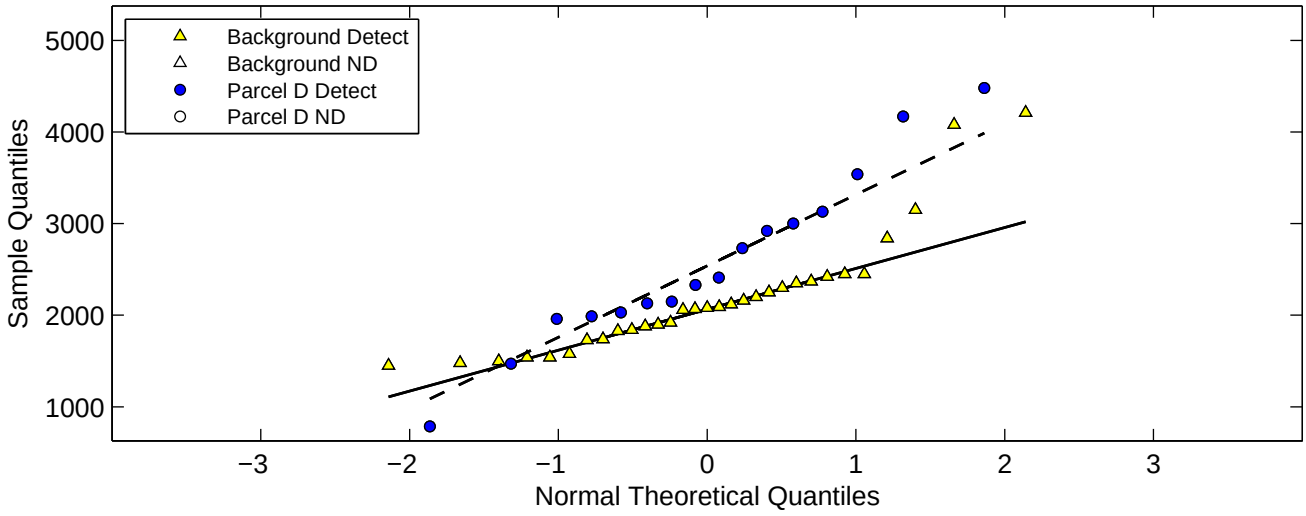


Figure I2−21A. Normal Q−Q Plots
Potassium





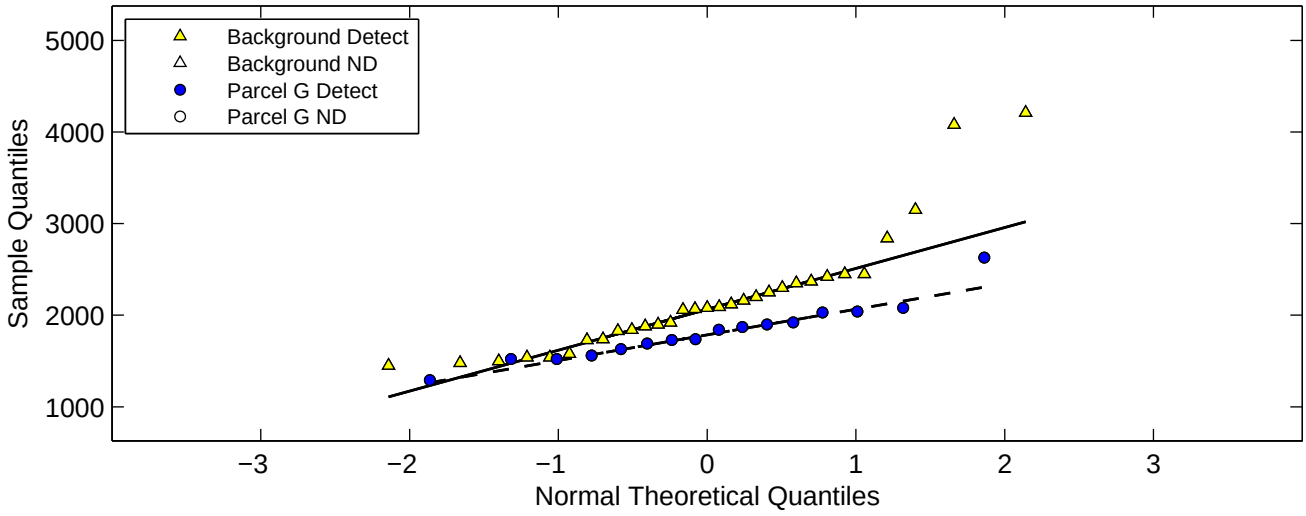
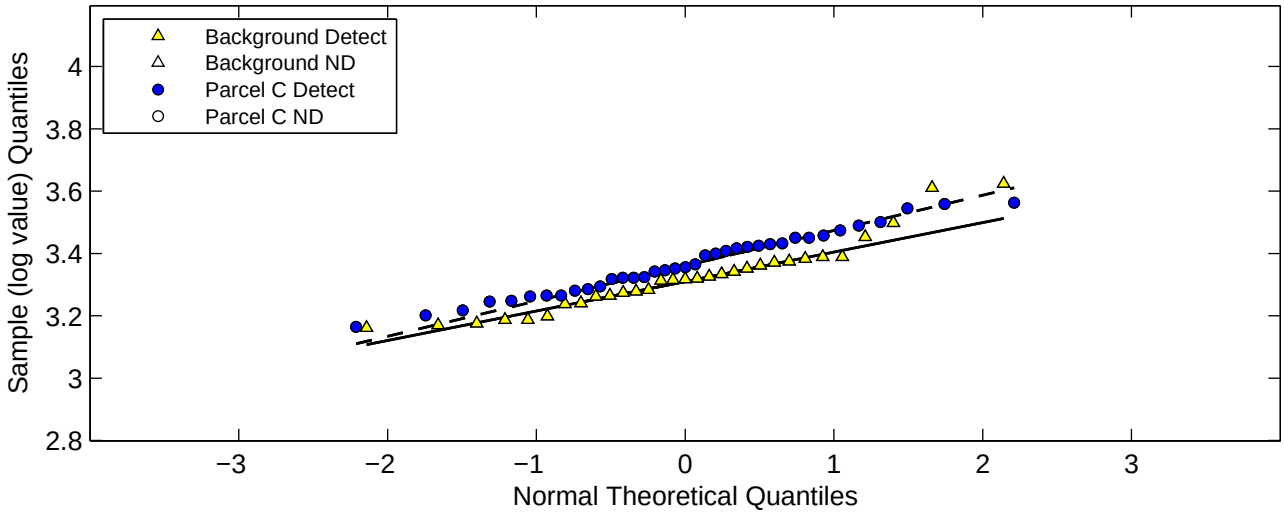
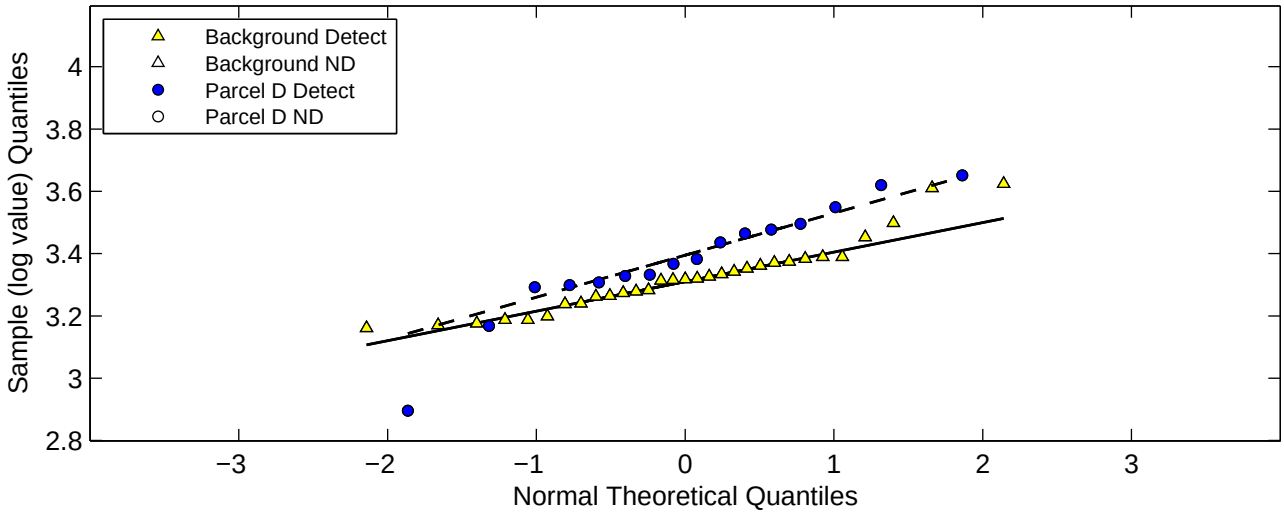


Figure I2−21B. Lognormal Q−Q Plots
Potassium





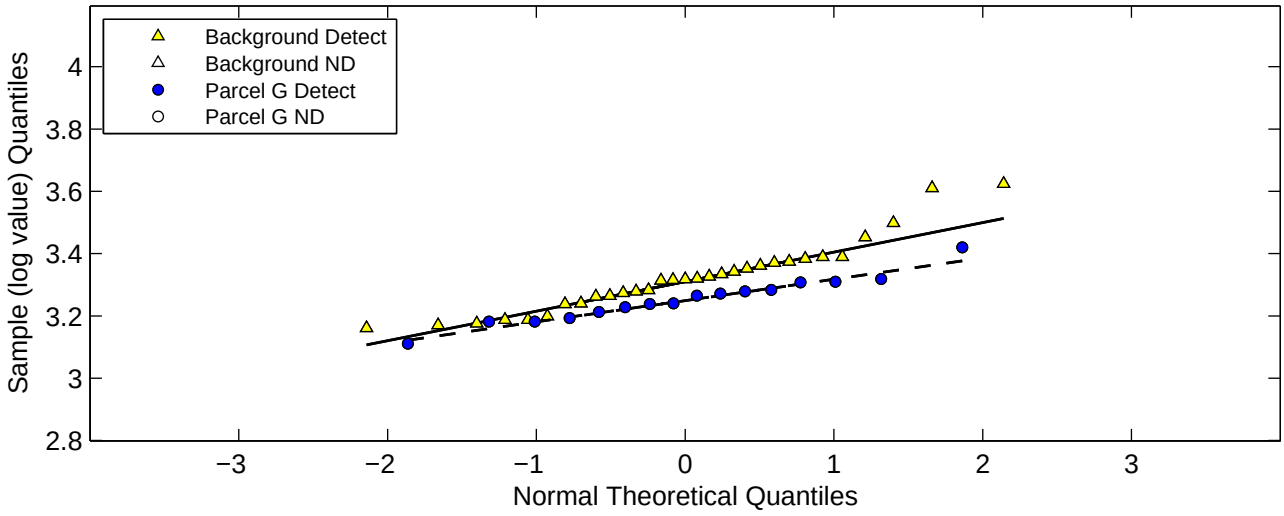
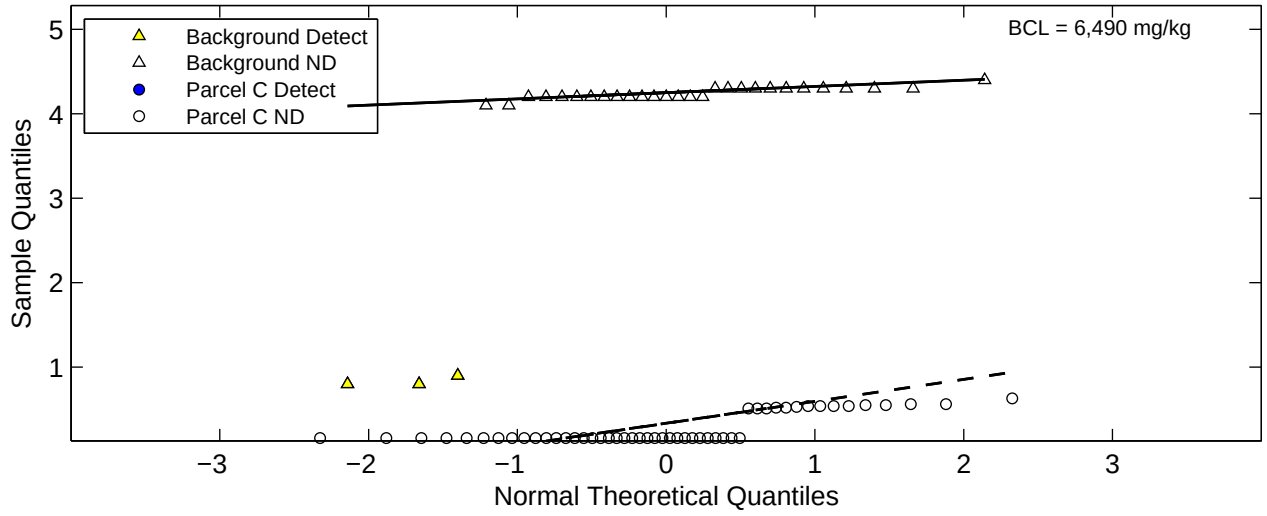
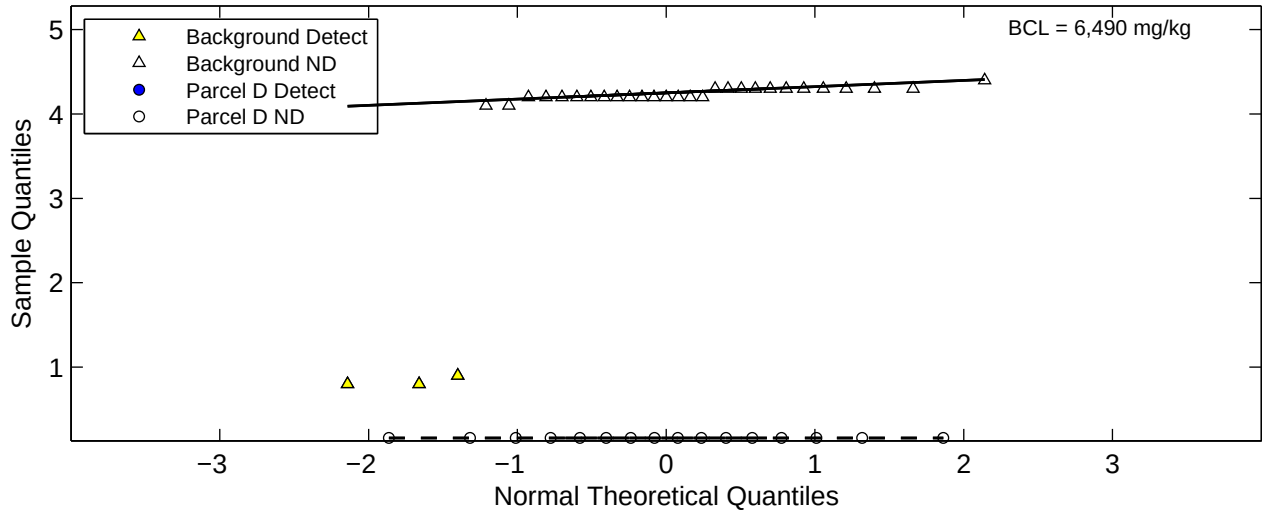


Figure I2−22A. Normal Q−Q Plots
Selenium





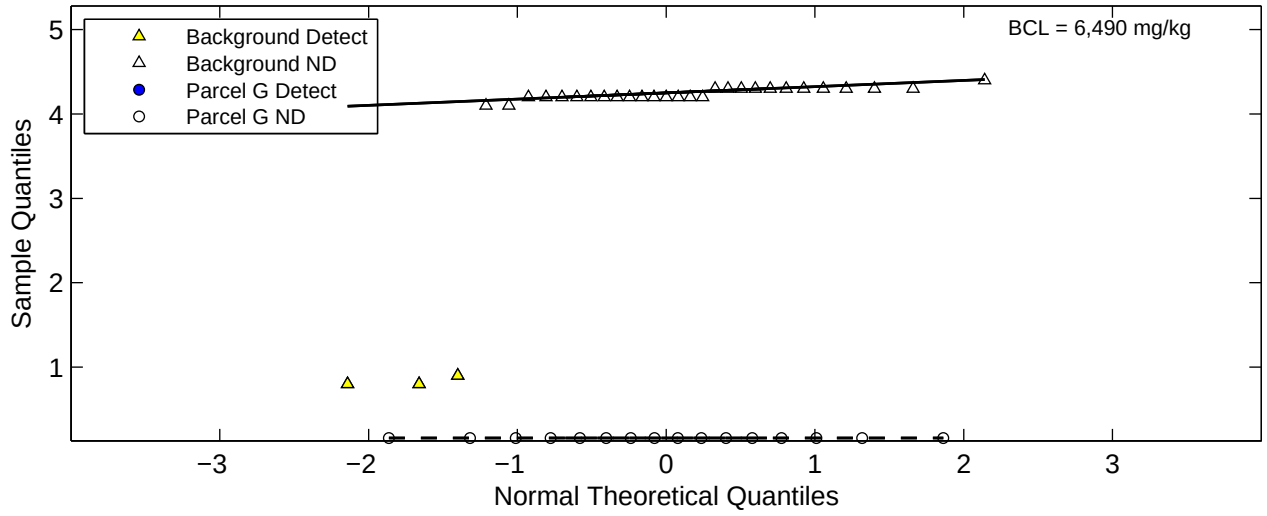
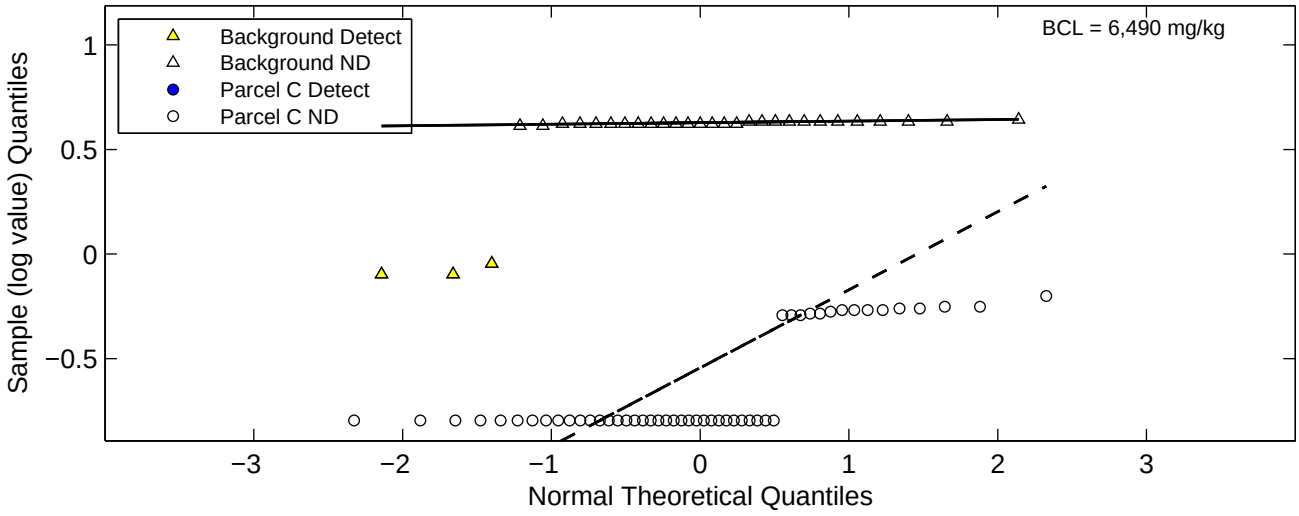
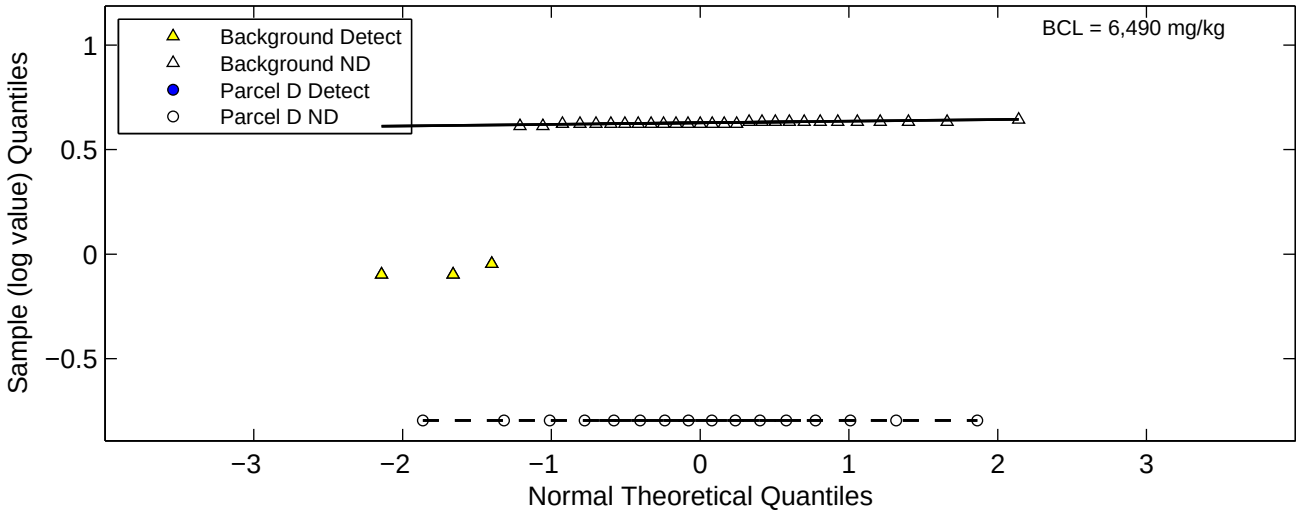


Figure I2−22B. Lognormal Q−Q Plots
Selenium





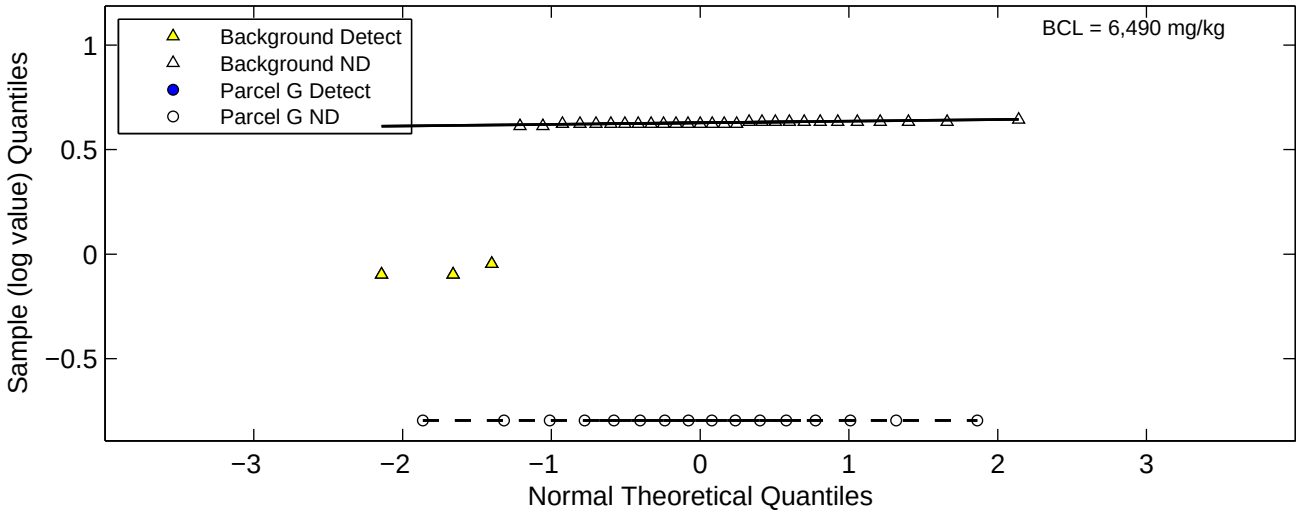
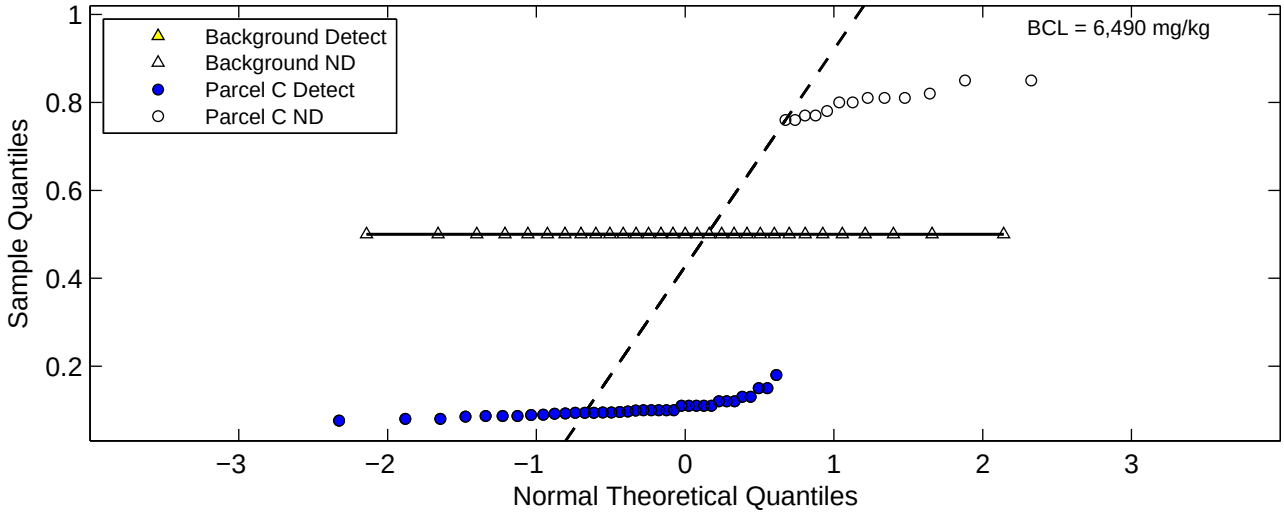
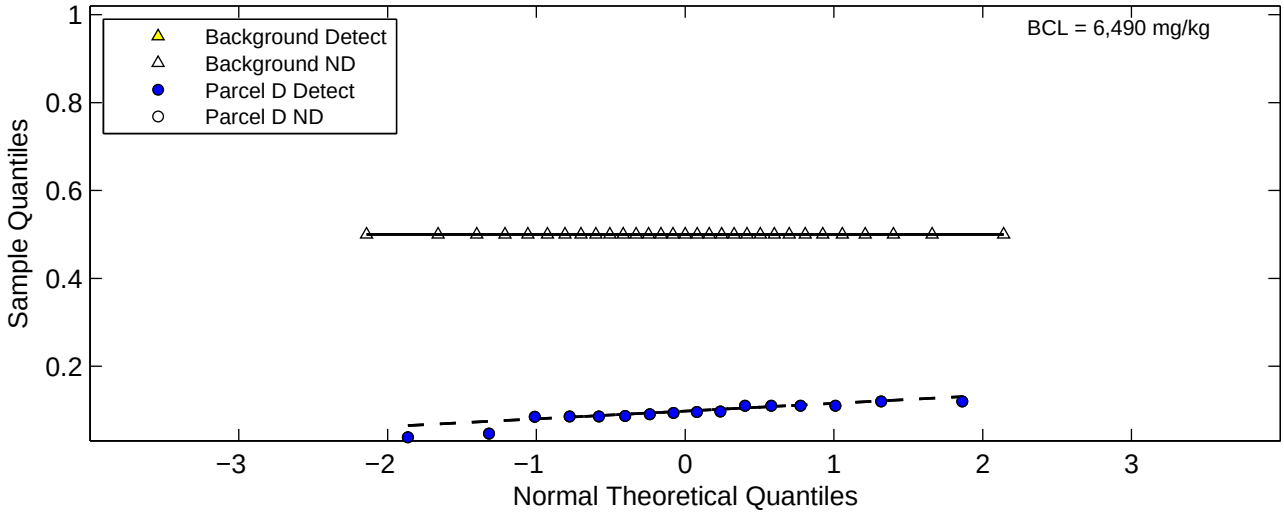


Figure I2−23A. Normal Q−Q Plots
Silver





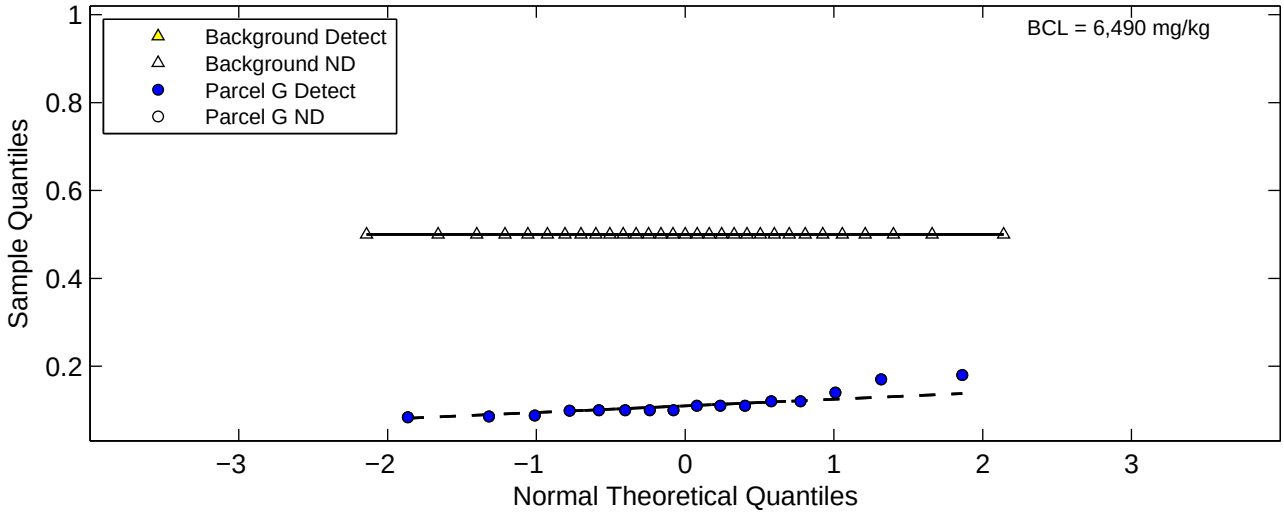
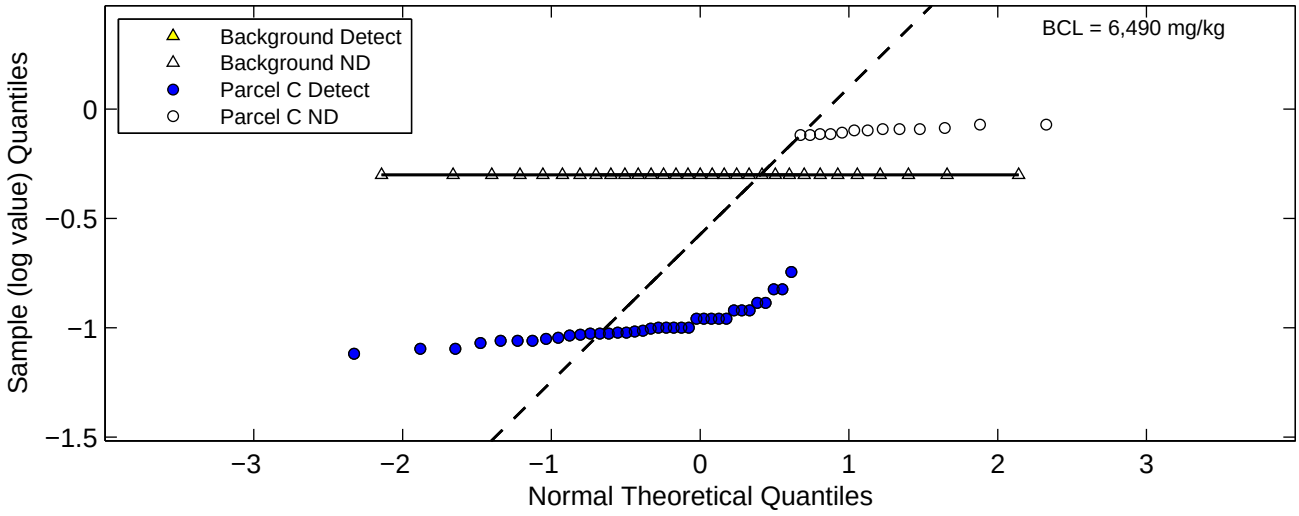
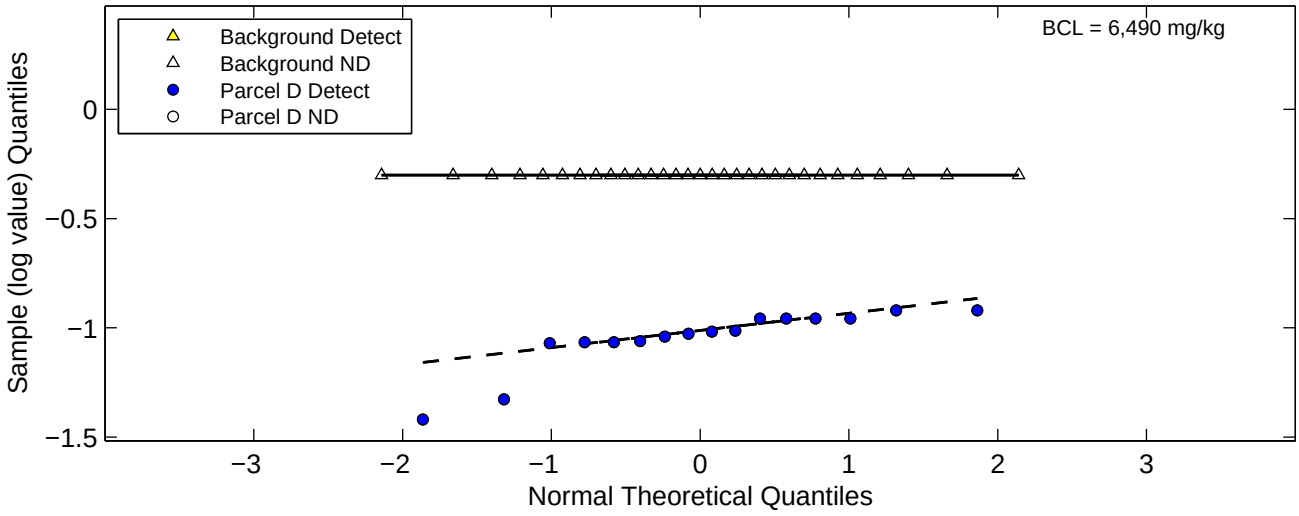


Figure I2−23B. Lognormal Q−Q Plots
Silver





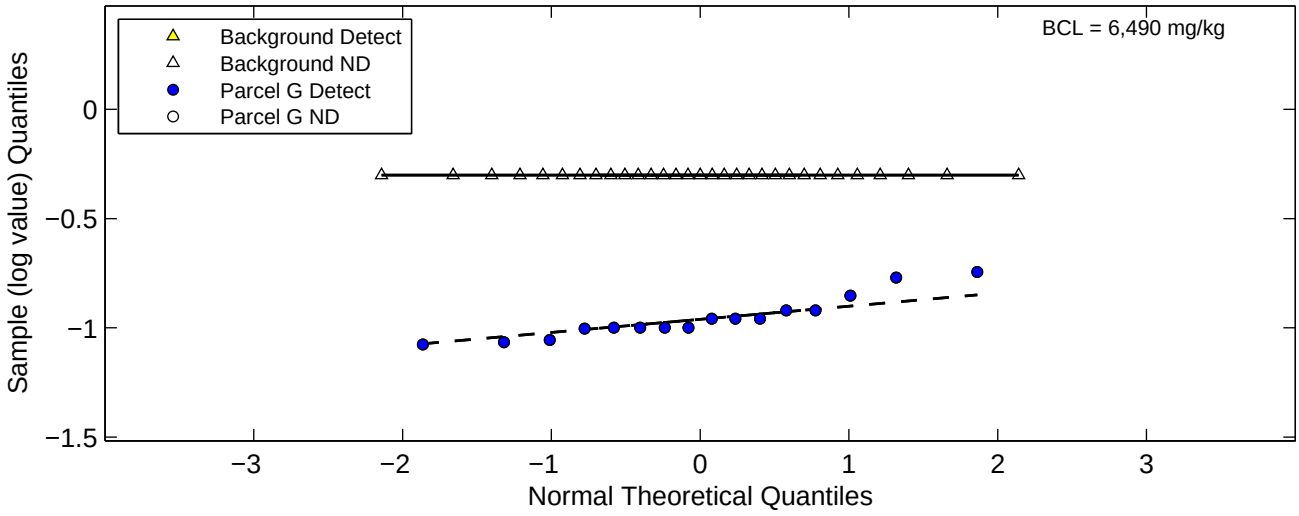
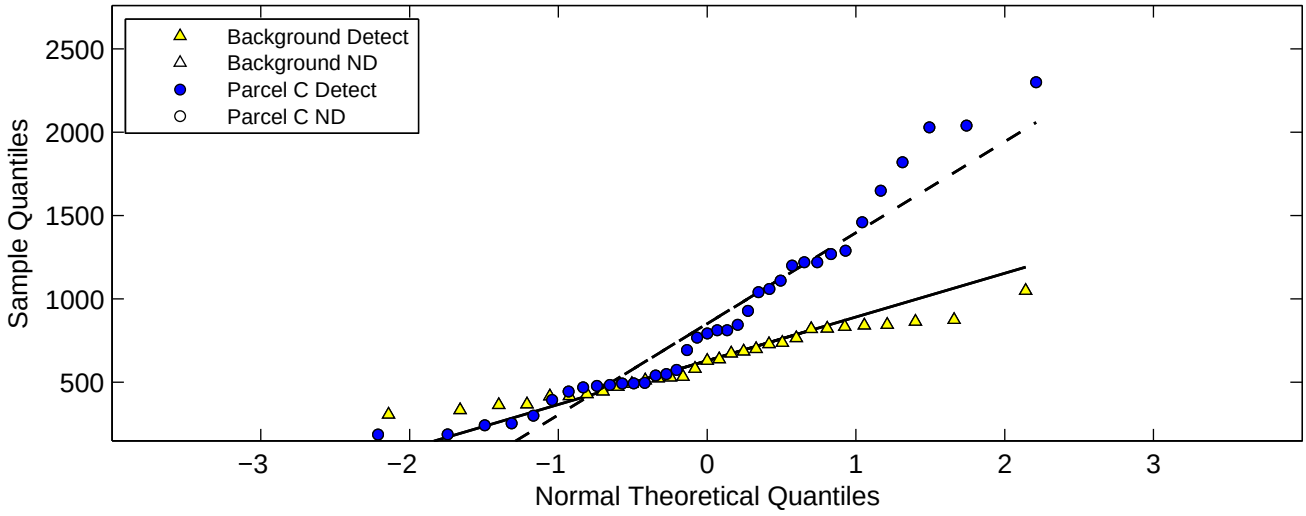
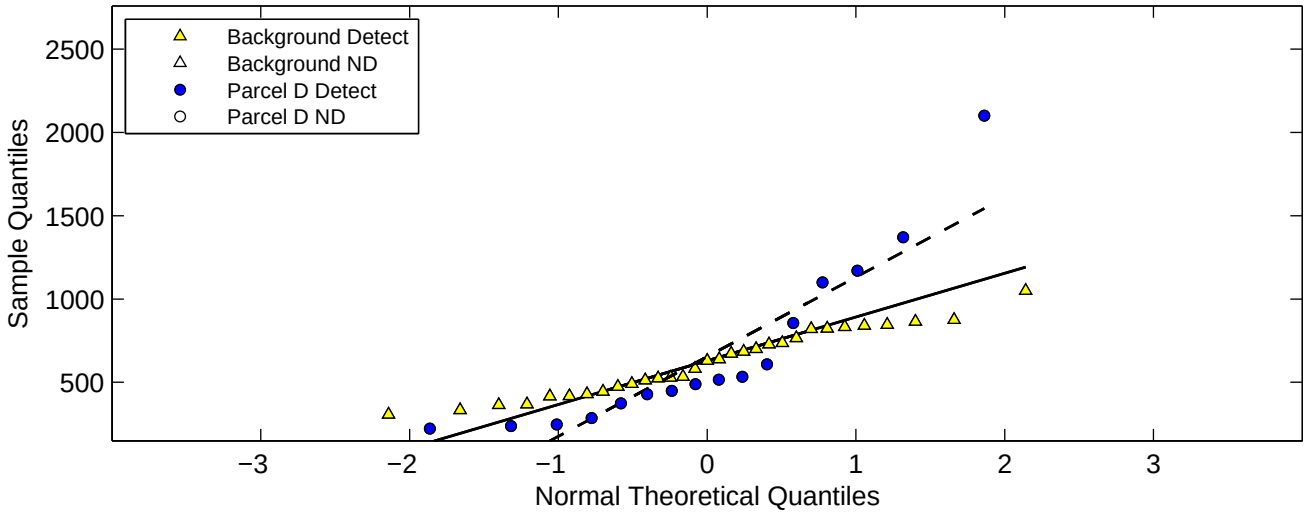


Figure I2−24A. Normal Q−Q Plots
Sodium





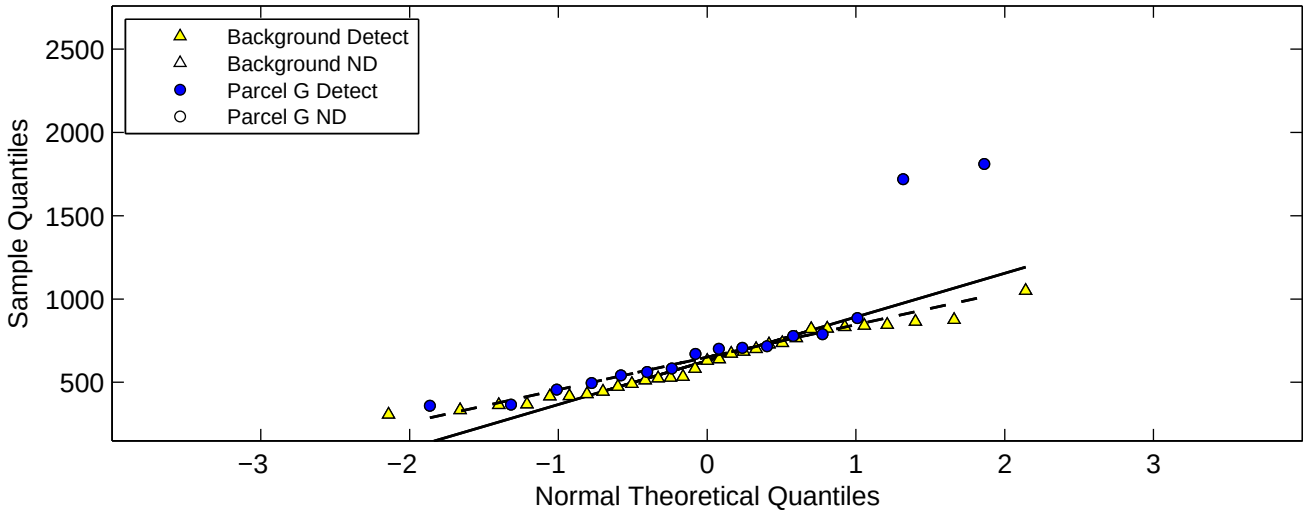
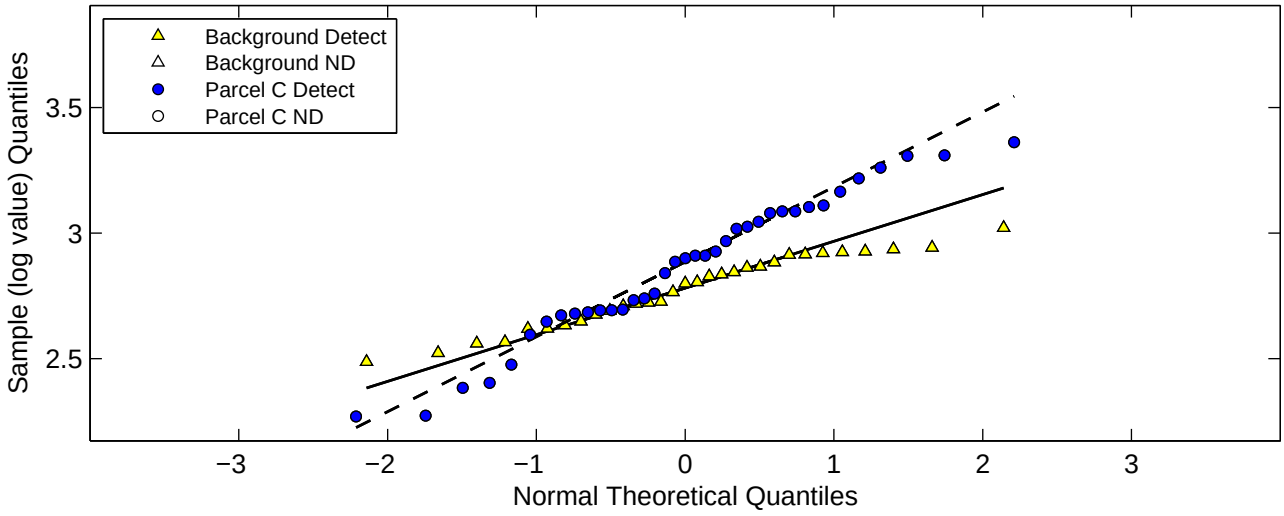
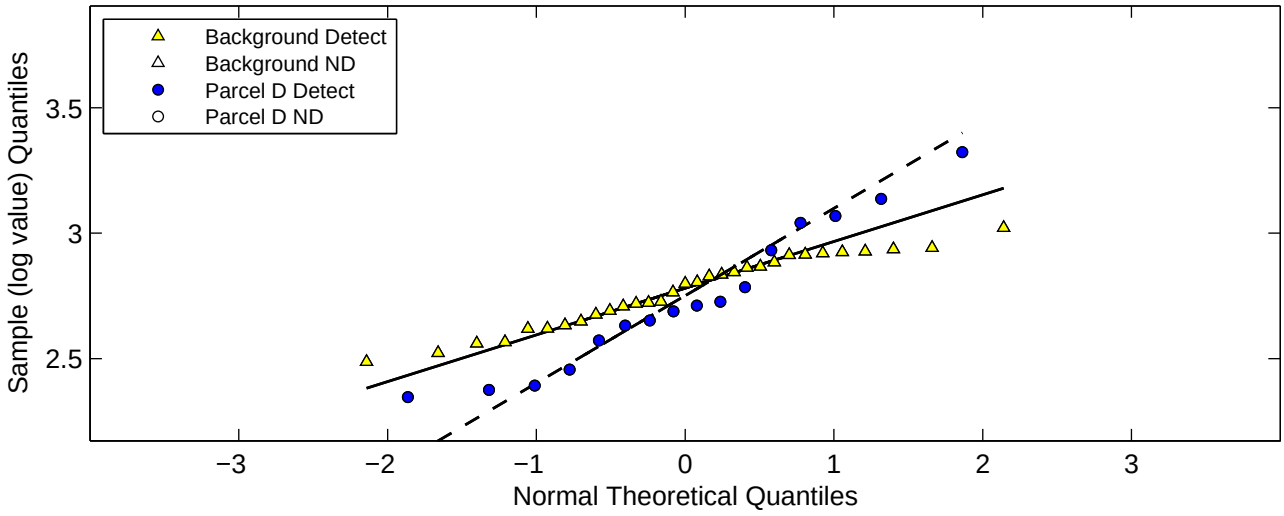


Figure I2−24B. Lognormal Q−Q Plots
Sodium





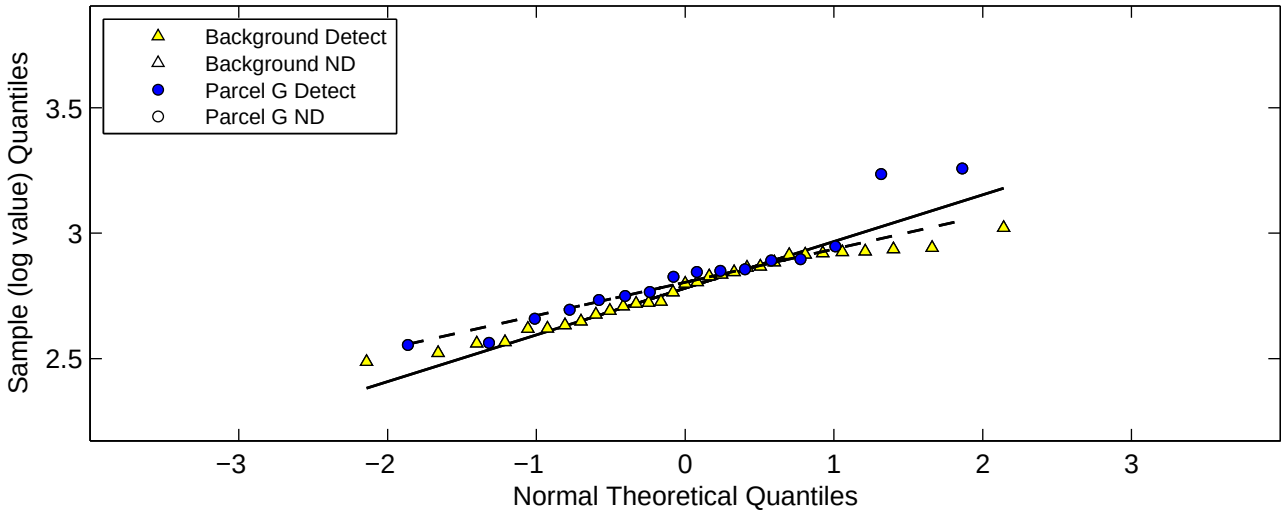
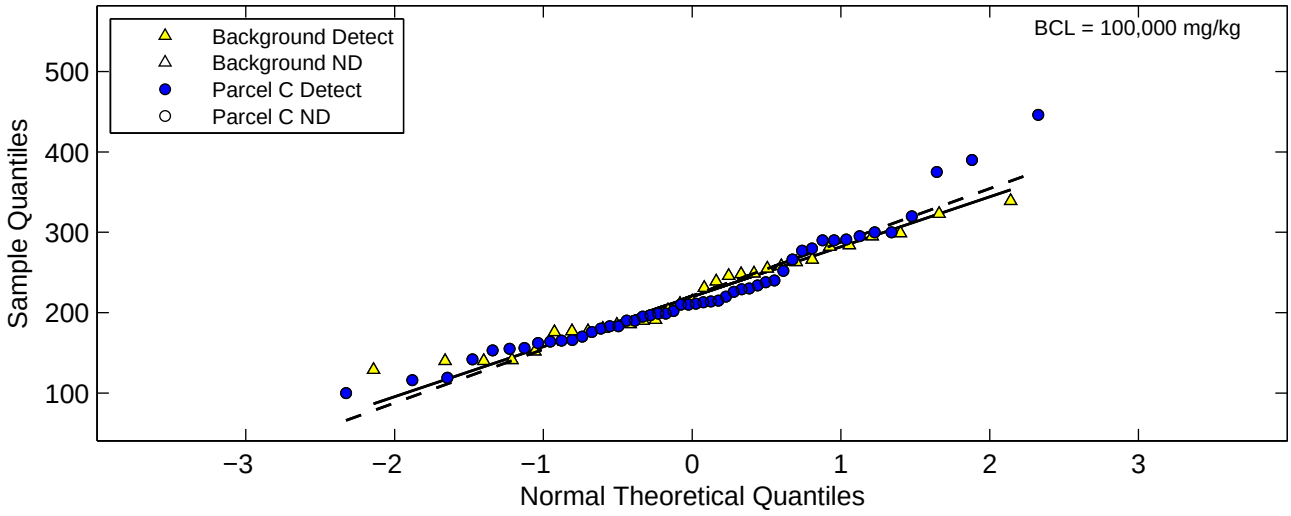
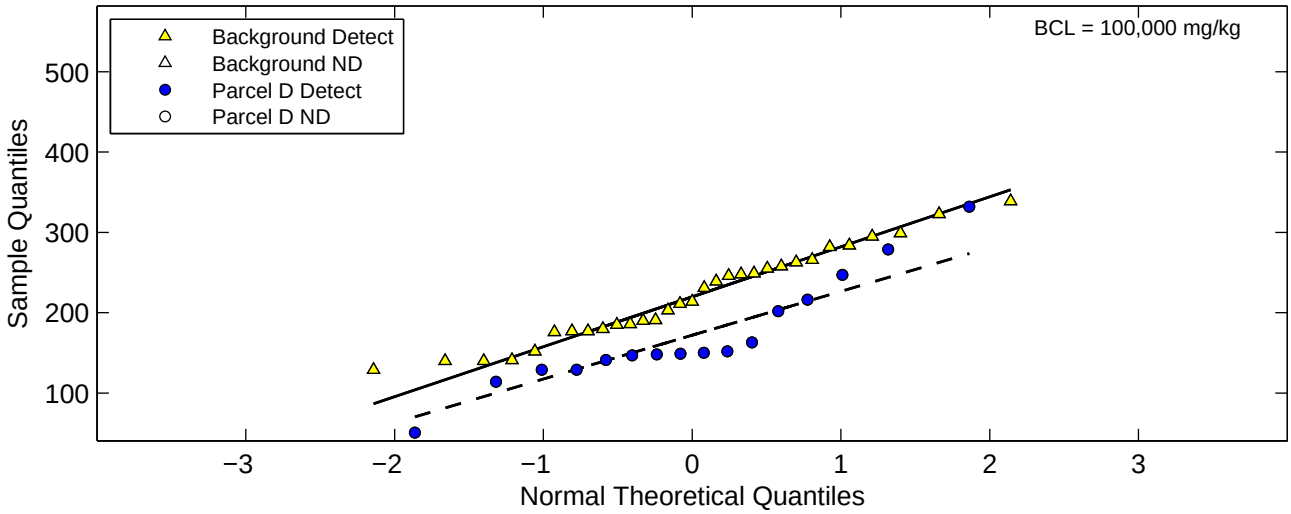


Figure I2−25A. Normal Q−Q Plots
Strontium





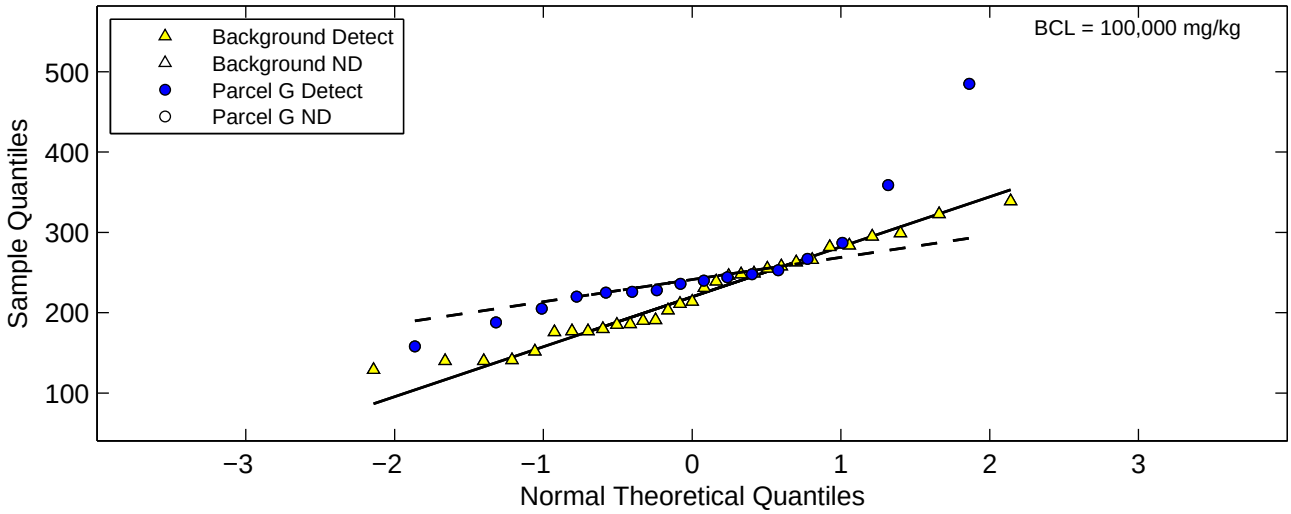
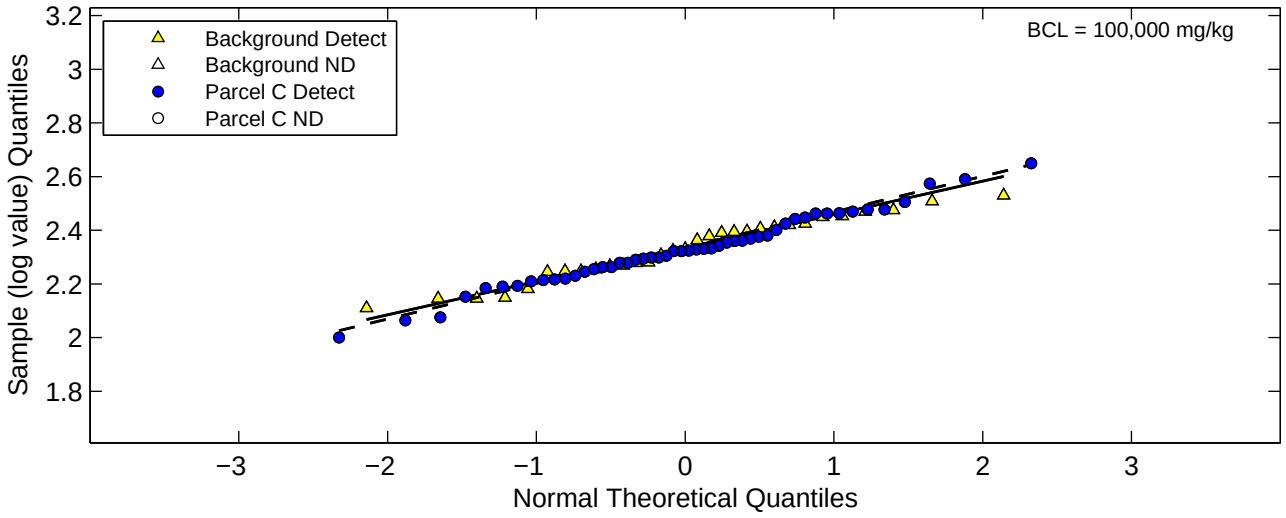
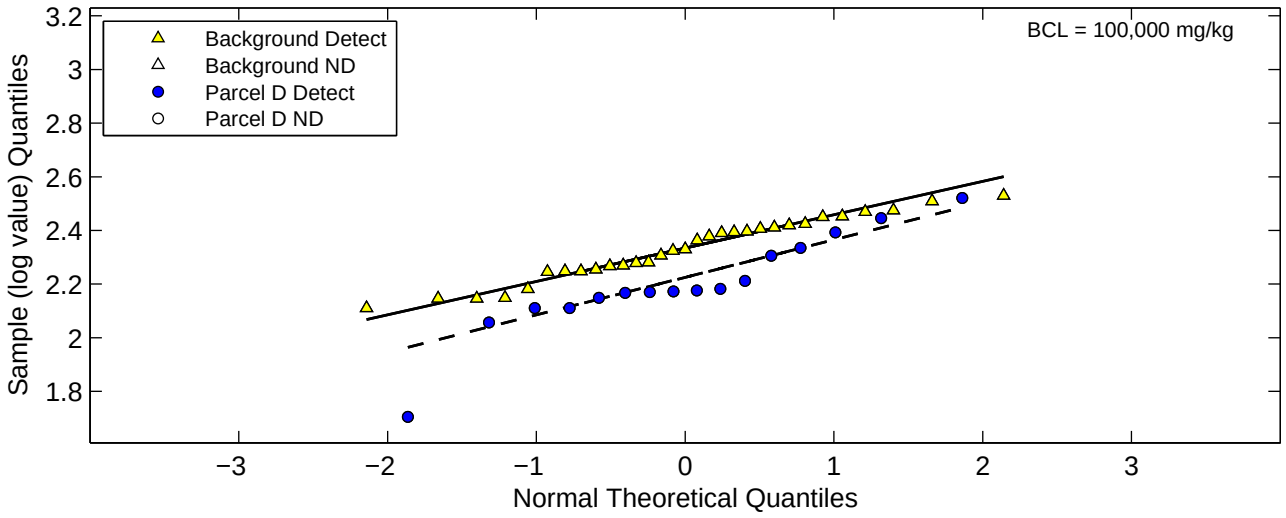


Figure I2−25B. Lognormal Q−Q Plots
Strontium





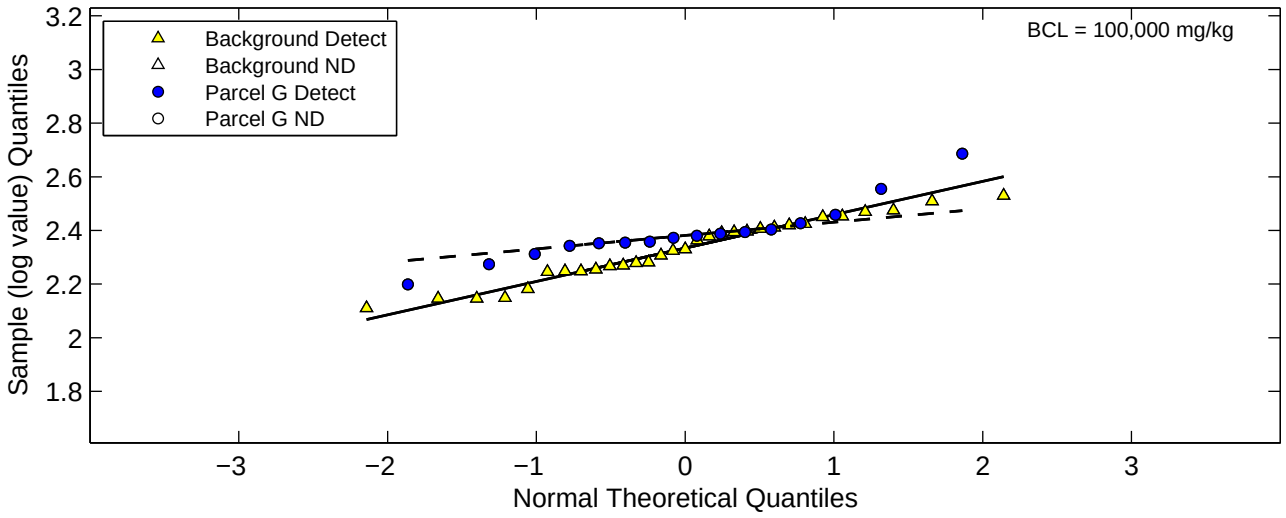
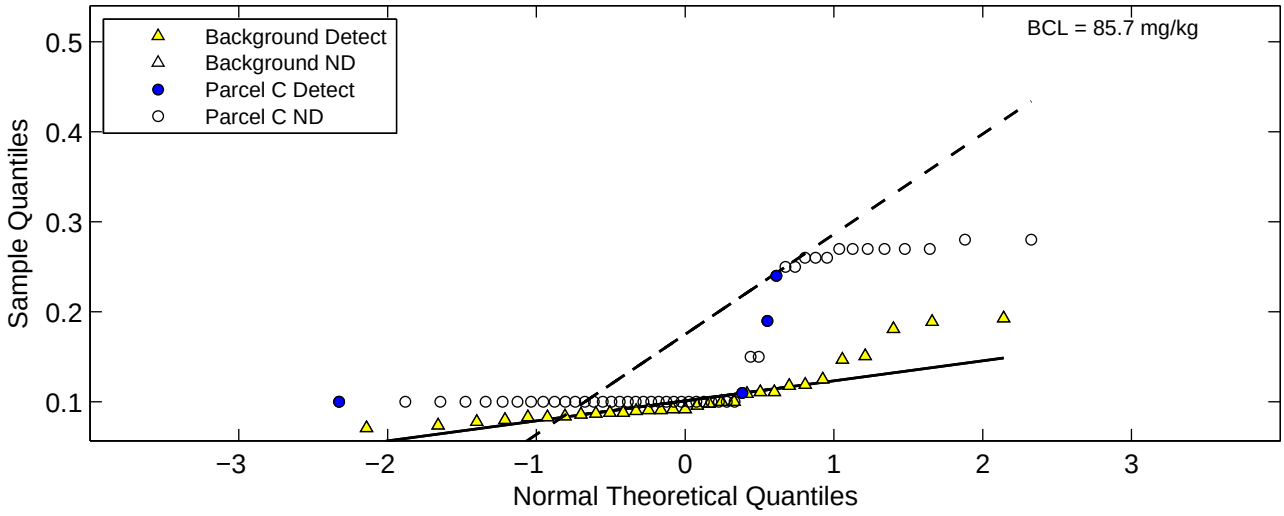
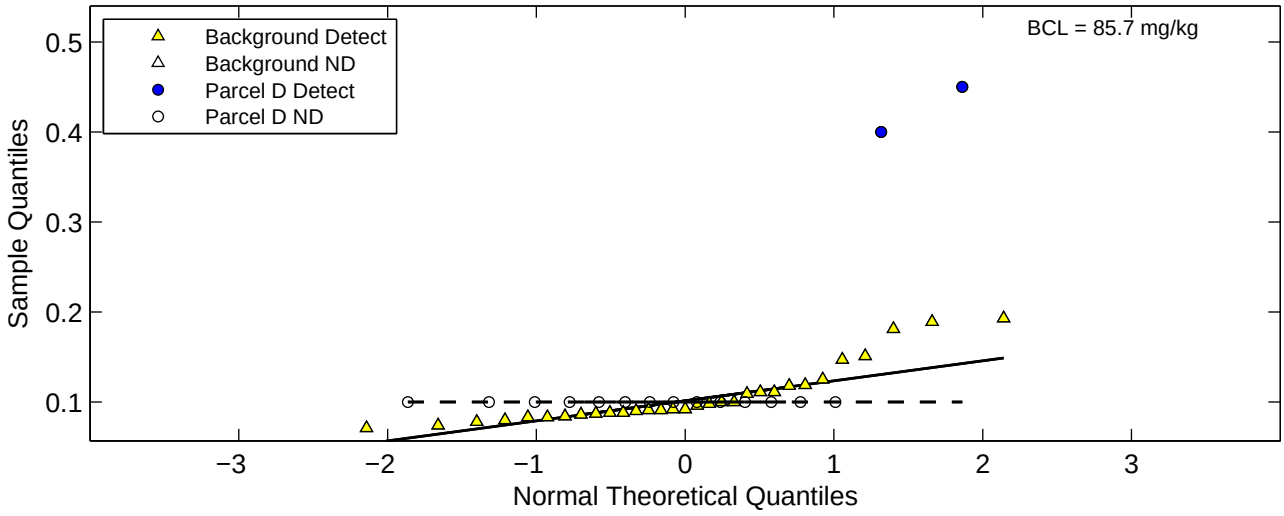


Figure I2−26A. Normal Q−Q Plots
Thallium





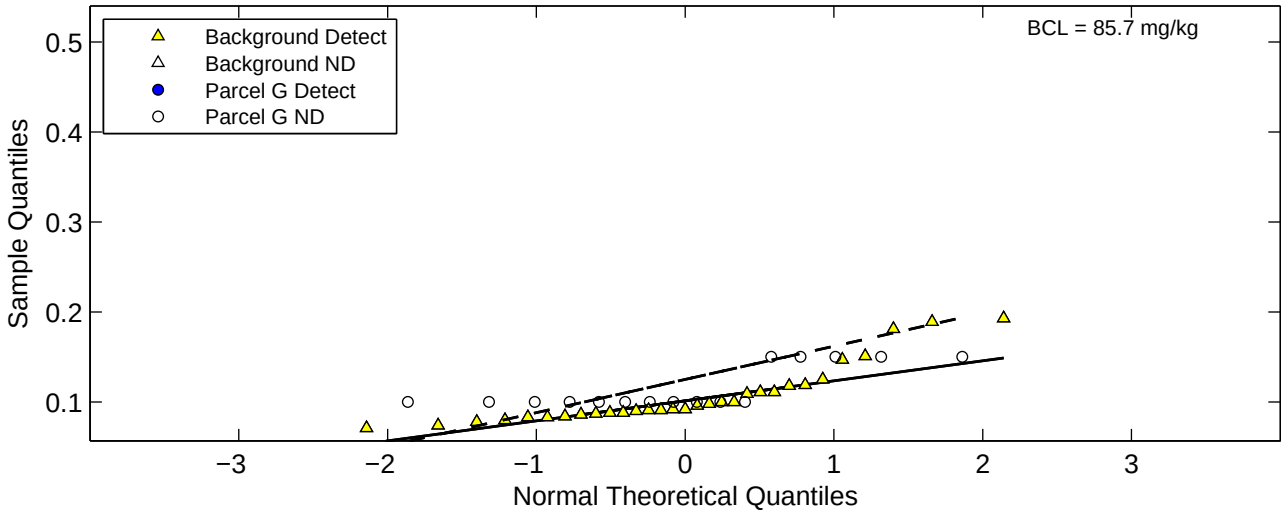
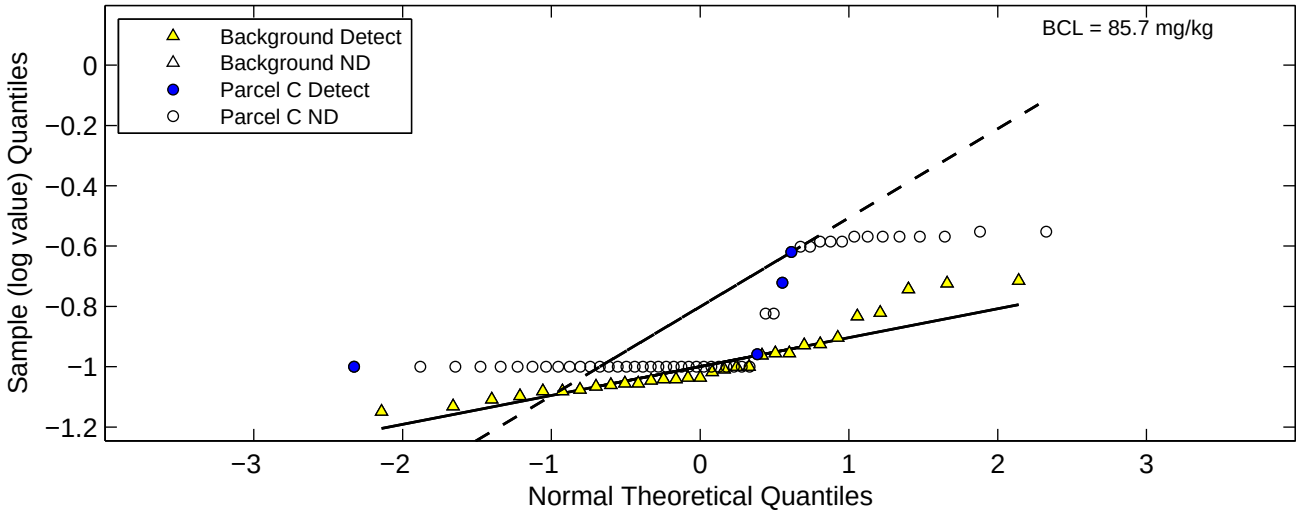
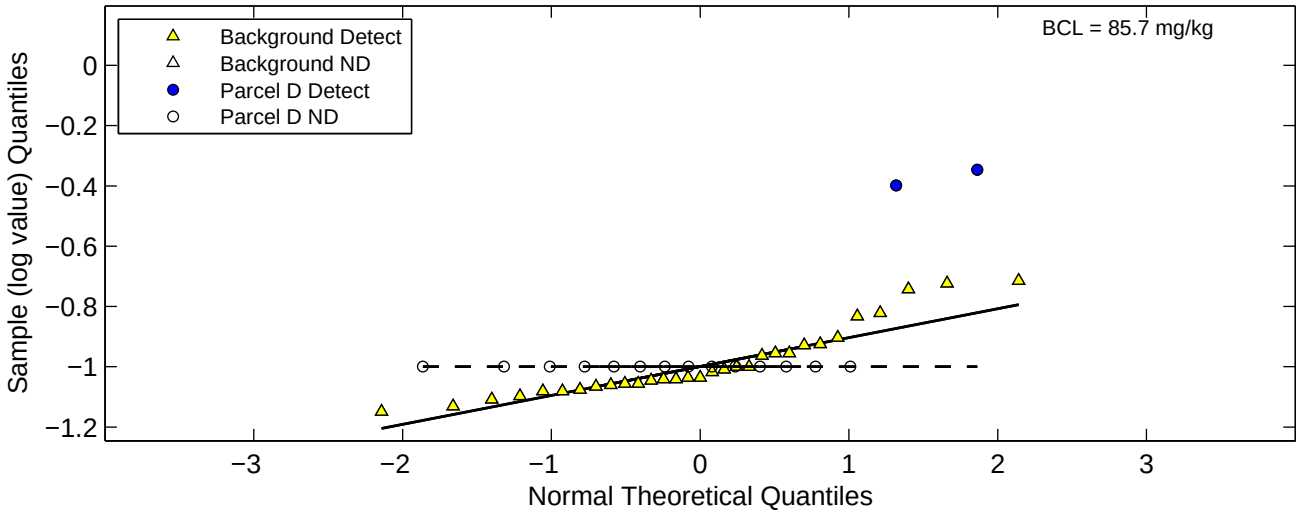


Figure I2−26B. Lognormal Q−Q Plots
Thallium





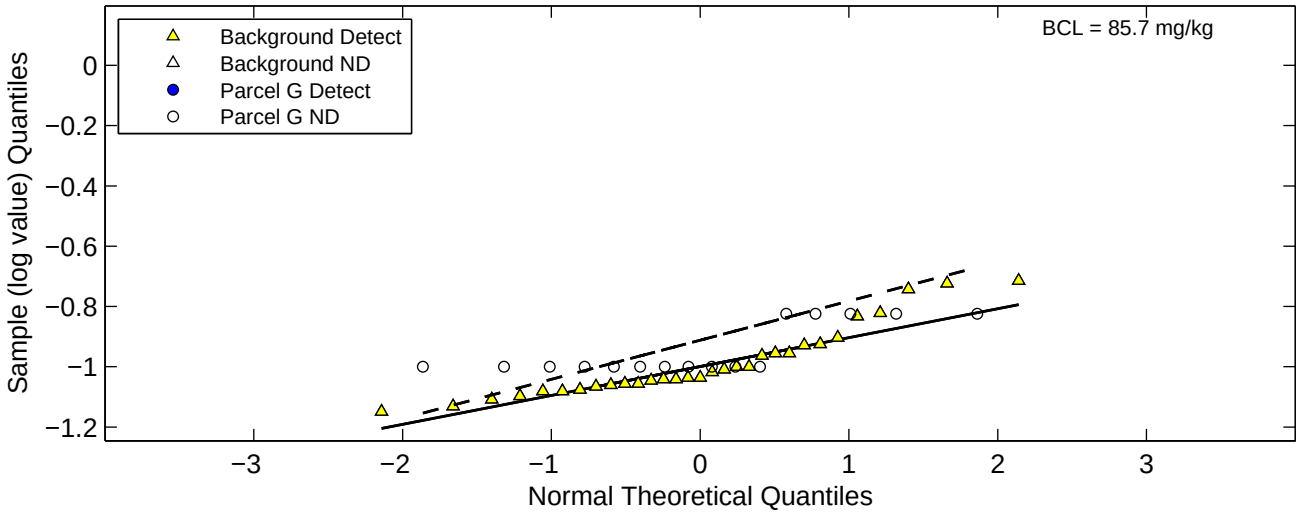
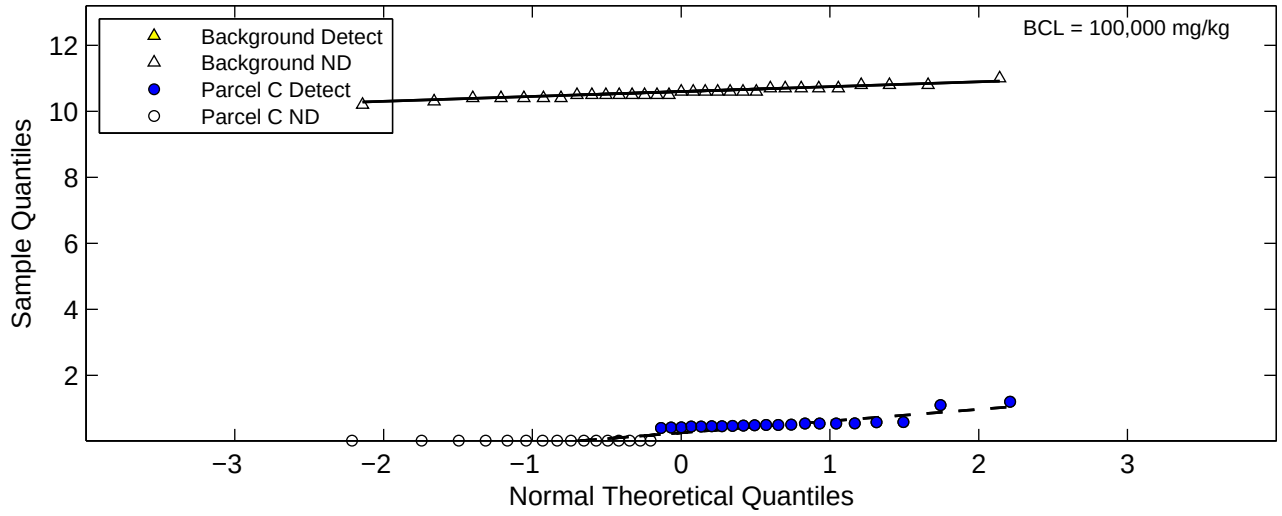
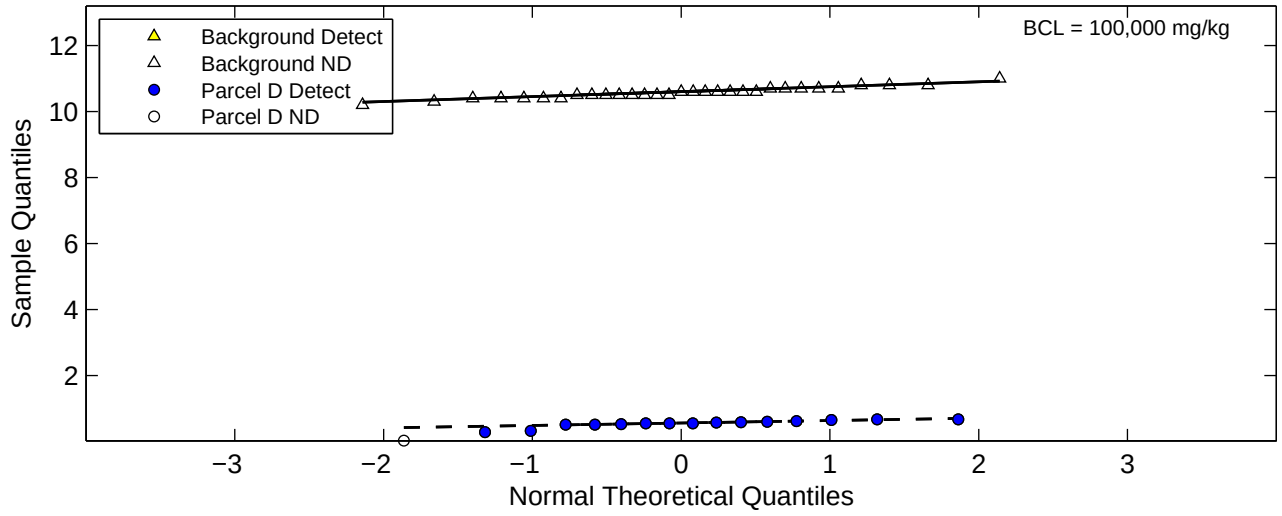


Figure I2−27A. Normal Q−Q Plots
Tin





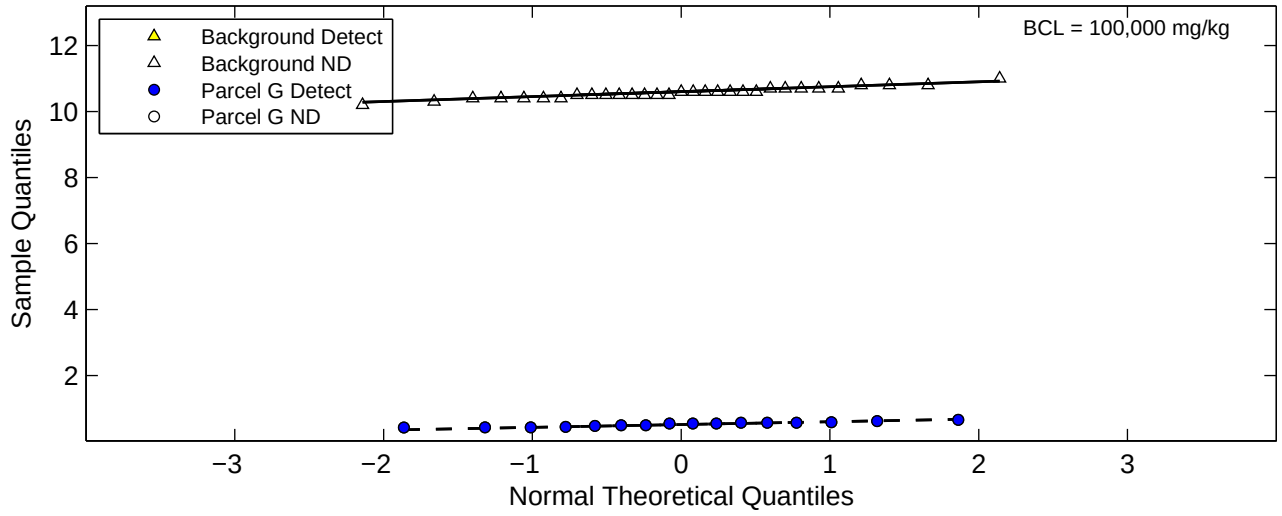
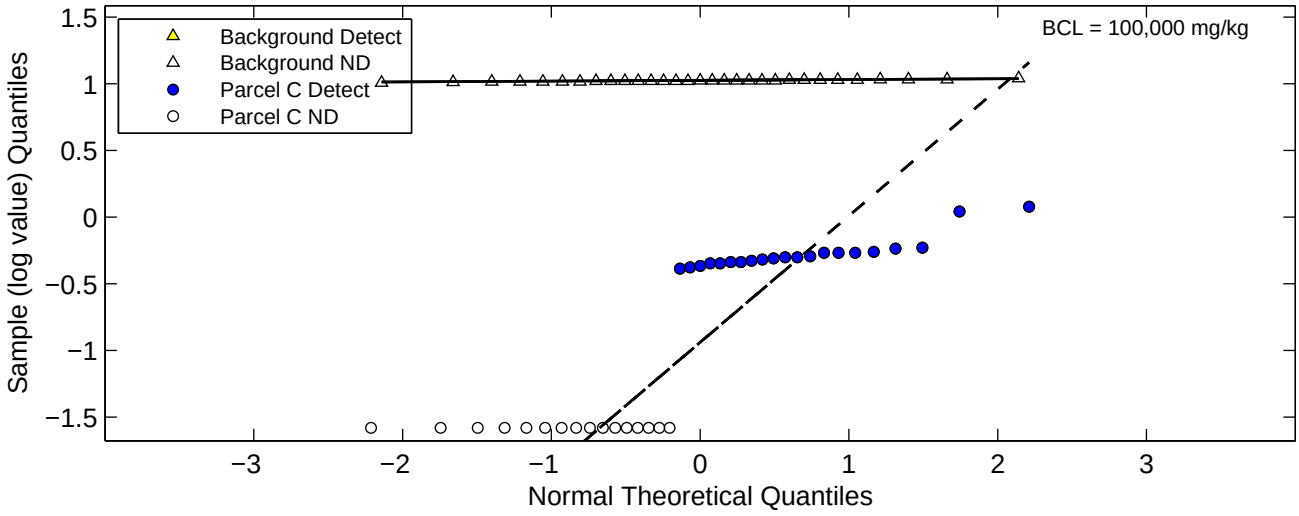
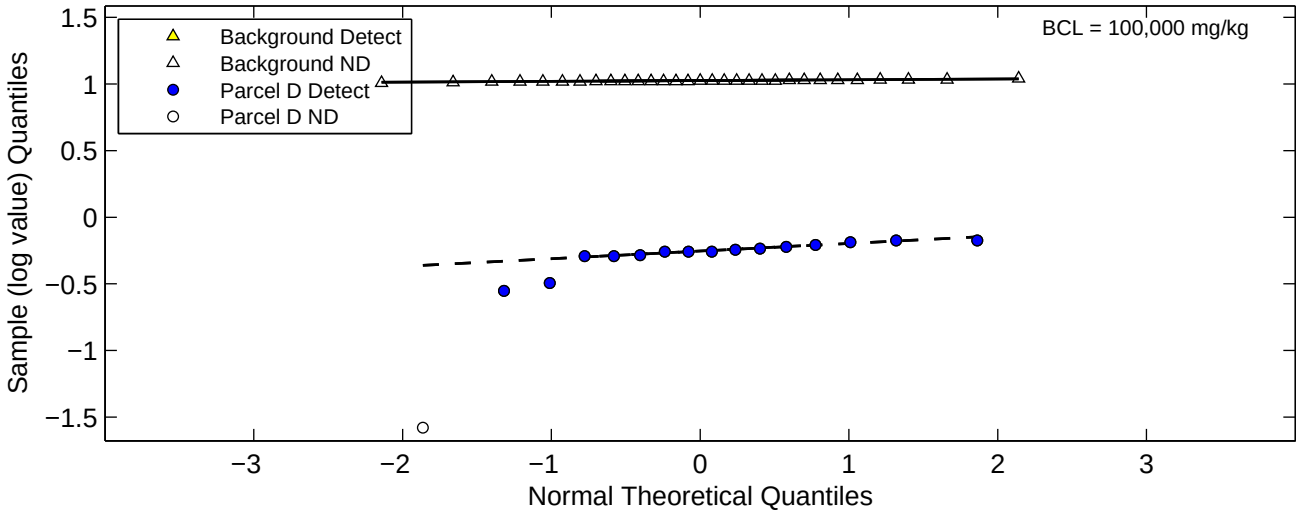


Figure I2−27B. Lognormal Q−Q Plots
Tin





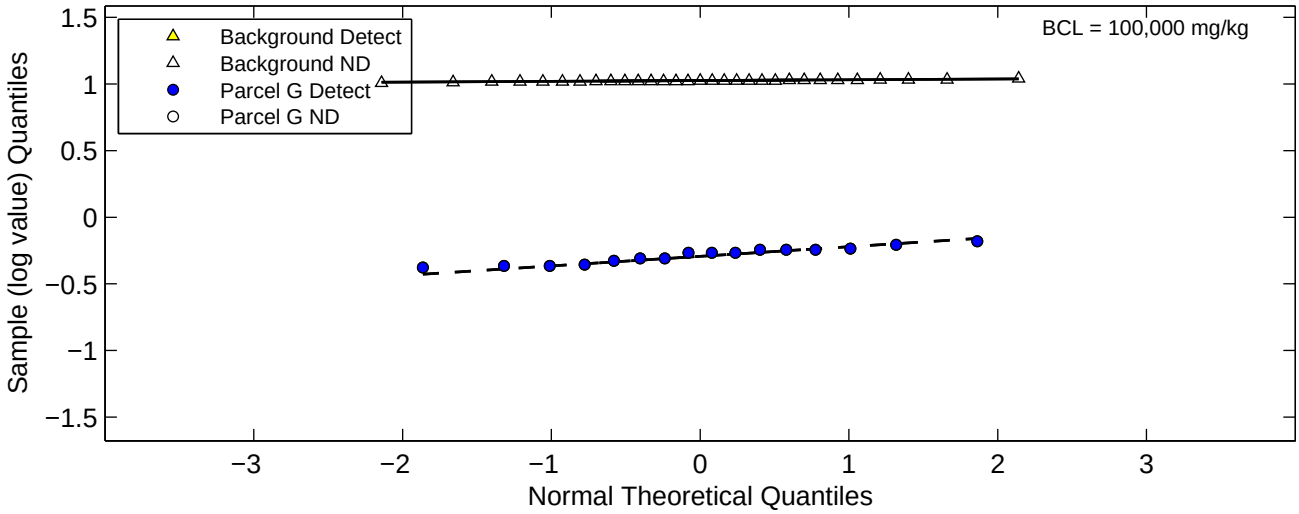
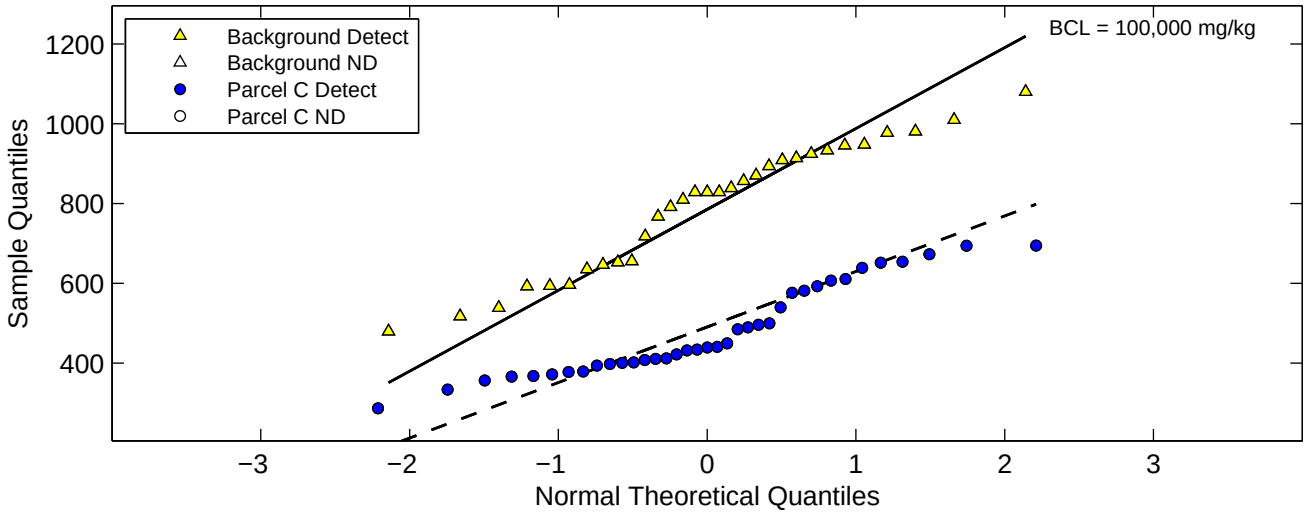
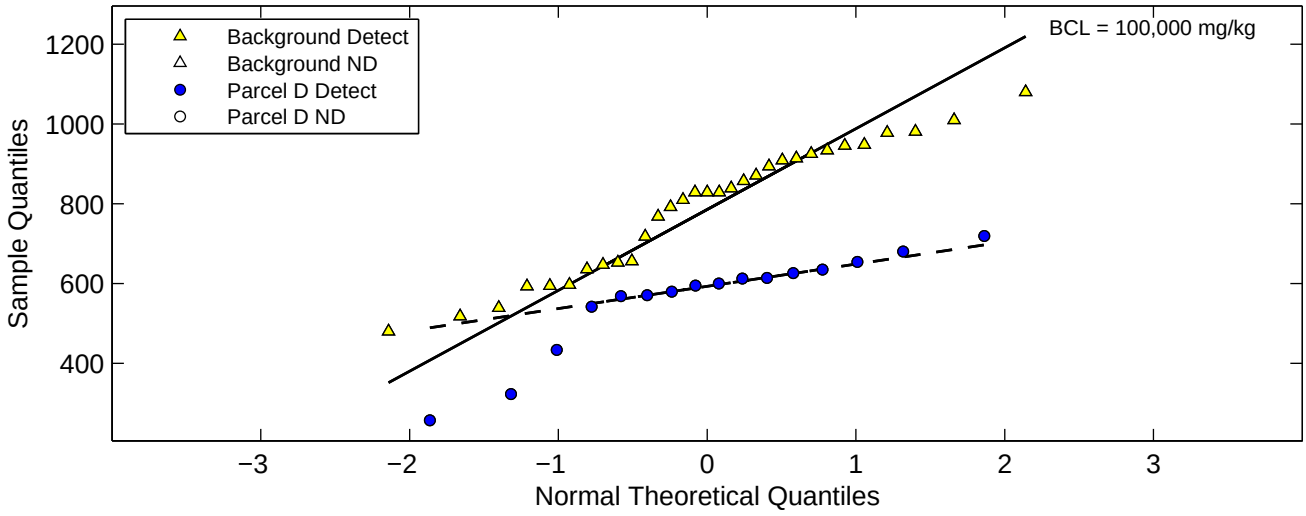


Figure I2−28A. Normal Q−Q Plots
Titanium





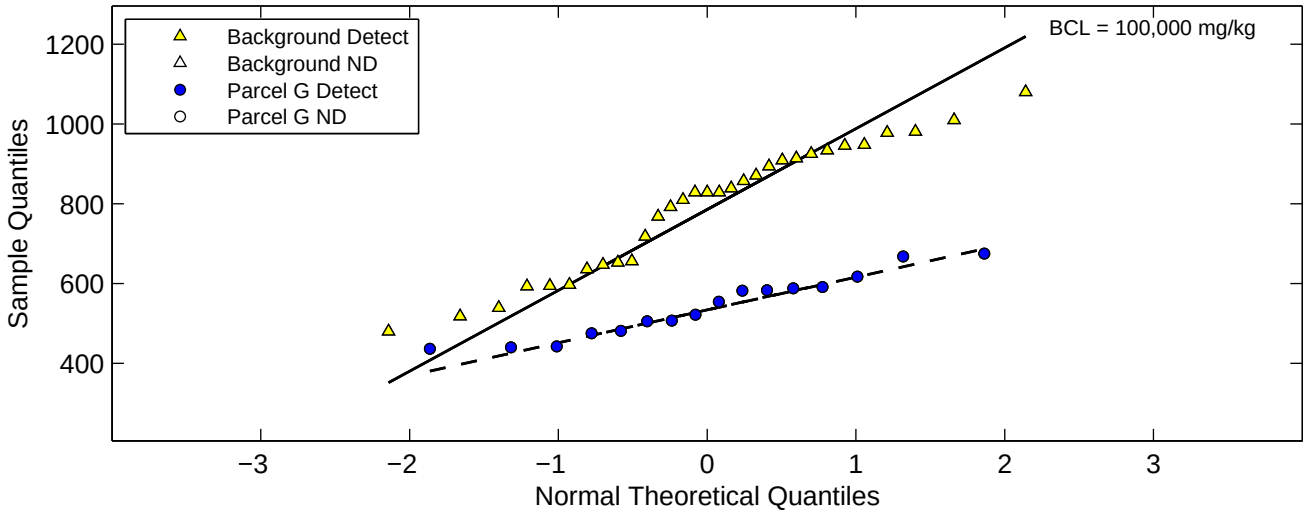
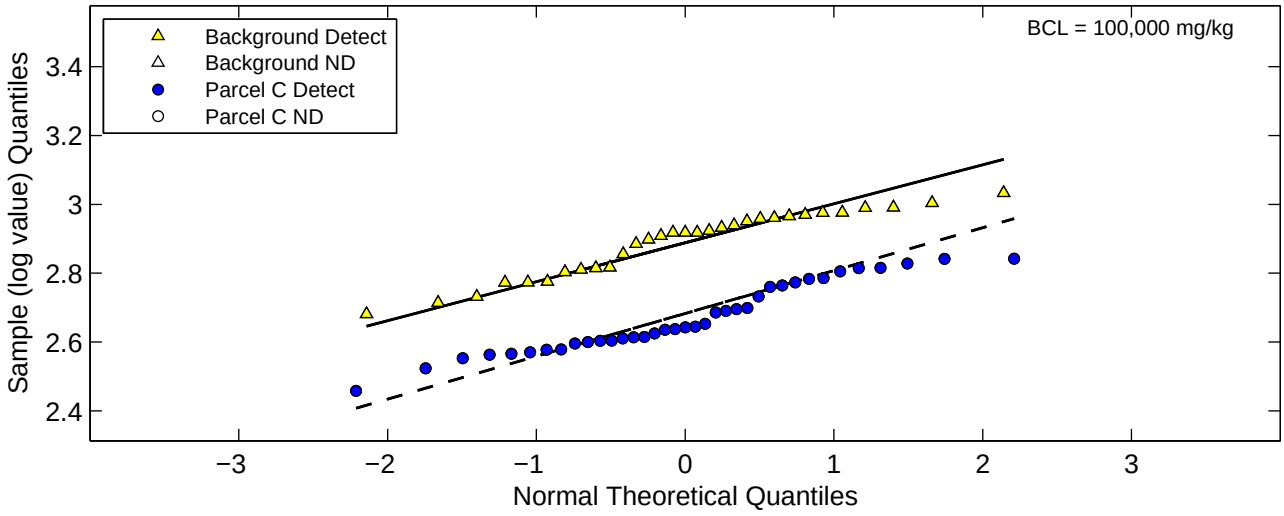
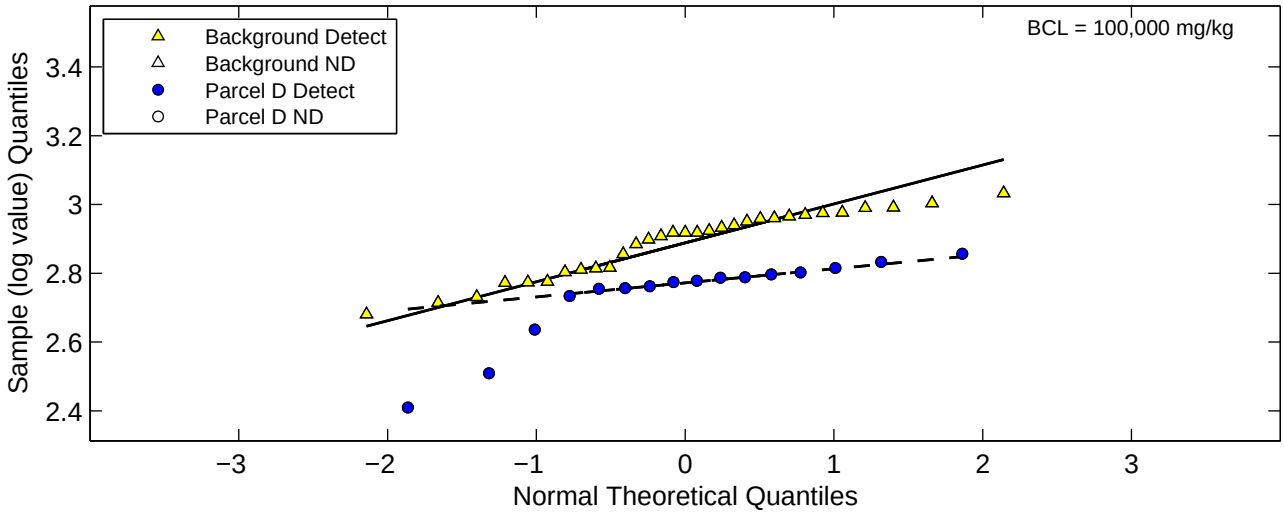


Figure I2−28B. Lognormal Q−Q Plots
Titanium





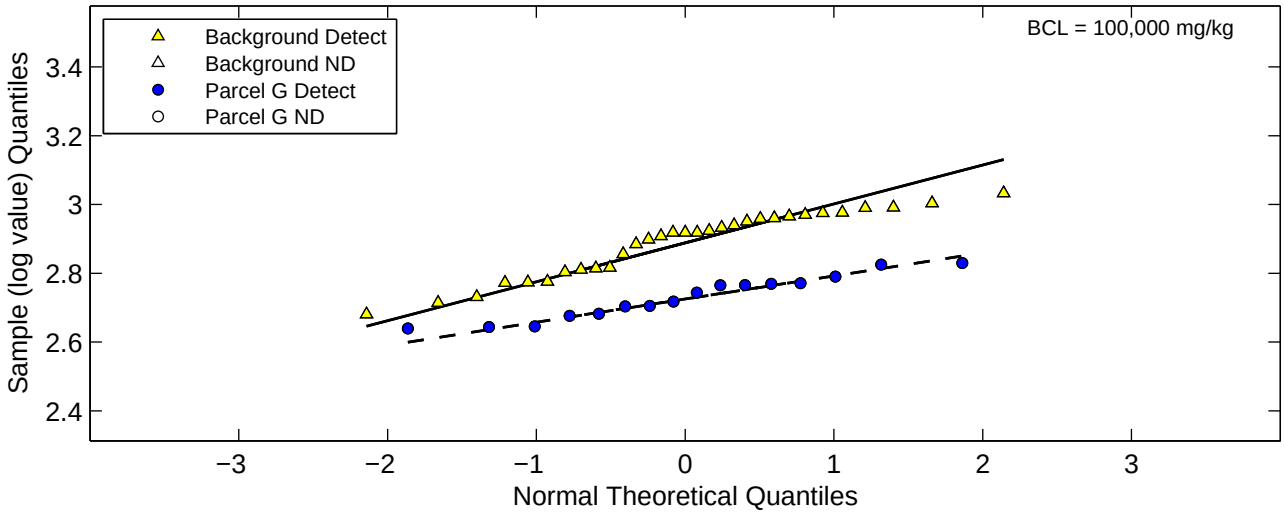
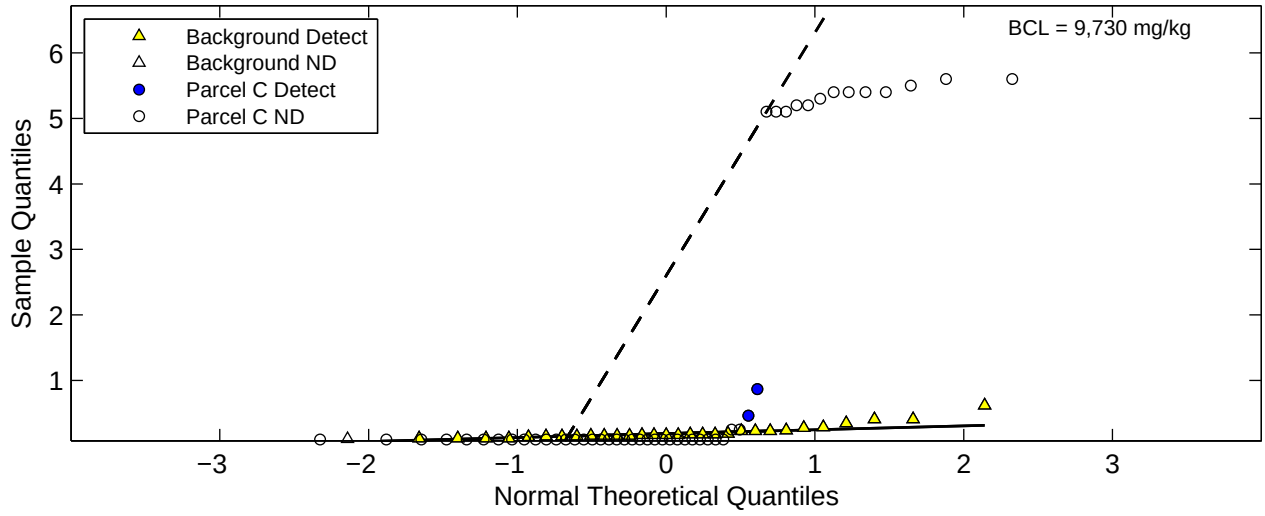
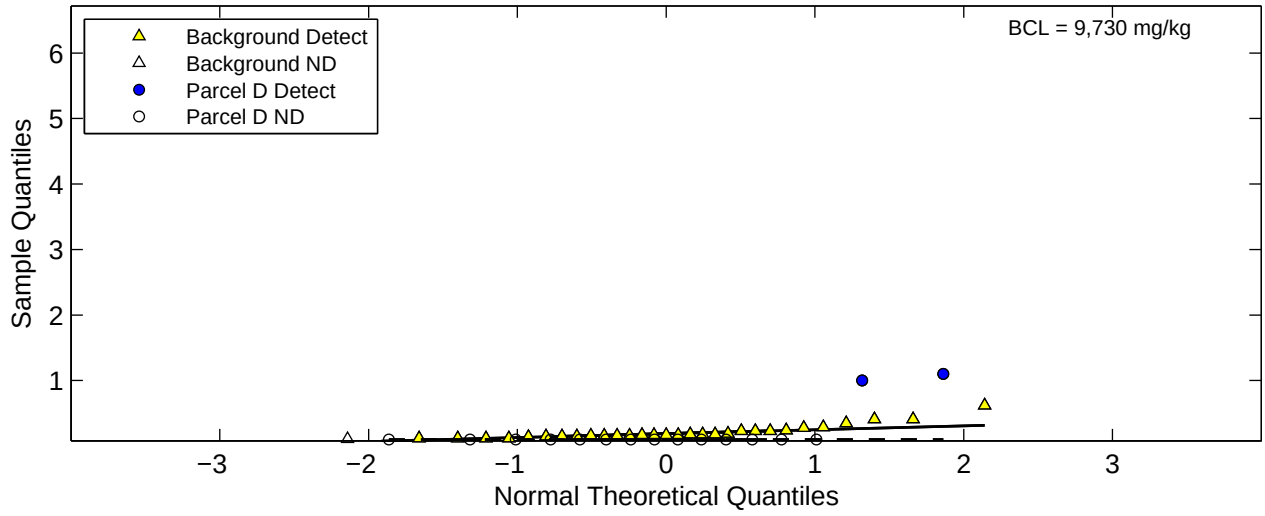


Figure I2−29A. Normal Q−Q Plots
Tungsten





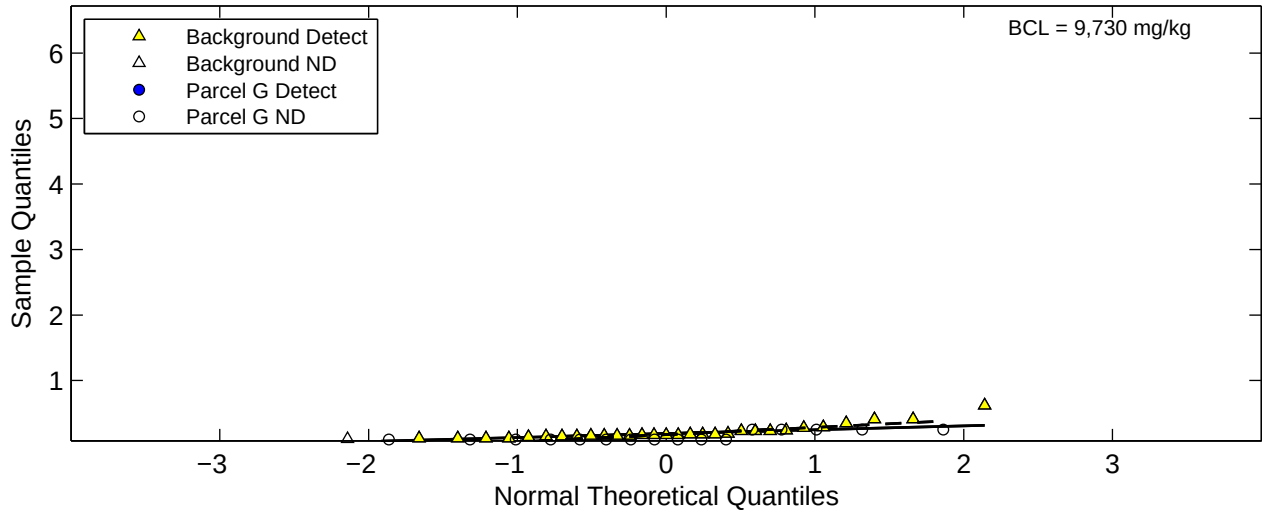
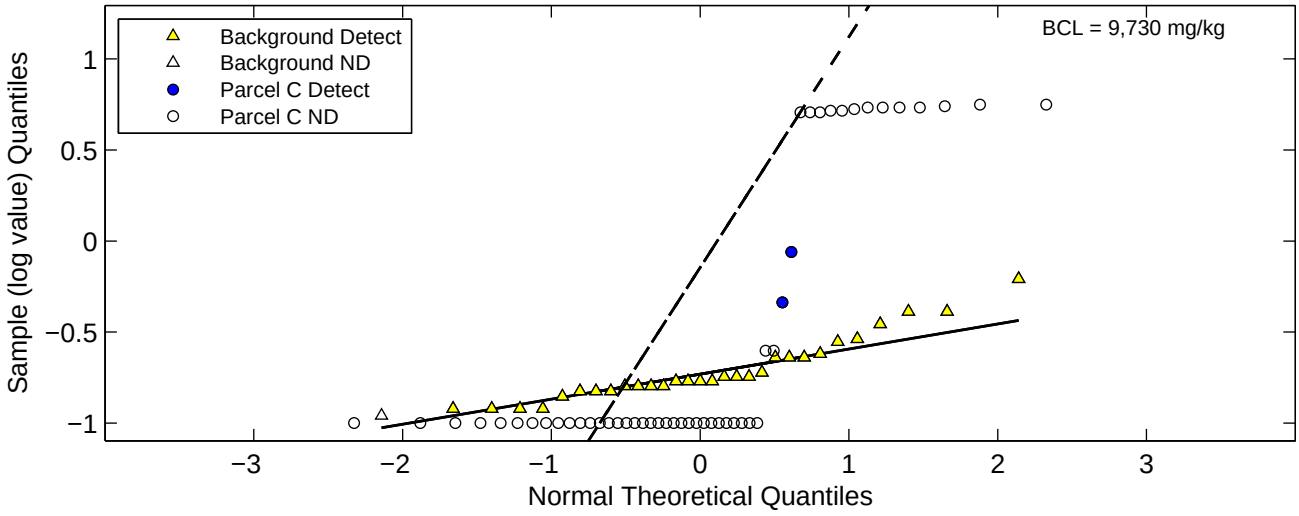
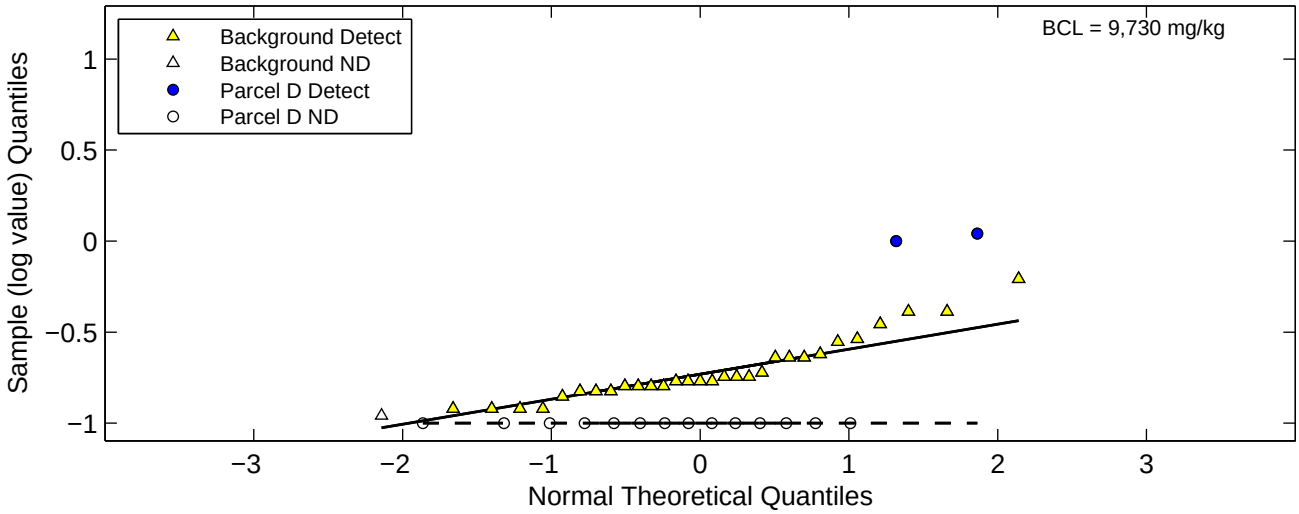


Figure I2−29B. Lognormal Q−Q Plots
Tungsten





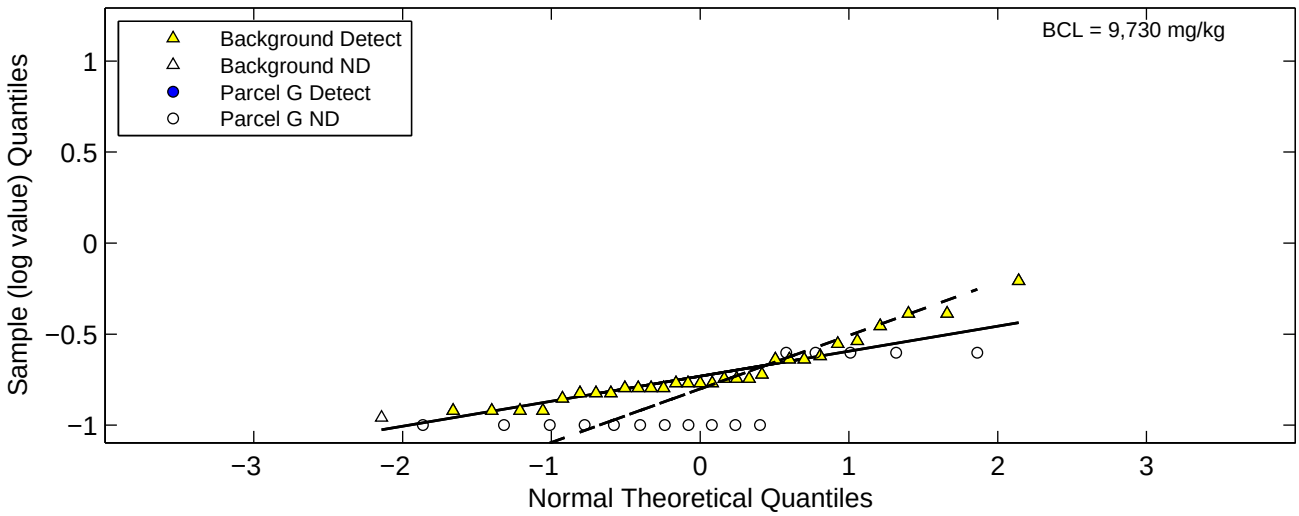
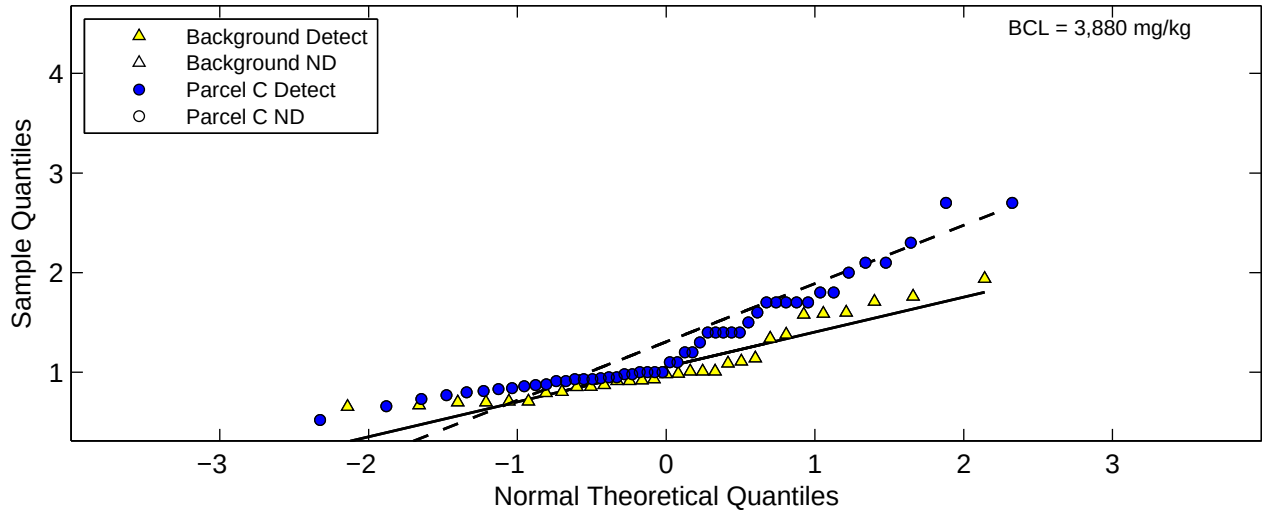
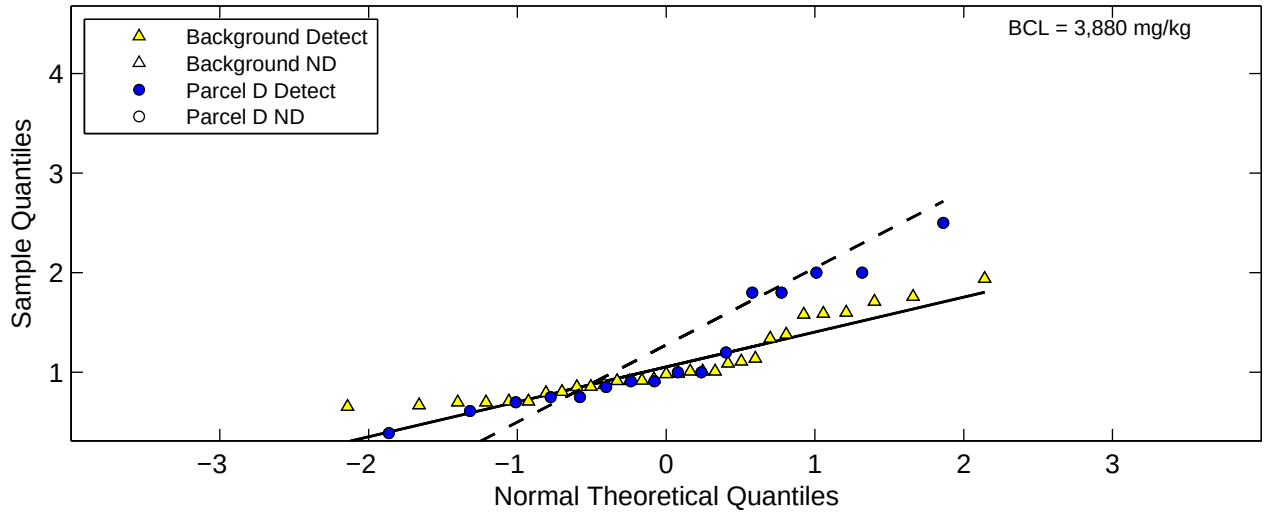


Figure I2−30A. Normal Q−Q Plots
Uranium (total)





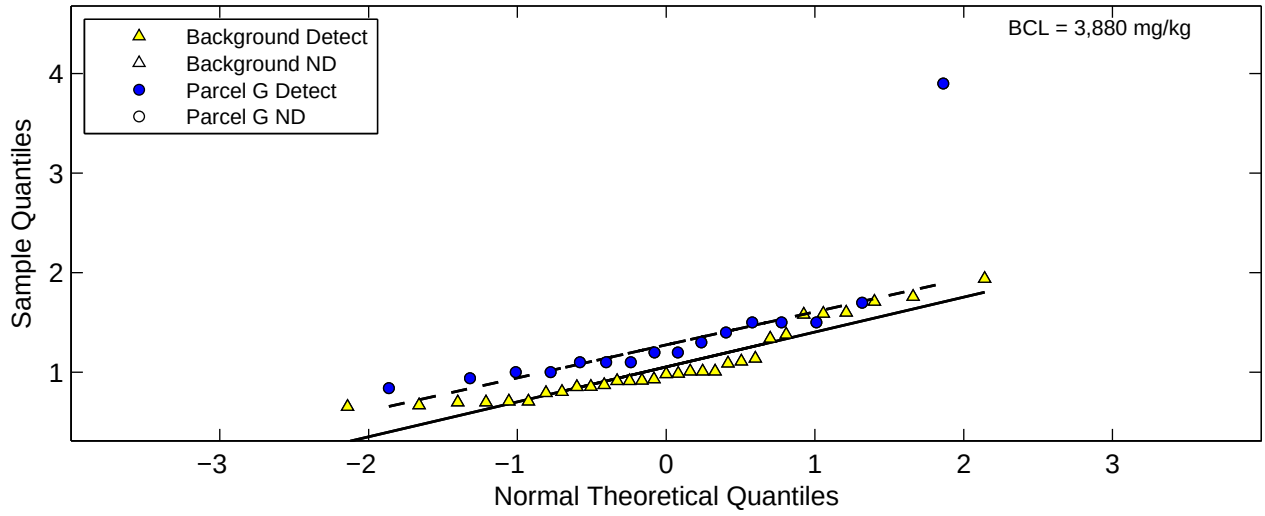
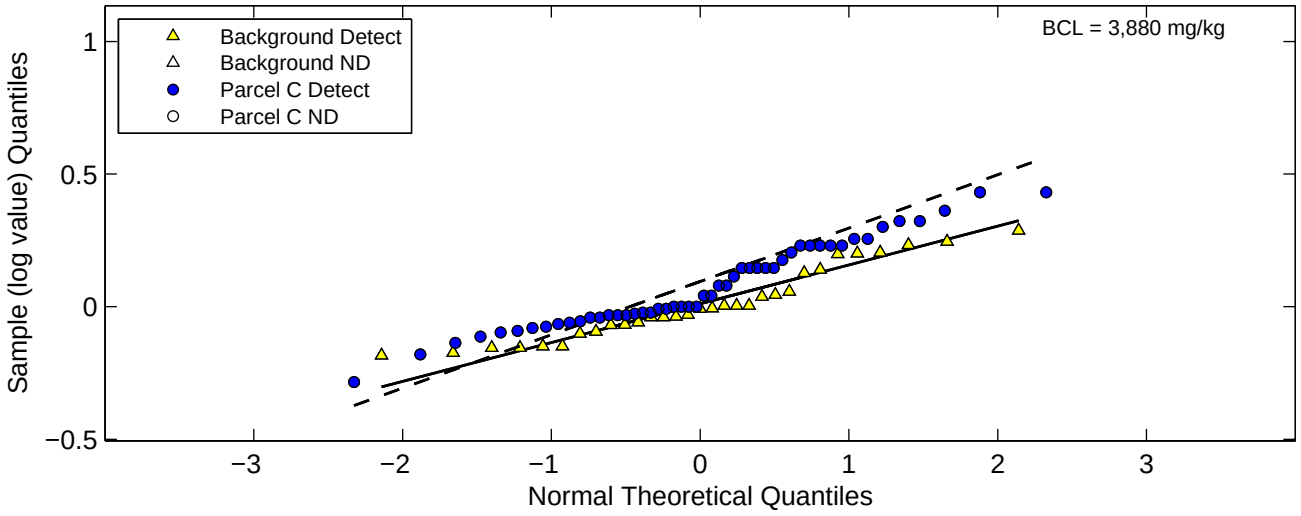
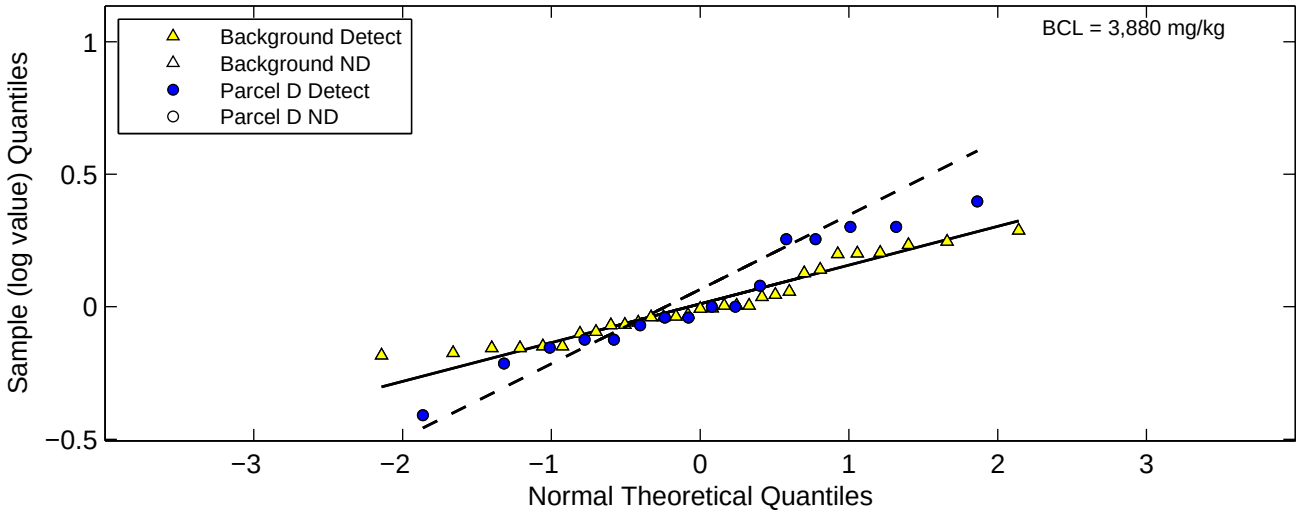


Figure I2−30B. Lognormal Q−Q Plots
Uranium (total)





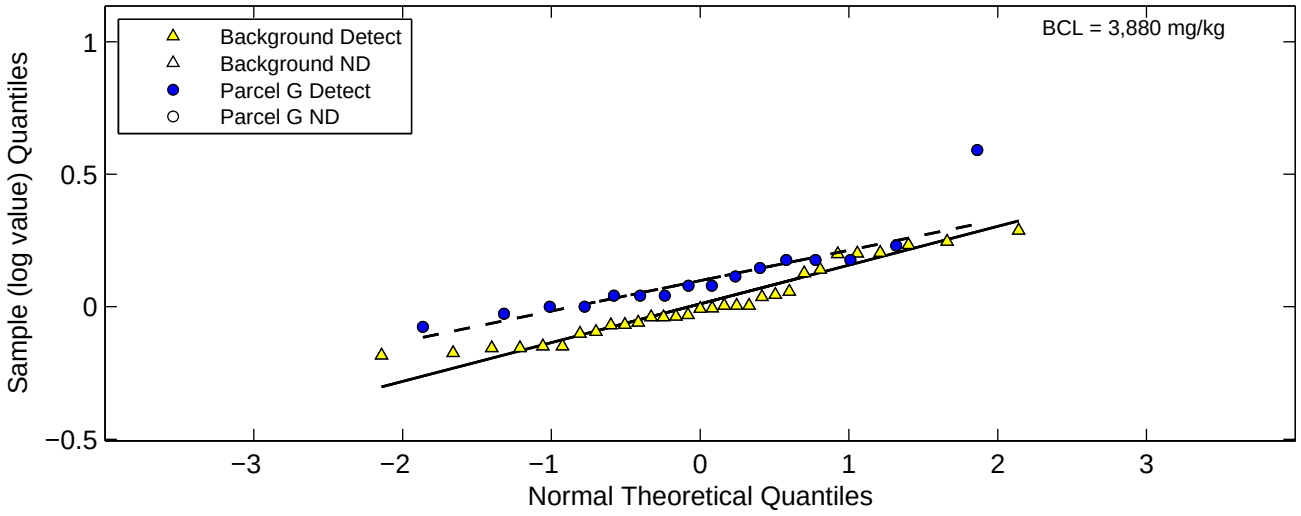
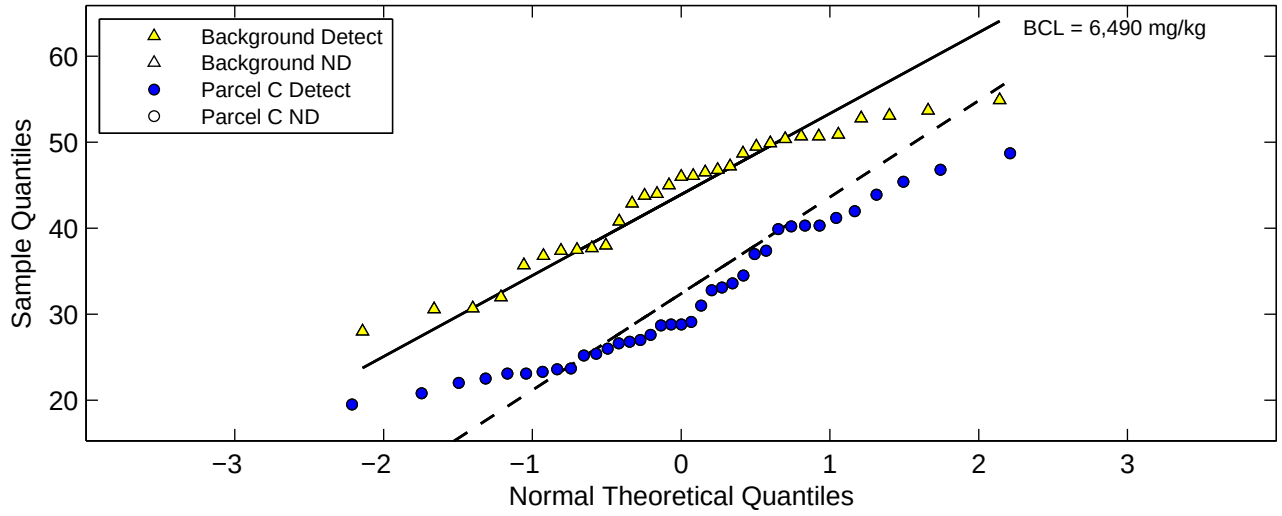
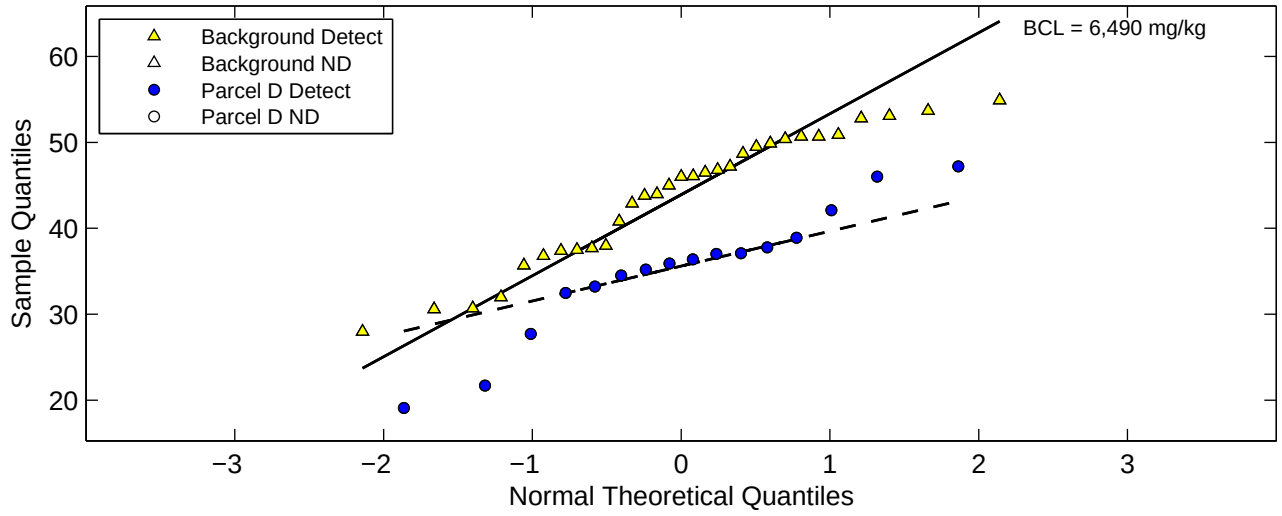


Figure I2−31A. Normal Q−Q Plots
Vanadium





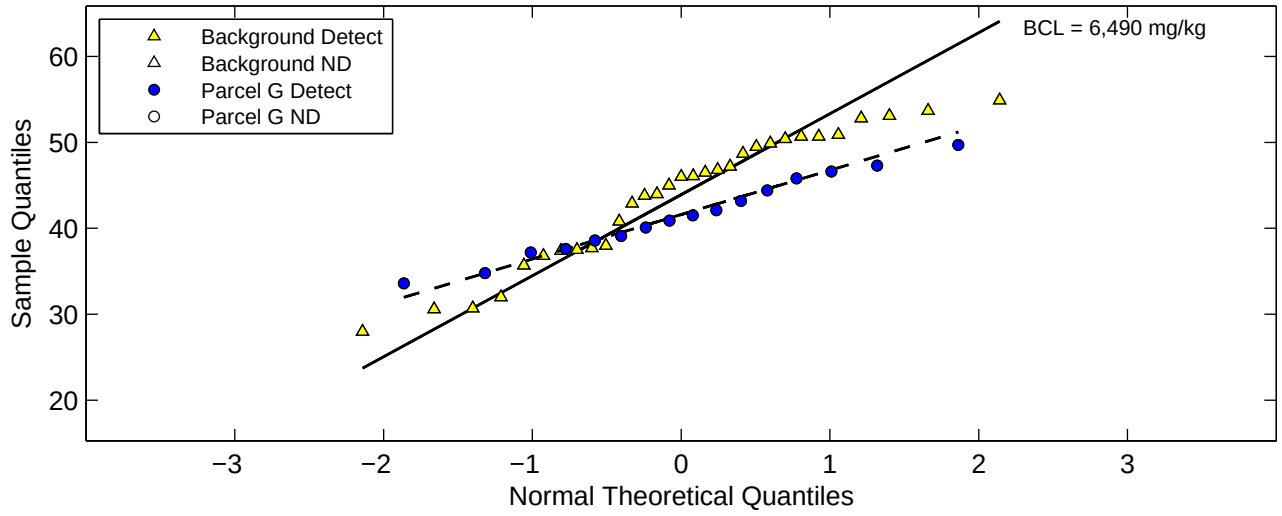
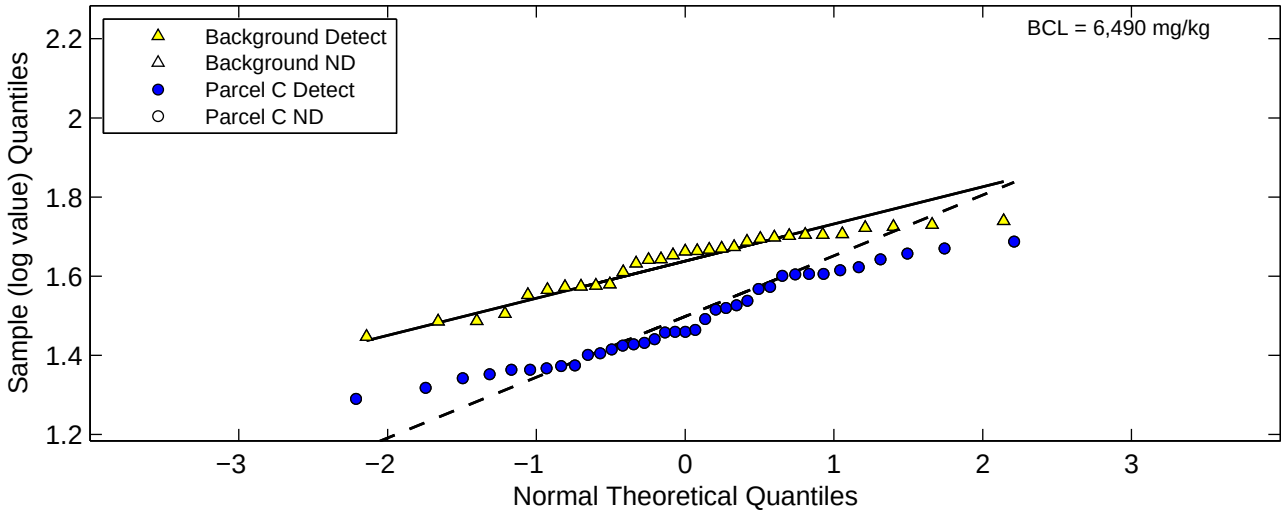
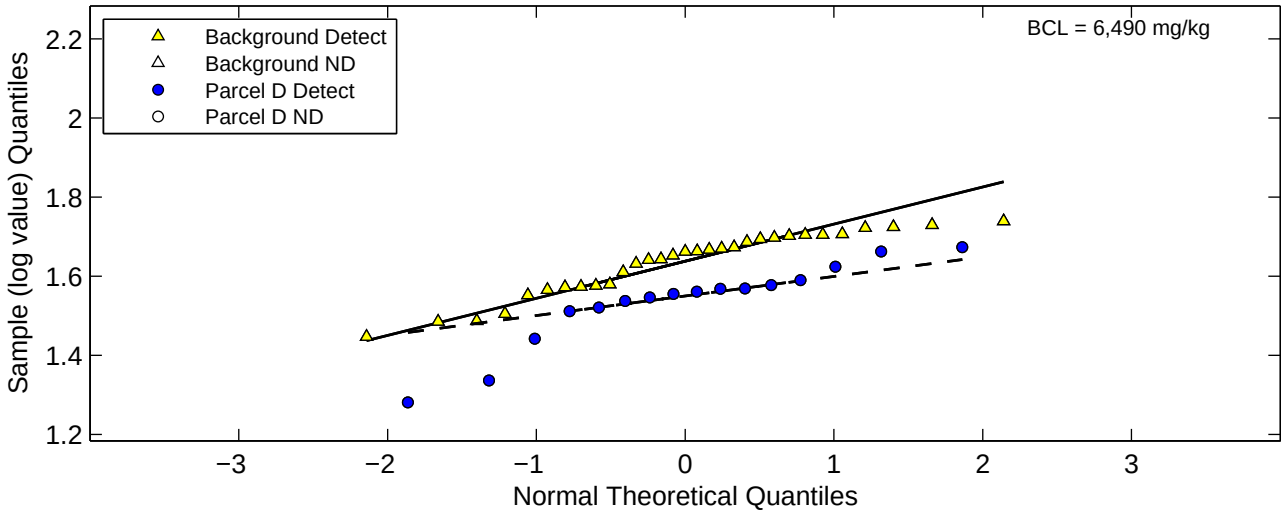


Figure I2−31B. Lognormal Q−Q Plots
Vanadium





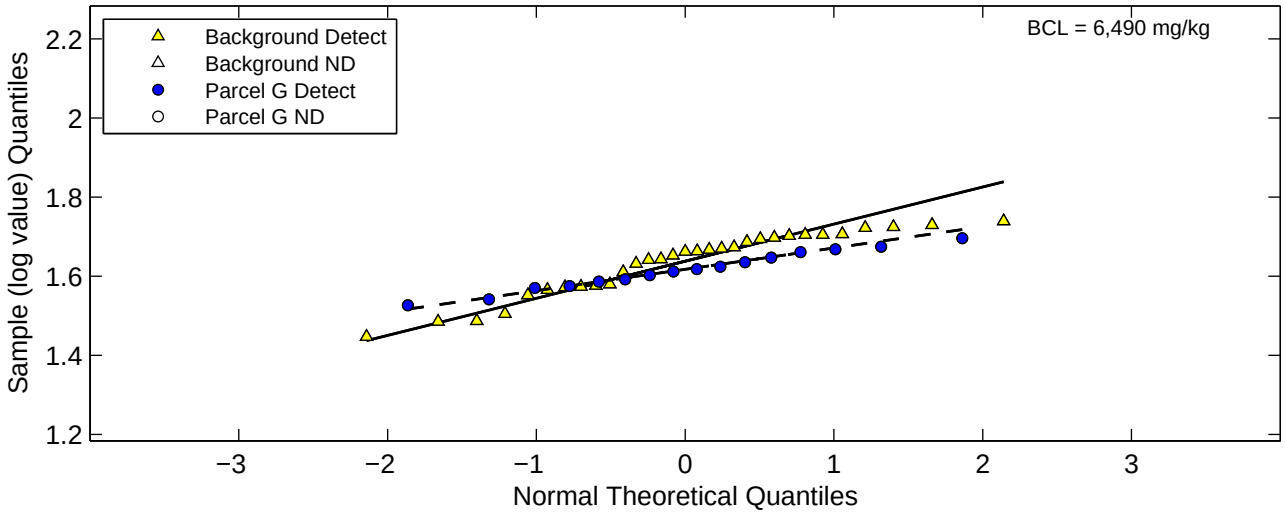
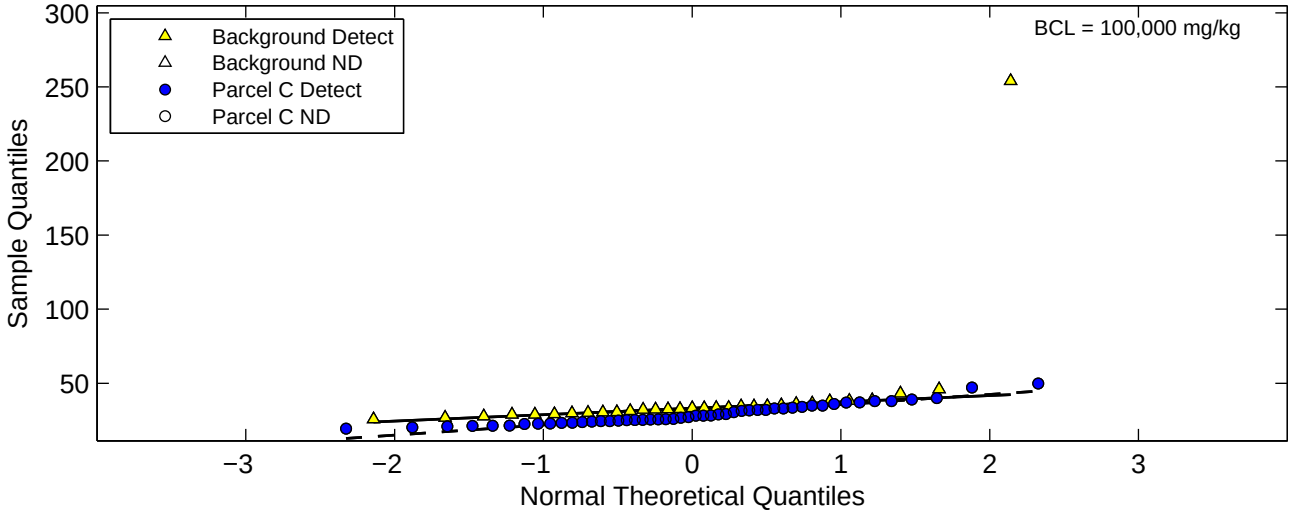
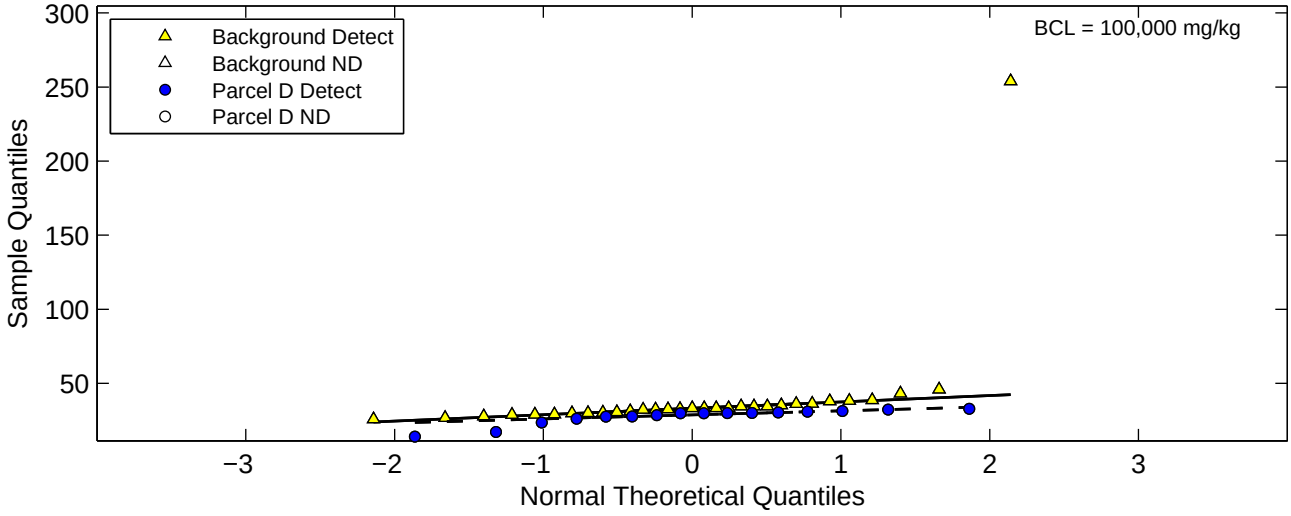


Figure I2−32A. Normal Q−Q Plots
Zinc





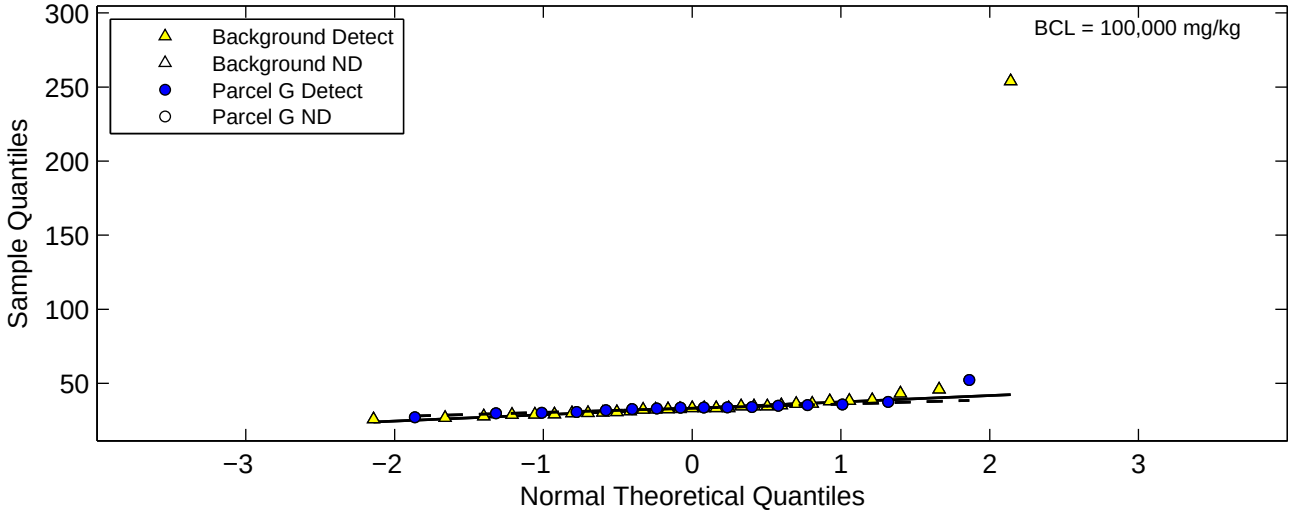
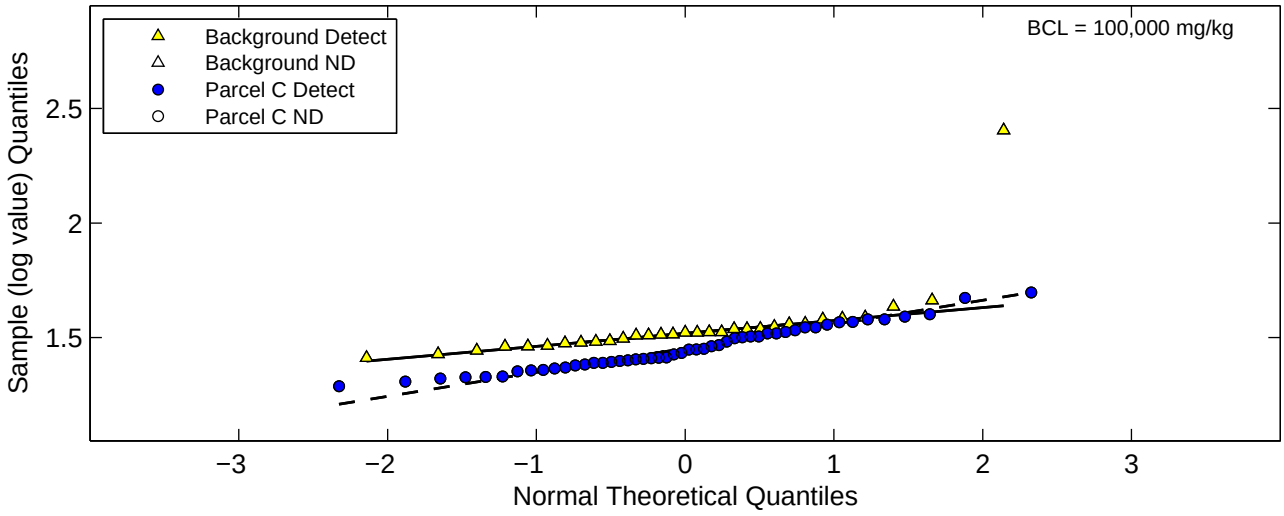
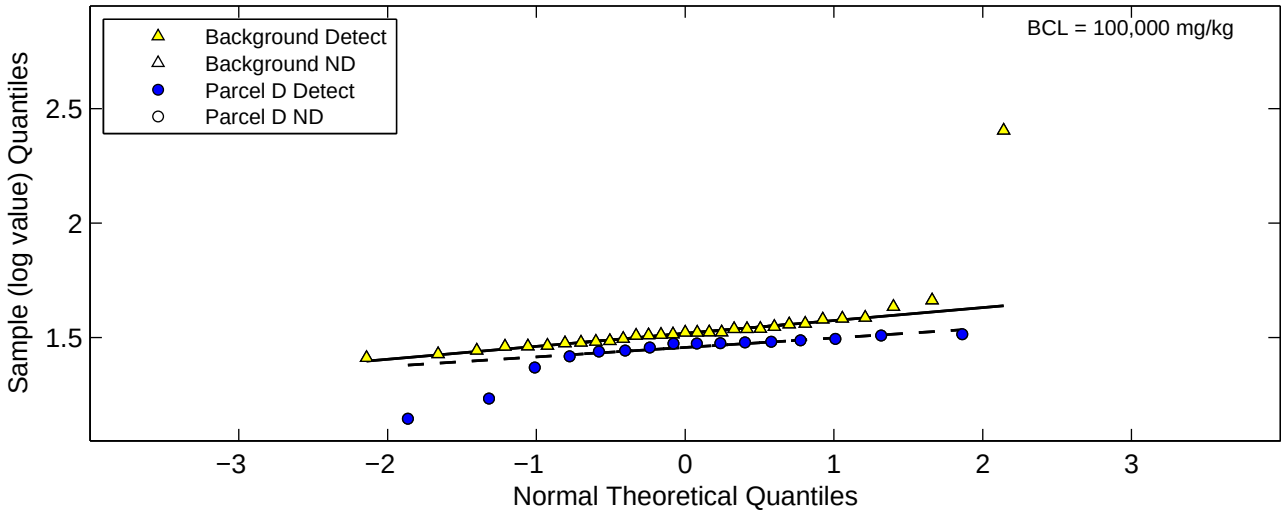


Figure I2−32B. Lognormal Q−Q Plots
Zinc





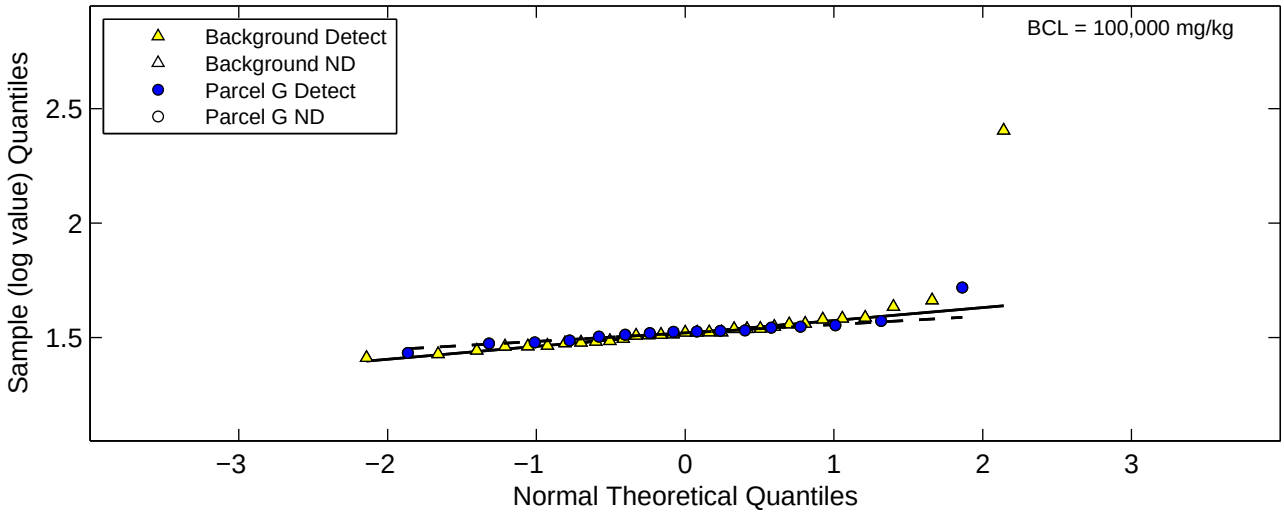
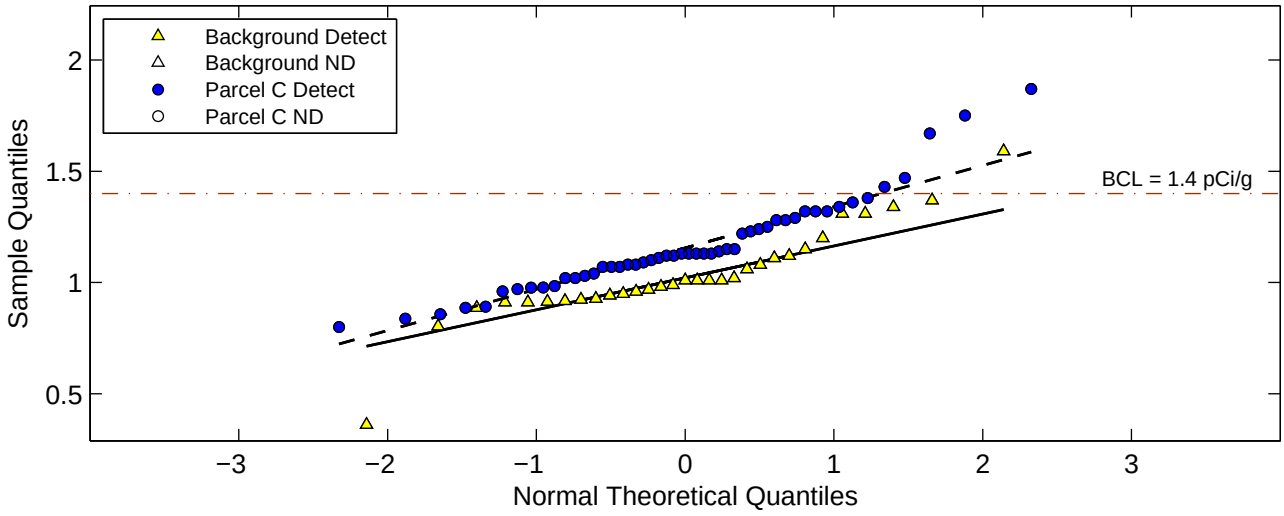
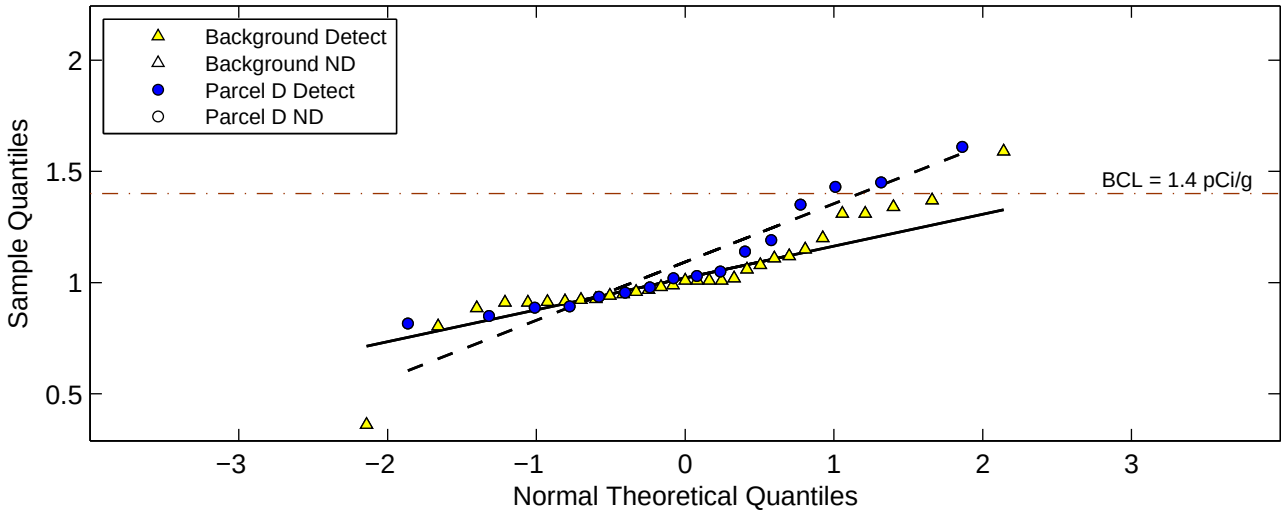


Figure I2−33A. Normal Q−Q Plots
Uranium−238





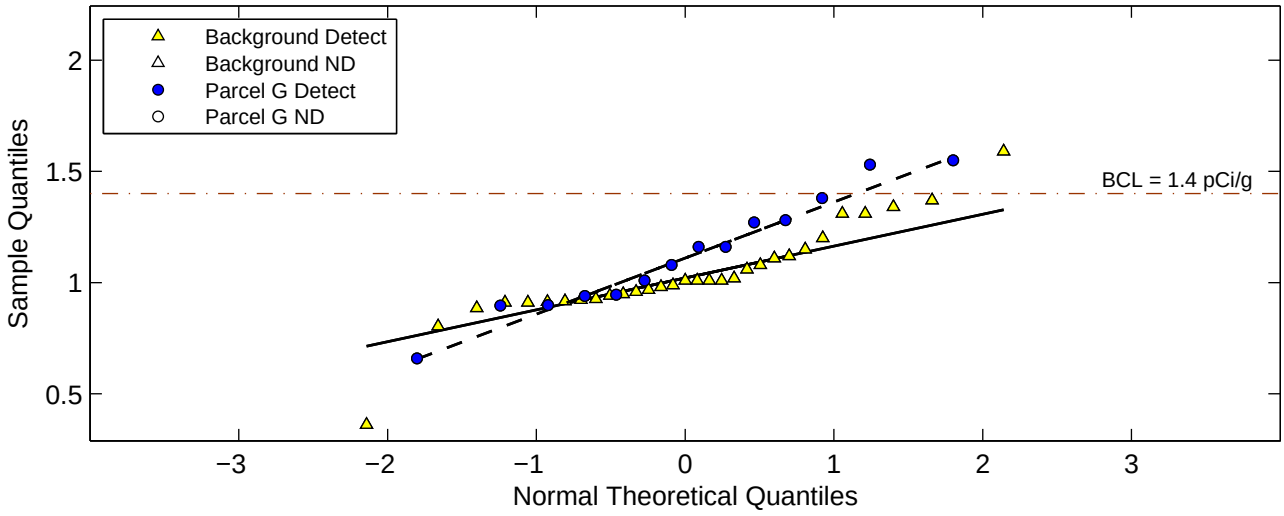
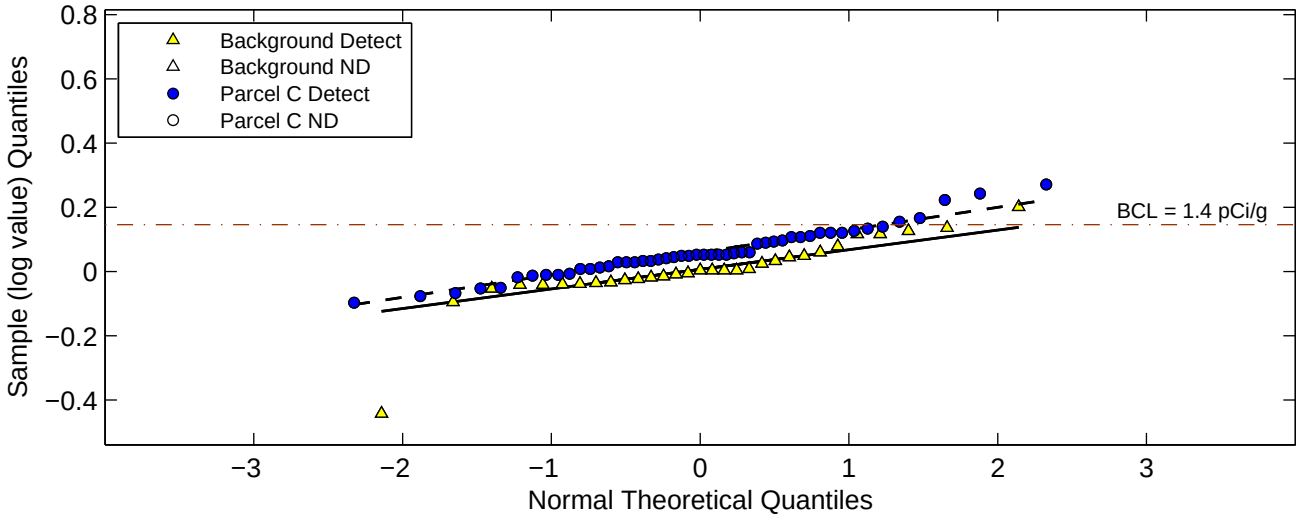
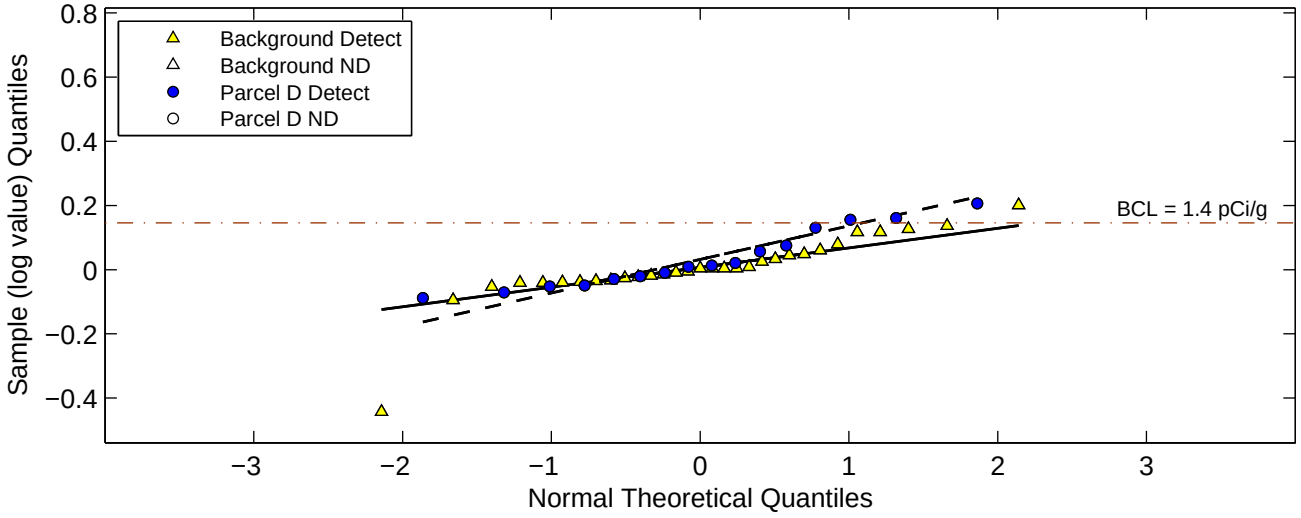


Figure I2−33B. Lognormal Q−Q Plots
Uranium−238





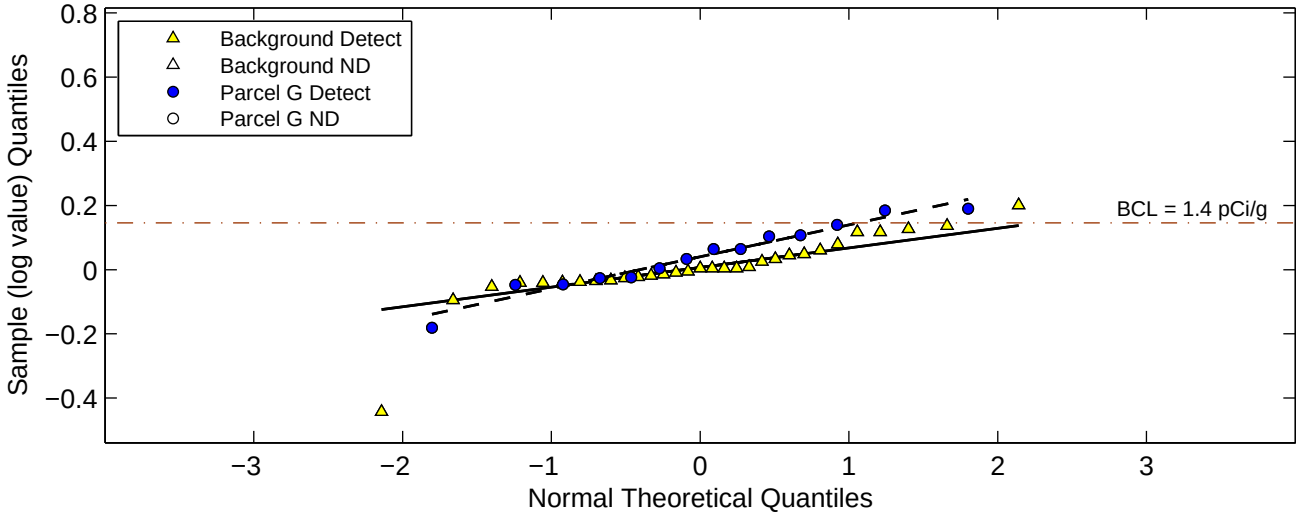
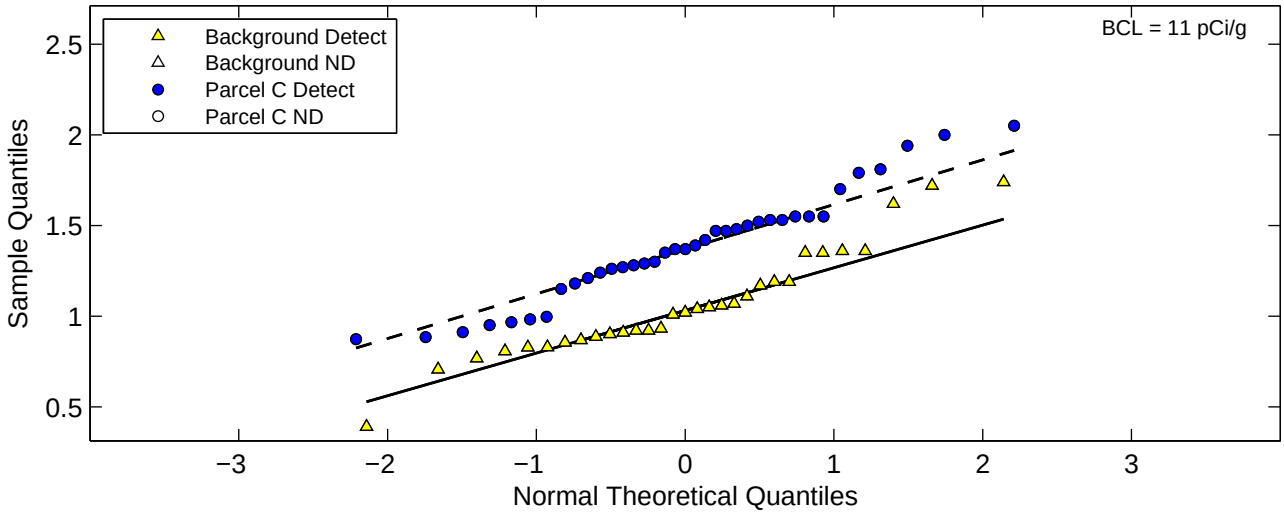
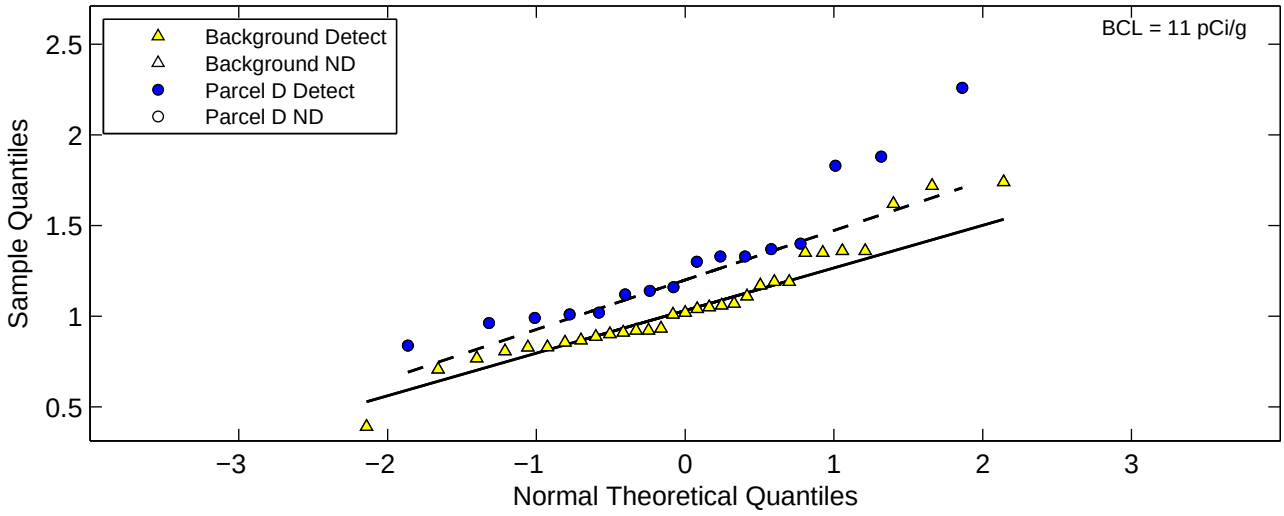


Figure I2−34A. Normal Q−Q Plots
Uranium−234





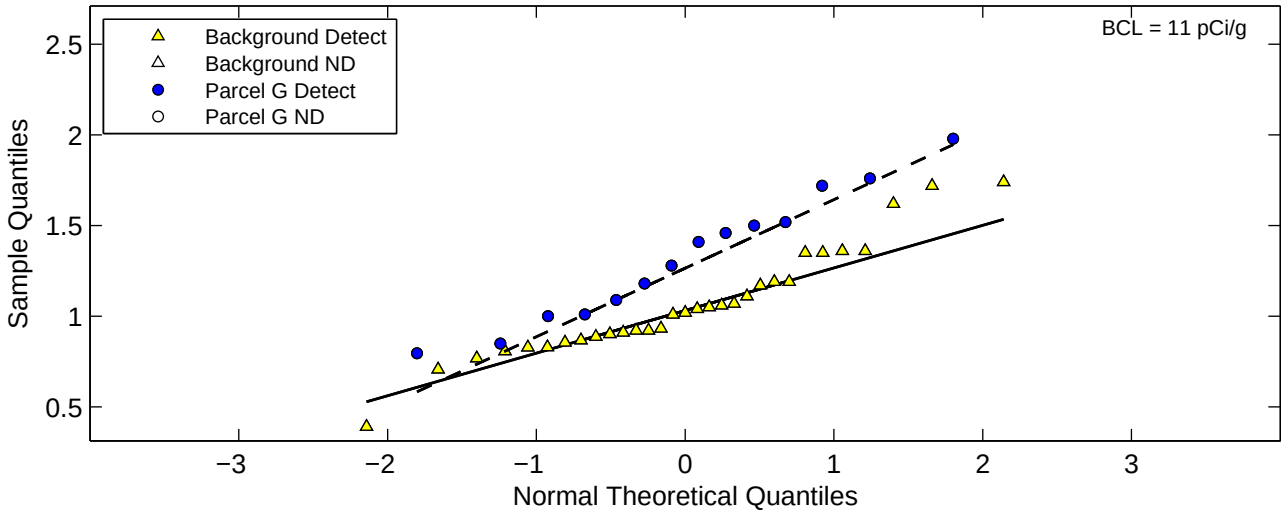
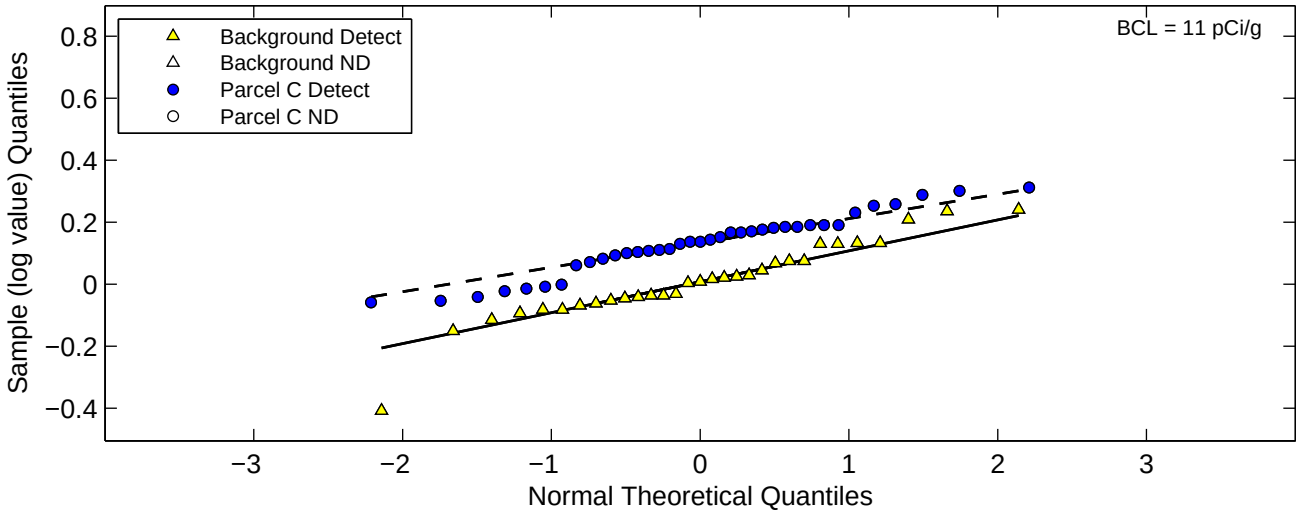
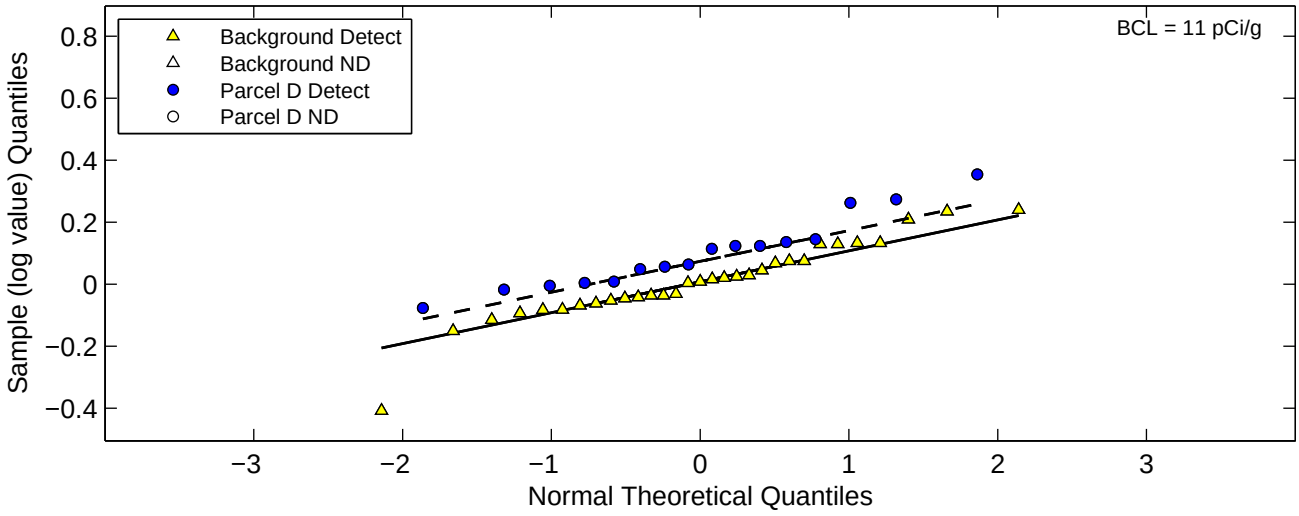


Figure I2−34B. Lognormal Q−Q Plots
Uranium−234





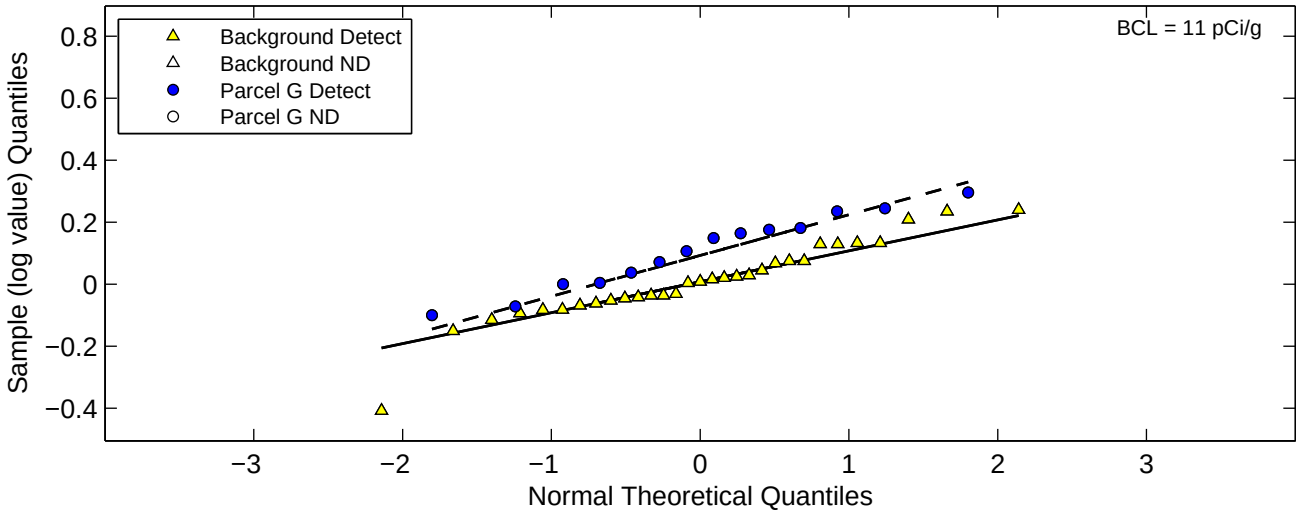
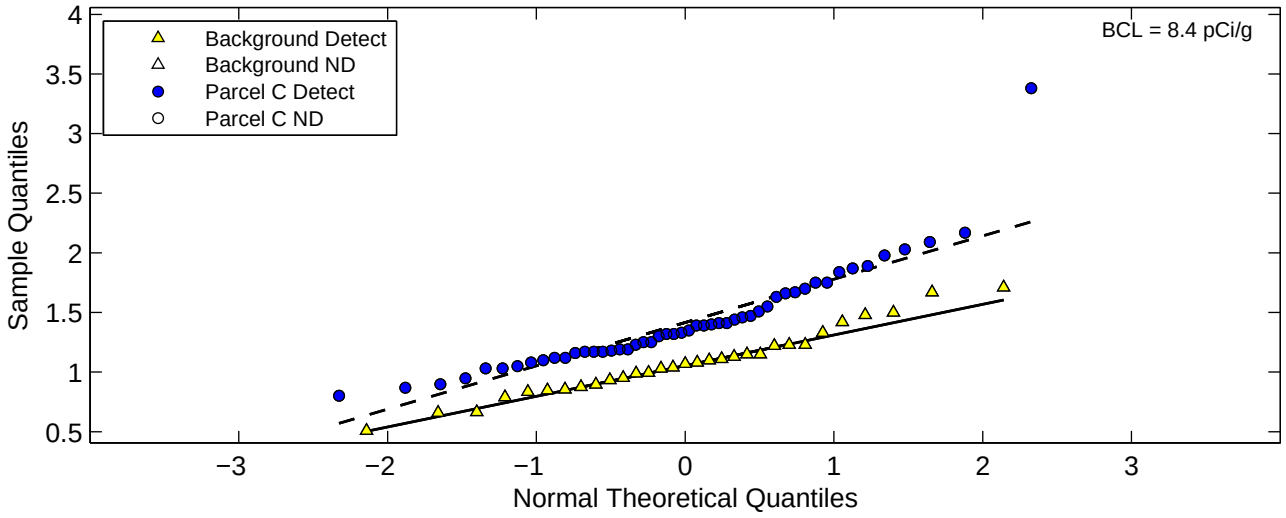
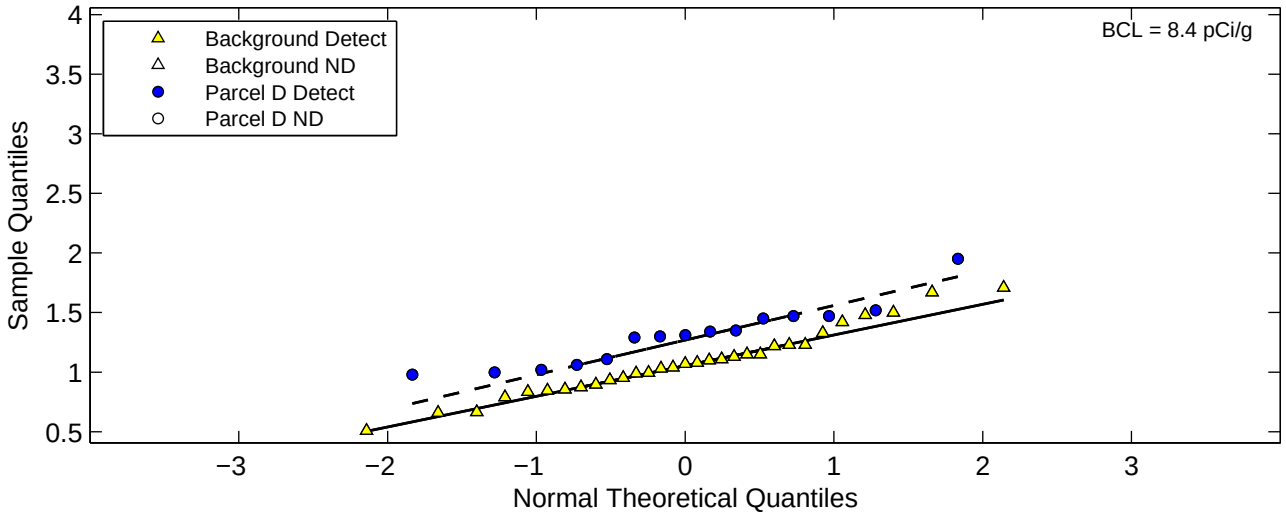


Figure I2−35A. Normal Q−Q Plots
Thorium−230





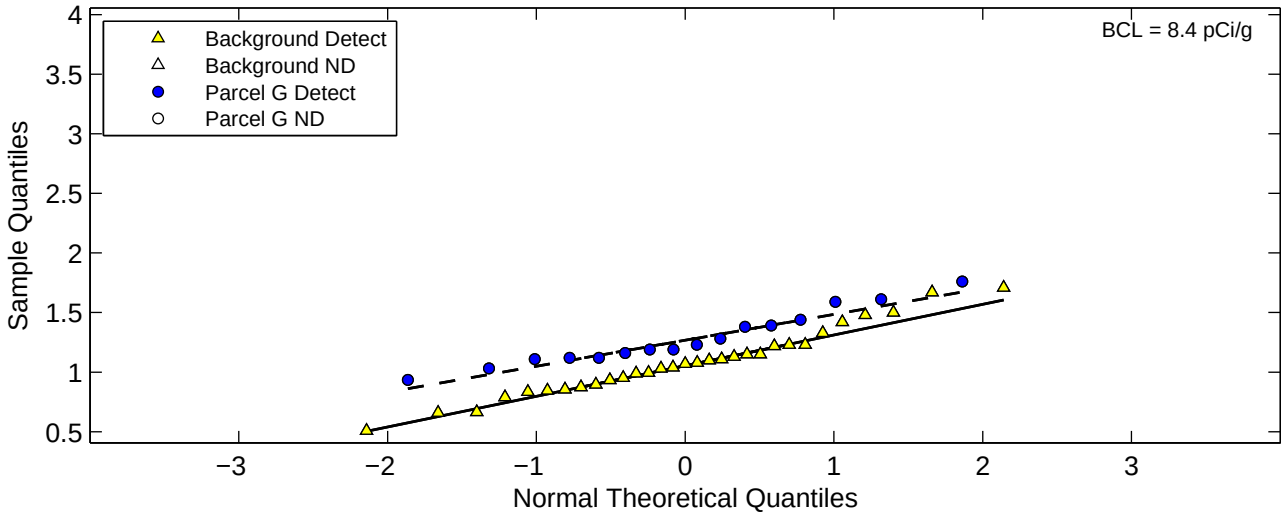
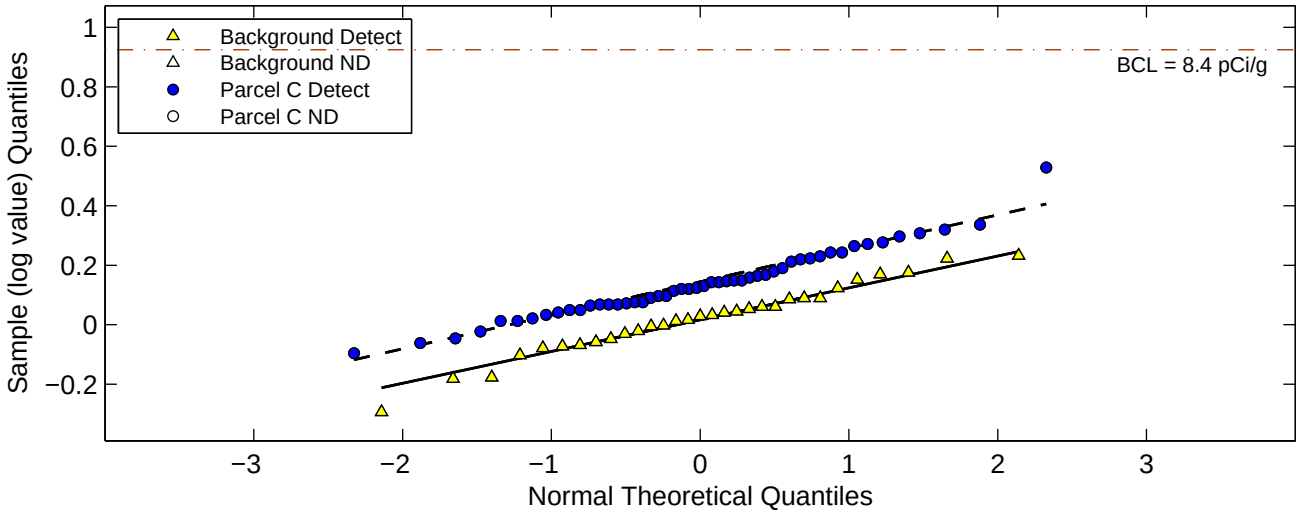
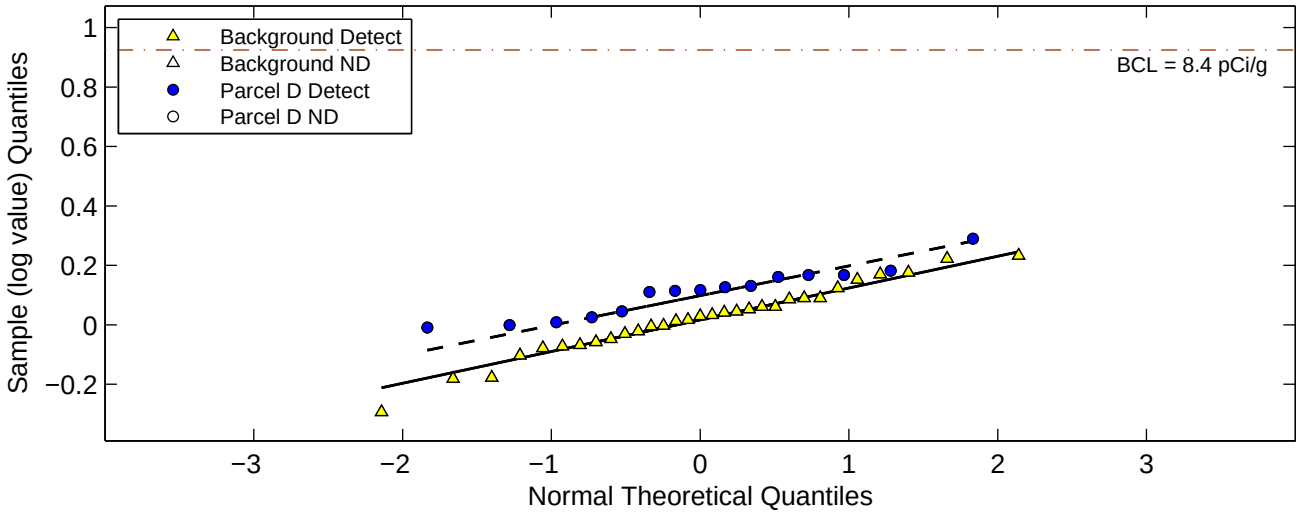


Figure I2−35B. Lognormal Q−Q Plots
Thorium−230





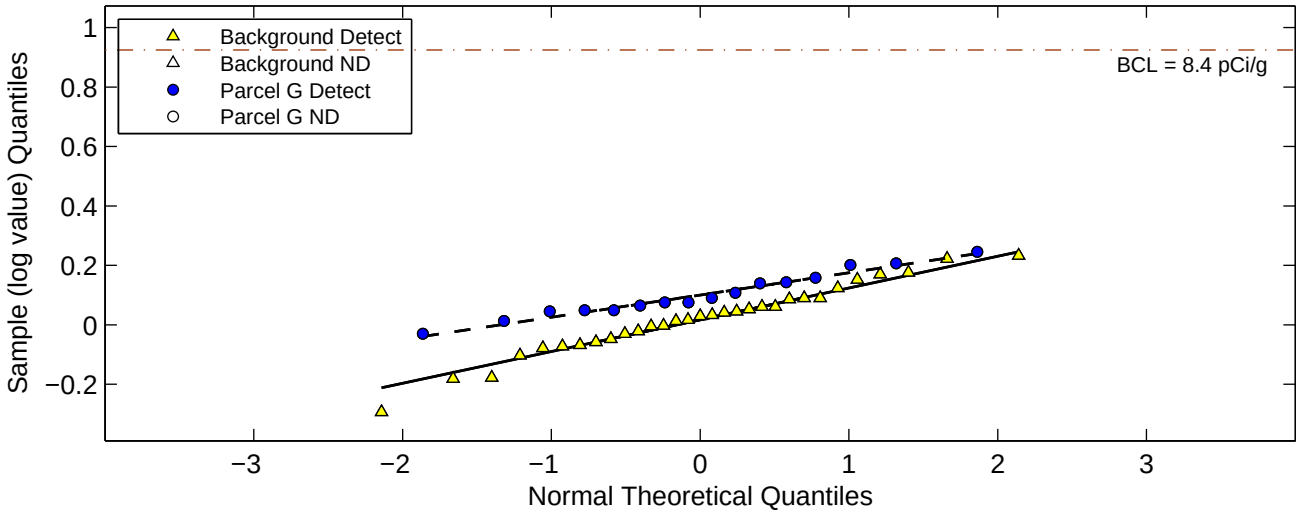
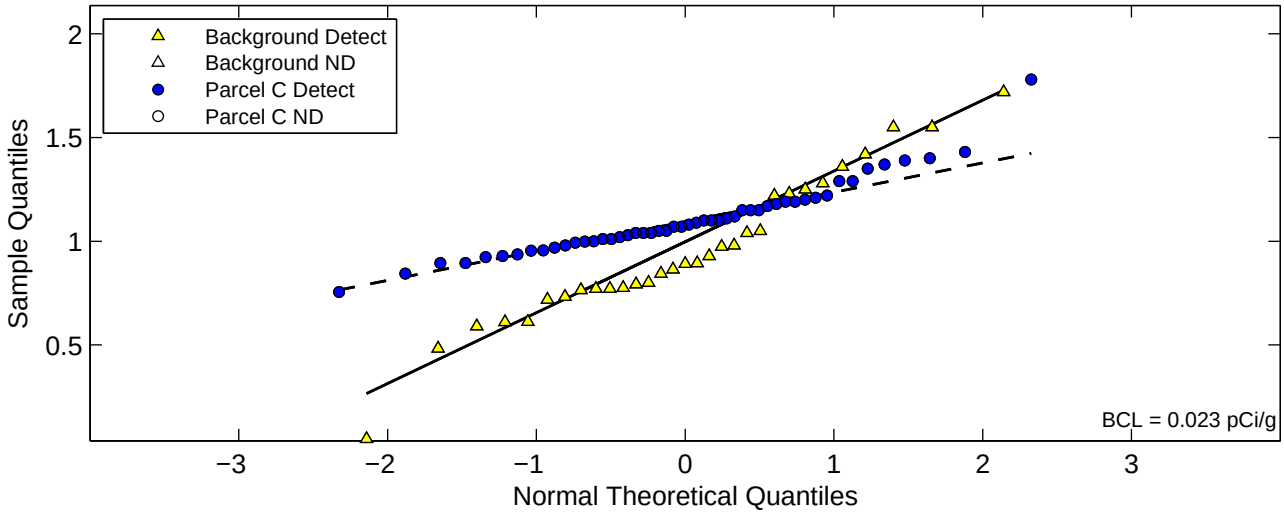
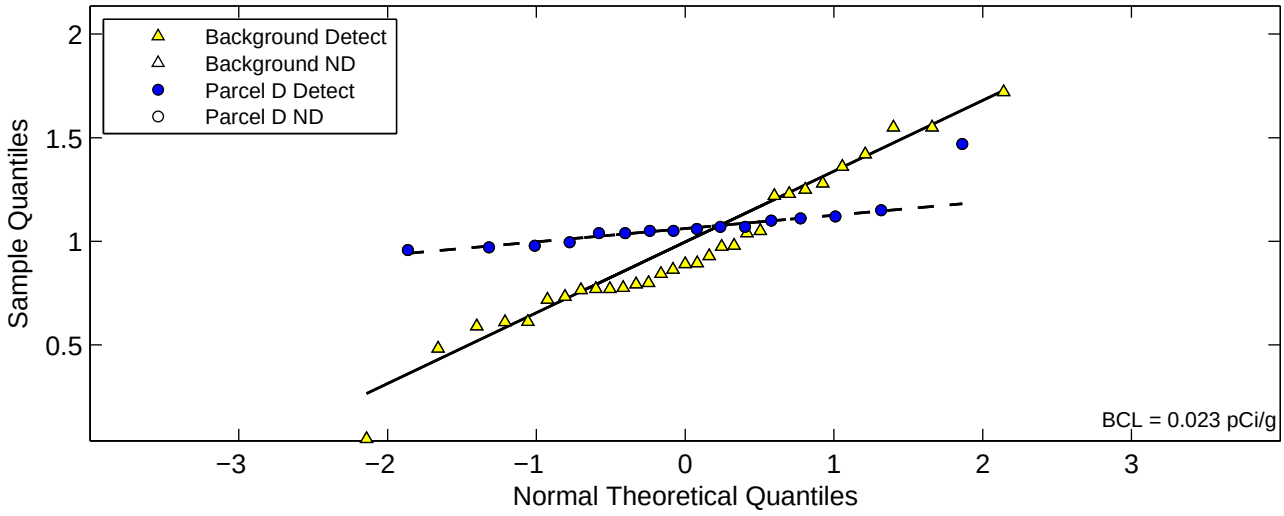


Figure I2−36A. Normal Q−Q Plots
Radium−226





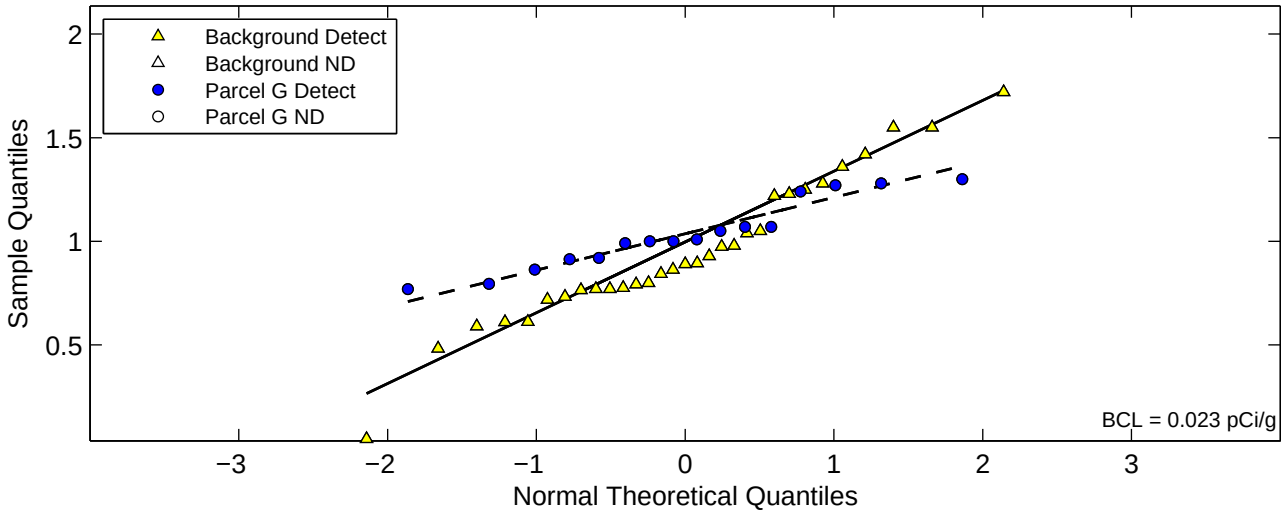
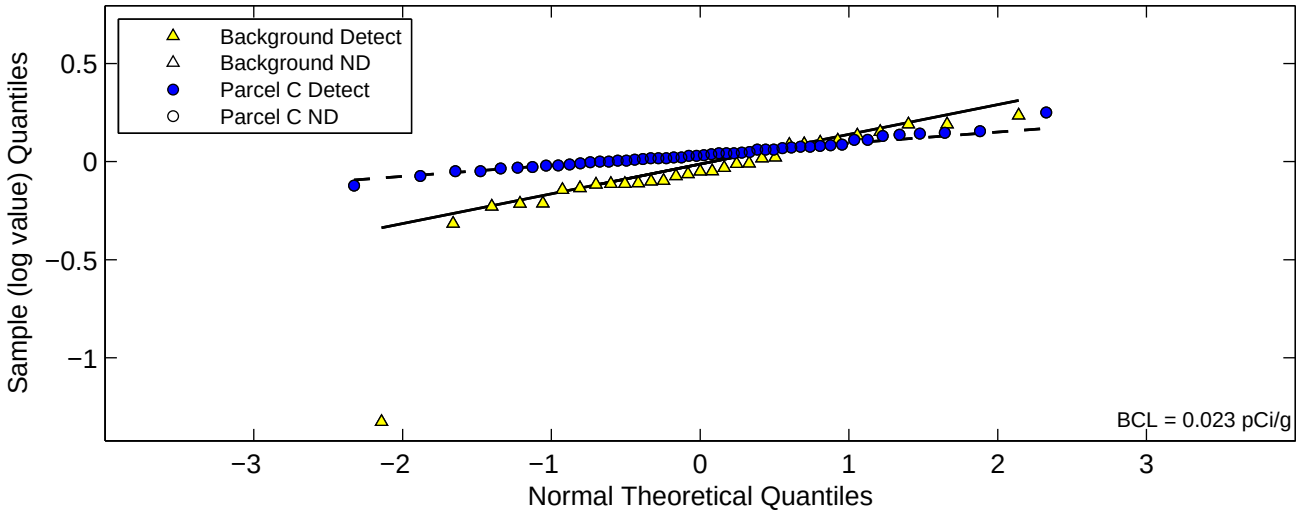
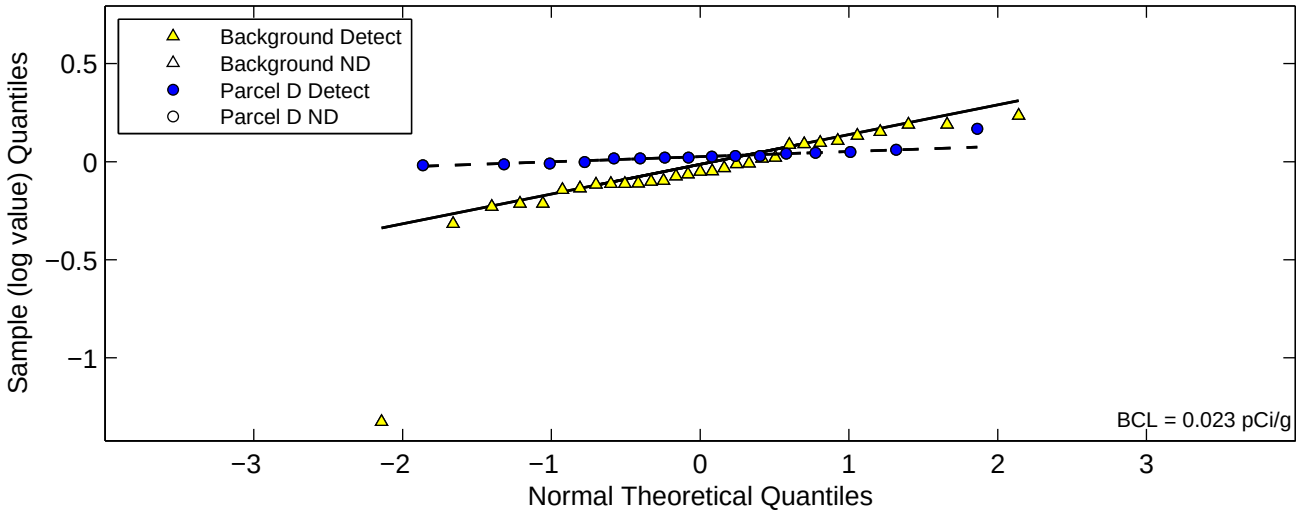


Figure I2−36B. Lognormal Q−Q Plots
Radium−226





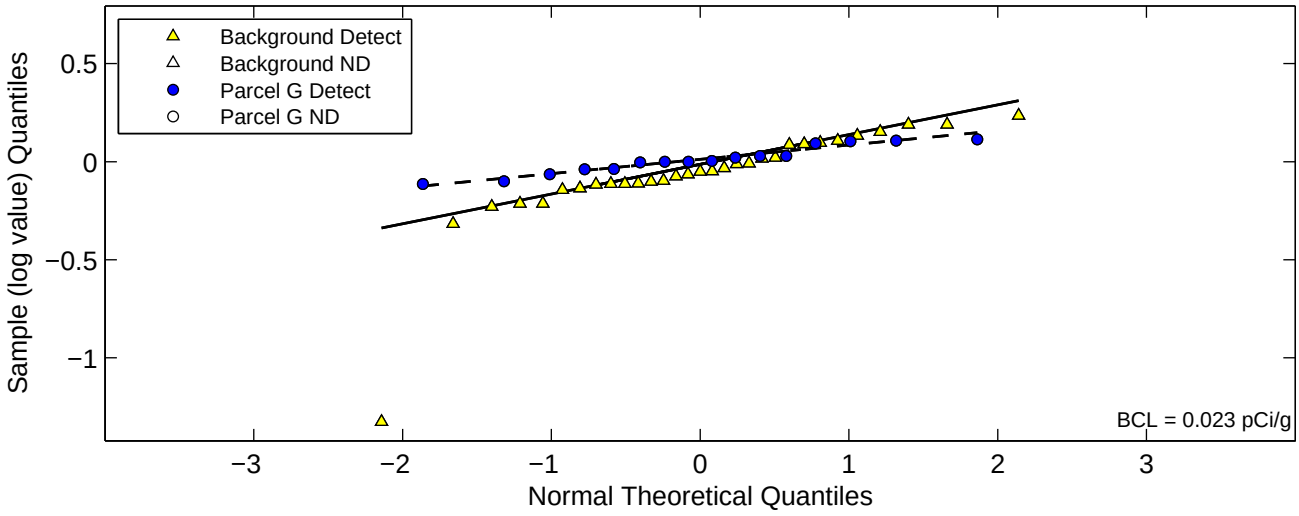
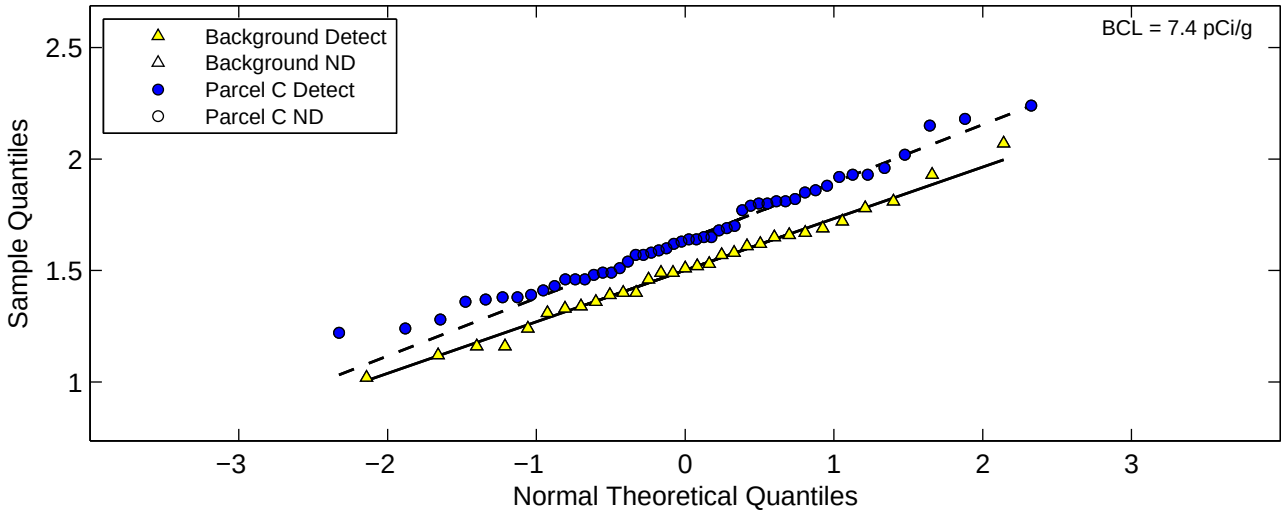
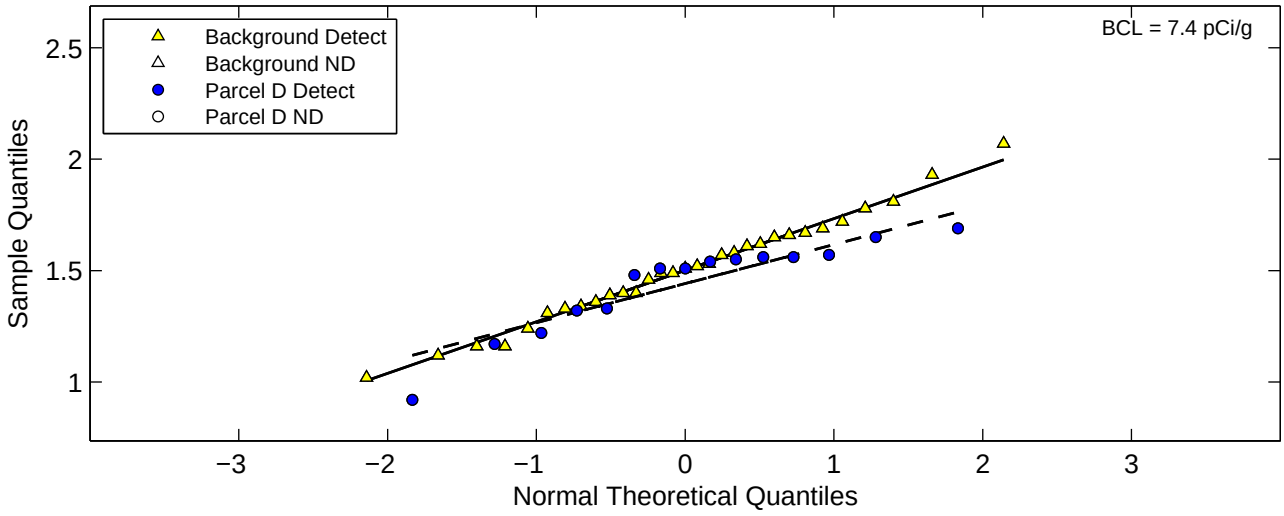


Figure I2−37A. Normal Q−Q Plots
Thorium−232





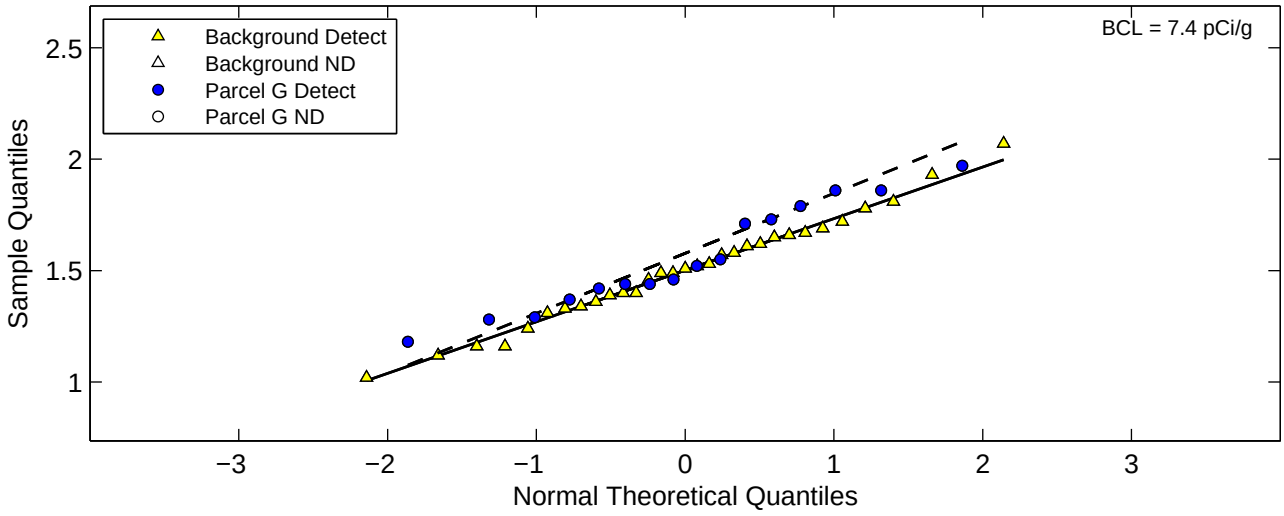
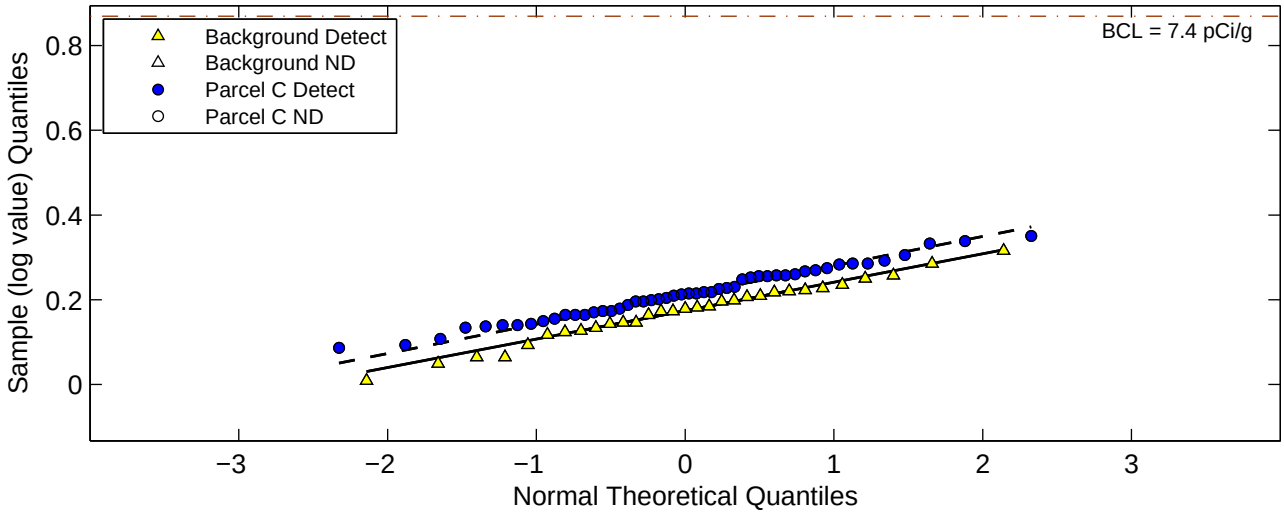
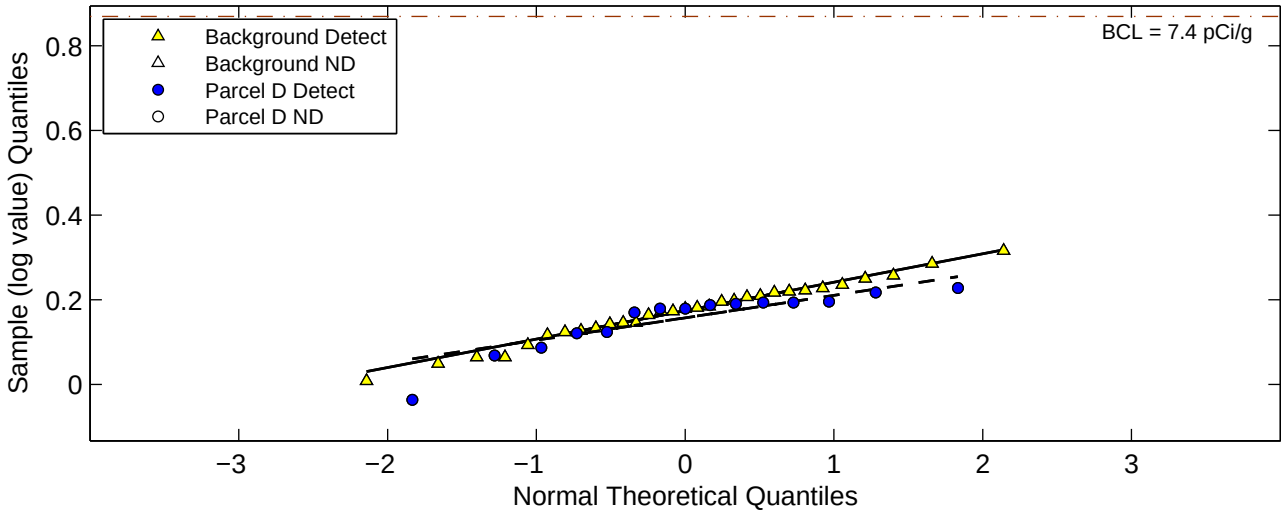


Figure I2−37B. Lognormal Q−Q Plots
Thorium−232





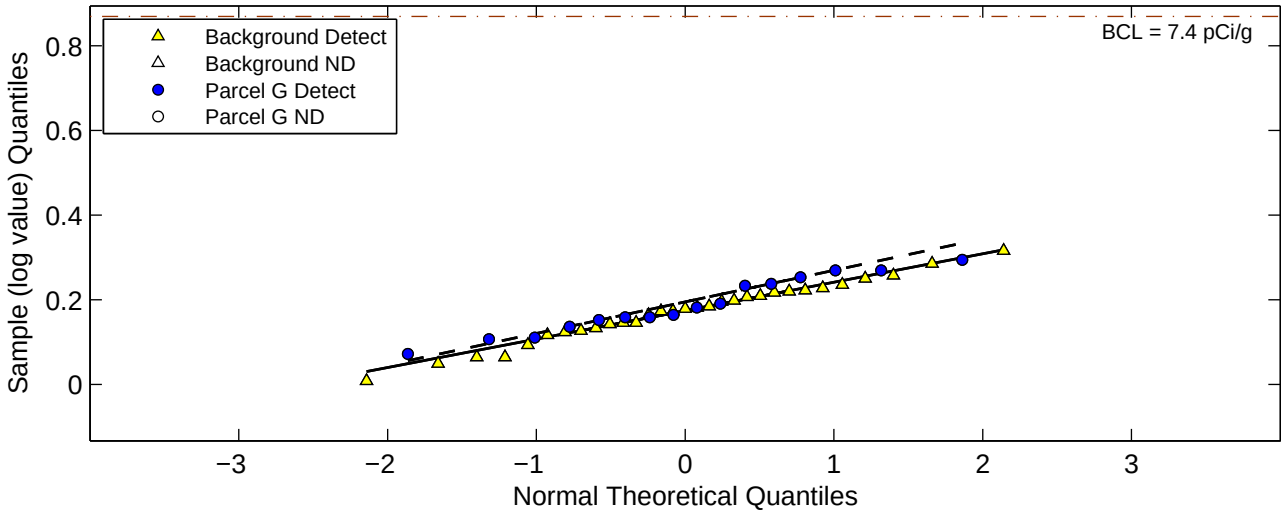
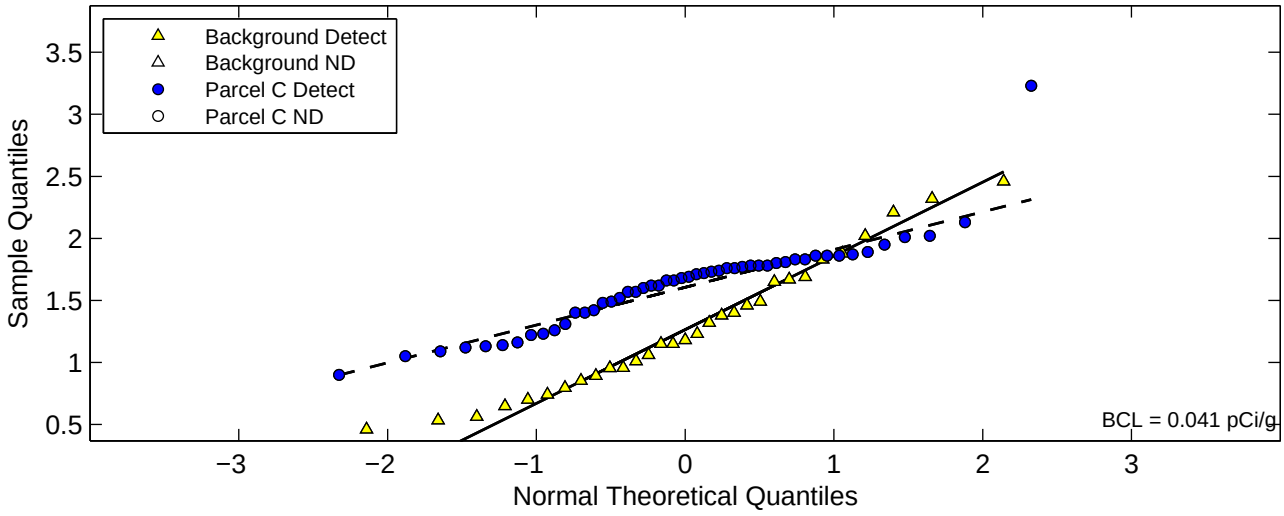
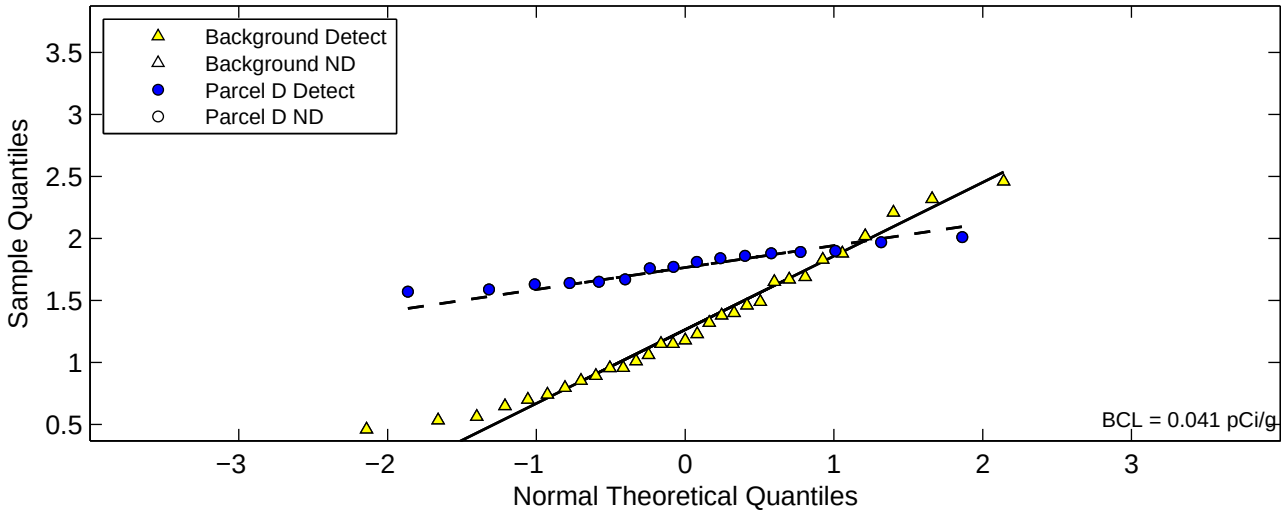


Figure I2−38A. Normal Q−Q Plots
Radium−228





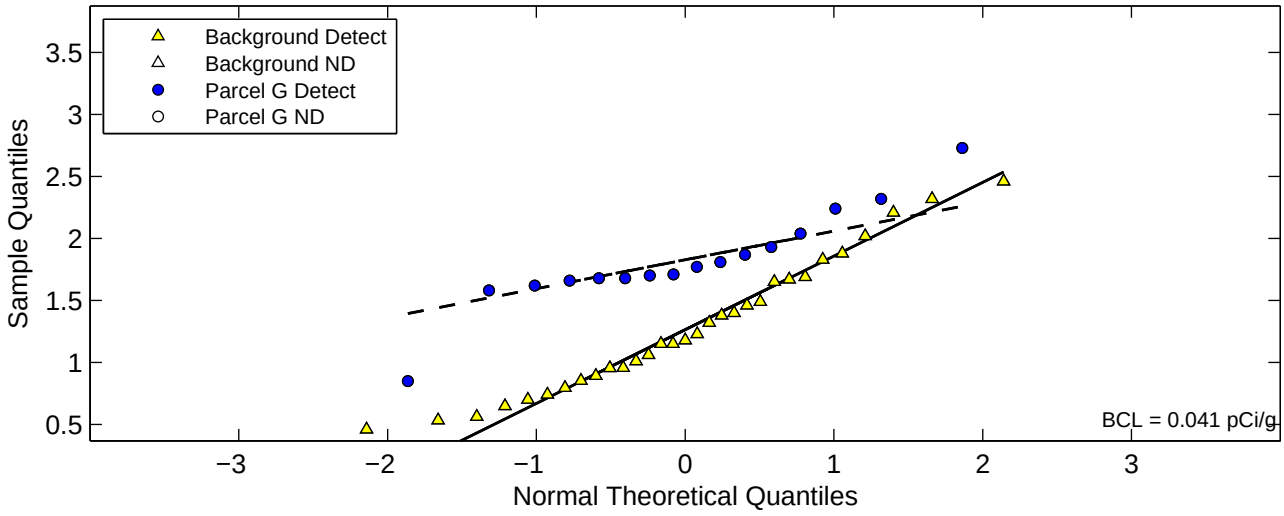
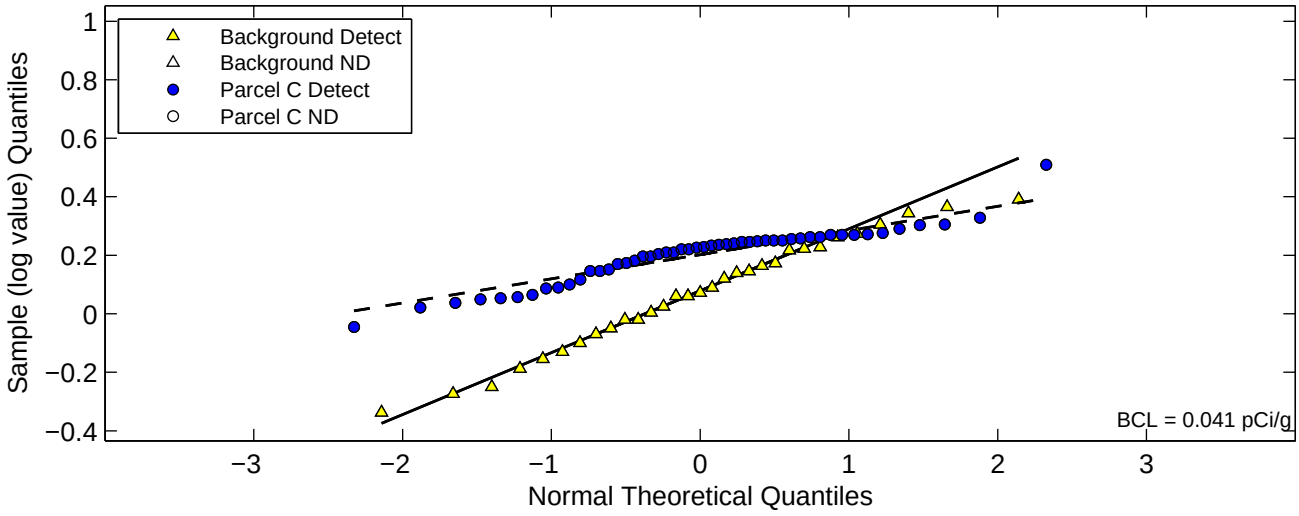
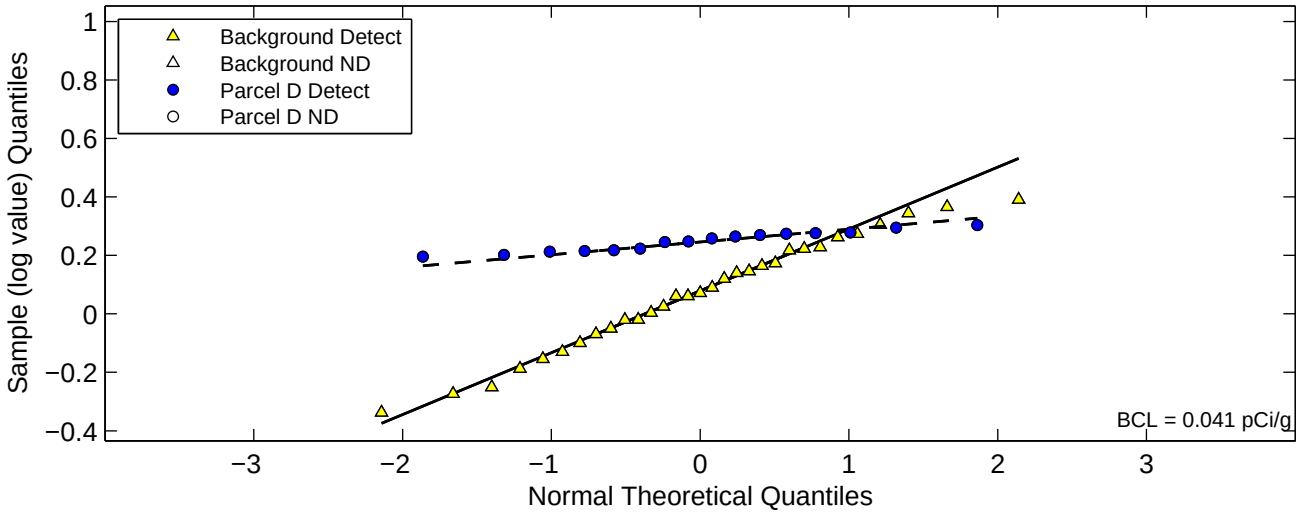


Figure I2−38B. Lognormal Q−Q Plots
Radium−228





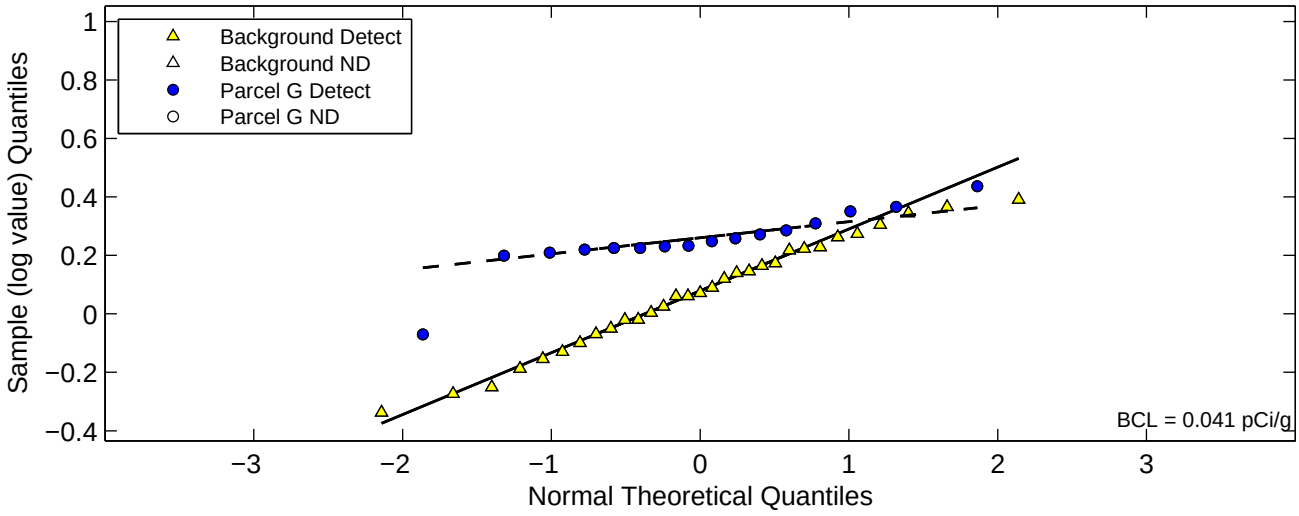
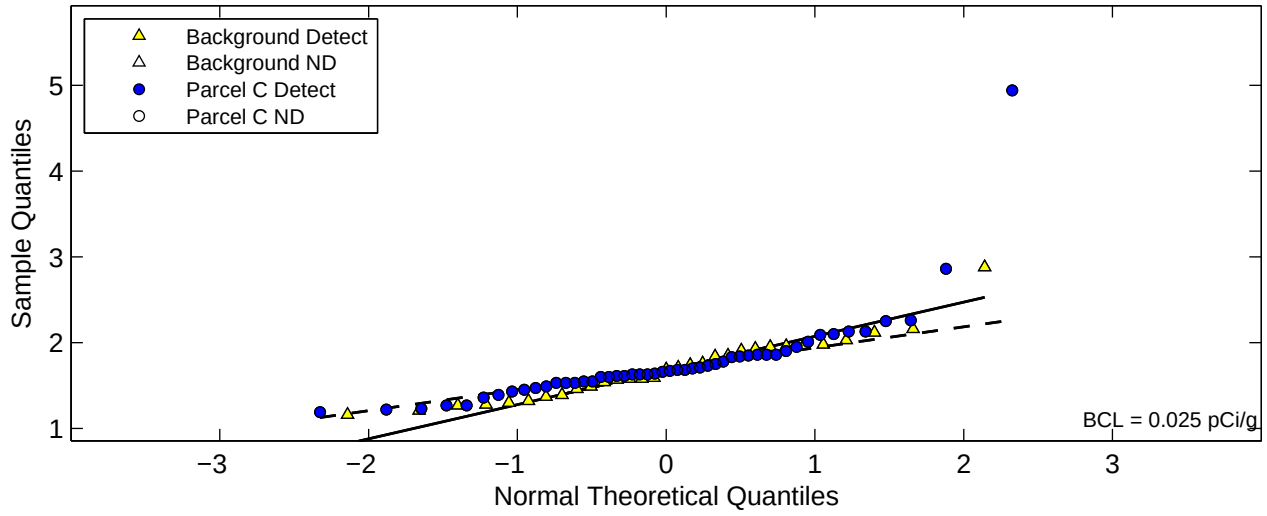
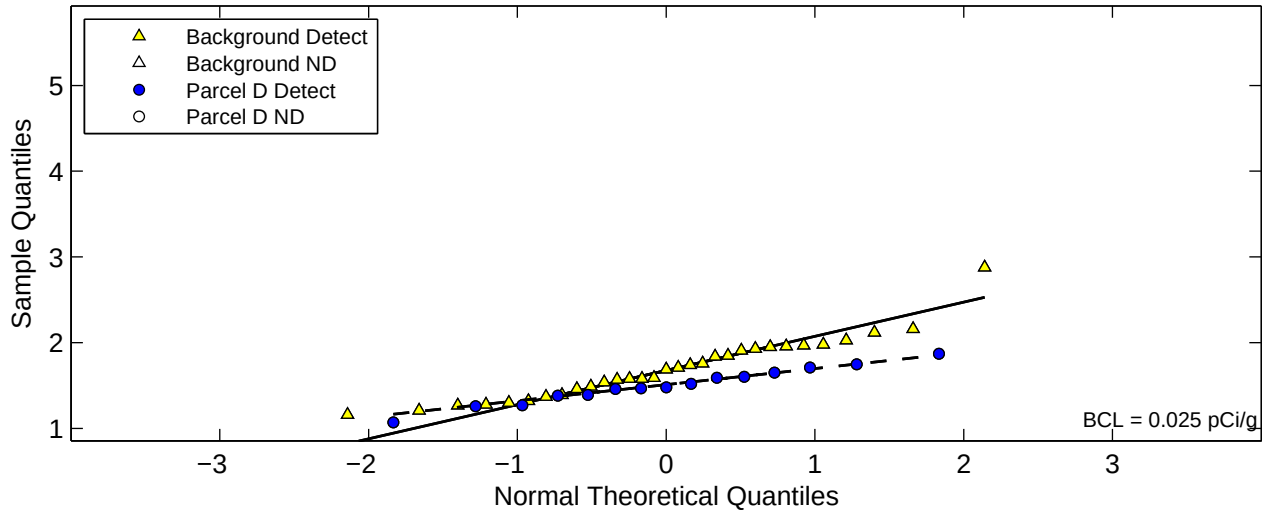


Figure I2−39A. Normal Q−Q Plots
Thorium−228





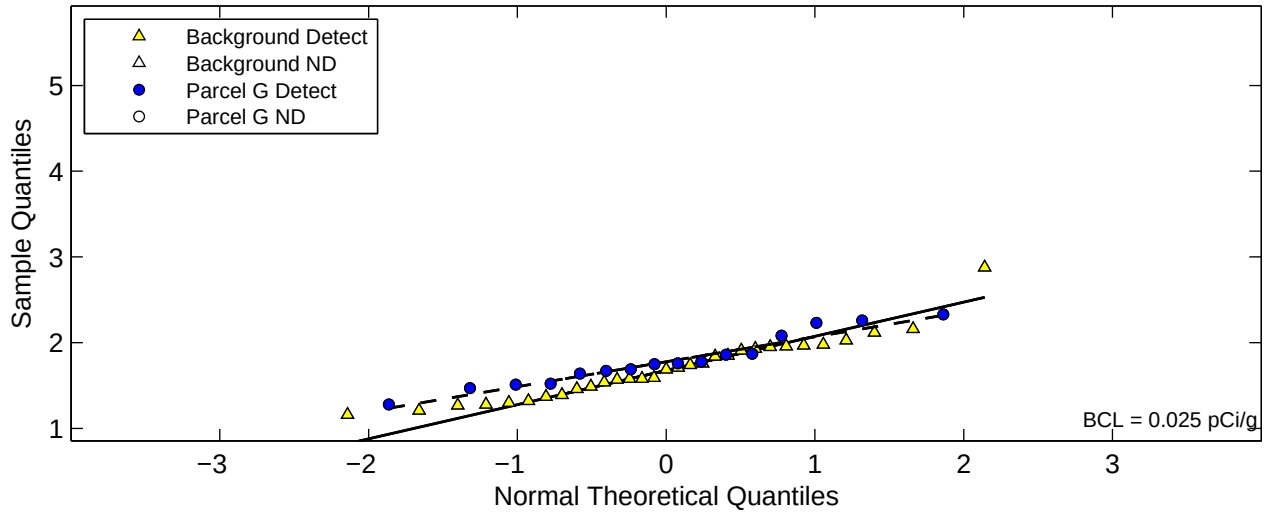
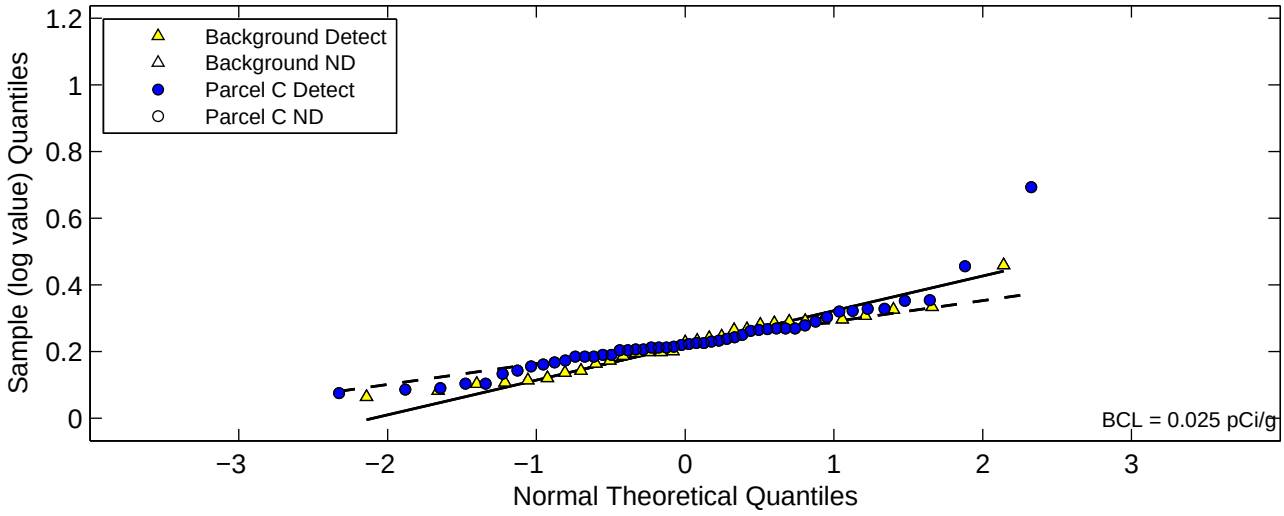
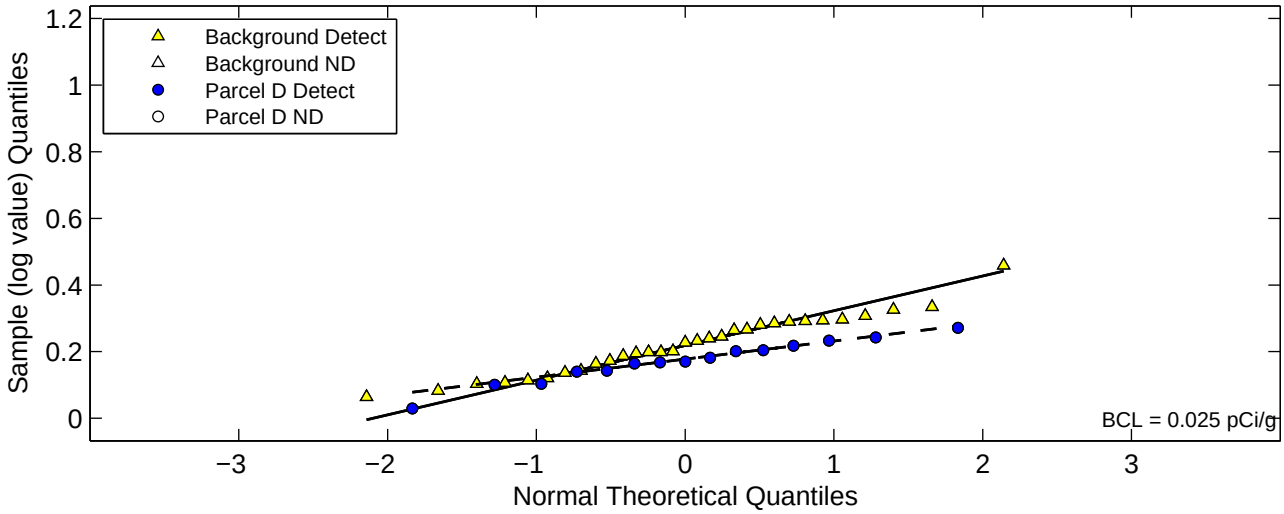


Figure I2−39B. Lognormal Q−Q Plots
Thorium−228





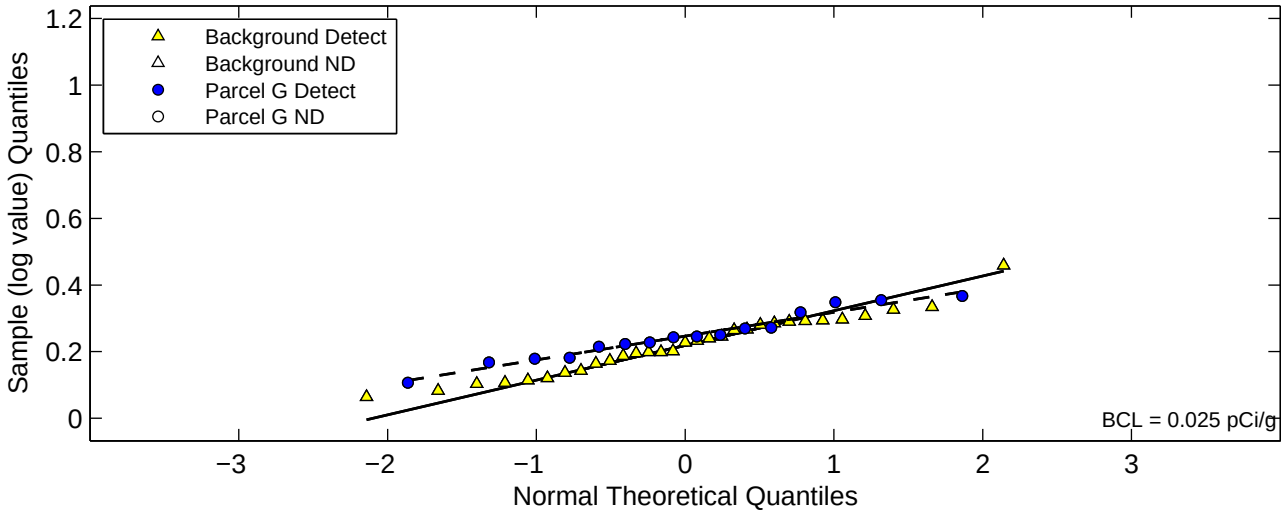
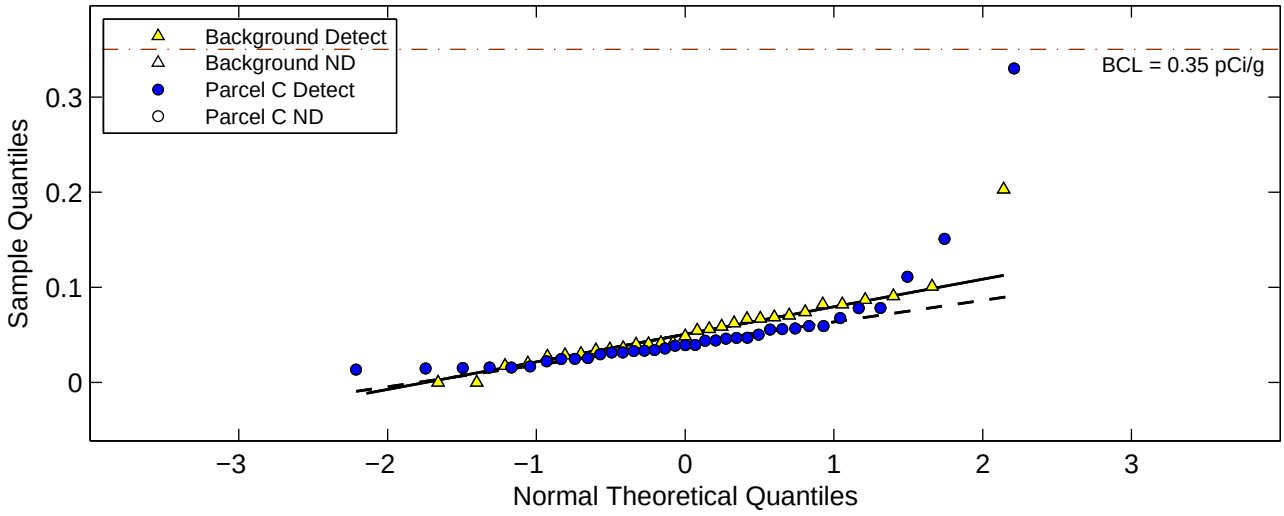
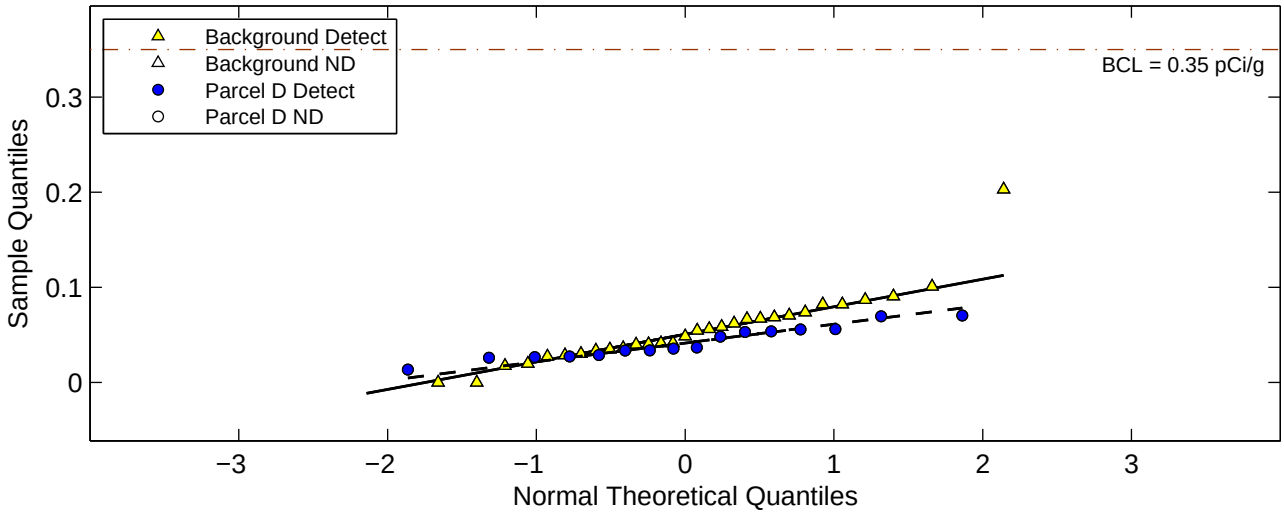


Figure I2−40A. Normal Q−Q Plots
Uranium−235





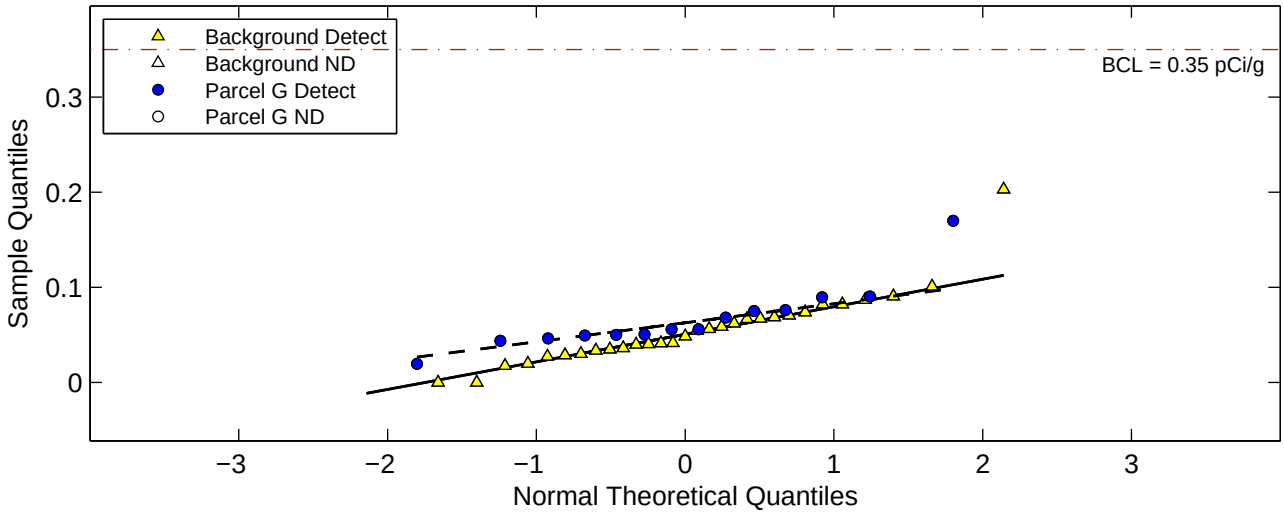
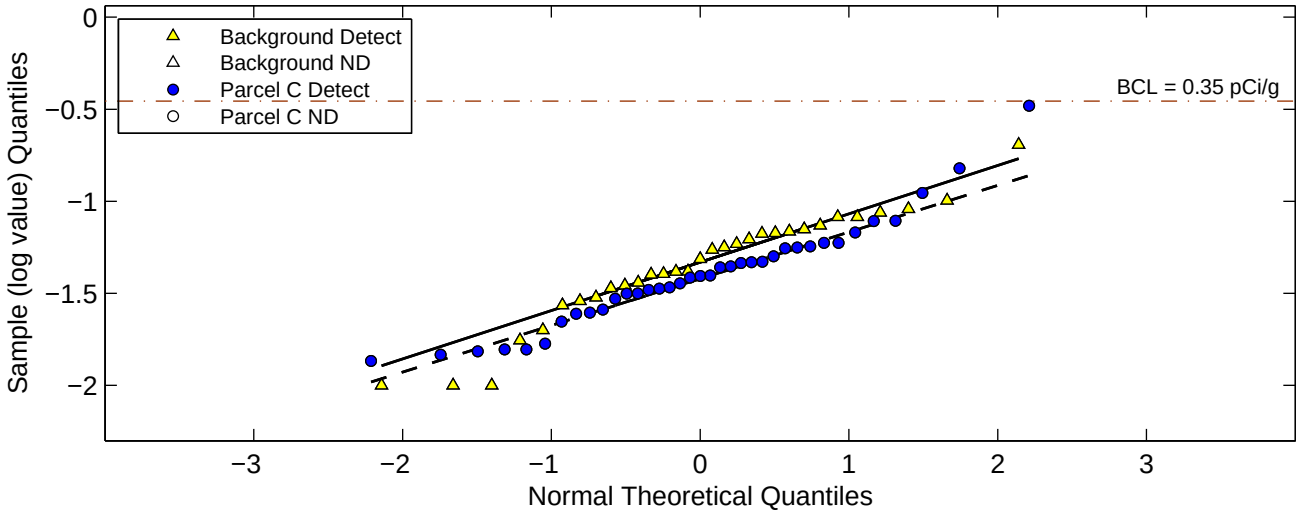
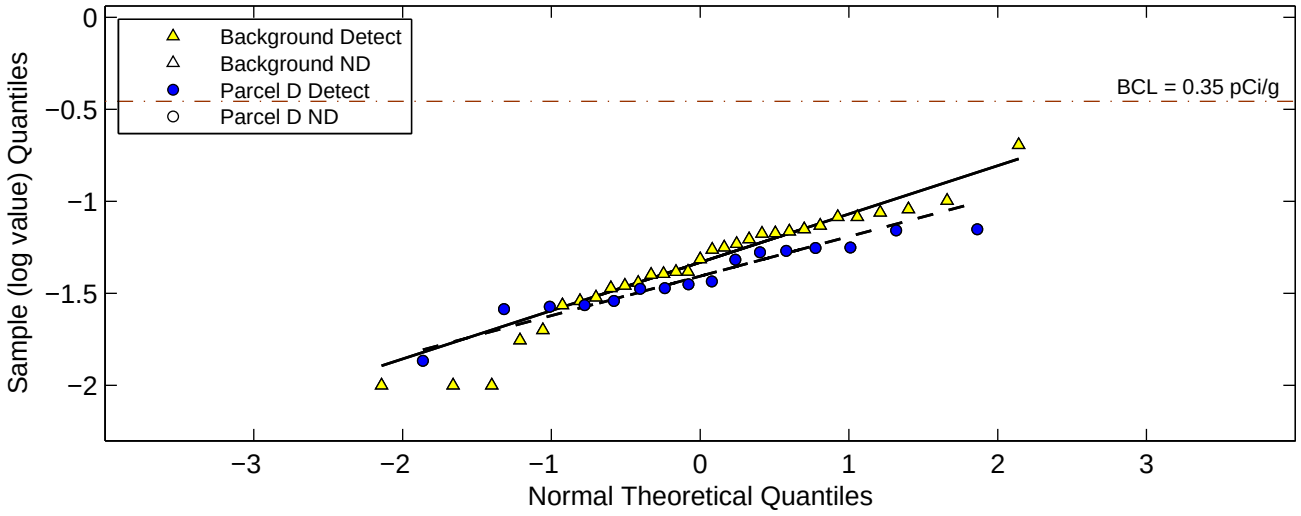
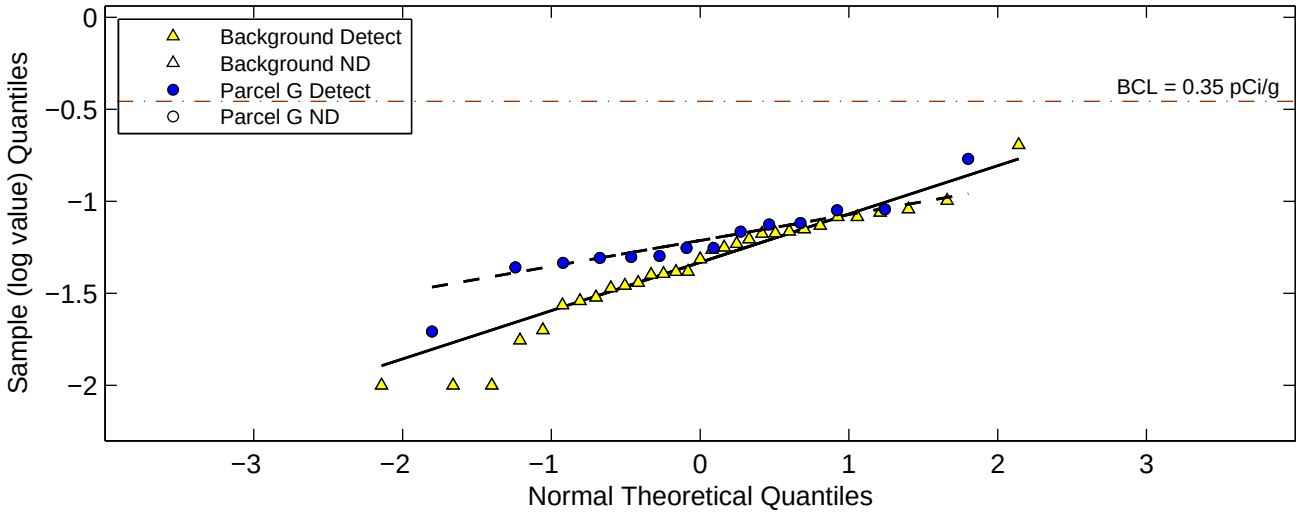


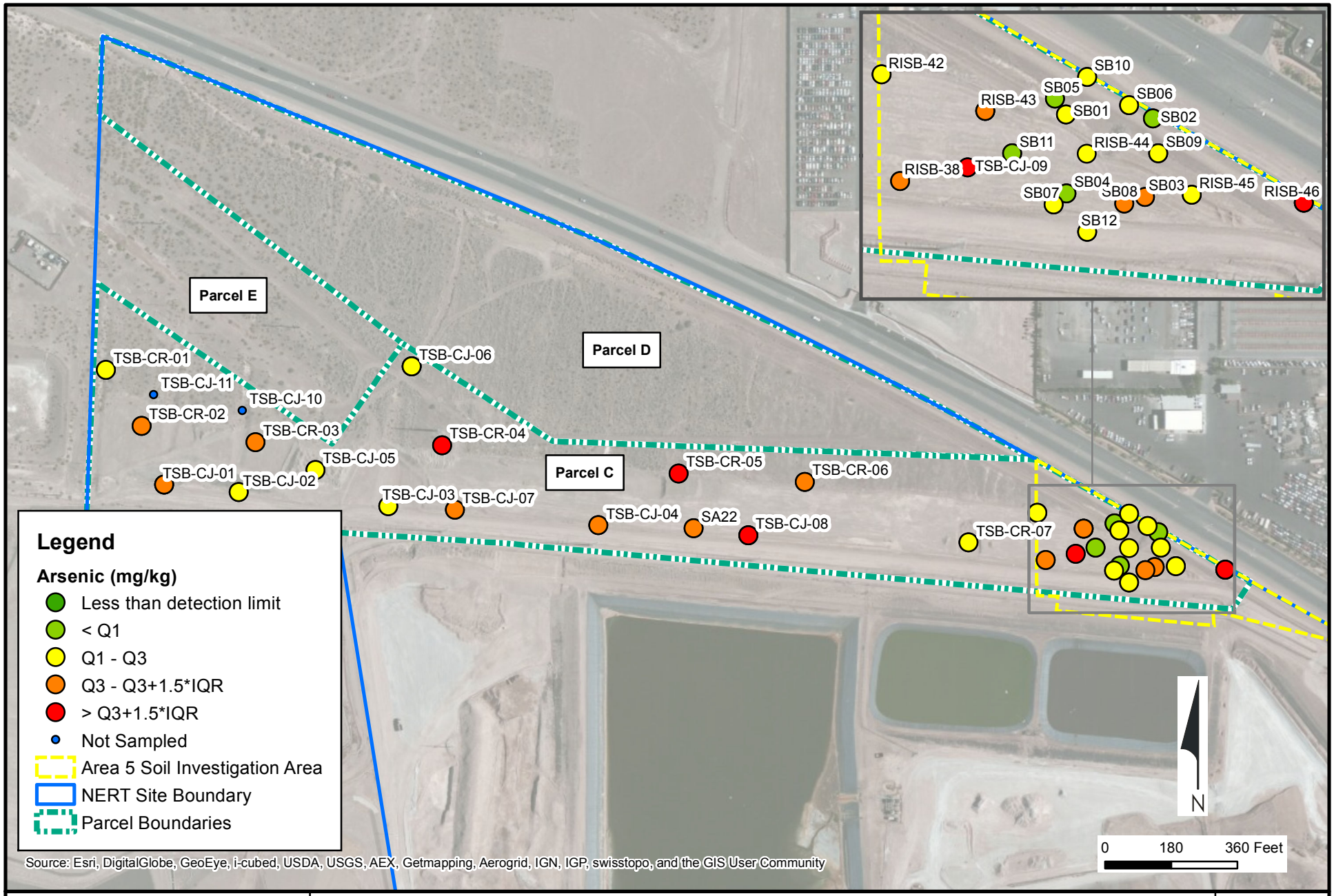
Figure I2−40B. Lognormal Q−Q Plots
Uranium−235







APPENDIX J
SPATIAL QUARTILE PLOTS FOR PARCELS C, D, AND G SOIL SAMPLES



RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - Arsenic (mg/kg)

[Q1 = 3.1, Q3 = 4.68, Q3+1.5*IQR = 7.04]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-1**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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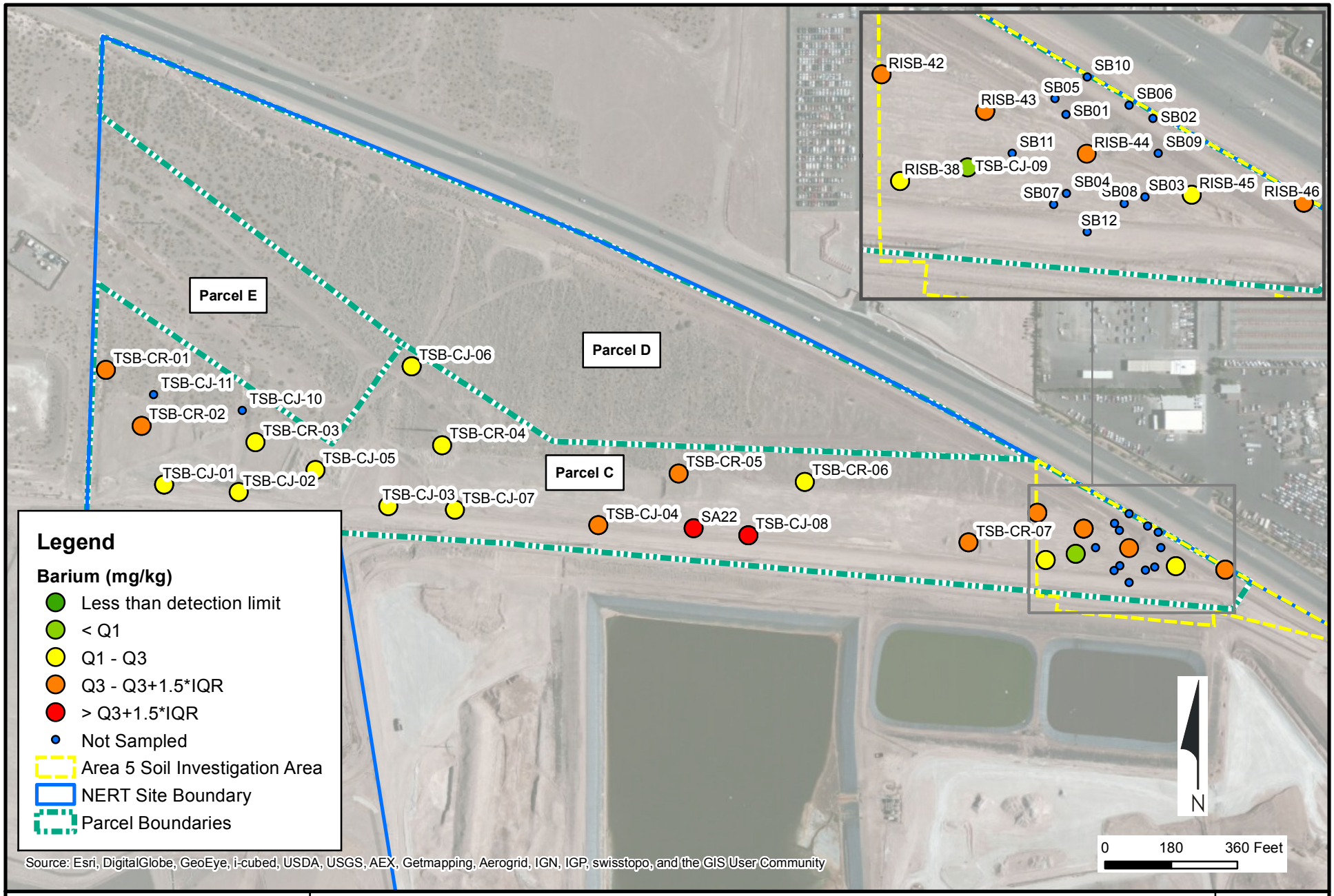

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - Barium (mg/kg)

[Q1 = 160, Q3 = 203, Q3+1.5*IQR = 267]

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Figure **J-2**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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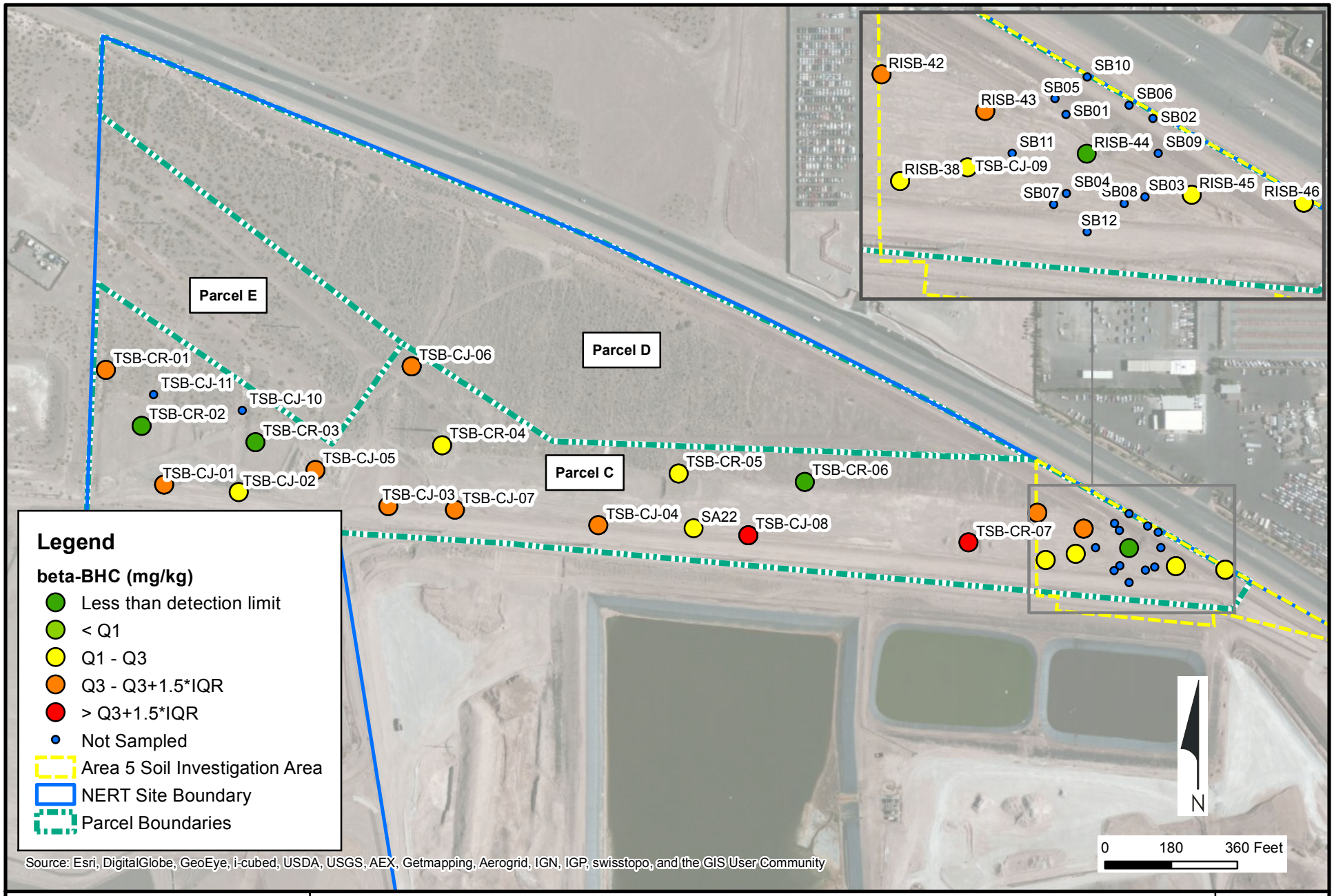

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - beta-BHC (mg/kg)

[Q1 = 0.000345, Q3 = 0.054, Q3+1.5*IQR = 0.134]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-3**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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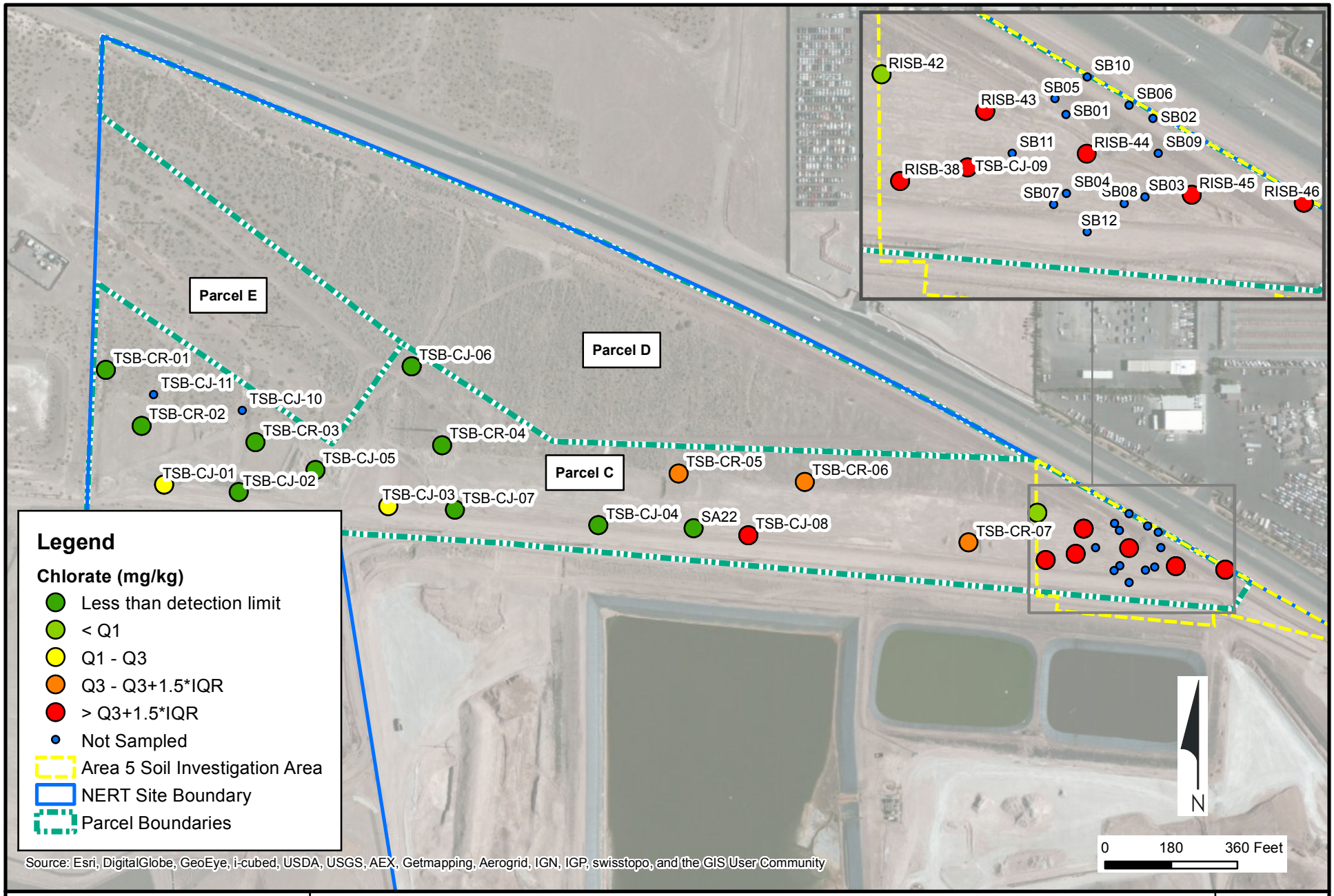

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - Chlorate (mg/kg)

[Q1 = 1, Q3 = 2.83, Q3+1.5*IQR = 5.56]

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Figure **J-4**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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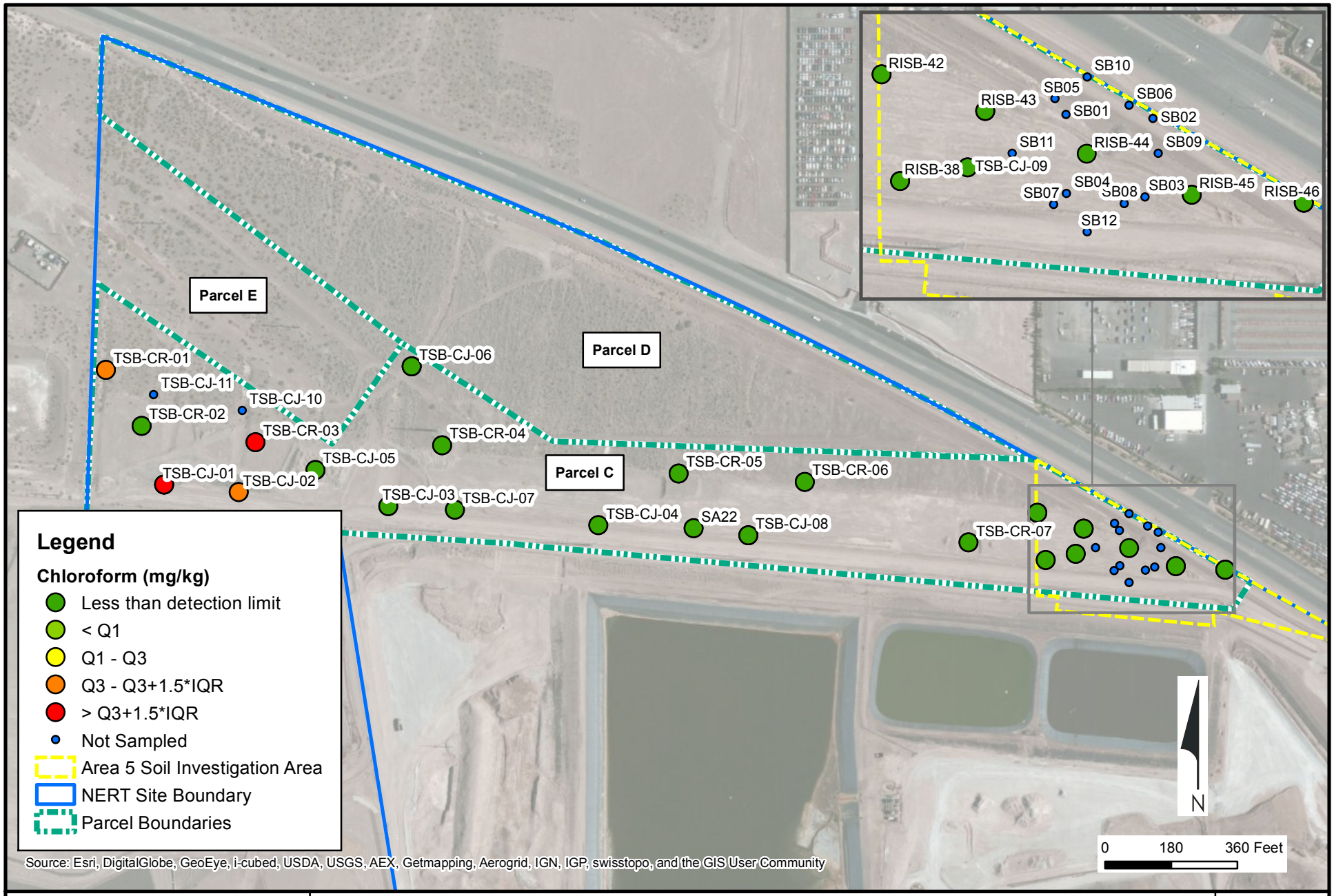

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - Chloroform (mg/kg)

[Q1 = 0.000142, Q3 = 0.000518, Q3+1.5*IQR = 0.00108]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-5**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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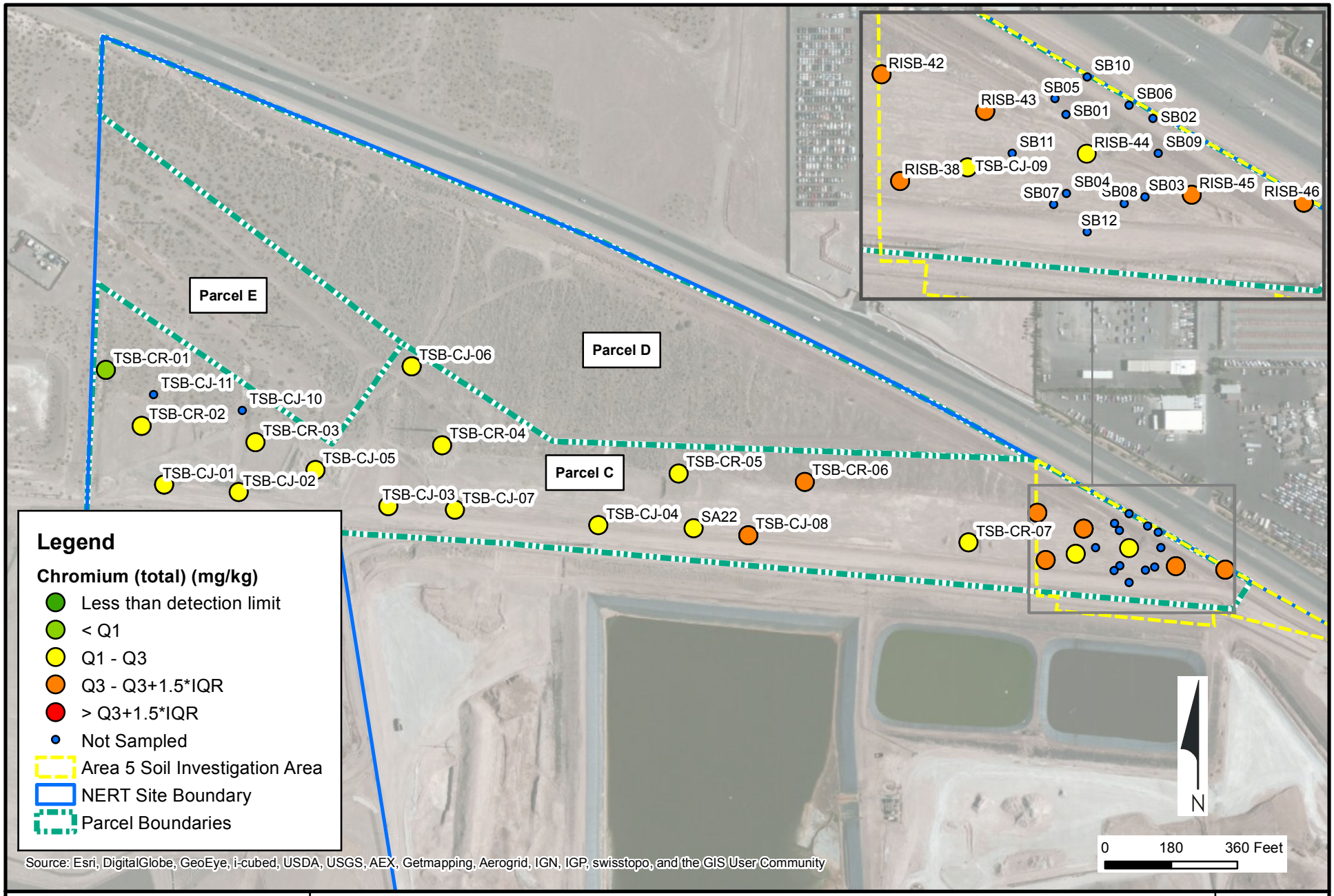

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - Chromium (total) (mg/kg)

[Q1 = 7.33, Q3 = 13, Q3+1.5*IQR = 19]

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Figure **J-6**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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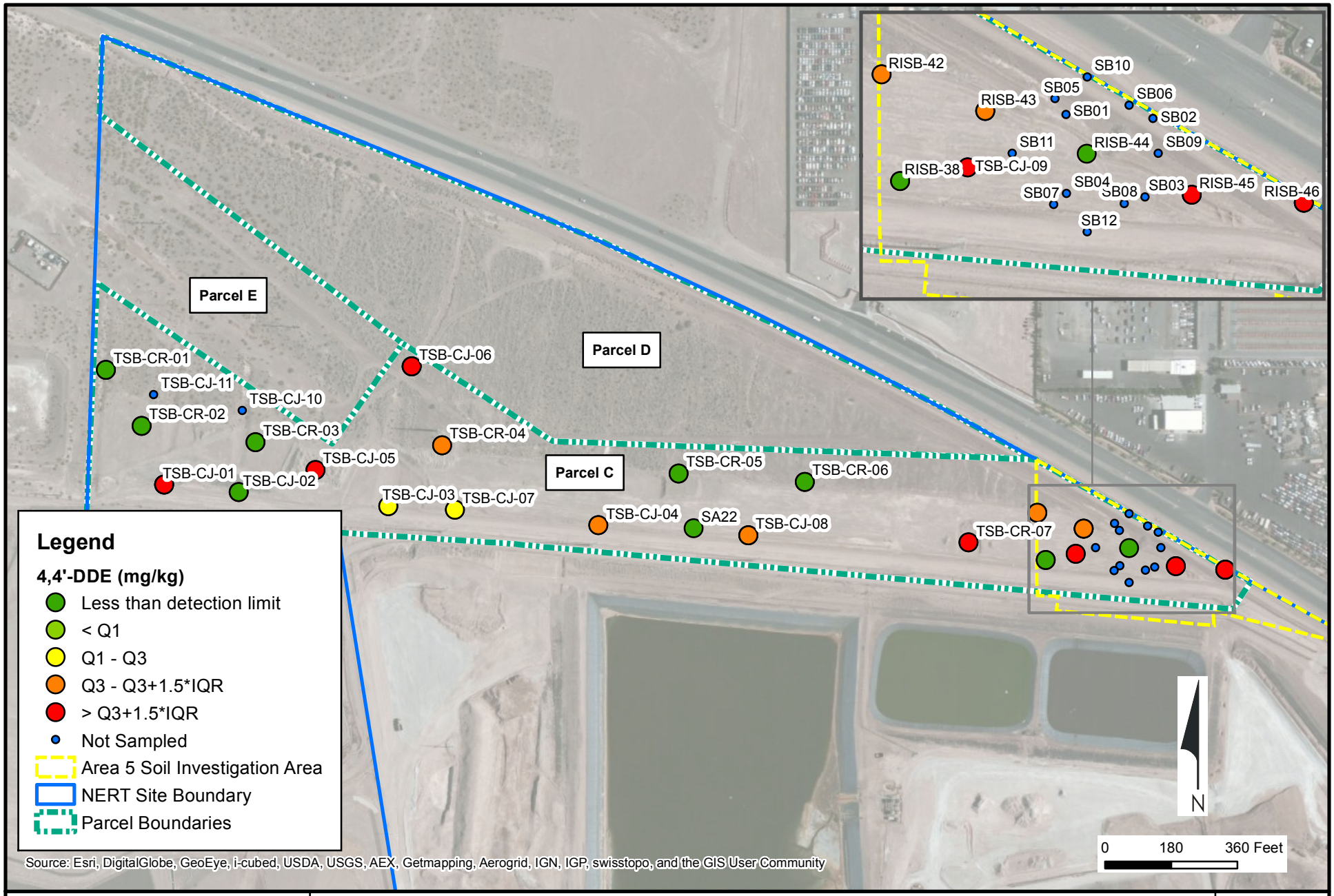

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - 4,4'-DDE (mg/kg)

[Q1 = 0.000252, Q3 = 0.0034, Q3+1.5*IQR = 0.00812]

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Figure **J-7**

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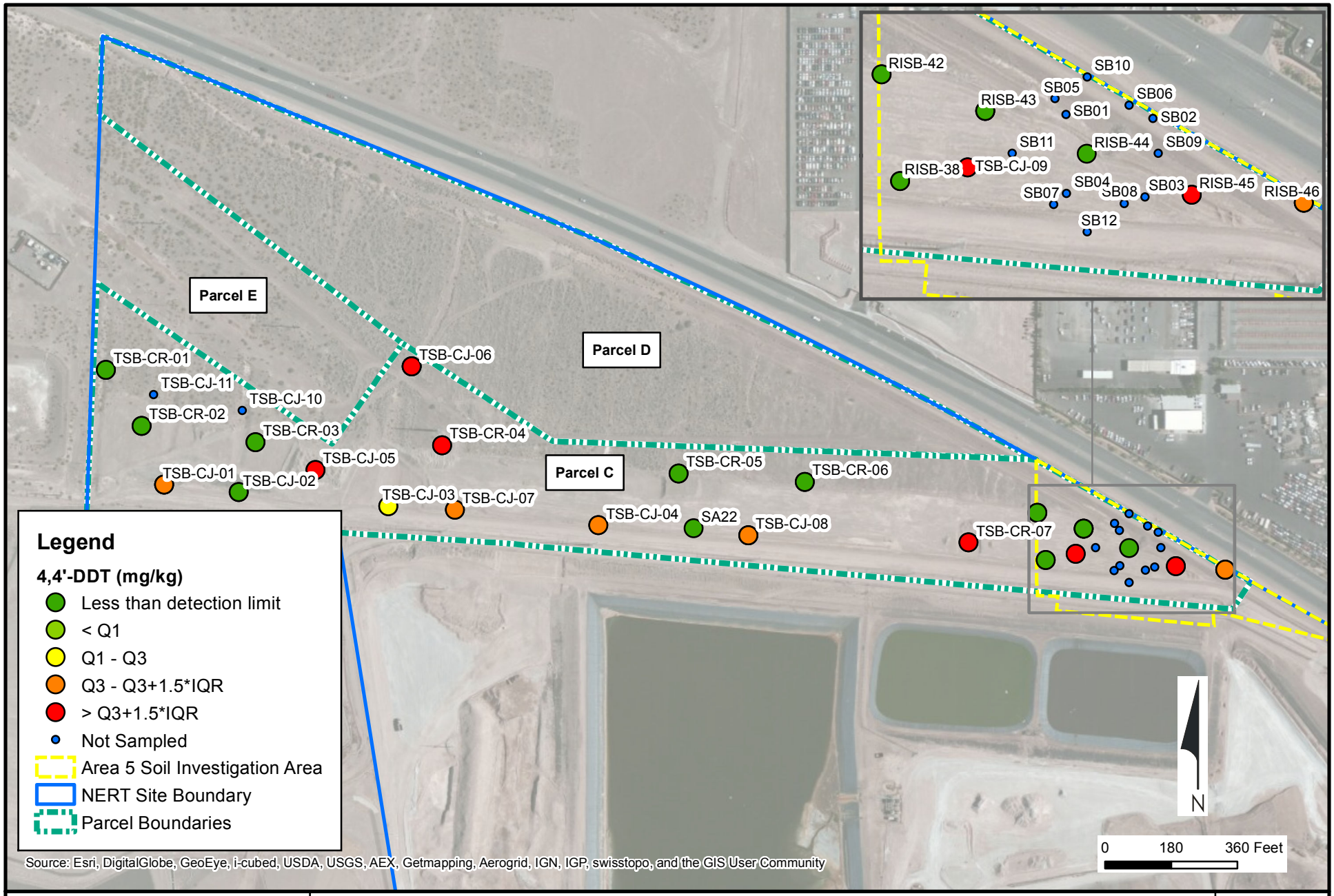

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - 4,4'-DDT (mg/kg)

[Q1 = 0.000427, Q3 = 0.0022, Q3+1.5*IQR = 0.00486]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-8**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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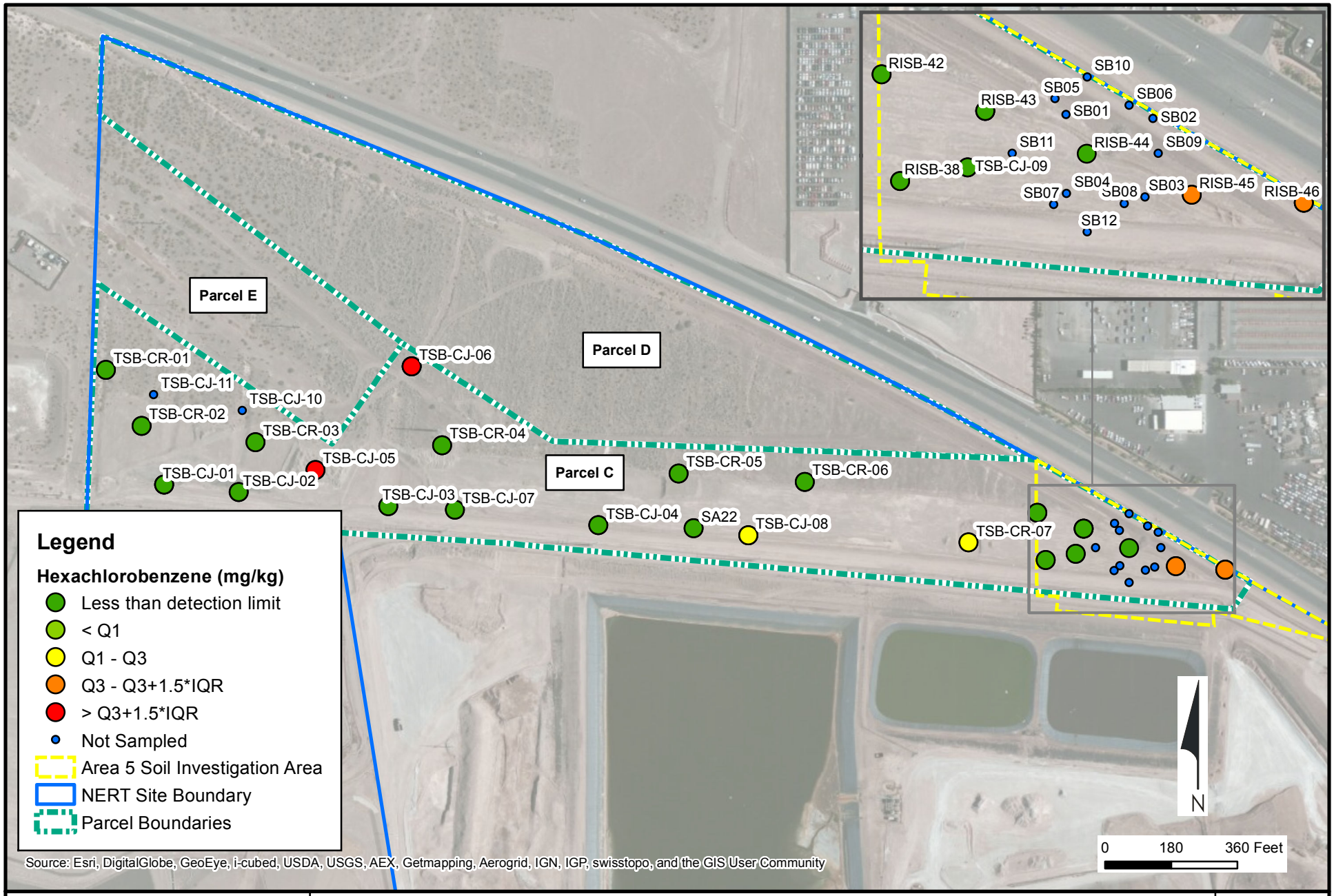

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - Hexachlorobenzene (mg/kg)

[Q1 = 0.0333, Q3 = 0.0738, Q3+1.5*IQR = 0.134]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-9**

Drafter: YZ Date: 6/20/2017 Contract Number: 21-41400A Approved: Revised:

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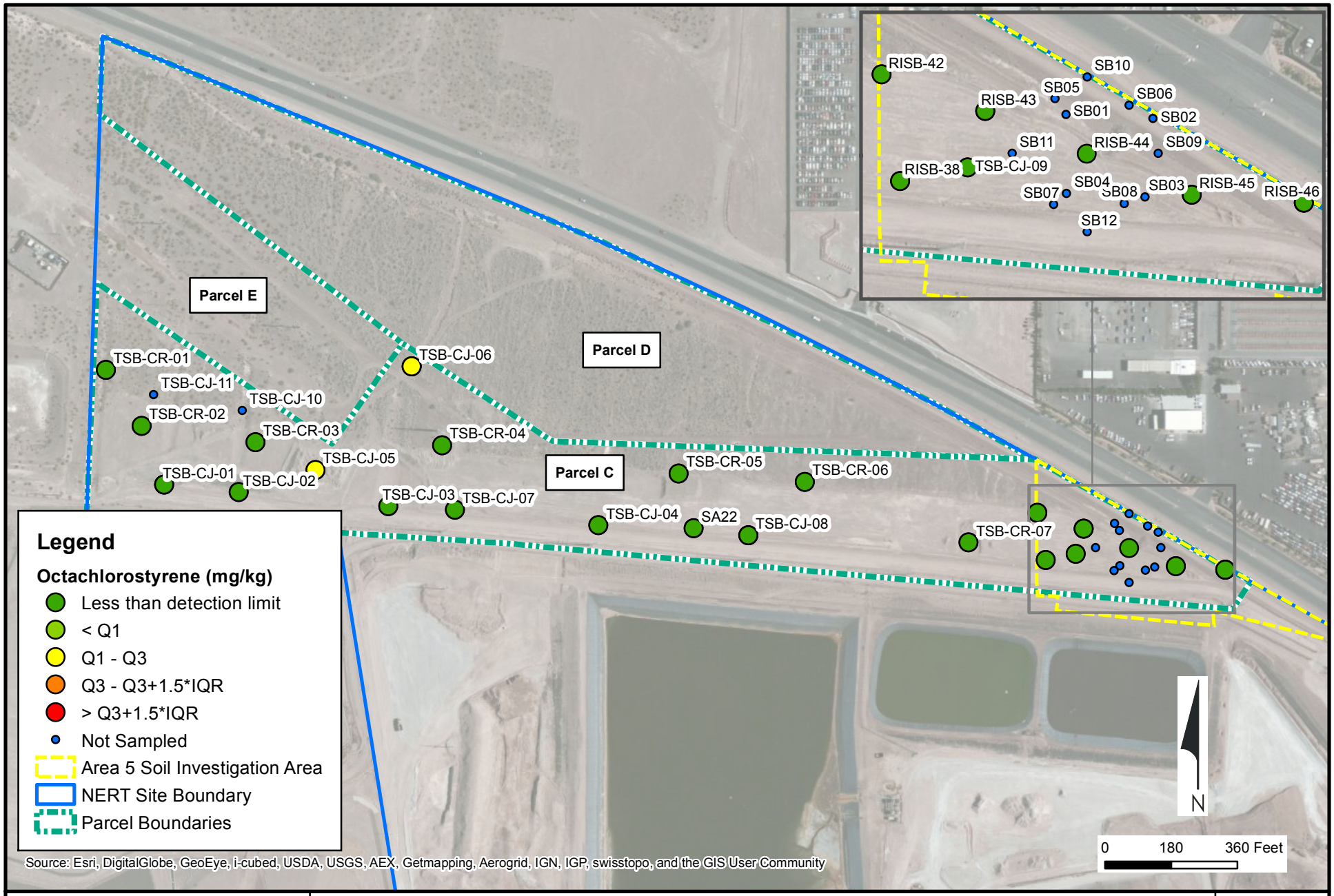

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - Octachlorostyrene (mg/kg)

[Q1 = 0.0333, Q3 = 1.83, Q3+1.5*IQR = 2.6]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-10**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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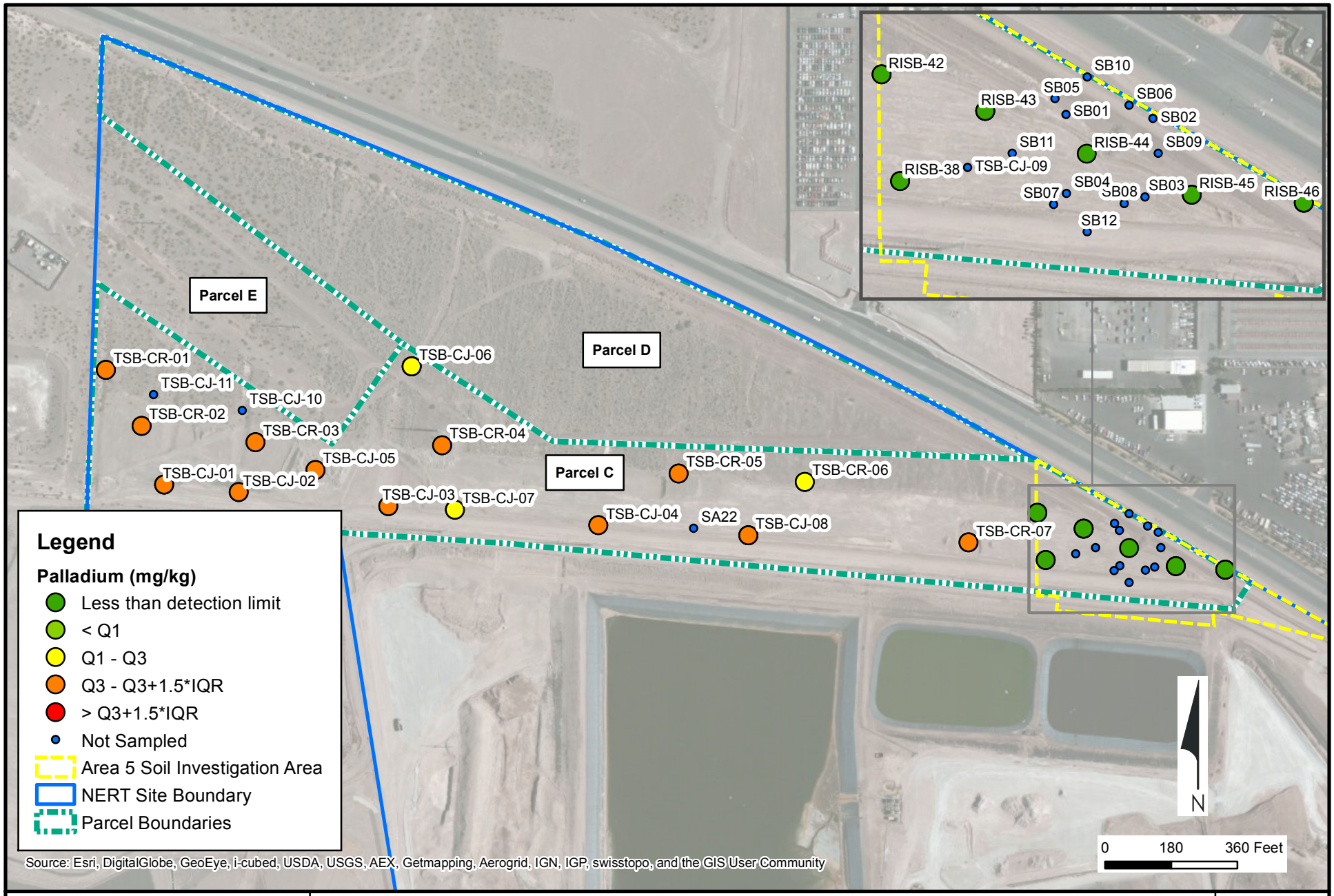

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - Palladium (mg/kg)

[Q1 = 0.0603, Q3 = 0.508, Q3+1.5*IQR = 0.9]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-11**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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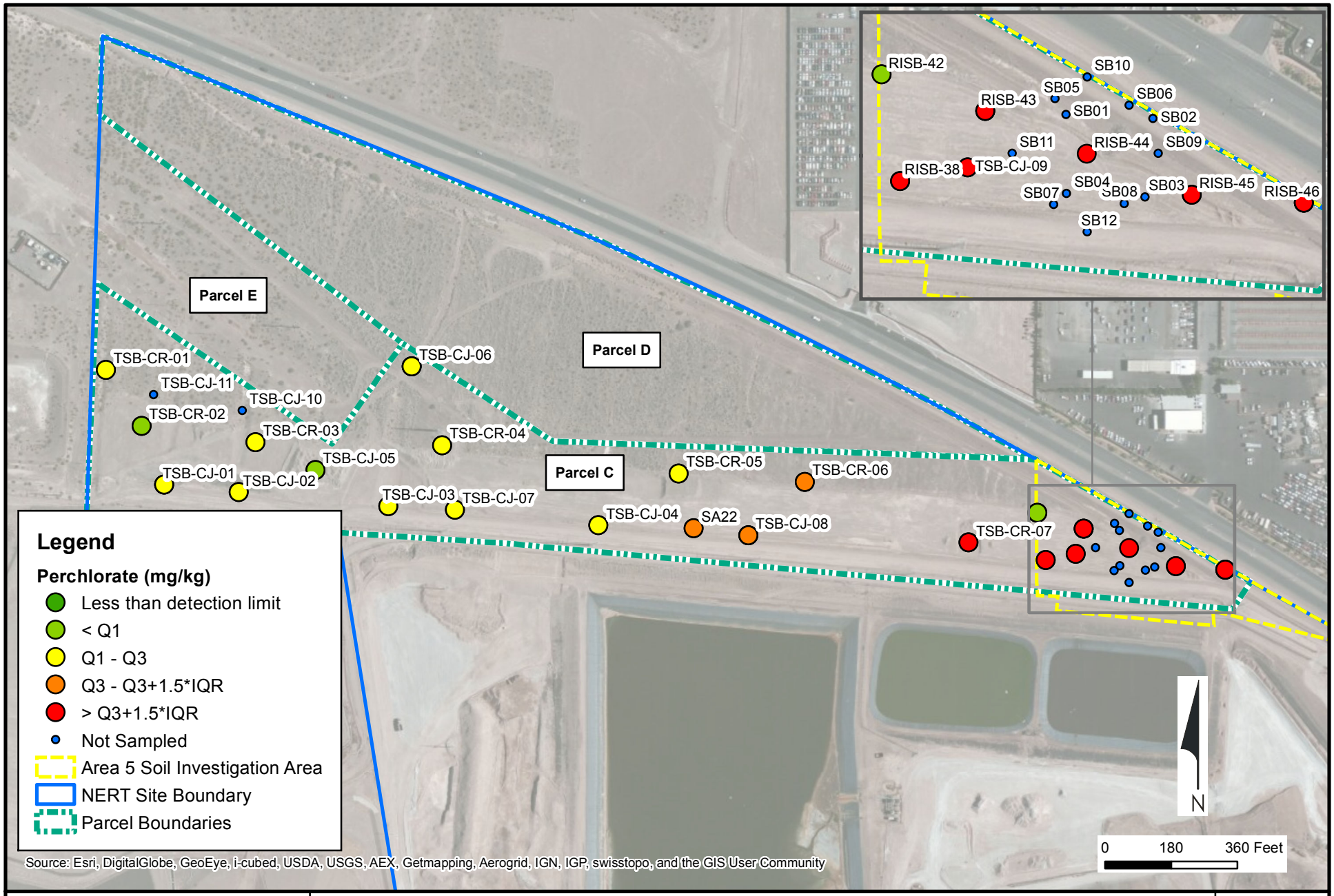

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - Perchlorate (mg/kg)

[Q1 = 0.183, Q3 = 4.9, Q3+1.5*IQR = 12]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-12**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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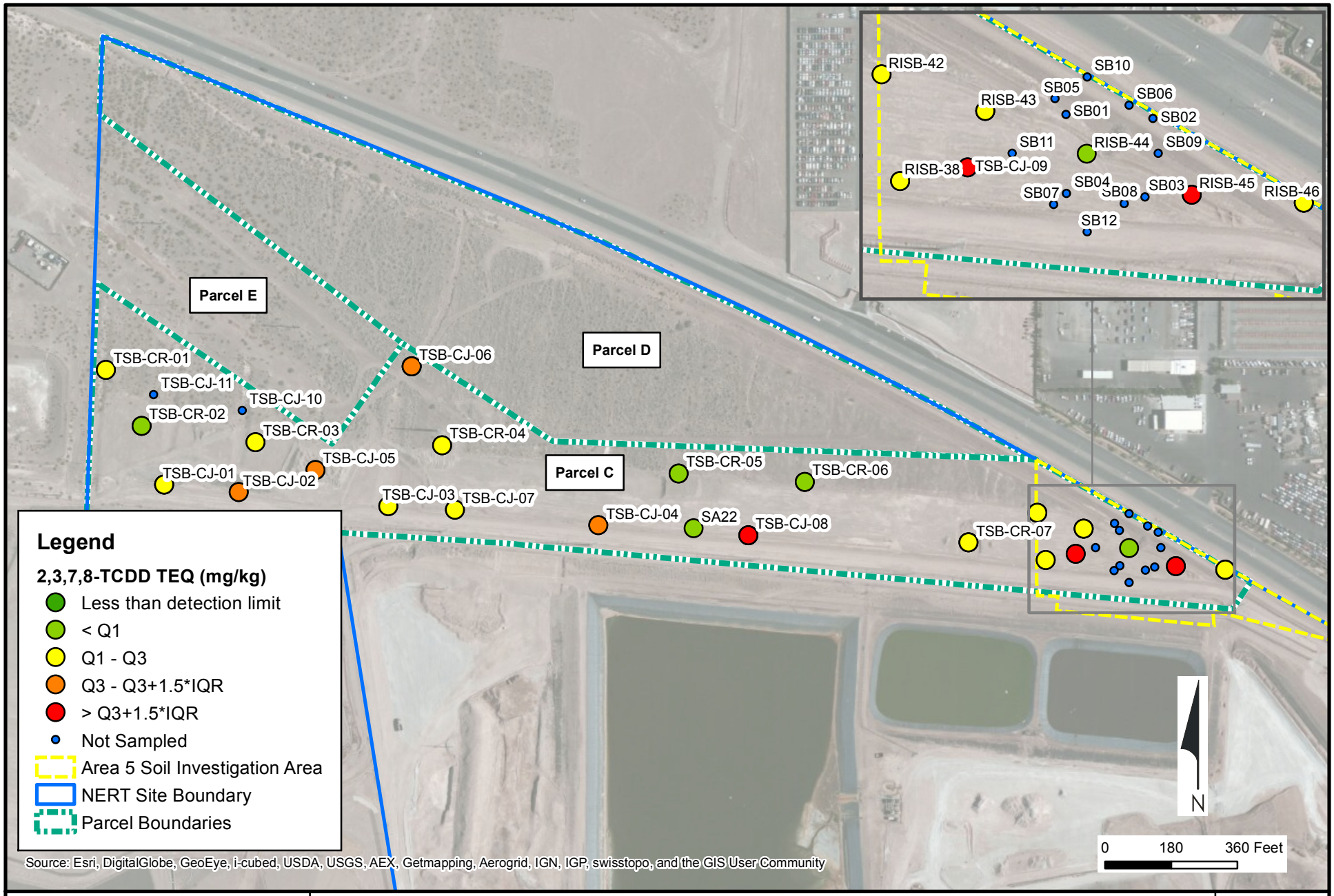

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - 2,3,7,8-TCDD TEQ (mg/kg)

[Q1 = 0.00000475, Q3 = 0.000356, Q3+1.5*IQR = 0.000884]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-13**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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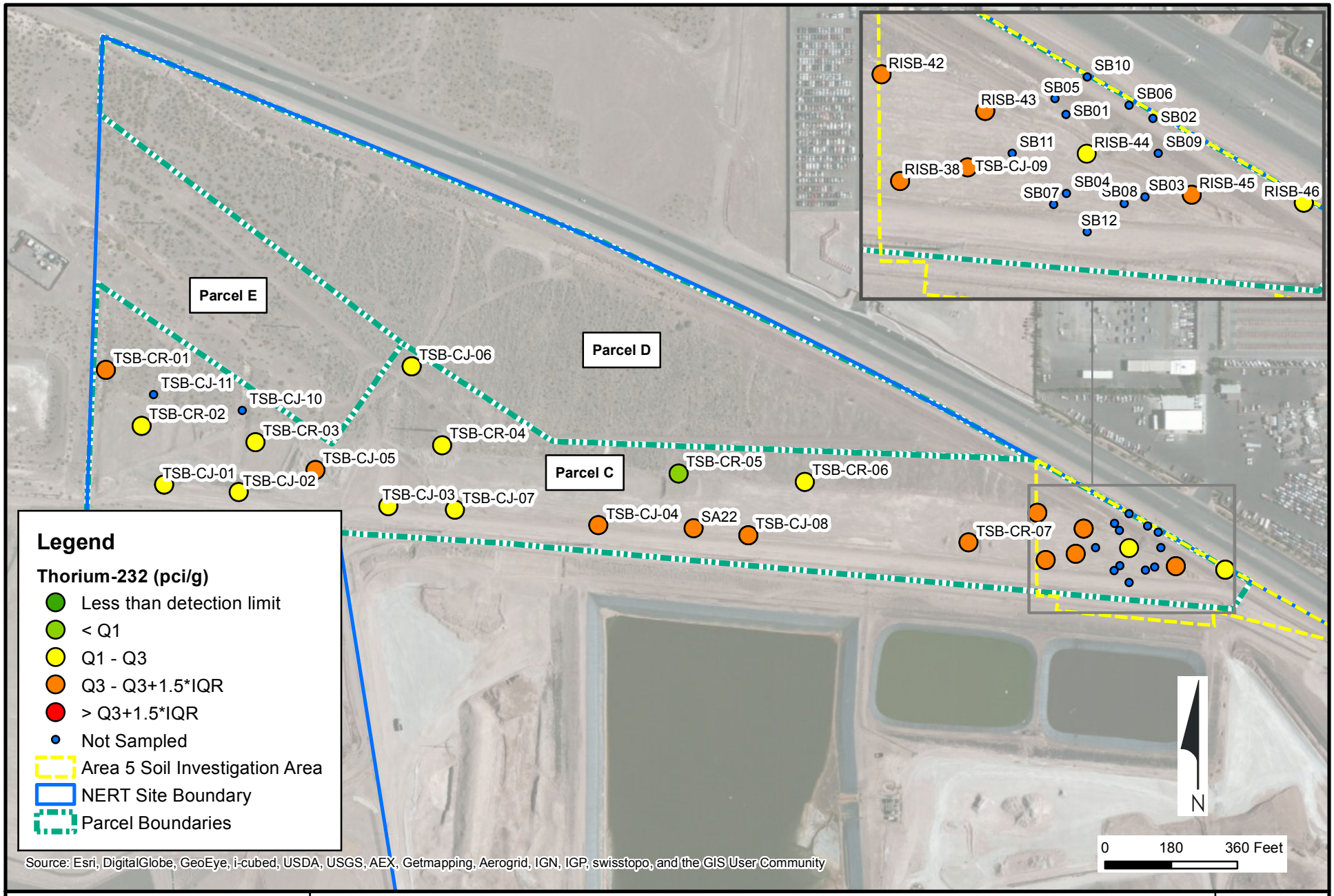

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - Thorium-232 (pci/g)

[Q1 = 1.47, Q3 = 1.81, Q3+1.5*IQR = 2.24]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-14**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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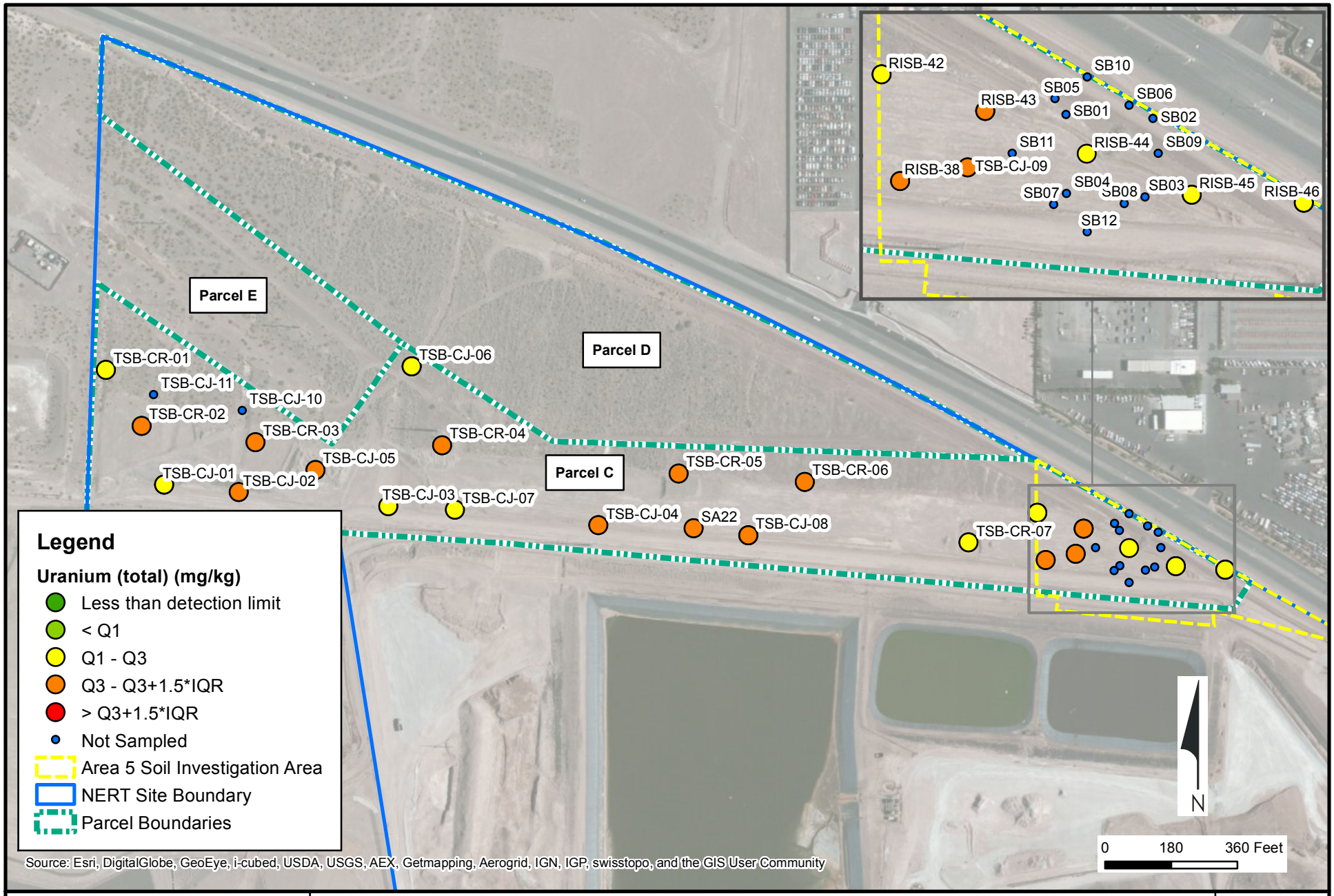

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - Uranium (total) (mg/kg)

[Q1 = 0.915, Q3 = 1.68, Q3+1.5*IQR = 2.7]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-15**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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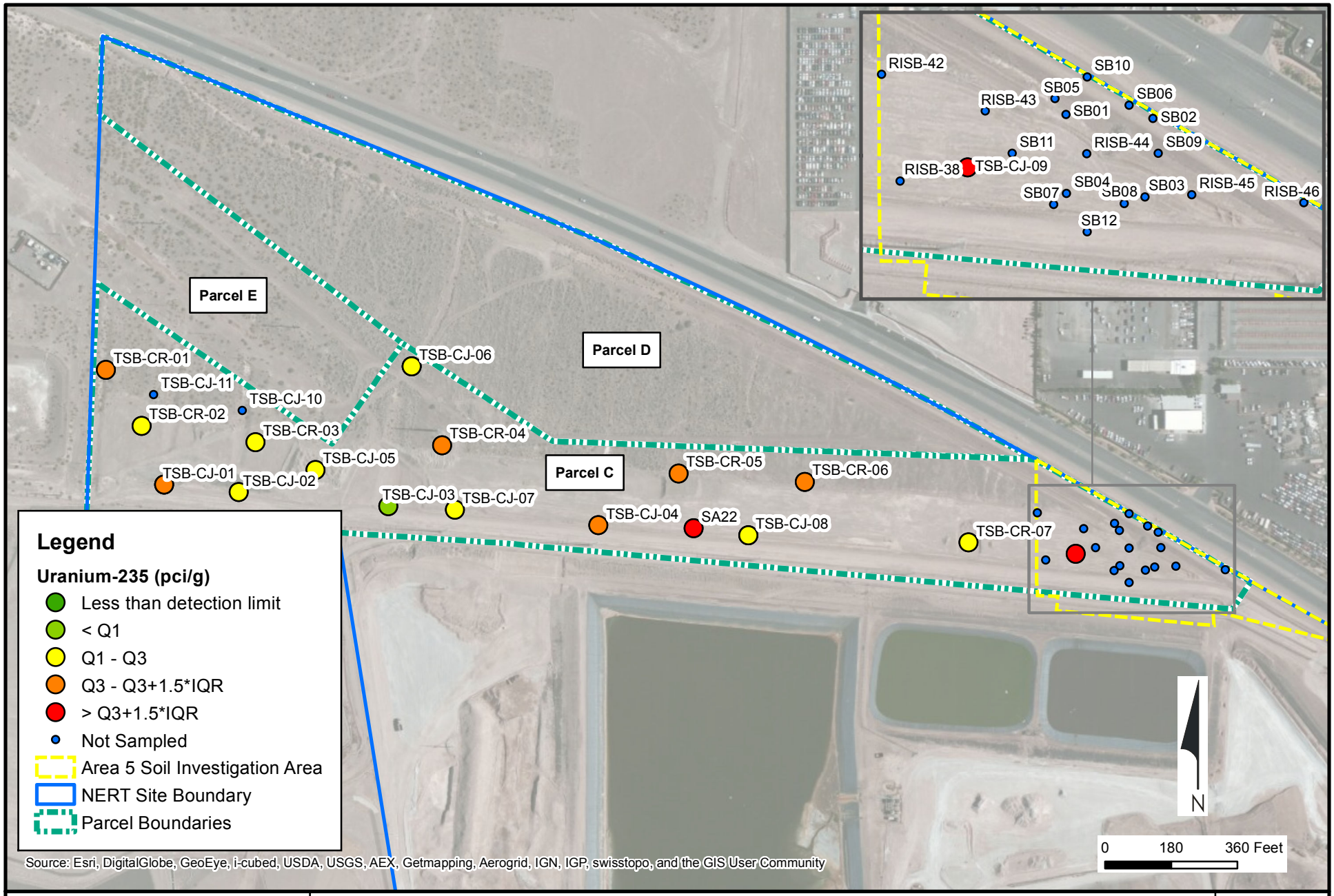

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - Uranium-235 (pci/g)

[Q1 = 0.0258, Q3 = 0.056, Q3+1.5*IQR = 0.101]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-16**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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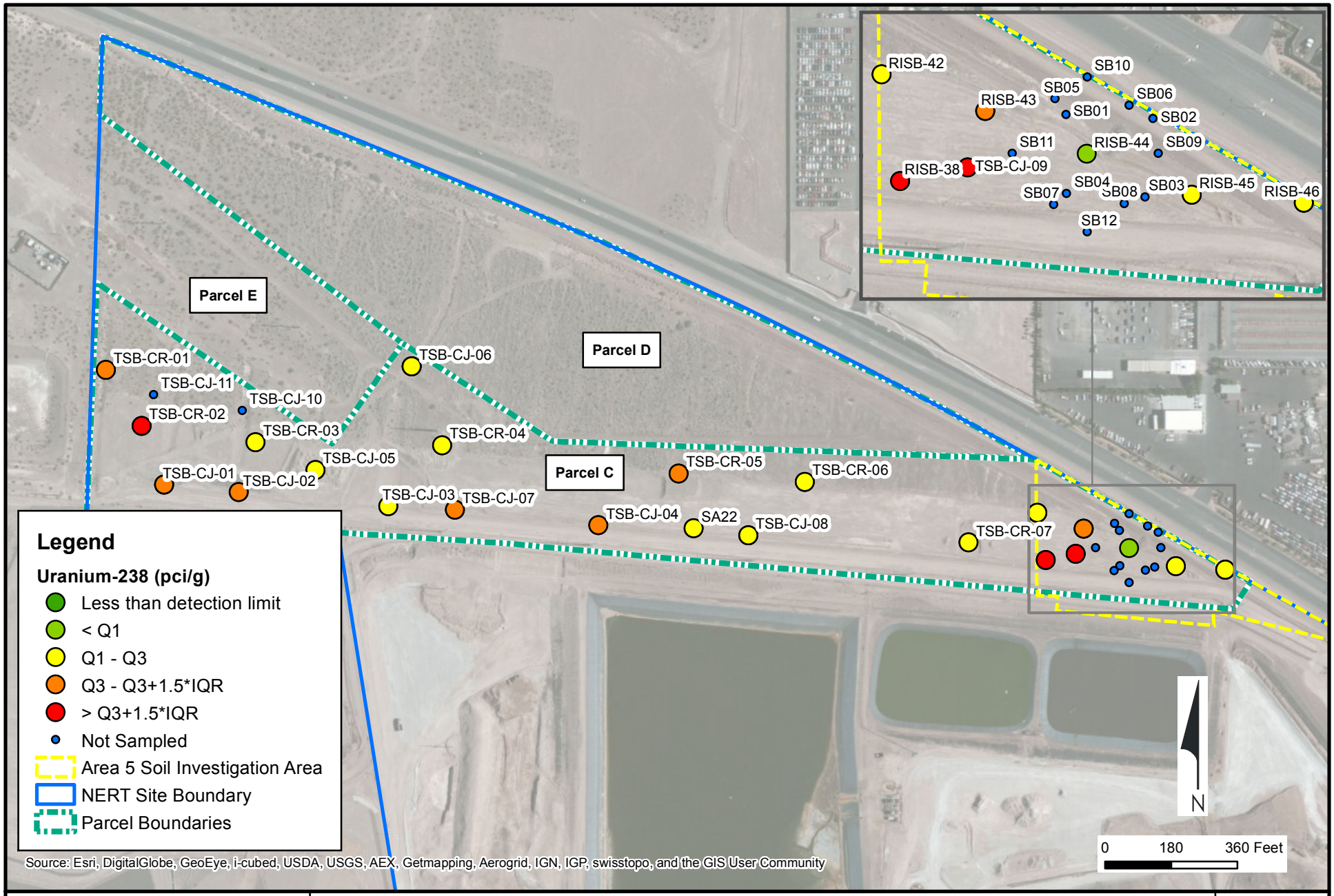

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - Uranium-238 (pci/g)

[Q1 = 1.03, Q3 = 1.28, Q3+1.5*IQR = 1.65]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-17**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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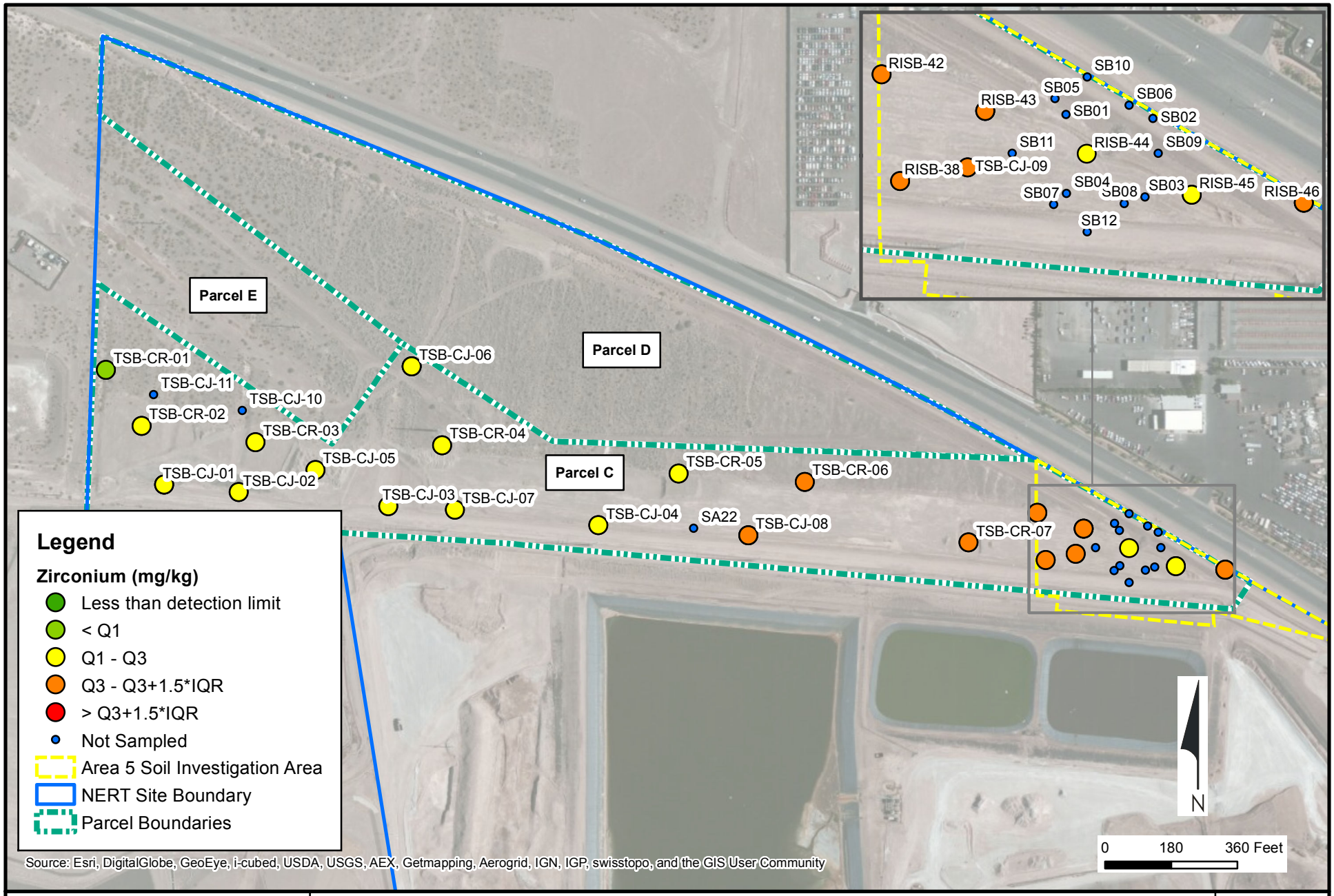

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel C - Zirconium (mg/kg)

[Q1 = 19.9, Q3 = 24.8, Q3+1.5*IQR = 30]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-18**

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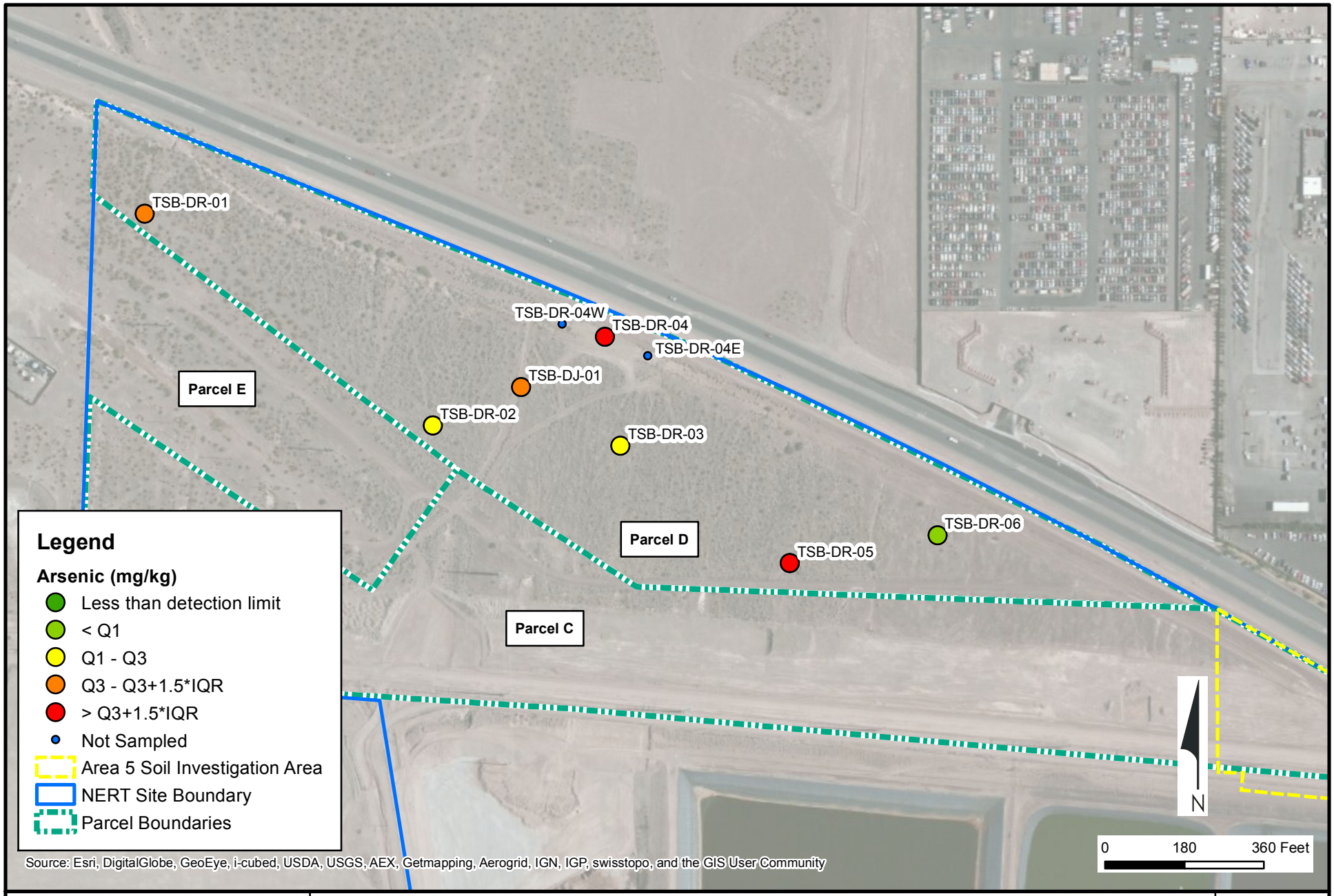

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel D - Arsenic (mg/kg)

[Q1 = 2.88, Q3 = 3.8, Q3+1.5*IQR = 5.19]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-19**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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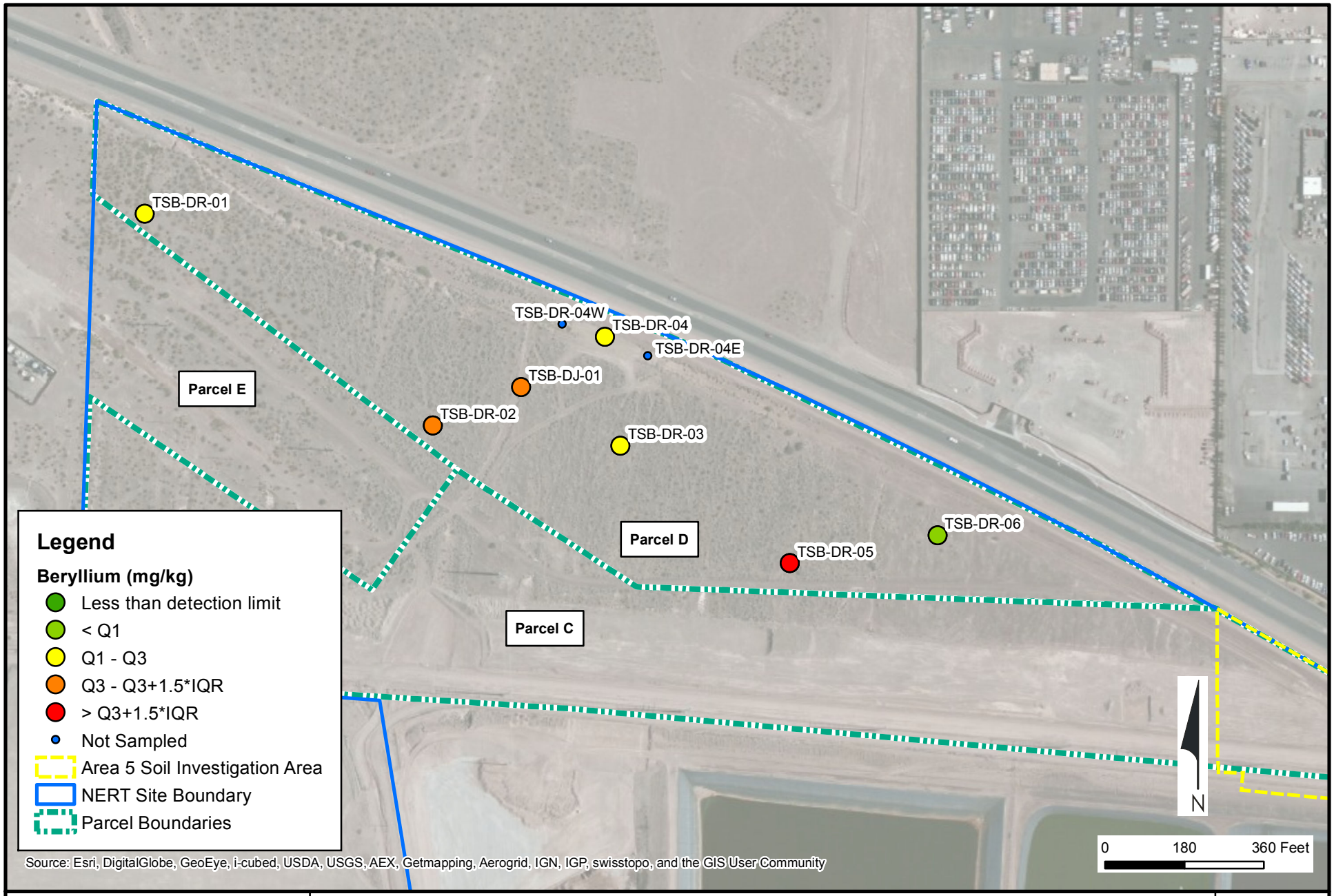

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel D - Beryllium (mg/kg)

[Q1 = 0.485, Q3 = 0.543, Q3+1.5*IQR = 0.629]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-20**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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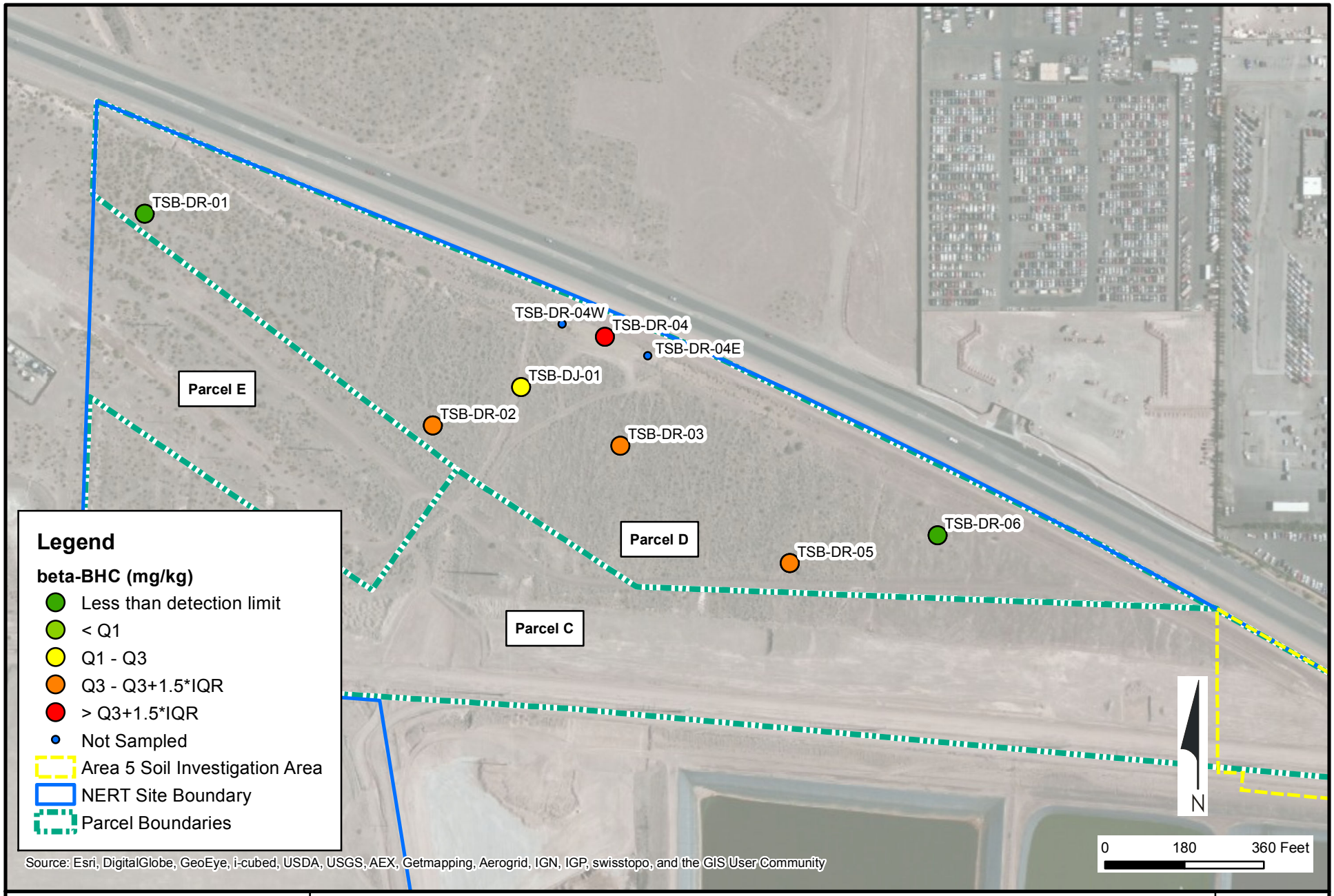

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel D - beta-BHC (mg/kg)

[Q1 = 0.000345, Q3 = 0.0198, Q3+1.5*IQR = 0.0489]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-21**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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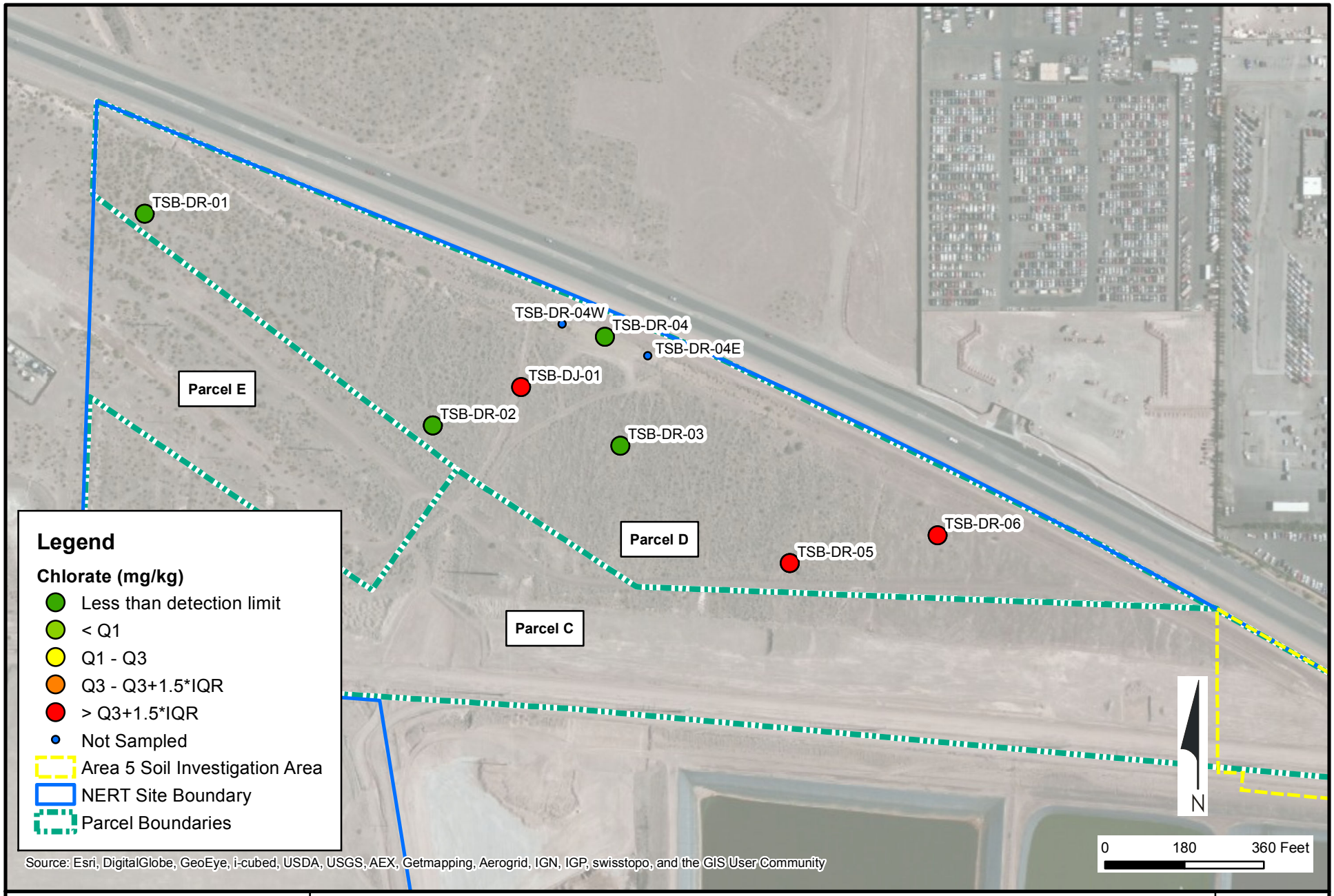

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel D - Chlorate (mg/kg)

[Q1 = 1, Q3 = 1, Q3+1.5*IQR = 1]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-22**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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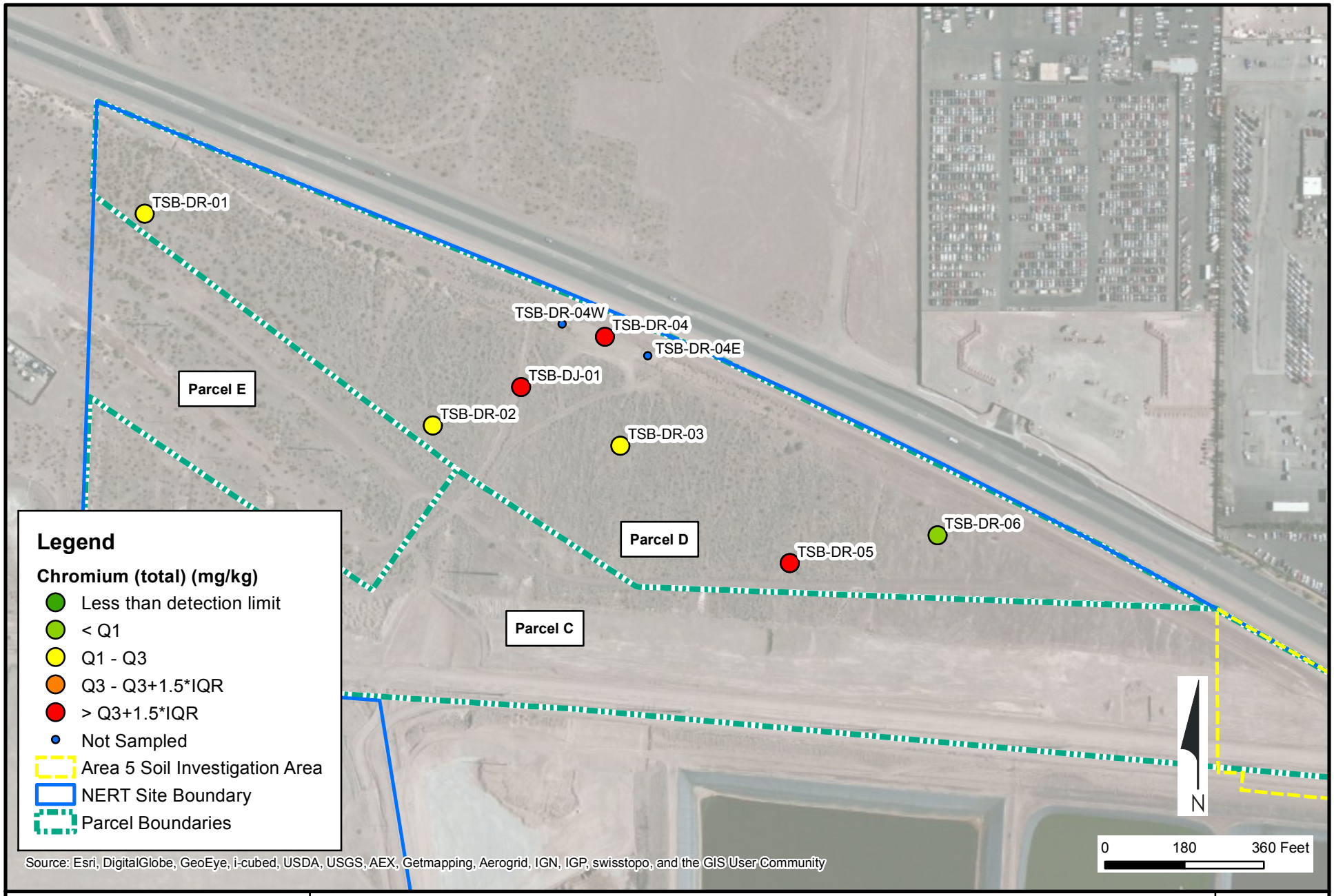

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel D - Chromium (total) (mg/kg)

[Q1 = 9.65, Q3 = 11.6, Q3+1.5*IQR = 14.5]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-23**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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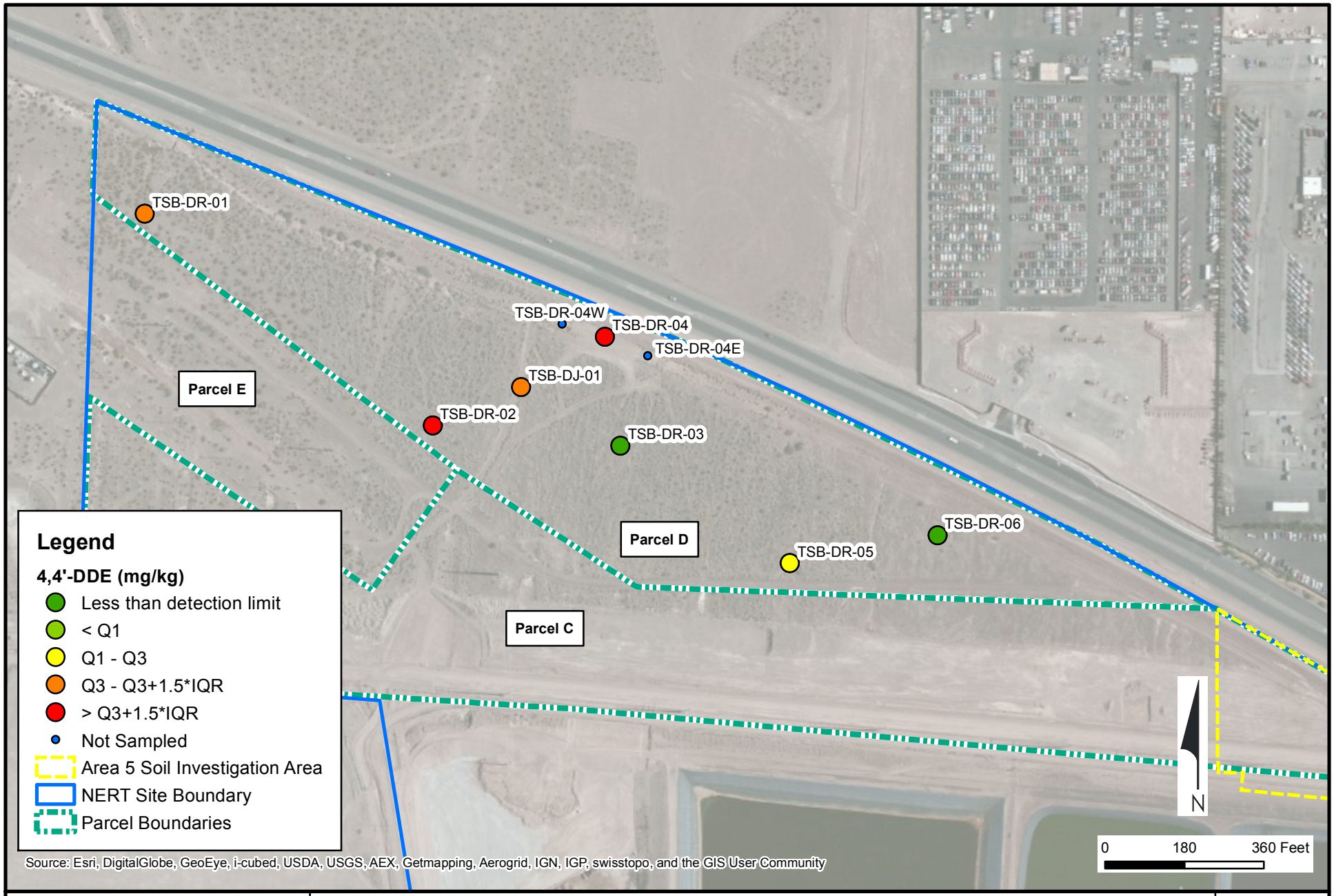

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel D - 4,4'-DDE (mg/kg)

[Q1 = 0.000252, Q3 = 0.00285, Q3+1.5*IQR = 0.00675]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-24**

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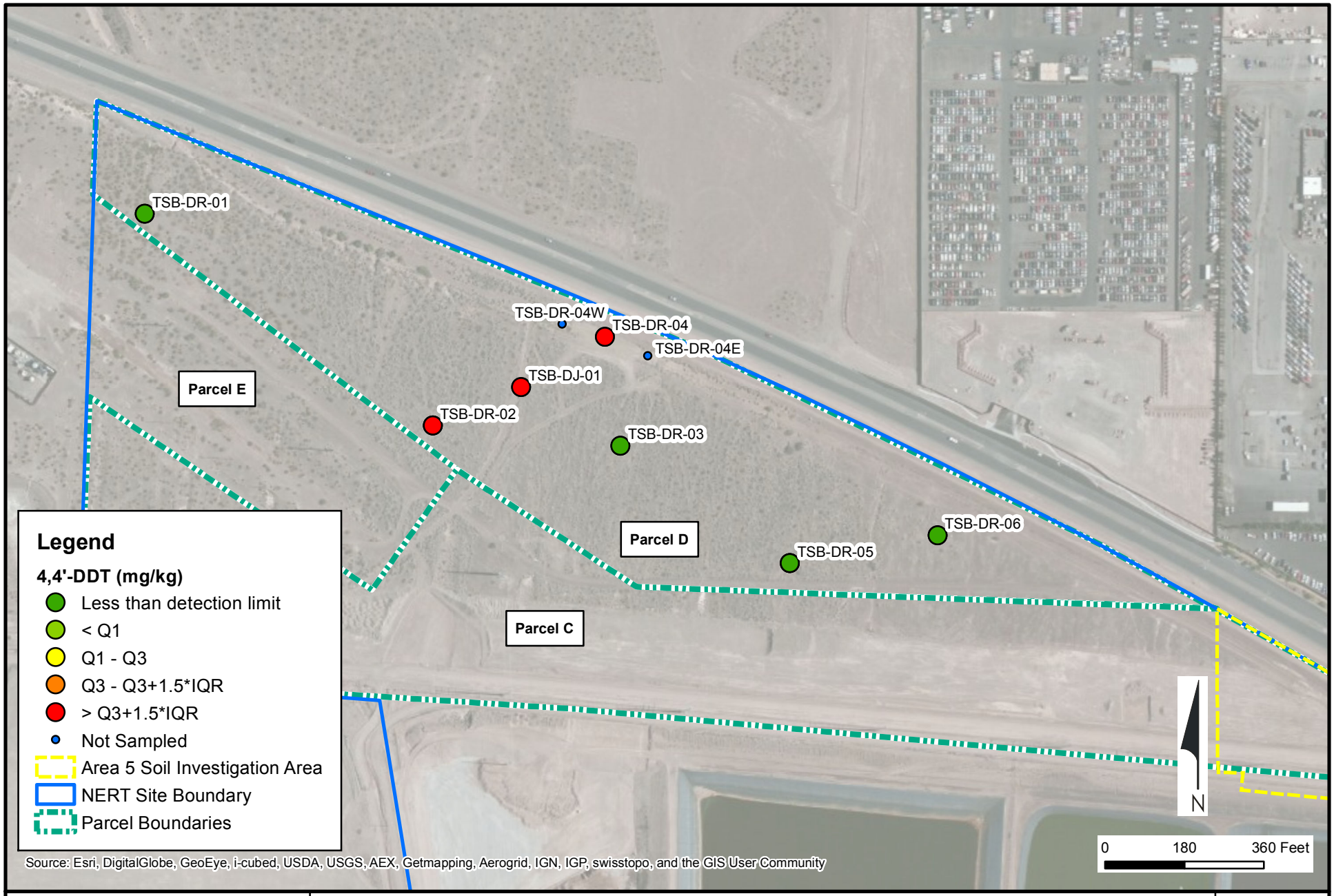

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel D - 4,4'-DDT (mg/kg)

[Q1 = 0.000427, Q3 = 0.000427, Q3+1.5*IQR = 0.000427]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-25**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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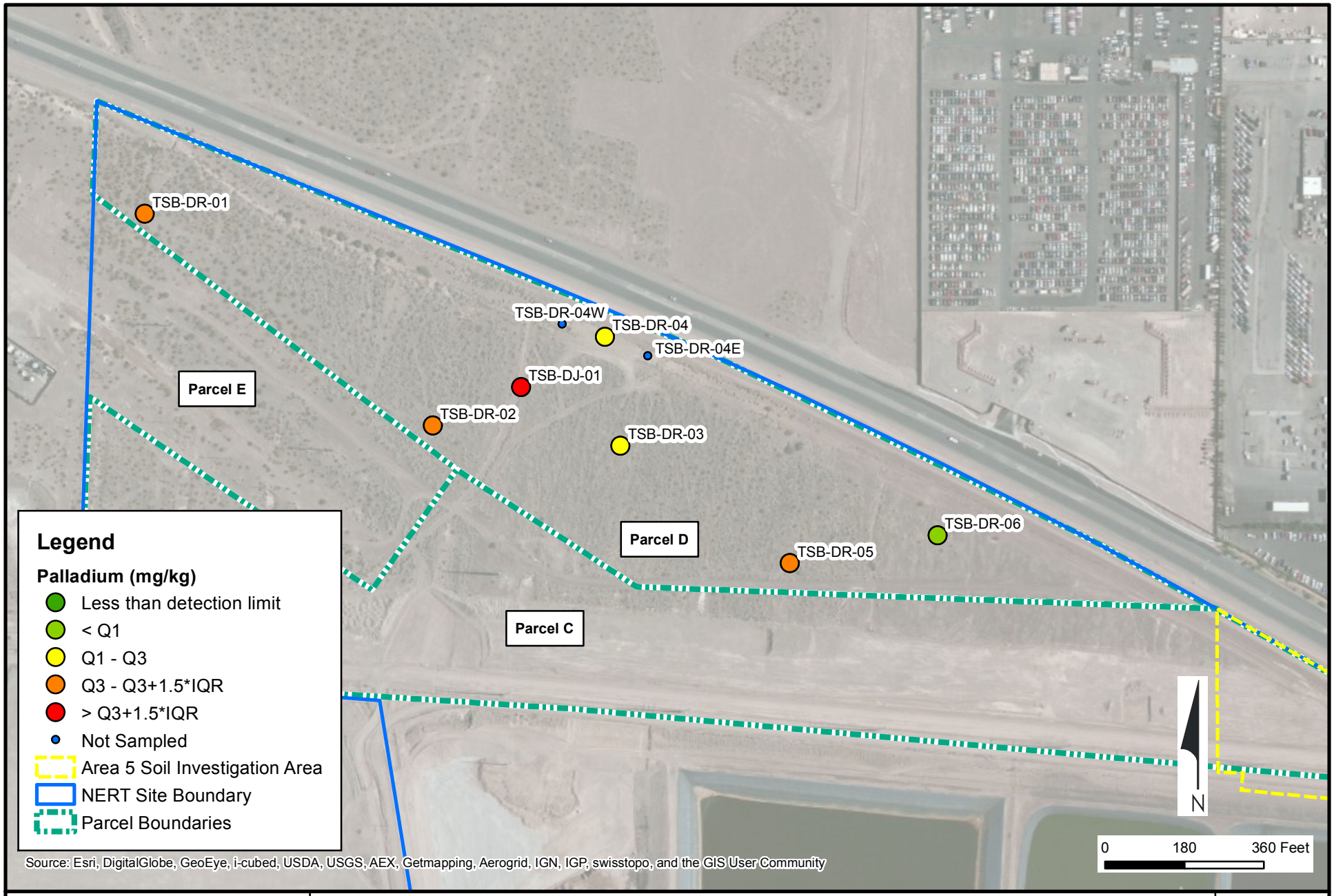

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel D - Palladium (mg/kg)

[Q1 = 0.258, Q3 = 0.373, Q3+1.5*IQR = 0.545]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-26**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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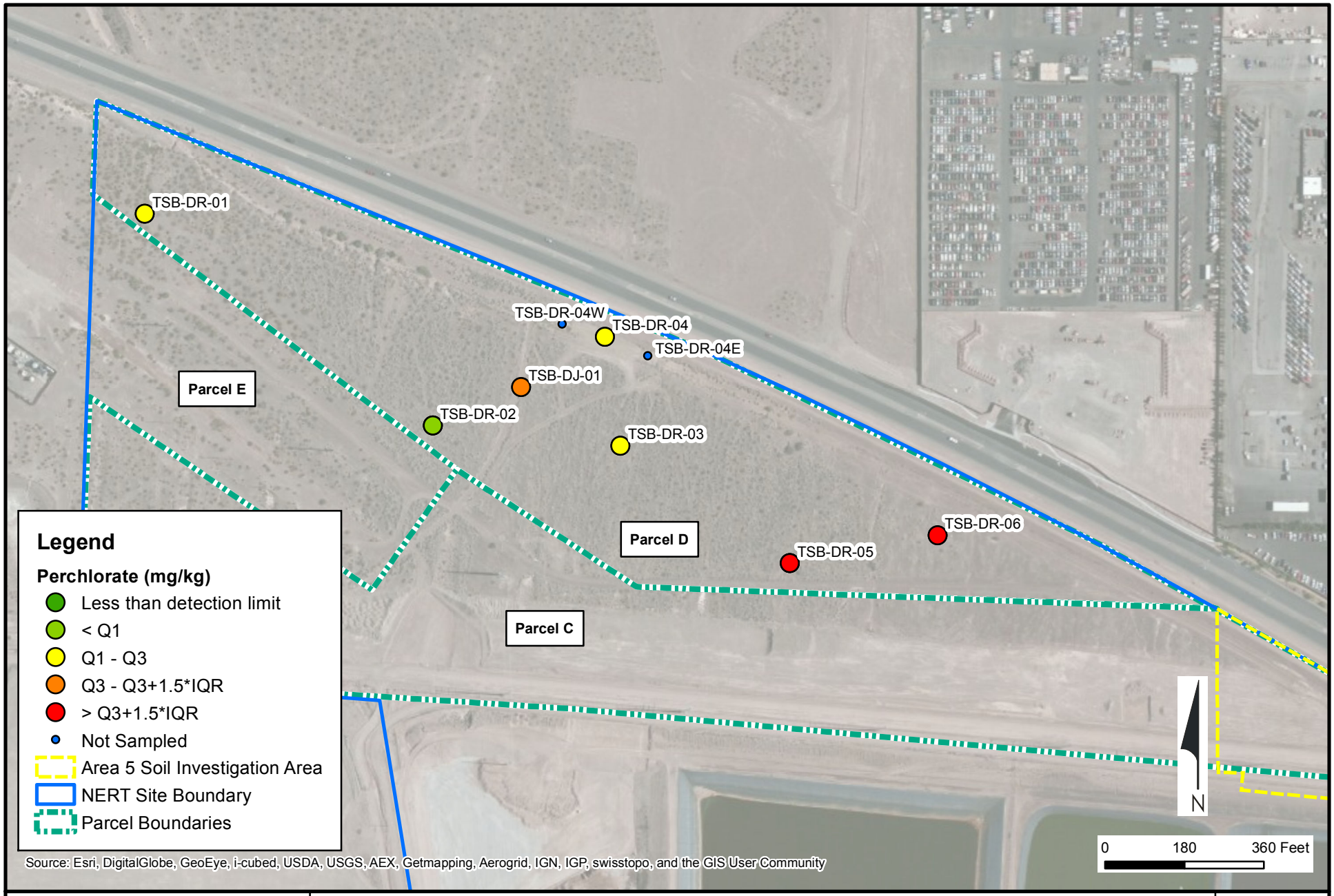

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel D - Perchlorate (mg/kg)

[Q1 = 0.0995, Q3 = 1.09, Q3+1.5*IQR = 2.58]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-27**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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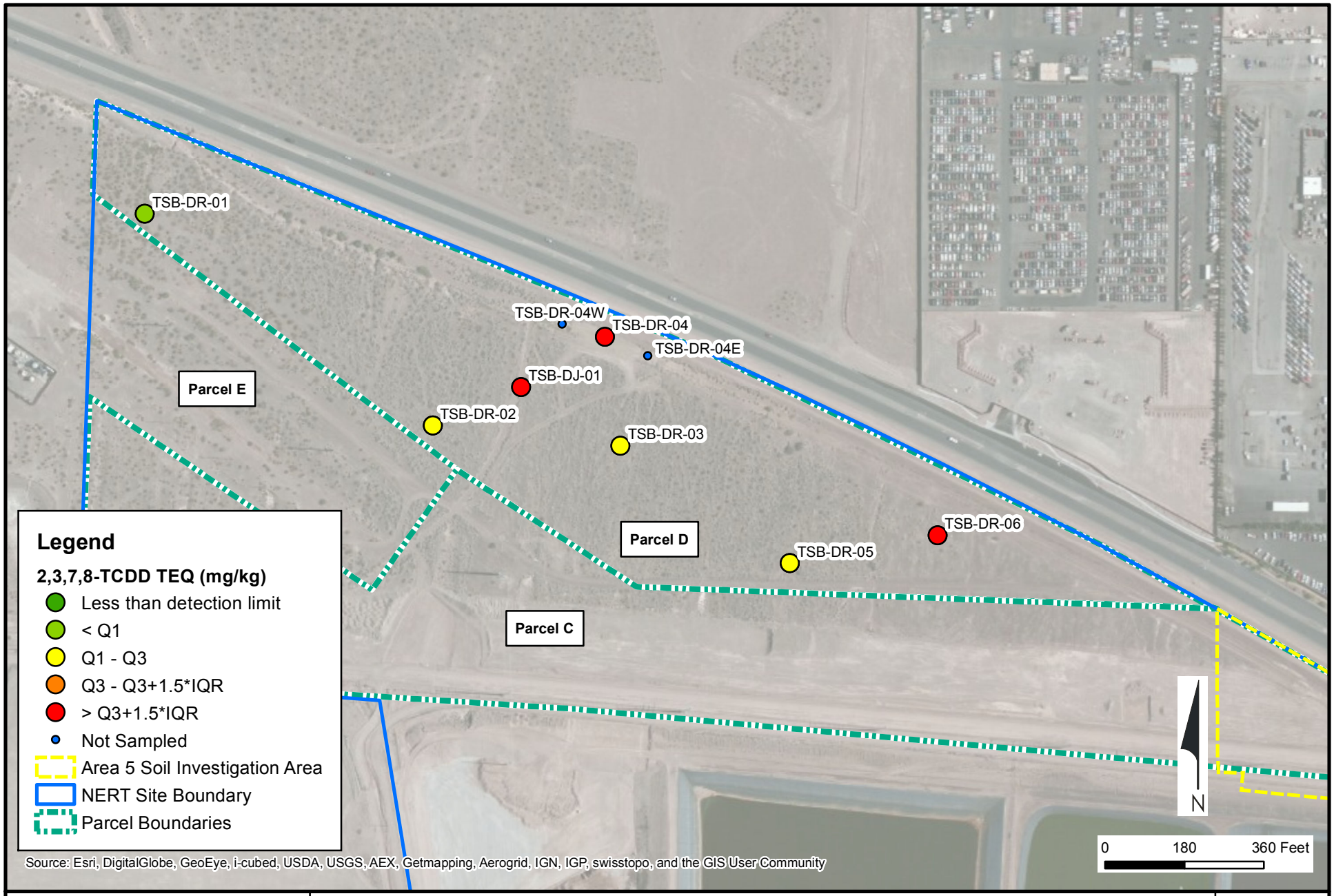

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel D - 2,3,7,8-TCDD TEQ (mg/kg)

[Q1 = 0.0000157, Q3 = 0.000143, Q3+1.5*IQR = 0.000333]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-28**

Drafter: YZ Date: 6/20/2017 Contract Number: 21-41400A Approved: Revised:

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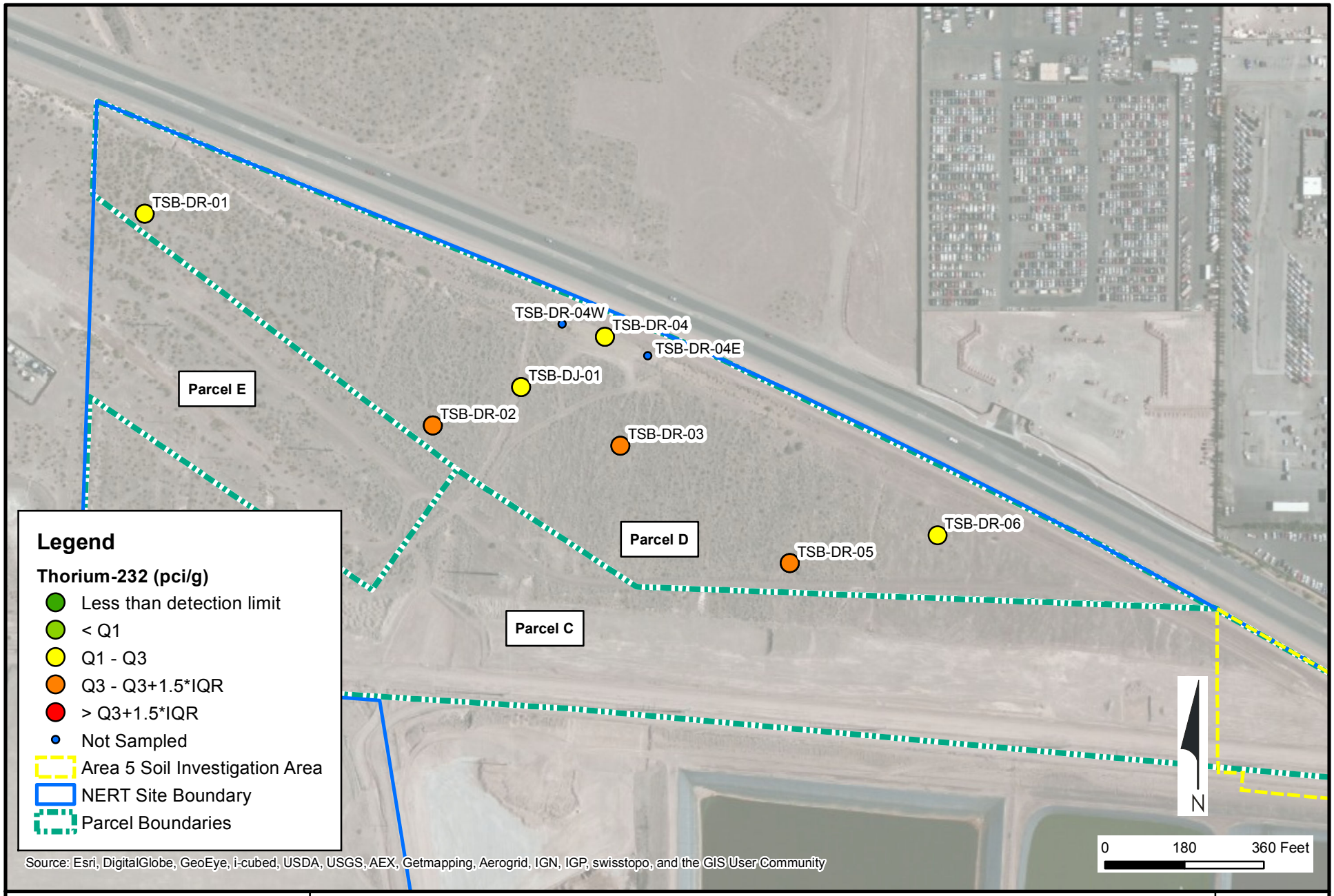

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel D - Thorium-232 (pci/g)

[Q1 = 1.33, Q3 = 1.56, Q3+1.5*IQR = 1.69]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-29**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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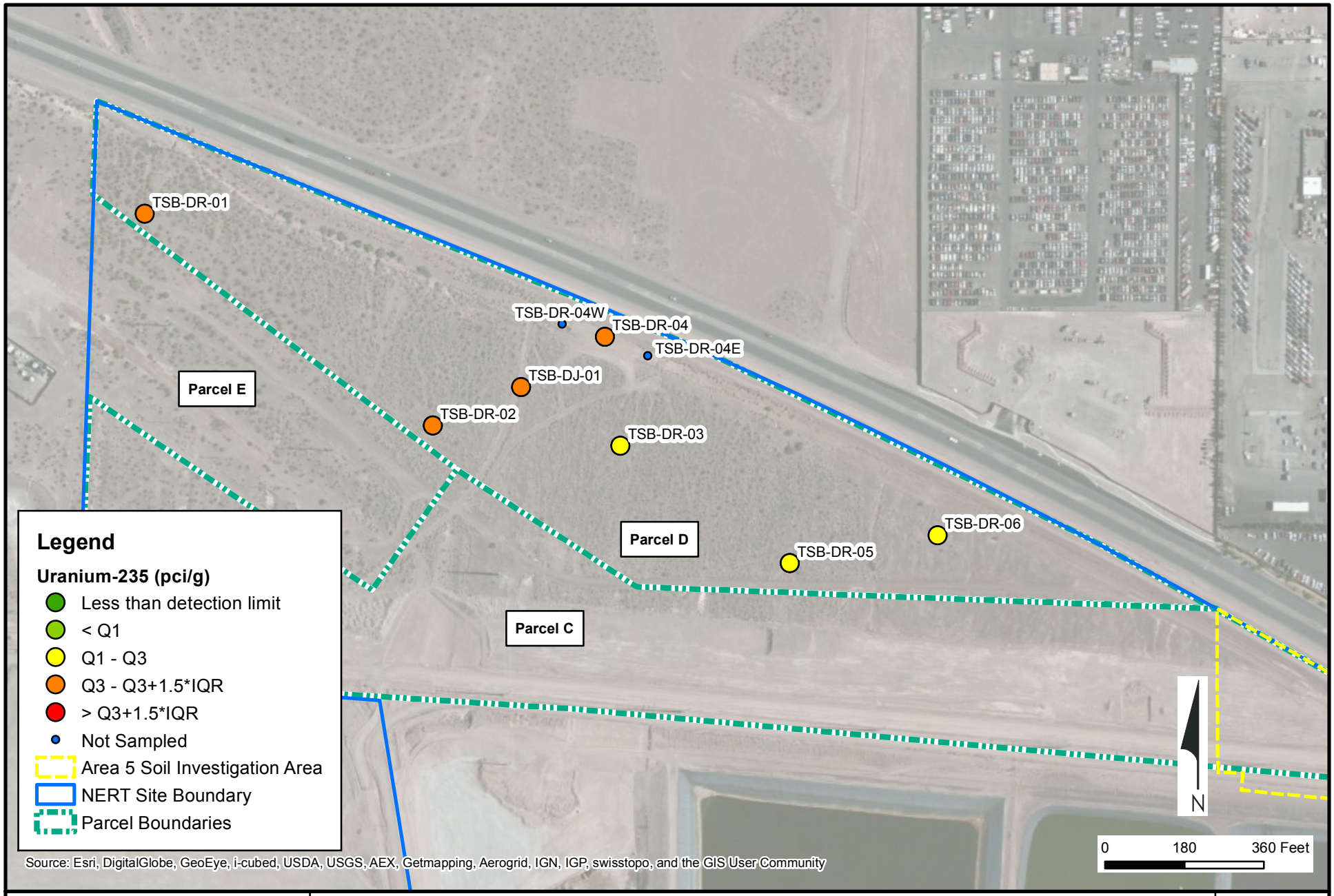

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel D - Uranium-235 (pci/g)

[Q1 = 0.0284, Q3 = 0.0544, Q3+1.5*IQR = 0.0704]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-30**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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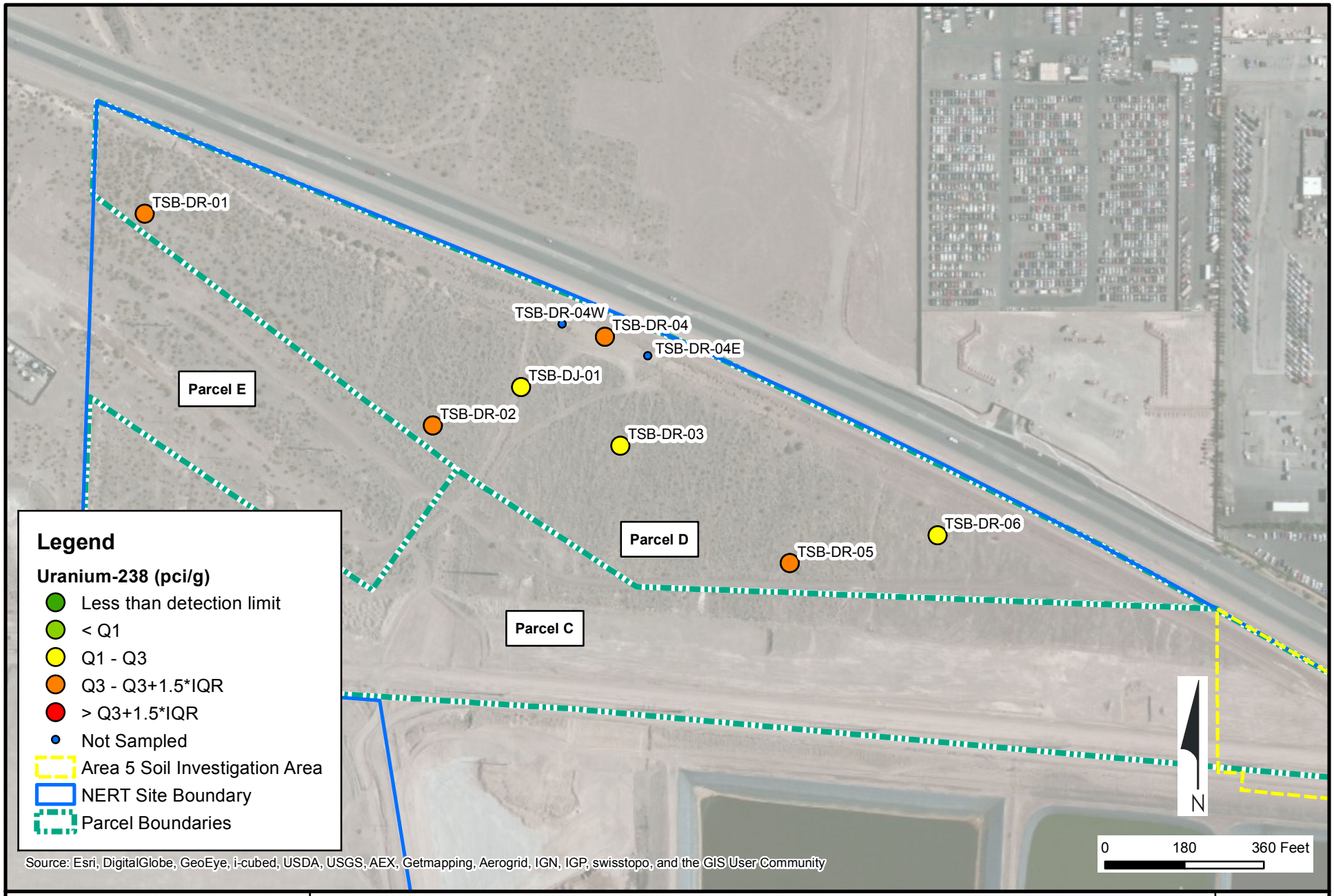

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel D - Uranium-238 (pci/g)

[Q1 = 0.925, Q3 = 1.23, Q3+1.5*IQR = 1.61]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-31**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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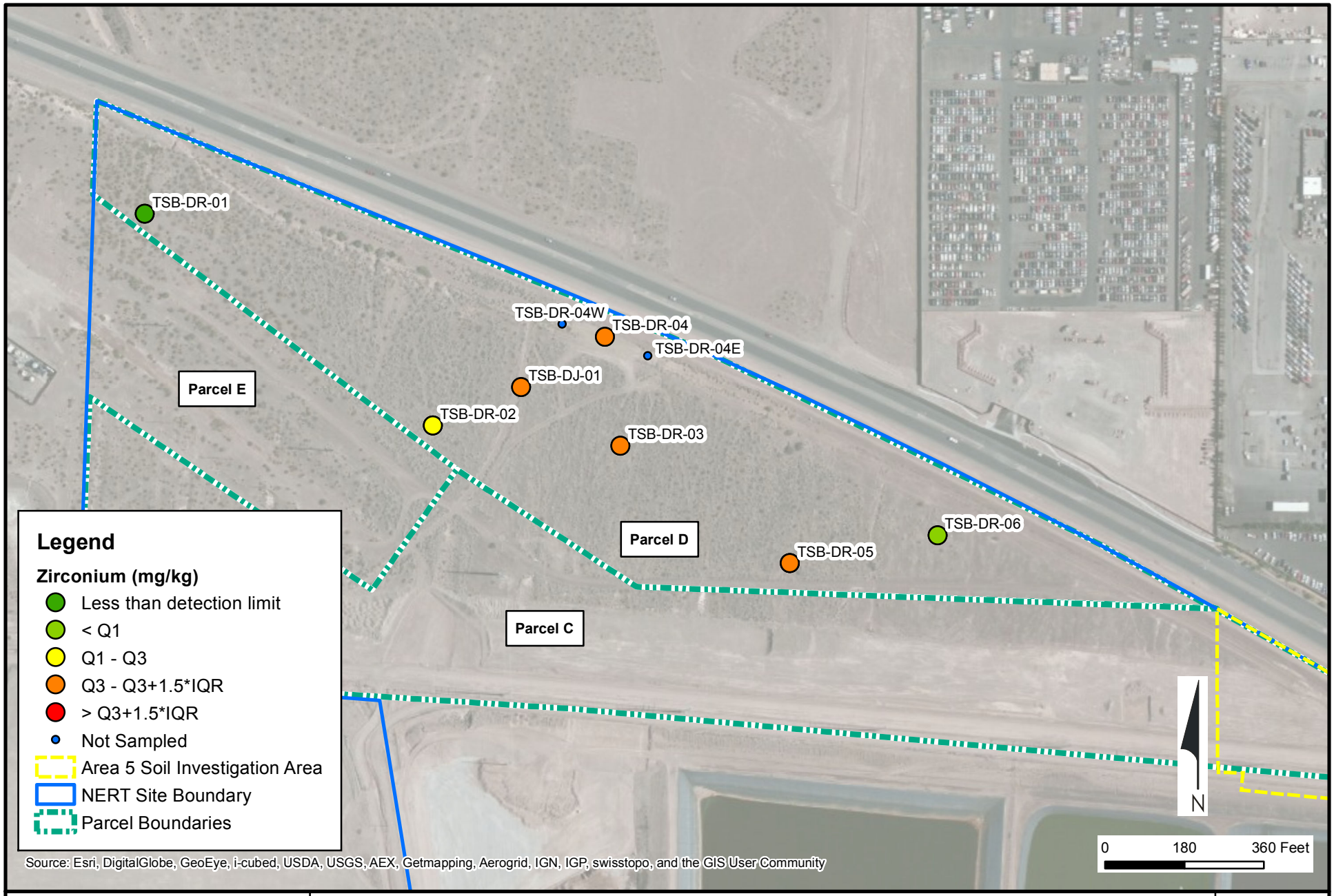

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel D - Zirconium (mg/kg)

[Q1 = 14, Q3 = 22.8, Q3+1.5*IQR = 28.2]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-32**

Drafter:	YZ	Date:	6/20/2017	Contract Number:	21-41400A	Approved:	Revised:

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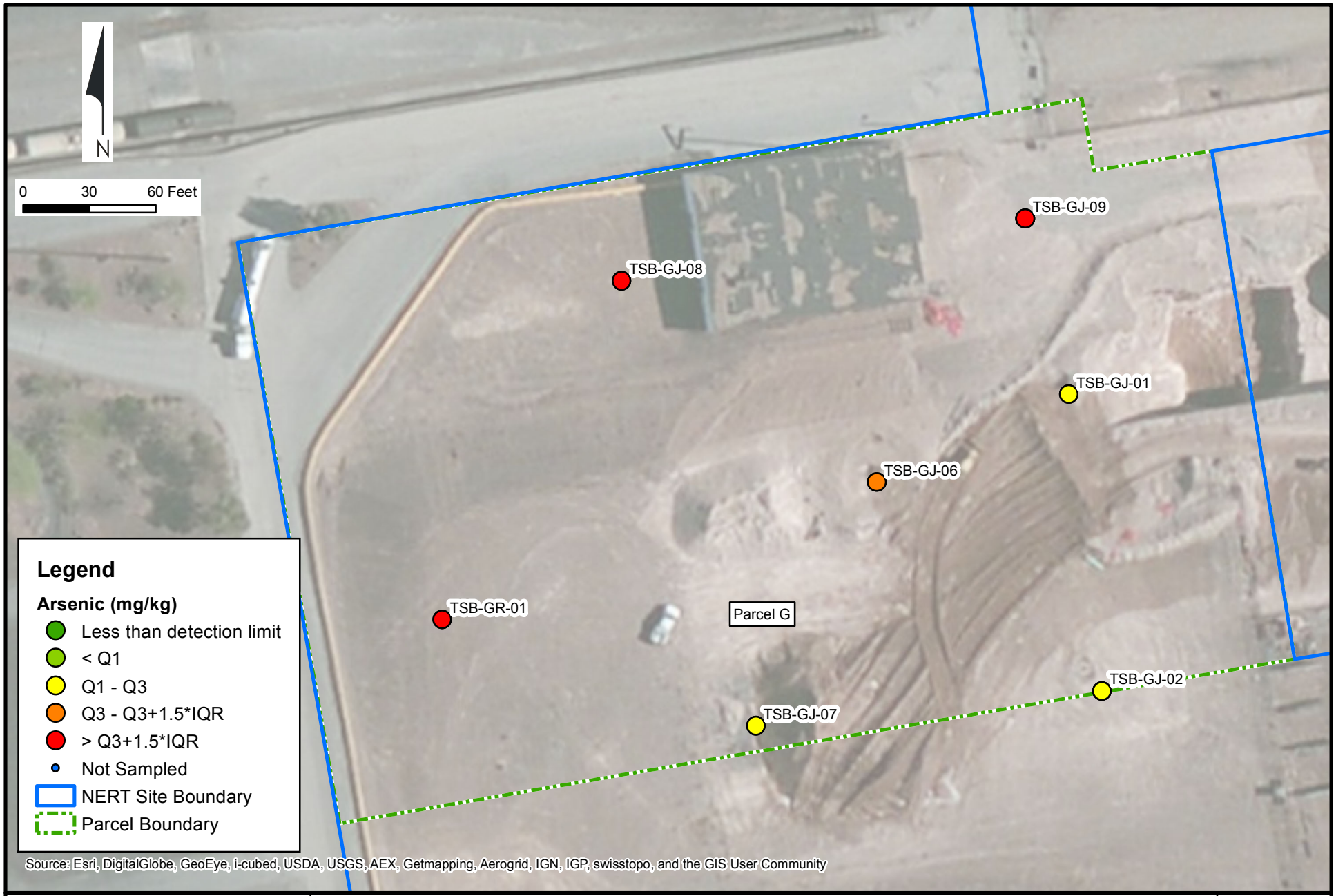

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - Arsenic (mg/kg)

[Q1 = 3.13, Q3 = 3.65, Q3+1.5*IQR = 4.44]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-33**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

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RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - Benzo(a)pyrene Equivalent (mg/kg)

[Q1 = 0.0212, Q3 = 0.0385, Q3+1.5*IQR = 0.0644]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-34**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

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RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - Beryllium (mg/kg)

[Q1 = 0.503, Q3 = 0.57, Q3+1.5*IQR = 0.65]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-35**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

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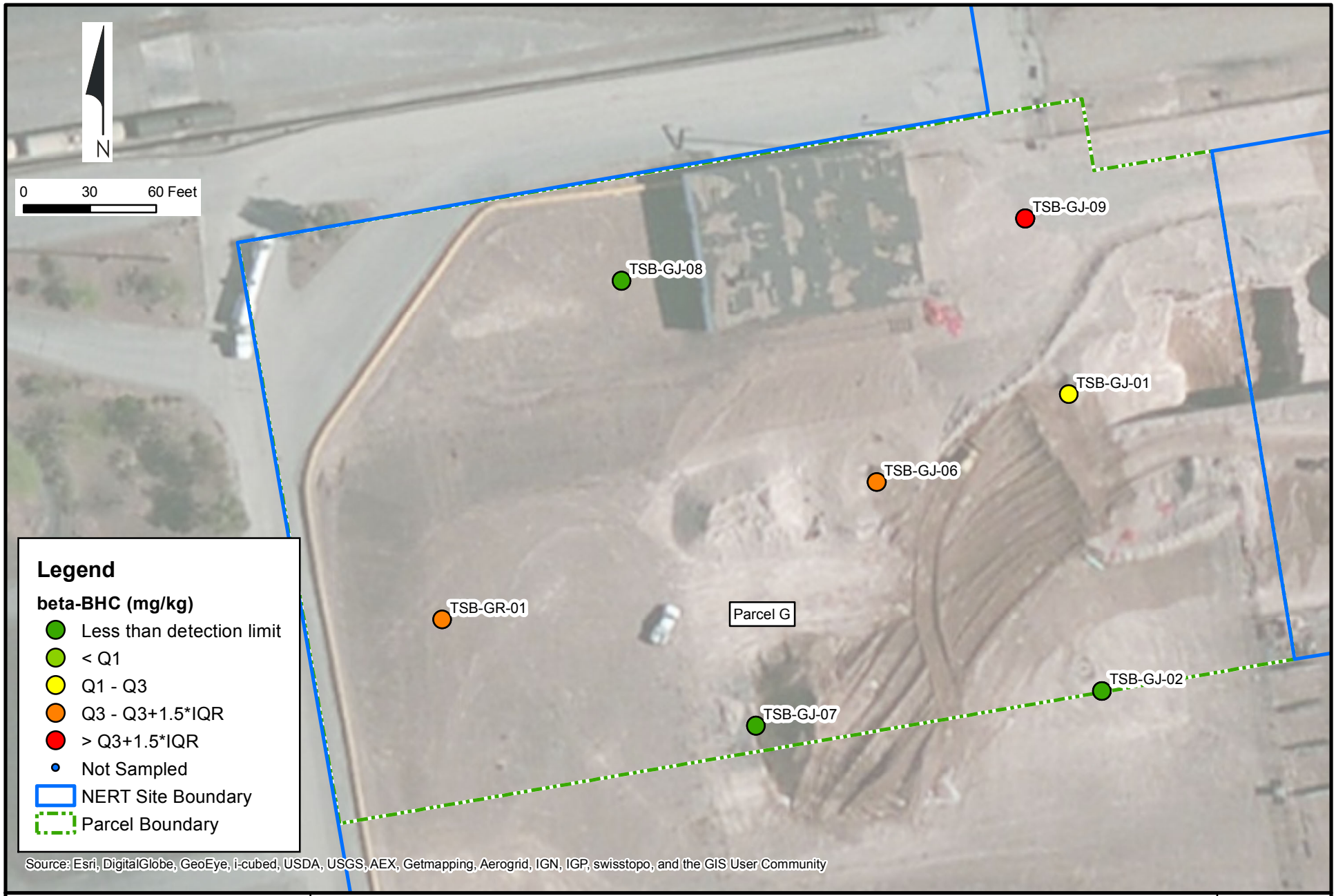

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - beta-BHC (mg/kg)

[Q1 = 0.000345, Q3 = 0.0123, Q3+1.5*IQR = 0.0301]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-36**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

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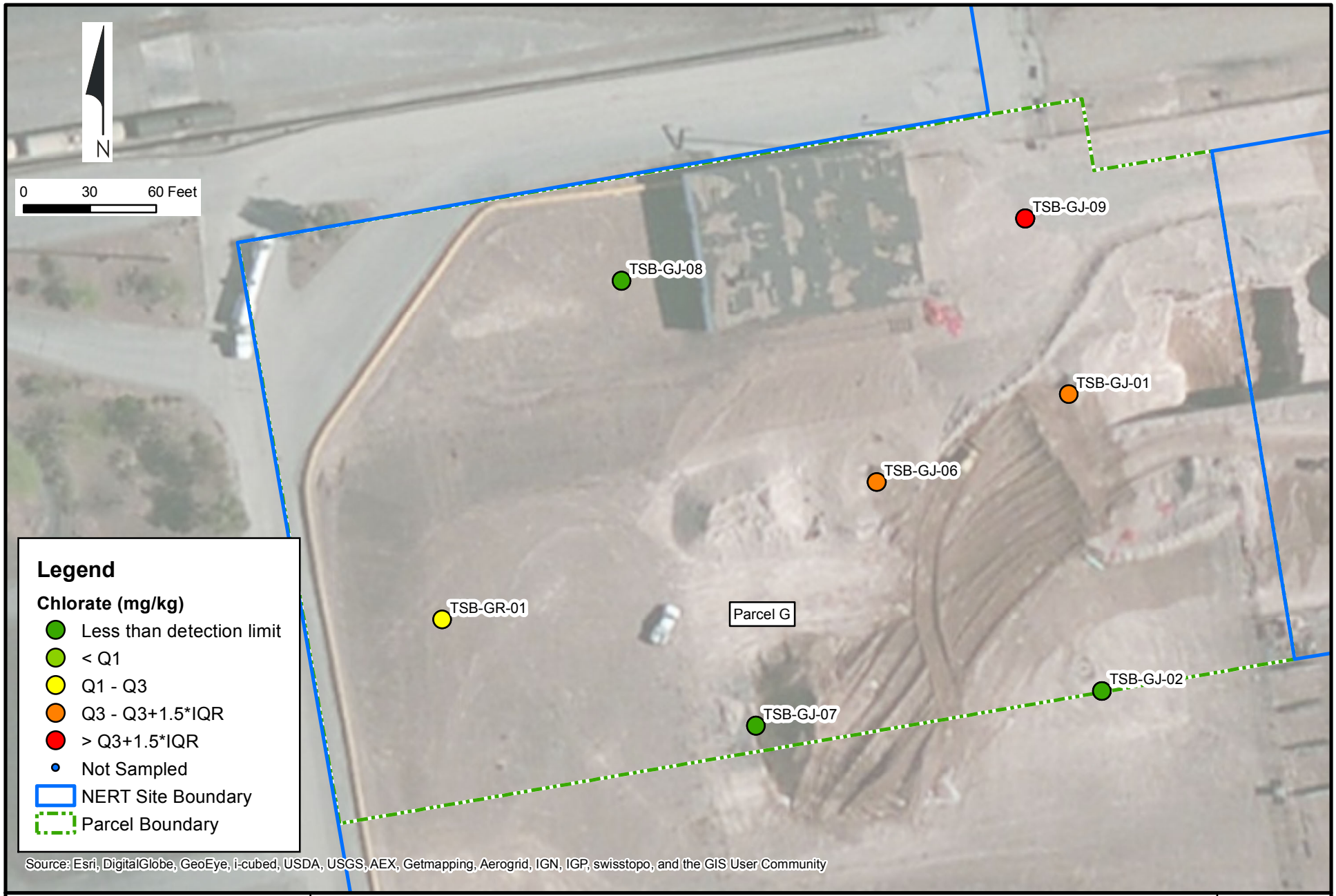

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - Chlorate (mg/kg)

[Q1 = 1, Q3 = 8.38, Q3+1.5*IQR = 19.4]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-37**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

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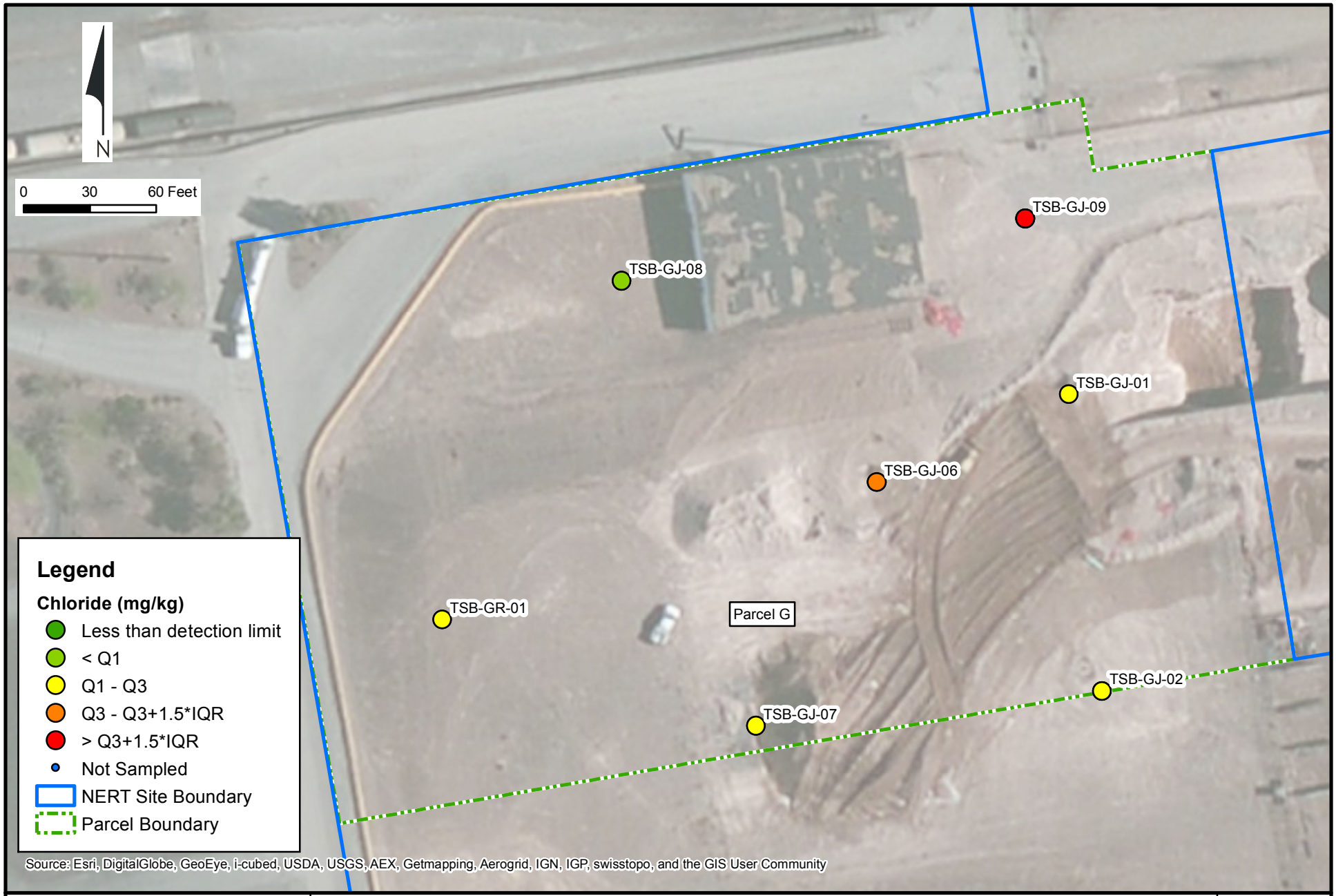

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - Chloride (mg/kg)

[Q1 = 98.9, Q3 = 874, Q3+1.5*IQR = 2040]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-38**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

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RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - Chromium (total) (mg/kg)

[Q1 = 10.2, Q3 = 11.2, Q3+1.5*IQR = 11.8]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-39**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

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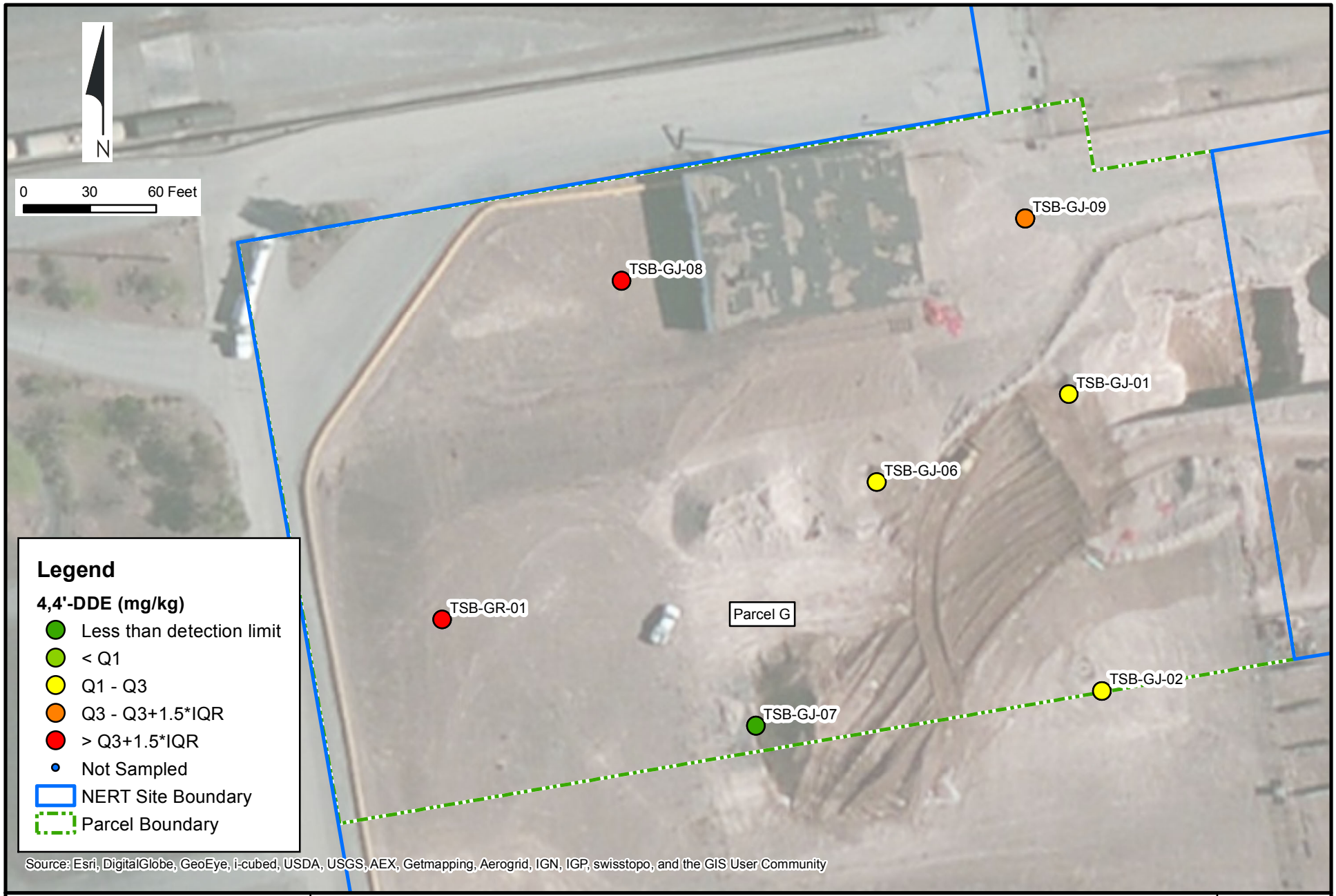

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - 4,4'-DDE (mg/kg)

[Q1 = 0.000252, Q3 = 0.0145, Q3+1.5*IQR = 0.0359]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-40**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

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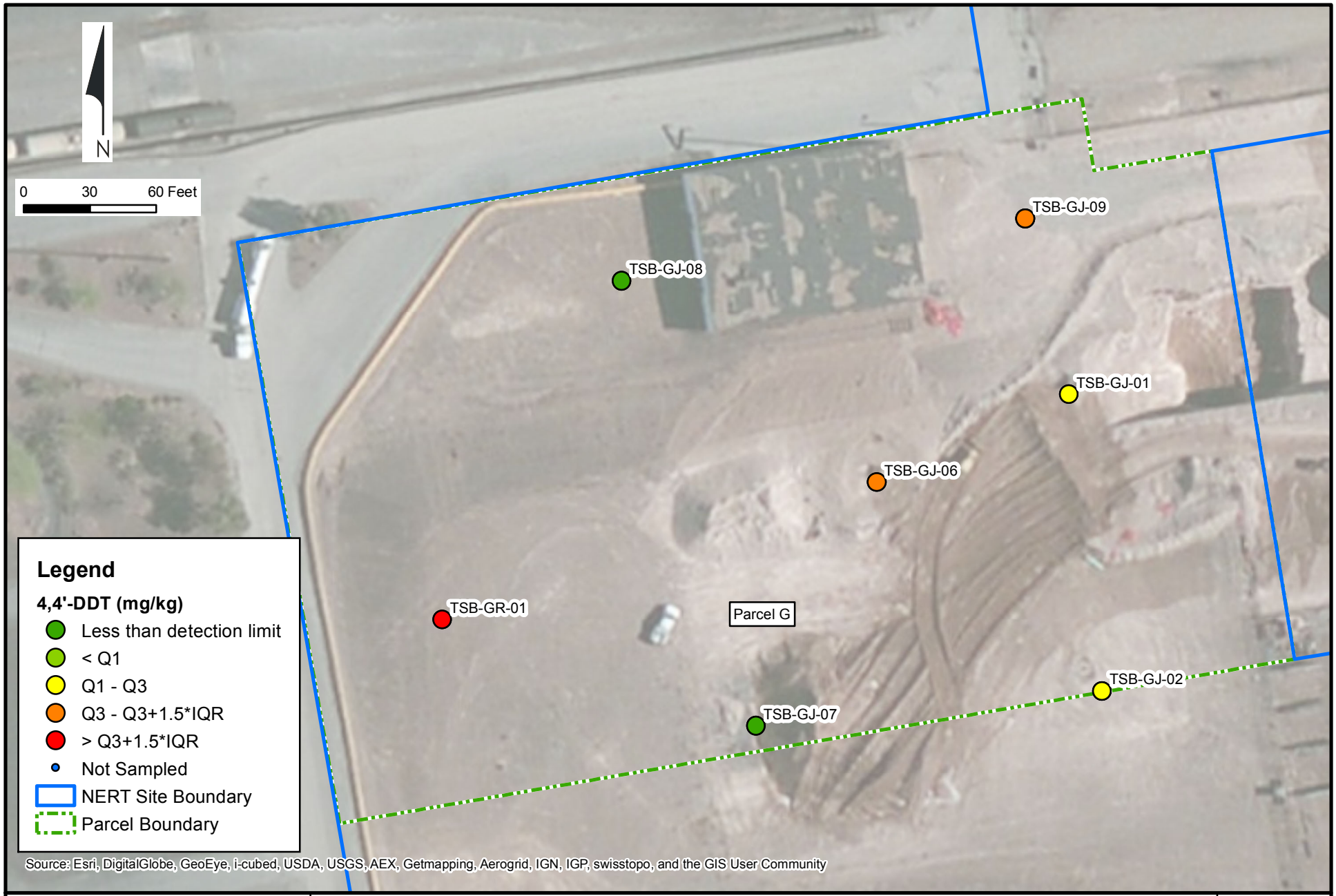

RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - 4,4'-DDT (mg/kg)

[Q1 = 0.000427, Q3 = 0.0155, Q3+1.5*IQR = 0.0381]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-41**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

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RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - Palladium (mg/kg)

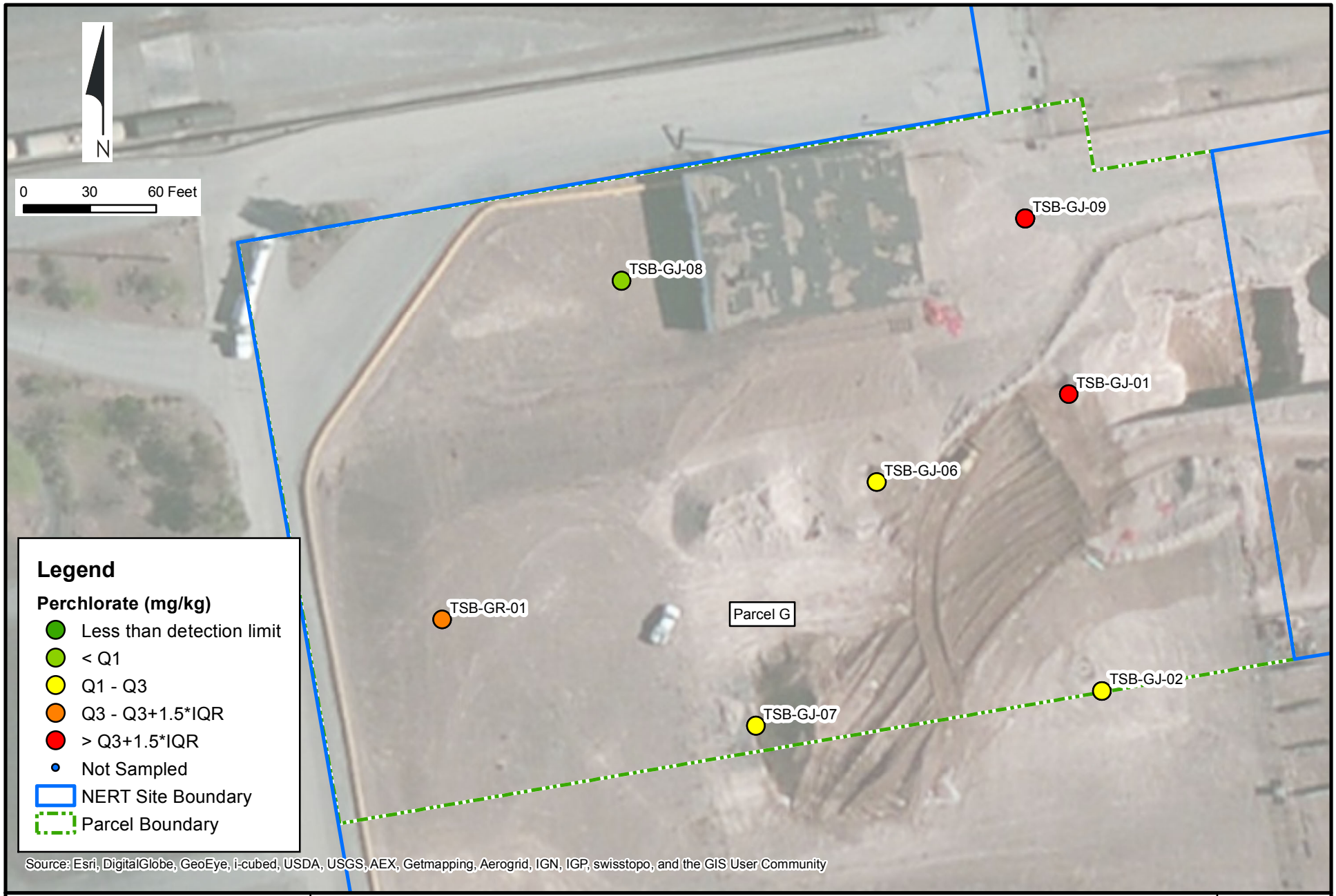
[Q1 = 0.34, Q3 = 0.525, Q3+1.5*IQR = 0.79]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-42**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\GIS\COPCmap\201705\Spatial_Quartile_ParcelG_letter.mxd



RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - Perchlorate (mg/kg)

[Q1 = 0.662, Q3 = 5.65, Q3+1.5*IQR = 13.1]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-43**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

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RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - 2,3,7,8-TCDD TEQ (mg/kg)

[Q1 = 0.00000192, Q3 = 0.001, Q3+1.5*IQR = 0.00251]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-44**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

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RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - Thorium-232 (pci/g)

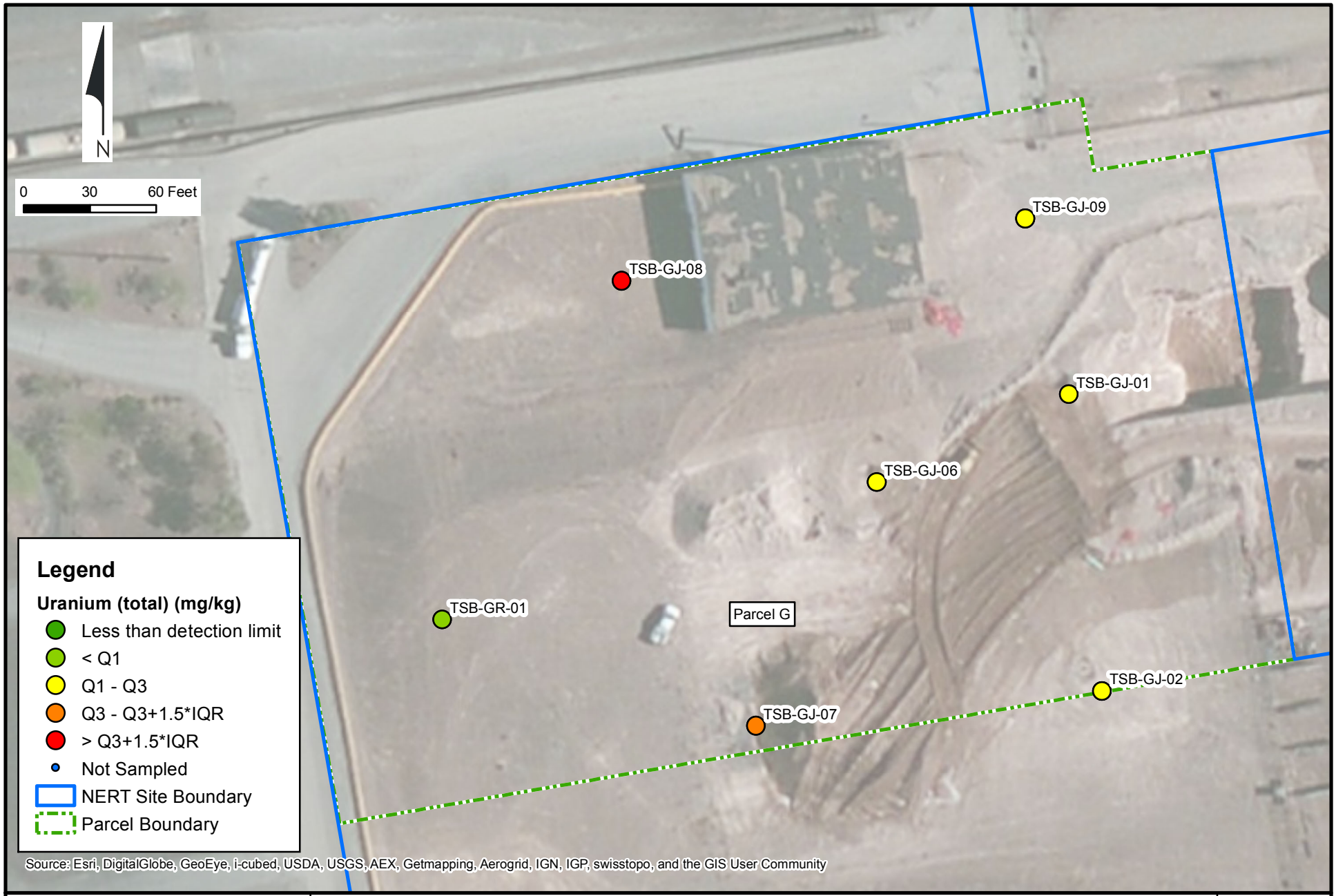
[Q1 = 1.41, Q3 = 1.75, Q3+1.5*IQR = 1.97]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-45**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\GIS\COPCmap\201705\Spatial_Quartile_ParcelG_letter.mxd



RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - Uranium (total) (mg/kg)

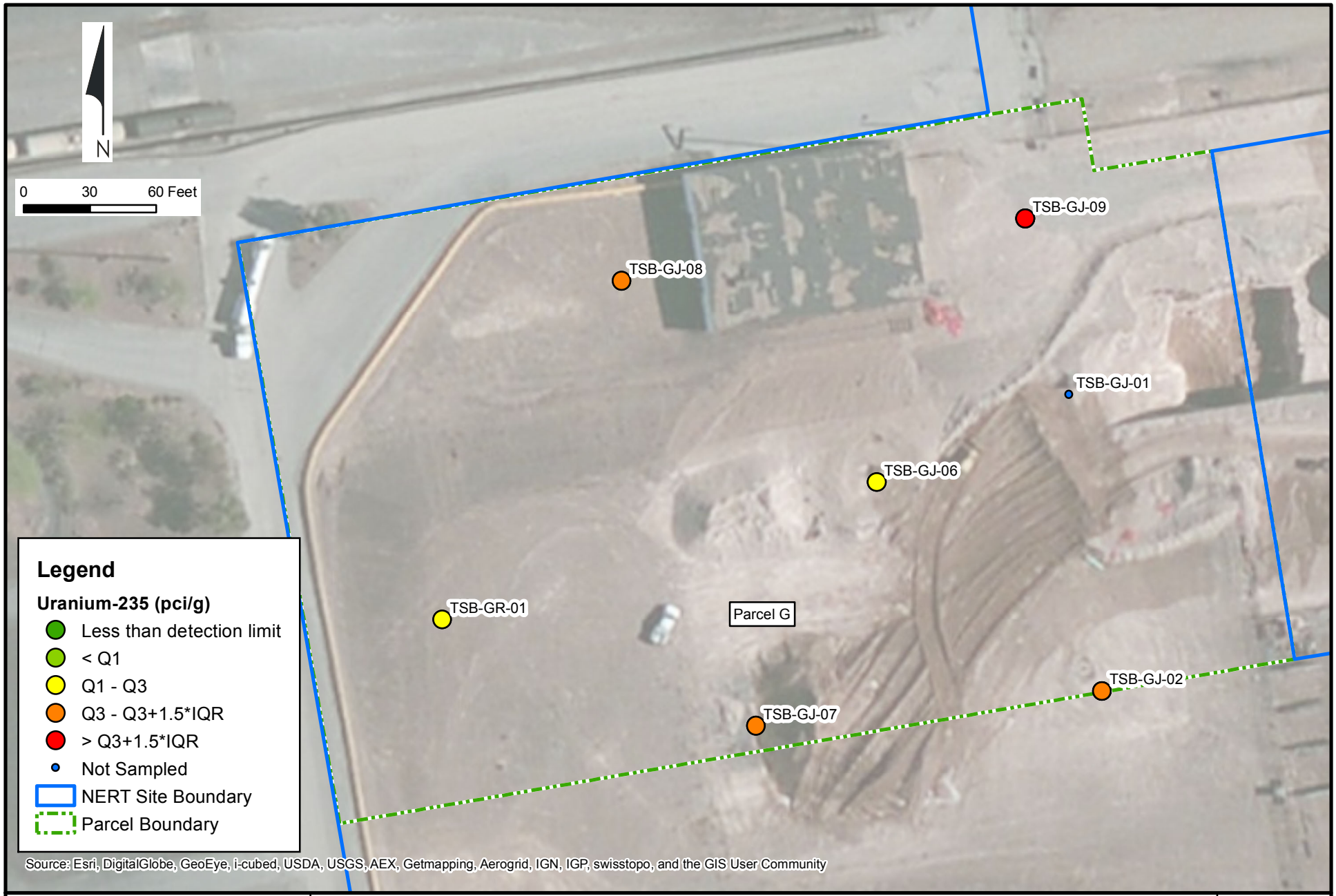
[Q1 = 1.08, Q3 = 1.5, Q3+1.5*IQR = 2.14]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-46**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

Path: H:\LePetomane\NERT\Risk Assessment-Human Health\GIS\COPCmap\201705\Spatial_Quartile_ParcelG_letter.mxd



RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - Uranium-235 (pci/g)

[Q1 = 0.0495, Q3 = 0.076, Q3+1.5*IQR = 0.116]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-47**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

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RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - Uranium-238 (pci/g)

[Q1 = 0.942, Q3 = 1.28, Q3+1.5*IQR = 1.55]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-48**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

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RAMBOLL ENVIRON

Spatial Quartile Plot for Parcel G - Zirconium (mg/kg)

[Q1 = 19.6, Q3 = 24.6, Q3+1.5*IQR = 26.2]

Nevada Environmental Response Trust Site; Henderson, Nevada

Figure **J-49**

Drafter:	RS	Date:	6/27/2017	Contract Number:	21-41400A	Approved:	Revised:

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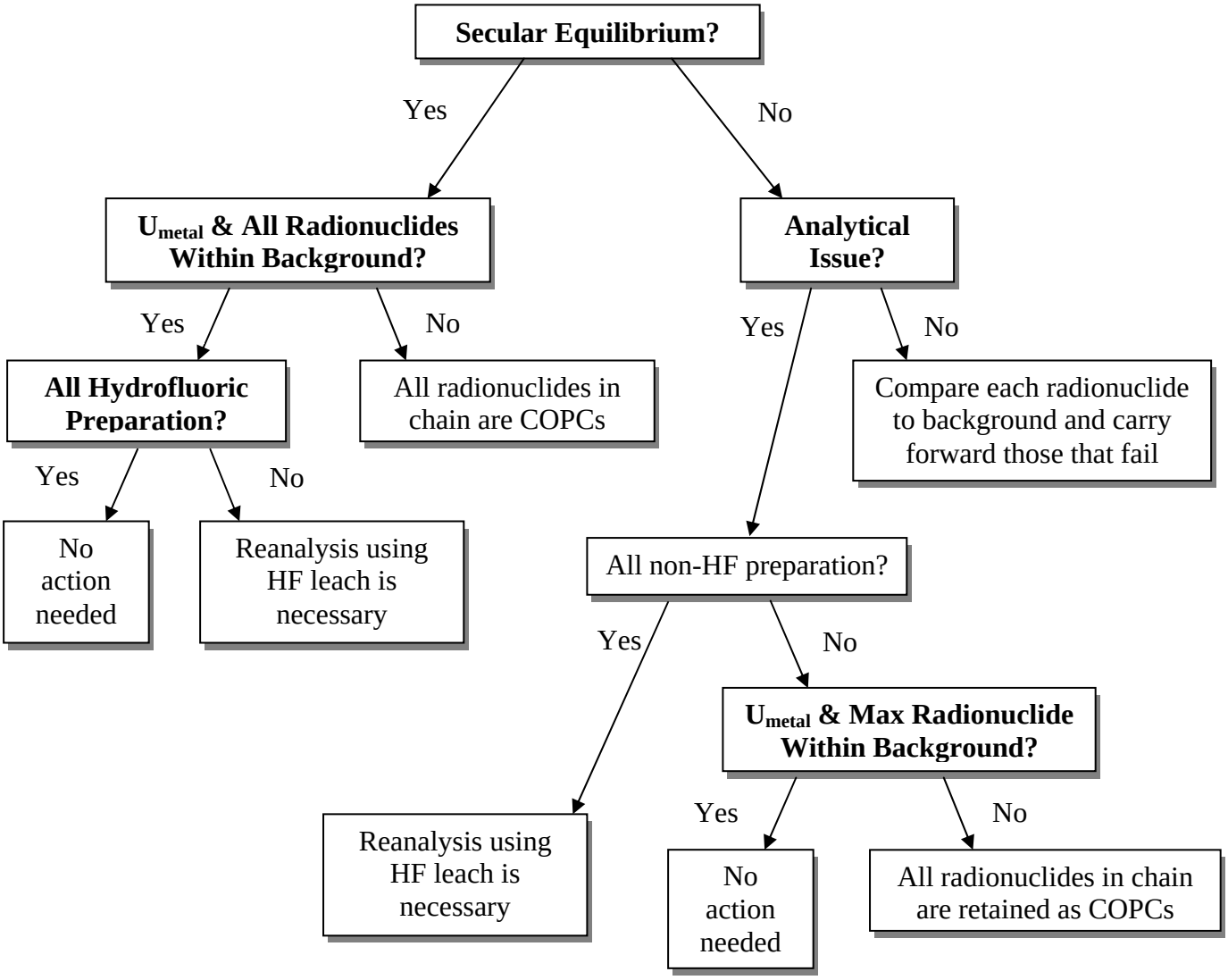
APPENDIX K
SOIL GAS FIELD SAMPLING DATA FOR PARCELS C, D, AND G (CD)

APPENDIX L
DATA VALIDATION SUMMARY REPORTS AND TABLES - SOIL GAS (CD)

APPENDIX M
GROUNDWATER FIELD SAMPLING DATA FOR PARCELS C, D, AND G (CD)

APPENDIX N
DATA VALIDATION SUMMARY REPORTS AND TABLES – GROUNDWATER (CD)

APPENDIX O
NDEP FLOWCHART FOR RADIONUCLIDE DATA USABILITY



COPCs indicates "chemicals of potential concern".
U_{metal} denotes metallic uranium.

Figure 1. Flowchart describing the decision framework for radionuclide historical dataset usability for Sites within the BMI Complex and Common Areas, Henderson, NV.

APPENDIX P
PROUCL OUTPUT FILES (CD)

APPENDIX Q
RISK ASSESSMENT CALCULATION SPREADSHEETS AND SUPPORTING DOCUMENTATION (CD)

APPENDIX Q-1
RISK ASSESSMENT CALCULATION SPREADSHEETS AND SUPPORTING DOCUMENTATION – SOIL (CD)

APPENDIX Q-2
RISK ASSESSMENT CALCULATION SPREADSHEETS AND SUPPORTING DOCUMENTATION - SOIL GAS (CD)

APPENDIX Q-3
RISK ASSESSMENT CALCULATION SPREADSHEETS AND SUPPORTING DOCUMENTATION – GROUNDWATER (CD)

APPENDIX R
SOIL PROPERTY SAMPLING LOCATIONS AND BORING LOGS (CD)