Basic Remediation COMPANY

# TECHNICAL MEMORANDUM

**To** BMI Compliance Coordinator (NDEP)

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**Subject:** Technical Memorandum – Data Review for the Warm Springs Road Right-of-Way Investigation, BMI Common Areas (Eastside), Clark County, Nevada

## 1.0 Introduction

The objective of this Technical Memorandum is to present the results of investigations Basic Remediation Company (BRC) has performed for the Warm Springs Road right-of way (ROW; the Site; Figure 1) within the BMI Common Areas in Clark County, Nevada. The Site represents a continuation of Warm Springs Road that extends approximately 600 feet east of Boulder Highway, and bisects the Southern RIBs sub-area. On October 6, 1998, the Nevada Division of Environmental Protection (NDEP) granted a No Further Action Determination (NFAD) for the segment of Warm Springs Road that extends from Boulder Highway to Pabco Road (see Figure 2 for the location of the NFAD for the existing ROW). Therefore, the focus of this technical memorandum is on the portion of the Warm Springs Road ROW that extends east of Pabco Road (that is, that portion of the ROW not covered by the previous NFAD).

This revision of the report, Revision 1, incorporates comments received from the NDEP, dated May 12, 2010, on the May 6, 2010 version of the report. The NDEP comments and BRC's response to these comments are included in Attachment A. Also included in Attachment A is a redline/strikeout version of the text showing the revisions from both the May 6, 2010 version of the report.

The Site is adjacent to Eastside lands located to the north of the Site that contain (1) unlined wastewater effluent evaporation/infiltration ponds that were built and into which various plant wastewaters were discharged from 1942 through 1976; and (2) conveyance ditches associated

with the historical effluent discharge (primarily unlined). One of these ditches transects the western-most edge of the Site, beneath the existing Warm Springs Road. The eastern half of the Site traverses an area formerly used by the City of Henderson as Rapid Infiltration Basins (RIBs), which were in use from approximately 1992 to 2002 by the City of Henderson for municipal wastewater treatment.

Based on the data collected, an NFAD is being sought from the NDEP in order to support the construction of a road on this Site. No residential or commercial use is planned, and no structures will be built on the Site. This technical memorandum, which has been prepared in support of this objective, includes the following primary tasks:

- Conceptual site model (CSM);
- Data usability evaluation;
- Summary of data, including evaluation to comparison levels;
- Screening-level health risk assessment, including statistical comparison to background concentrations; and
- Data quality assessment.

Each of these tasks is discussed below.

## 2.0 Conceptual Site Model

The CSM is used to describe relationships between chemicals and potentially exposed human receptor populations, thereby delineating the relationships between the suspected sources of chemicals identified at the Site, the mechanisms by which the chemicals might be released and transported in the environment, and the means by which the receptors could come in contact with the chemicals. The CSM provides a basis for defining data quality objectives and developing exposure scenarios. Additional information for the Site than that presented below is provided in the NDEP-approved *Sampling and Analysis Plan for the Southern RIBs Sub-Area* (SAP; BRC and ERM 2008; approved by NDEP on September 11, 2008).[1]

[1] A sampling and analysis plan was not developed specifically for the Site. This Site was originally part of the Southern RIBs sub-area, but schedule constraints necessitated pursuing an NFAD for the Site prior to the remainder of the Southern RIBs sub-area. However, many of the samples for the Southern RIBs sub-area fall within the footprint of the Site. These samples are used in this Technical Memorandum.

The Site comprises approximately 15.6 acres of undeveloped land with very little surface relief that is gently sloping to the northwest.[2] As noted above, it is part of an area referred to as the Southern RIBs sub-area. It is located in close proximity to waste conveyance and disposal facilities historically operated by the BMI Complex, including the Beta Ditch and TIMET Ponds, and crosses the municipal wastewater infiltration ponds formerly operated by the City of Henderson (the "Southern RIBs;" see Figure 2). While the Southern RIBs have not been decommissioned, they have not been used since May 2005.

Land use in the vicinity is mixed, ranging from industrial in the BMI Complex itself to light industrial at the margins of the Complex to commercial and residential on the periphery of the Southern RIBs sub-area. Lands surrounding the BMI Complex are zoned commercial and residential, and are mostly developed. Other structures are also located in proximity to the Site, including the St. Rose of Lima Hospital, several shopping centers, a mobile home park, and an apartment complex.

The CSM considers current and potential future land-use conditions. Currently, the Site is undeveloped. Current receptors that may use the Site include on-site trespassers. Therefore, current exposures to native soils at the Site are likely to be minimal. In addition, exposures to future on-site workers will be much greater than current exposures. For example, future receptors include outdoor commercial/industrial workers, who are assumed to be exposed to soil at the Site for 225 days per year for 25 years which is much greater than any current exposures.

U.S. Environmental Protection Agency (USEPA 1989) guidance states that potential future land use should be considered in addition to current land use when evaluating the potential for human exposure at a site. Therefore, the CSM also considers other future land-uses. For example, the CSM includes the planned use of the Site for redevelopment into roadway for the future development of the Eastside property. The potentially exposed populations and their potential routes of exposure are presented in Figure 3.

## 2.1 Potential Source Areas

As discussed above potential sources of chemicals in Site soils include (1) nearby features associated with historical discharge of plant wastewater effluent (*i.e.*, unlined wastewater effluent evaporation/infiltration ponds and conveyance ditches); and (2) the former City of Henderson RIBs.

[2] Note that subsequent to the preparation of this report and issuance of the NFAD, a potential re-alignment of the Warm Springs Road ROW has been identified, due to development constraints on the original alignment. This potential re-alignment is shown on Figure 2.

### 2.2 Potential Human Exposure Scenarios

Given the planned development of the Site, potential human receptors include on-site construction workers and outdoor workers. Potential migration pathways, exposure pathways, and routes of exposure are shown on Figure 3. Although several potential human receptors may occur on the Site in the future, the screening-level health risk assessment focuses on the outdoor commercial/industrial receptor (as defined in NDEP's *User's Guide and Background Technical Document for Nevada Division Of Environmental Protection (NDEP) Basic Comparison Levels (BCLs) for Human Health for the BMI Complex and Common Areas* [2010]). This receptor is considered to have the highest level of exposure at the Site. Other receptors generally have lower exposures, and thus lower risk estimates. Although there may be some exceptions to this, for example, several metals might generate construction worker risk estimates higher than those for outdoor commercial/industrial receptors, these cannot be evaluated in a screening level process because of the lack of available BCLs. However, given the nature of the Site and potential exposures, it is unlikely that the screening-level health risk assessment underestimates Site risks. This issue is discussed further in Section 6.7. Therefore, risk estimates generated for outdoor commercial/industrial receptors are considered protective of other potential receptors at the Site.

One exception to this is construction worker exposures to asbestos. This is because asbestos risks are only evaluated for the dust inhalation exposure pathway, with construction activities generating more dust than under normal circumstances. Therefore, the screening-level health risk assessment also evaluates the construction worker receptor for asbestos exposures, using the spreadsheet NDEP has developed for assessing asbestos risks (NDEP 2009a).

## 3.0 Data Usability Evaluation

The primary objective of the data review and usability evaluation was to identify appropriate data for use in the screening-level health risk assessment. The analytical data were reviewed for applicability and usability following procedures in the *Guidance for Data Usability in Risk Assessment (Part A)* (USEPA 1992a) and USEPA (1989) and NDEP's *Data Usability Guidance for the BMI Complex and Common Areas* (NDEP 2008). A quality assurance/quality control (QA/QC) review of the analytical results was conducted during the sampling events. According to the USEPA Data Usability Guidance, there are six principal evaluation criteria by which data are judged for usability in risk assessment. The six criteria are:

- reports to risk assessor (availability of information associated with Site data)
- documentation;

- data sources;
- analytical methods and detection limits;
- data review; and
- data quality indicators (DQIs), including precision, accuracy, representativeness, comparability, and completeness.

A summary of these six criteria for determining data usability is provided below. In addition to the six principal evaluation criteria, NDEP's Data Usability Guidance includes a step for data usability analysis, which is discussed after these six USEPA evaluation criteria. Data usability evaluation tables are provided electronically in Attachment B (on the enclosed CD in Attachment C).

### 3.1 Criterion I – Availability of Information Associated with Site Data

The usability analysis of the site characterization data requires the availability of sufficient data for review. The required information is available from documentation associated with the Site data and data collection efforts. Data have been validated per the NDEP-approved *Data Validation Summary Report, Southern RIBs Sub-Area Soil Investigations October-November 2008; February 2009; September 2009 (Dataset 53)* (DVSR; BRC and ERM 2010; approved by NDEP on March 11, 2010). Several TO-15 selective ion mode (SIM) results were initially rejected due to an invalid initial calibration. Attachment D contains memos from Neptune and Company and Dr. Steve Hoyt of Environmental Analytical Service, discussing this issue. The laboratory revised the dataset using a different internal standard which passed quality control parameters. A DVSR for the re-validated surface flux data is currently being prepared as a separate deliverable. This revision of the report incorporates the revised surface flux dataset. The following lists the information sources and the availability of such information for the data usability process:

- A property description provided in the NDEP-approved SAP (BRC and ERM 2008) and Sections 1 and 2 identifies the location and features of the property, the characteristics of the vicinity, and contaminant transport mechanisms.
- A site map with sample locations is provided in Figure 2.
- Sampling design and procedures were provided in the NDEP-approved SAP (BRC and ERM 2008).

- Analytical methods and detection limits are provided on the enclosed CD in Attachment C.
- A complete data set is provided on the enclosed CD in Attachment C.
- Laboratory reports for all samples included in Site data set are provided in the NDEP-approved DVSR (BRC and ERM 2010).
- A narrative of qualified data is provided with each analytical data package, the laboratory provided a narrative of QA/QC procedures and results. These narratives are included as part of the NDEP-approved DVSR (BRC and ERM 2010).
- QC results are provided by the laboratory, including blanks, replicates, and spikes. The laboratory QC results are included as part of the NDEP-approved DVSR (BRC and ERM 2010).
- Data flags used by the laboratory were defined adequately as part of the NDEP-approved DVSR (BRC and ERM 2010).
- Electronic files containing the raw data made available by the laboratory are included as part of the NDEP-approved DVSR (BRC and ERM 2010).

## 3.2 Criterion II – Documentation Review

The objective of the documentation review is to confirm that the analytical results provided are associated with a specific sample location and collection procedure, using available documentation. For the purposes of this data usability analysis, the chain-of-custody forms prepared in the field were reviewed and compared to the analytical data results provided by the laboratory to ensure completeness of the data set as discussed in the DVSR (BRC and ERM 2010). Based on the documentation review, all samples analyzed by the laboratory were correlated to the correct geographic location at the property. The samples were collected in accordance with the SAP and Confirmation Sampling Plan (BRC and ERM 2008; BRC 2009), the standard operating procedures (SOPs) developed for the BMI Common Areas as provided in the Field Sampling and Standard Operating Procedures (FSSOP; BRC, ERM and MWH 2009). Field procedures included documentation of sample times, dates and locations, other sample specific information such as depth bgs were also recorded. Information from field forms generated during sample collection activities was imported into the project database.

Measurement of asbestos was conducted consistent with NDEP's *Technical Guidance for the Calculation of Asbestos-Related Risk in Soils* (2009a). The analytical data were reported in a format that provides adequate information for evaluation, including appropriate quality control

measures and acceptance criteria. Each laboratory report describes the analytical method used, provides results on a sample by sample basis along with sample quantitation limits (SQLs), and provides the results of appropriate quality control samples such as laboratory control spike samples, sample surrogates and internal standards, and matrix spike samples. All laboratory reports, except for asbestos, provided the documentation required by USEPA's Contract Laboratory Program (USEPA 2003a, 2004a,b) which includes chain of custody records, calibration data, QC results for blanks, duplicates, and spike samples from the field and laboratory, and all supporting raw data generated during sample analysis. Reported sample analysis results were imported into the project database. The recommended method for providing asbestos data which are useful for risk assessment purposes was performed by EMSL Analytical Inc in Westmont, New Jersey. This laboratory is not currently certified in the State of Nevada, but has California and national accreditation for asbestos analysis. Because many of the QC procedures associated with other analyses do not apply to asbestos analyses (*e.g.*, laboratory blanks, duplicates and spikes), data validation of the asbestos laboratory reports involved a somewhat lesser level of effort than for other analyses. The asbestos worksheets were thoroughly reviewed to ensure that the reported counts were correct.

## 3.3 Criterion III –Data Sources

The review of data sources is performed to determine whether the analytical techniques used in the site characterization process are appropriate for risk assessment purposes. The data collection activities were developed to characterize a broad spectrum of chemicals potentially present on the property, including volatile organic compounds (VOCs) (including surface flux), semi-volatile organic compounds (SVOCs), polynuclear aromatic hydrocarbons (PAHs), organochlorine pesticides, polychlorinated biphenyls (PCBs), aldehydes, dioxins/furans, metals, perchlorate, radionuclides, and general chemistry. Figure 2 demonstrates that samples were collected over the entire Site.

The State of Nevada is in the process of certifying the laboratories used to generate the analytical data. As such, standards of practice in these laboratories follow the quality program developed by the Nevada Revised Statutes (NRS) and are within the guidelines of the analytical methodologies established by the USEPA. Based on the review of the available information, the data sources for chemical and physical parameter measurements are adequate for use in a risk assessment.

## 3.4 Criterion IV – Analytical Methods and Detection Limits

In addition to the appropriateness of the analytical techniques evaluated as part of Criterion III, it is necessary to evaluate whether the detection limits are low enough to allow adequate characterization of risks. At a minimum, this data usability criterion can be met through the determination that routine USEPA and U.S. Department of Energy (DOE) reference analytical methods were used in analyzing samples collected from the property. The USEPA and DOE methods that were used in conducting the laboratory analysis of soil and surface flux samples are identified in the electronic dataset on the enclosed CD in Attachment C. Each of the identified USEPA methods is considered the most appropriate method for the respective constituent class and each was approved by NDEP as part of the SAP (BRC and ERM 2008).

Laboratory practical quantitation limits (PQLs) were based on those outlined in the reference method, the SAP, and the *BRC Closure Plan* (BRC, ERM, and DBS&A 2007). In accordance with respective laboratory SOPs, the analytical processes included performing instrument calibration, laboratory method blanks, and other verification standards used to ensure quality control during the analyses of collected samples. The range of SQLs achieved in field samples was compared to NDEP's BCLs (NDEP 2010). None of the SQLs exceeded the BCLs. Therefore, the SQLs are considered adequate for risk assessment purposes.

## 3.5 Criterion V – Data Review

The data review portion of the data usability process focuses primarily of the quality of the analytical data received from the laboratory. Soil and surface flux sample data were subject to data validation. A DVSR was prepared as a separate deliverable (BRC and ERM 2010). The analytical data were validated according to the internal procedures using the principles of USEPA National Functional Guidelines (USEPA 1999, 2004c, 2005, 2008) and were designed to ensure completeness and adequacy of the data set. Additionally, the DVSR (BRC and ERM 2010) was prepared utilizing NDEP's two *Supplemental Guidance on Data Validation* documents (NDEP 2009b,c). Any analytical errors and/or limitations in the data have been addressed and an explanation for data qualification provided in the respective data tables. The results of ERM's data review for these issues are presented in the DVSR and are summarized below.

A small number of results for certain analytes/samples (two data points, all non-detections) were rejected as unusable due to calibration violations:

- The flux results for dibromochloropropane and hexachlorobutadiene for SRC1-AI19 were rejected due calibration violations.

Given the general lack of detections of these constituents none of the rejections reflected a larger concern for a particular compound, sample, or method. Data qualifications are discussed in the subsections that follow.

*Holding Time Exceedances/Sample Condition Qualifications*

Holding time refers to the period of time between sample collection and the preparation and/or analysis of the sample. The accuracy of analytical results may depend upon analysis within specified holding times and sample temperature. In general, a longer holding time is assumed to result in a less accurate measurement due to the potential for loss or degradation of the analyte over time. Sample temperature is of greatest concern for VOCs that may volatilize from the sample at higher temperatures. As described in the DVSR (BRC and ERM 2010), sample results were reviewed for compliance with the method-prescribed preparation and analysis holding times.

USEPA guidance for validation allows professional judgment to be used in evaluating qualification due to holding time exceedances. Sample results that were generated after the required holding time but less than two times after the holding time were qualified as estimated (J or UJ). If the samples were prepared after two times the holding time was exceeded, non-detect results were qualified as rejected (R). No data were rejected due to holding time exceedances. Qualifications to eight samples were made on the basis of exceeded holding times (see Table 2-2 of the DVSR), as follows:

- Hexavalent chromium results for two soil samples in one laboratory data package (TestAmerica data package F8K150163 [2 samples]) were qualified as estimated due to holding time exceedances. Holding time was exceeded by one day for these samples.

- VOC results for five soil samples in two laboratory data packages (TestAmerica data package F9I150136 [three samples] and F9I180183 [two samples]) were qualified as estimated due to holding time exceedances. Holding time was exceeded by four or eight days for these samples.

- VOC results for one surface flux sample in one laboratory data package (EAS data package 208610) was qualified as estimated due to holding time exceedances. Holding time was exceeded by one day for these samples.

As noted in the DVSR (BRC and ERM 2010), all samples were received at the laboratory within the required temperatures range of 4°± 2° Celsius. No sample results were qualified based on sample temperatures.

Sixty-five SPLP sample results (SRC1-AJ19-11) were qualified since they were not filtered immediately upon extraction. The affected results were pesticides, metals, and general chemistry. Eight SPLP sample results (SRC1-AJ19-11) were qualified for the lack of sample preservation. The affected results were radionuclides analyzed by method HASL 300 (thorium-228, thorium-230, and thorium-232, and uranium-233/234, uranium-235/236, and uranium-238). The soil samples were tumbled but not acidified prior to shipment for SPLP analysis. The acid was added upon receipt at the laboratory. Per preparation method EPA 1312, the acidification should be "immediate;" therefore the samples were qualified as estimated.

*Blank Contamination*

Blanks are artificial samples designed to evaluate the nature and extent of contamination of environmental samples that may be introduced by field or laboratory procedures. Field and laboratory blanks, consisting of contaminant-free water, were prepared and analyzed as part of standard QA/QC procedures to monitor for potential contamination of field equipment, laboratory process reagents, and sample containers. As presented in the DVSR (BRC and ERM 2010) 240 results were qualified as undetected (U) or estimated (J+) due to laboratory blank contamination, and 59 results were qualified as undetected (U) or estimated (J+) due to field blank contamination as discussed below. Detections of constituents qualified as non-detections due to comparable detections in laboratory or field blanks are known as "censored" data, and are presented in Tables 2-5 and 2-6 of the DVSR (BRC and ERM 2010). In these cases, non-detections are represented in the database as "< [*the PQL*]" in the case of inorganics detected below the PQL, or as "<[*result value*]" for all others.

These censored data are summarized in Attachment B, Table B-11 (on the enclosed CD in Attachment C) by compound class. As seen in Attachment B, in 275 instances, analytes were initially reported as detections in samples, but were later qualified as non-detections based on the presence of comparable concentrations of that analyte in blank samples. Compounds most often censored for soil or surface flux results included the following:

- Cadmium (14 samples)
- Benzene (35 samples)
- Cyanide (10 samples)
- Dichloromethane (22 samples)
- Formaldehyde (11 samples)
- Total Organic Carbon (17 samples)
- 1,2,4-Trimethylbenzene (17 samples)
- Unknown aldol condensate (SVOC TIC) (24 samples)

In addition, the following eight sample results were flagged as estimated with a high bias (J+) due to the presence of the respective metals at comparable concentrations in the associated laboratory or field blanks.

| Field Sample ID | Lab Sample ID | Analyte | Result | Unit | SQL | Reported Concen-tration | Blank Concen-tration |
|---|---|---|---|---|---|---|---|
| SRC1-AJ19-11 | F8L020248002 | Sodium | 13500 | ug/l | 10 | 13500 | 3530 |
| 'SRC1-AJ20-0 | F8K060286013 | Cadmium | 0.26 | mg/kg | 0.08 | 0.26 | 0.073 mg/kg, 0.2 ug/L |
| SRC1-AJ21-12 | F8K070216012 | Total Organic Carbon | 3 | g/kg | 0.065 | 3 | 2 |
| SRC1-AK21-18 | F8K070216010 | Total Organic Carbon | 3.1 | g/kg | 0.065 | 3.1 | 2 |
| SRC1-AK21-8 | F8K070216009 | Total Organic Carbon | 3.3 | g/kg | 0.065 | 3.3 | 2 |
| SRC1-AL25-0 | F8K110239005 | Total Organic Carbon | 6.4 | g/kg | 0.065 | 6.4 | 2 |
| SRC1-AK21-0 | F8K070216007 | Tin | 0.42 | mg/kg | 0.3 | 0.42 | 3.0 ug/L |
| SRC1-AL24-18 | F8K070216006 | Tin | 0.45 | mg/kg | 0.3 | 0.45 | 3.0 ug/L |

*Sample/Duplicate Differences Outside Permissible Range or Greater than Permissible Values*

During the data validation process, sample/duplicate results are evaluated to determine whether differences in those results suggest potential issues with data quality. Specifically, the analyst reviews the following:

- Matrix spike/matrix spike duplicate (MS/MSD) RPDs, to determine whether the RPDs are outside acceptance limits;
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPDs, to determine whether the RPDs are outside acceptance limits;
- Sample/field duplicate results to determine whether differences are greater than the permissible value; and
- Sample/laboratory duplicate results to determine whether differences are greater than the permissible value.

*Qualifications due to MS/MSD Recoveries Outside Acceptance Criteria*

As discussed in the DVSR (BRC and ERM 2010), inorganic constituent results for 26 samples were qualified as estimated (either UJ for non-detections or J for detections; "+" or " – " added to denote potential high or low bias, respectively) based on MS/MSD recoveries; there were no rejections of data associated with MS/MSD recoveries. The qualifications applied on the basis of MS/MSD recoveries were as follows:

- The radium-228 result for one soil sample (SRC1-AJ19-0) was qualified as estimated due to a recovery below than the acceptance criteria.

- Metals results for soil samples in seven laboratory data packages (TestAmerica packages F8K0101440 [three samples], F8K0402270 [four samples], F8K0602860 [three samples], F8K0702160 [nine samples], F8K1102390 [two samples], F8K1202310 [two samples] and F9I1501360 [three samples] were qualified due to recoveries outside the acceptance criteria, as summarized in the table below:

| Laboratory Data Package | Antimony | Barium | Copper | Magnesium | Silver | Sodium | Strontium | Tungsten | Vanadium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|
| F8K0101440 | - | | | | + | | + | | | - |
| F8K0402270 | - | | - | - | | | | | | |
| F8K0602860 | - | + | | | + | | | - | - | |
| F8K0702160 | - | | - | - | | - | | - | | - |
| F8K1102390 | - | | | | + | | | - | | - |
| F8K1202310 | - | -&+ | | | + | | | - | - | |
| F9I1501360 | - | + | | | | | - | - | | |

+ = Recovery greater than the acceptance limits
- = Recovery less than the acceptance limits
Blank entry signifies that the recovery was within the acceptance limits

- Total Kjeldahl Nitrogen results for soil samples in two laboratory data packages (Test America packages F8K0702160 [nine samples] and F9I1501360 [two samples]) were qualified due to recoveries greater than the acceptance criteria.

- Total Organic Carbon results for soil samples in two laboratory data packages (Test America packages F8K0402270 [two samples] and F8K0101440 [three samples]) were qualified due to recoveries greater than the acceptance criteria.

- Perchlorate results for one soil sample (SRC1-AK21-0) was qualified due to recoveries greater than the acceptance criteria.

Attachment B, Table B-12 (on the enclosed CD in Attachment C) lists the samples and associated analytes exhibiting MS/MSD percent recoveries below the laboratory control limits. In cases where the recoveries were higher than the acceptance criteria, the results have the potential of being similarly biased high and using these data in the screening-level health risk assessment could result in risks being calculated that are higher than would be associated with

actual Site conditions. Of more concern for the screening-level health risk assessment is underestimation of risk, which could be associated with the use of data that are biased low.

As indicated in that table, reported detections and non-detects for soil data were flagged as estimated ("J-" or "UJ," respectively) due to low MS/MSD recoveries (*i.e.*, from 30 to 74 percent for metals)[3]. Detections associated with "very low" MS/MSD recoveries (*i.e.*, less than 30 percent for metals), are generally rejected as unusable. Because none of the MS/MSD recoveries were that low, no data were rejected on this basis.

The data flagged as estimated based on low MS/MSD recoveries were subjected to further review in terms of data usability for the Site, as discussed in Section 3.7.

*Qualifications due to LCS/LCSD Recoveries Outside Acceptance Criteria*

Organic and inorganic constituent results for 18 samples were qualified as estimated (either UJ for non-detections or J for detections; "+" or " – " added to denote potential high or low bias, respectively) based on LCS/LCSD recoveries. The qualifications applied on the basis of LCS/LCSD recoveries were as follows:

- Benzyl alcohol result for one SPLP sample (GEL data package 219578) was qualified due to a recovery lower than the acceptance criteria.
- Arsenic results for three soil samples (TestAmerica data package F8K0602860) were qualified due to recoveries higher than the acceptance criteria.
- Molybdenum results for nine soil samples (TestAmerica data package F8K0702160) were qualified due to recoveries higher than acceptance criteria.
- 1,1-Dichloroethane, 1,1-dichloroethene, benzene and vinyl chloride results for one surface flux sample were qualified due to recoveries lower than the acceptance criteria.
- Tetrachloroethene results for four surface flux samples were qualified due to recoveries below and above the acceptance criteria.
- Trichloroethene results for two surface flux samples were qualified due to recoveries below the acceptance criteria.

[3] If additional validation criteria (aside from the MS/MSD recoveries) did not suggest a low bias for a given result, the sample result was flagged with "J" (no bias inferred).

As noted above, recoveries below the lower laboratory limits are of the most concern in terms of data usability. Attachment B, Table B-12 (on the enclosed CD in Attachment C) lists the samples and associated analytes exhibiting LCS/LCSD percent recoveries below the lower laboratory control limit. The data flagged as estimated based on low LCS/LCSD recoveries were subjected to further review in terms of data usability for the Site, as discussed in Section 3.7.

*Qualifications due to Sample/Field Duplicate Differences Outside Acceptance Criteria*

The following five soil field duplicates were collected during the sampling activities

- SRC1-AK21-0-FD
- SRC1-AI19-FD
- SRC2-AI19W-FD
- SRC2-J33-0-DUP
- SRC1-AK21-FD

In addition, the following two surface flux field duplicates were also collected during the sampling activities:

- SRC1-AI19
- SRC1-AL25

Field duplicate differences in excess of acceptance limits were noted in three field duplicate pairs of soil samples and in two field duplicate pair of surface flux samples. The differences are presented in Attachment B, Table B-13 (on the enclosed CD in Attachment C). Field duplicates are treated as independent samples and the variability noted in the samples does not differ from the variability of results across the Site. All associated data were flagged as estimated (J/UJ). No data were rejected on the basis of sample/field duplicate differences.

*Qualifications due to Sample/Laboratory Duplicate Differences Outside Acceptance Criteria*

Of the samples representing post-remediation conditions (*i.e.*, not including those data points associated with samples from soil intervals subsequently removed from the Site), the following seven samples had sample/laboratory duplicate differences greater than the 1 picoCurie per gram (or liter; pCi/g or pCi/L) permissible value:

| Lab Sample ID | Field Sample ID | Analyte | Result | Units | Notes |
|---|---|---|---|---|---|
| 218570014 | SRC1-AI19-0 | Thorium-232 | 1.62 J | pCi/g | Difference = 1.14 |
| 218570016 | SRC1-AI19-16 | Thorium-232 | 2.27 J | pCi/g | Difference = 1.14 |
| 218570015 | SRC1-AI19-6 | Thorium-232 | 2.17 J | pCi/g | Difference = 1.14 |
| 219578002 | SRC1-AJ19-11 | Thorium-230 | <0.512 UJ | pCi/L | Difference = 1.215 |
| 219578001 | SRC1-AJ19-0 | Radium-228 | 2.68 J | pCi/g | Difference = 1.45 |

| Lab Sample ID | Field Sample ID | Analyte | Result | Units | Notes |
|---|---|---|---|---|---|
| 219578005 | SRC1-AK28-0 | Radium-228 | 2.02 J | pCi/g | Difference = 1.45 |
| 219578006 | SRC1-AK28-11 | Radium-228 | 1.3 J | pCi/g | Difference = 1.45 |

The above data flagged as estimated based on sample/laboratory duplicate differences were subjected to further review in terms of data usability for the Site, as discussed in Section 3.7. No data were rejected on the basis of sample/laboratory duplicate differences.

*Internal Standards Outside Acceptance Criteria*

Internal standards are prepared for certain organic GC/MS and ICP/MS analyses by adding compounds similar to target compounds of interest to sample aliquots. Internal standards are used in the quantitation of target compounds in the sample or sample extract. The evaluation of internal standards involved comparing the instrument response and retention time from the target compounds in the sample with the response and retention time of specific internal standards added to the sample extract prior to analysis.

No results were rejected due to internal standard exceedances. The following results were qualified due to internal standard exceedances:

- PCB results for one soil sample (SRC1-AL25-0).
- Metals results for two soil samples (SRC1-AJ21-0 and SRC1-AL24-18).
- VOC results for one surface flux sample (SRC1-AI18).
- VOC results for 11 soil samples as follows:

| Laboratory Data Package # | Sample ID | |
|---|---|---|
| F8K0402270 | SRC1-AI18-11 | |
| F8K0101440 | SRC1-AI19-0 | |
| F8K0602860 | SRC1-AJ20-0 | |
| F8K0702160 | SRC1-AJ21-12<br>SRC1-AK21-8 | SRC1-AK21-0-FD |
| F8K1102390 | SRC1-AL25-0 | SRC1-AL25-11 |
| F9I1501360 | SRC2-J30-0<br>SRC2-J32-0 | SRC2-J31-0 |

- Dioxin/furan results for six soil samples as follows

| Laboratory Data Package # | Sample ID |
|---|---|
| F8K010440 | SRC1-AI19-6 |
| F8K0402270 | SRC1-AI16-0 |

| Laboratory Data Package # | Sample ID |
|---|---|
| F8K0602860 | SRC1-AJ20-0 |
| F8K0702160 | SRC1-AK21-0 |
| F8K1102390 | SRC1-AL25-0 |
| F9I1501360 | SRC2-J30-0 |

*Surrogate Percent Recoveries Outside Laboratory Control Limit*

As discussed in the DVSR (BRC and ERM 2010), surrogate spikes were added to each of the samples submitted for organic analysis to monitor potential interferences from the matrix. Results associated with unacceptable surrogate recoveries were qualified as estimated (J+). Generally, when surrogate recoveries are less than 10 percent, associated non-detect results are qualified as rejected (R) because false negatives are a possibility. No sample results were rejected due to surrogate recoveries. All of the recoveries outside the acceptance criteria were higher than the upper laboratory control limit, and as such did not warrant further review in terms of data usability for the Site.

*Calibrations Outside Laboratory Control Limits*

Requirements for instrument calibration ensure that the instrument is capable of producing acceptable quantitative data. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of analytical run. Continuing calibrations checks document satisfactory maintenance and adjustment of the instrument on a day-to-day basis. As presented in the DVSR (BRC and ERM 2010), certain data were qualified due to initial or continuing calibration issues. Of specific concern, are analytes with a final qualifier indicating a low bias due to calibration. In the following tables the percentage of analyte recovered is based on the percent difference of the actual amount and recovered amount reported from the continuing calibration. As the percentage decrease the potential for false negatives increases.

The following table summarizes those analytes for organochlorine pesticides:

| Laboratory Data Package # | Analyte | # of Samples Qualified | Percent of Qualified Non-detect | Percentage of Analyte Recovered as Indicated by Outlier |
|---|---|---|---|---|
| TestAmerica #F8K0402270 | 4,4-DDD | 6 | 100% | 83% |
| TestAmerica #F8K0402270 | 4,4-DDT | 6 | 83% | 80% |
| TestAmerica #F8K1102390 | Alpha-Chlordane | 2 | 100% | 84% |
| TestAmerica #F8K1102390 | Endosulfan II | 2 | 100% | 80% |
| TestAmerica #F8K0402270 | Endosulfan sulfate | 6 | 100% | 80% |

| Laboratory Data Package # | Analyte | # of Samples Qualified | Percent of Qualified Non-detect | Percentage of Analyte Recovered as Indicated by Outlier |
|---|---|---|---|---|
| TestAmerica #F8K0402270 | Endrin aldehyde | 6 | 100% | 75% |
| TestAmerica #F8K0402270 | Endrin ketone | 6 | 100% | 75% |
| TestAmerica #F8K1102390 | Gamma-chlordane | 2 | 100% | 80% |
| TestAmerica #F8K0402270 | Methoxychlor | 6 | 100% | 75% |
| TestAmerica #F8K0402270 | Toxaphene | 5 | 100% | 80% |

Of those listed, only 4,4-DDT was detected at the Site. The maximum SQLs for the analytes listed in the table were compared to the outdoor commercial/industrial worker BCL using the percentage recovered provided in the table above. It is very unlikely that any of the analytes, even with a potential false negative that the bias could affect the result to such a degree that the hypothetical missed detections were in excess of the BCL.

The following table summarizes those analytes for SVOCs:

| Laboratory Data Package # | Analyte | # of Samples Qualified | Percent of Qualified Non-detect | Percentage of Analyte Recovered as Indicated by Outlier |
|---|---|---|---|---|
| GEL #218843 | 1,4-Dioxane | 4 | 100% | 70% |
| GEL #218570 | 1,4-Dioxane | 3 | 100% | 70% |
| GEL #219578 | 1,4-Dioxane | 2 | 100% | 65-70% |
| GEL #218845 | 1,4-Dioxane | 3 | 100% | 55% |
| GEL #218980 | 1,4-Dioxane | 2 | 100% | 70% |
| GEL #219578 | 3-Nitroaniline | 1 | 100% | 60% |
| GEL #218845 | 3-Nitroaniline | 3 | 100% | 70% |
| GEL #218980 | 3-Nitroaniline | 2 | 100% | 75% |
| GEL #218570 | 4-Nitroaniline | 3 | 100% | 60% |
| GEL #219578 | 4-Nitroaniline | 1 | 100% | 50% |
| GEL #218980 | 4-Nitroaniline | 2 | 100% | 60% |
| GEL #218980 | 4-Nitrophenol | 2 | 100% | 70% |
| GEL #219578 | Acetophenone | 1 | 100% | 65% |
| GEL #218845 | Acetophenone | 3 | 100% | 70% |
| GEL #237201 | Benzyl alcohol | 3 | 100% | 55% |
| GEL #237201 | Phthalic acid | 3 | 100% | 70% |

Of those listed, only acetophenone was detected at the Site. The maximum SQLs for the analytes listed in the table were compared to the outdoor commercial/industrial worker BCL using the percentage recovered provided in the table above. It is very unlikely that any of the analytes, even with a potential false negative that the bias could affect the result to such a degree that the hypothetical missed detections were in excess of the BCL.

The following table summarizes those analytes for VOCs:

| Laboratory Data Package # | Analyte | # of Samples Qualified | Percent of Qualified Non-detect | Percentage of Analyte Recovered as Indicated by Outlier |
|---|---|---|---|---|
| TestAmerica #F8K1102390 | 2,2,3-Trimethylbutane | 2 | 100% | 60% |
| TestAmerica #F8K1102390 | 3-Methylhexane | 2 | 100% | 65% |
| TestAmerica #F8K0402270 | Freon-12 [Dichlorodifluoromethane] | 4 | 100% | 73% |
| TestAmerica #F8K0101440 | Freon-12 [Dichlorodifluoromethane] | 3 | 100% | 73% |
| TestAmerica #F8K0602860 | Freon-12 [Dichlorodifluoromethane] | 3 | 100% | 73% |
| TestAmerica #F8K0702160 | Freon-12 [Dichlorodifluoromethane] | 9 | 100% | 73% |

None of the above listed chemicals were detected at the Site. The maximum SQLs for the analytes listed in the table were compared to the outdoor commercial/industrial worker BCL using the percentage recovered provided in the table above. It is very unlikely that any of the analytes, even with a potential false negative that the bias could affect the result to such a degree that the hypothetical missed detections were in excess of the BCL. In addition, all of the acetonitrile and ethanol results were qualified as estimated with no bias direction. Acetonitrile and ethanol were non-detect in all samples. These two both had a low response on the instrument and have a potential for false negatives. Both were detected in flux samples.

The following table summarizes those analytes for surface flux VOCs:

| Laboratory Data Package # | Analyte | # of Samples Qualified | Percent of Qualified Non-detect | Percentage of Analyte Recovered as Indicated by Outlier |
|---|---|---|---|---|
| EAS #208610 | 1,2,3-Trichloropropane | 2 | 50% | 68% |
| EAS #208610 | 1,2,4-Trichlorobenzene | 2 | 100% | 43% |
| EAS #208610 | 1,2-Dichlorobenzene | 7 | 86% | 49-60% |
| EAS #208610 | 1,3-Dichlorobenzene | 6 | 83% | 59-68% |
| EAS #208610 | 1,4-Dichlorobenzene | 1 | 100% | 60% |
| EAS #208610 | Acetonitrile | 3 | 33% | 67% |
| EAS #208610 | Benzyl chloride | 4 | 100% | 62-70% |
| EAS #208610 | Chlorobromomethane | 1 | 100% | 65% |
| EAS #208610 | Dibromochloropropane | 1 | 100% | 62% |
| EAS #208610 | Ethanol | 3 | 0% | 63-67% |
| EAS #208610 | Heptane | 1 | 100% | 52% |
| EAS #208610 | n-Propylbenzene | 1 | 100% | 58% |
| EAS #208610 | Tert-Butylbenzene | 5 | 100% | 54-67% |
| EAS #208610 | Vinyl acetate | 1 | 0% | 49% |
| EAS #208610 | 1,2-Dichloropropane | 4 | 100% | 65-67% |

Surface flux data are compared to the ambient air BCLs. The percentages below 50 percent are of particular concern. Those are reported for the surface flux analytes, 1,2,4-trichlorobenzene,

1,2-dichlorobenzene, and vinyl acetate. The maximum SQLs were compared to the ambient air BCLs using the percentage recovered provided in the table above. It is very unlikely that that any of the analytes, even with a potential false negative that the bias could affect the result to such a degree that the hypothetical missed detections were in excess of the BCL.

*Tentatively Identified Compounds*

For the GC/MS methods used for soil samples, a list and estimated concentrations for tentatively identified compounds (TICs) were provided if detected. Many of the reported TICs were identified as "unknown". The TICs that were identified are as follows:

- 1,1-Difluoroethane
- 3-(hexahydro-1H-aze 1,2-Benzisothiazole
- 11,12-Dibromo-tetradecan-1-ol acetate
- 1-Bromo-11-iodoundecane
- 2,4-DDE
- 28-Nor-17.beta.(H)-hopane
- 2-Dodecen-1-yl(-)succinic anhydride
- 4-[3-Ethoxypropylamino]benzo-1,2,3-triaz
- 2-amino-1,5-dihydro-4H-Imidazol-4-one
- 5-Methyl-2-thiophenecarboxaldehyde thios
- (z)-9-Octadecenamide
- Androstane
- (5.beta.)-Androstane
- Chloroform
- dodecamethyl-Cyclohexasiloxane
- octadecamethyl-Cyclononasiloxane
- decamethyl Cyclopentasiloxane
- ,2,3,3,4-pentamethyl-Cyclopentene
- 1,2,3,4,5-pentamethyl-Cyclopentene
- E-8-Methyl-9-tetradecen-1-ol acetate
- Eicosane
- Ethisterone
- 2-(1,1-dimethylethyl)-4-methyl-Furan
- Hexadecanamide
- oxybis[dichloro-Methane
- n-Hexadecane
- Octadecanamide
- Octamethylcyclotetrasiloxane
- Pentadecane
- 11-[(trimethylsilyl Pregnane-3,20-dione
- trichlorooctadecyl-Silane
- Tributyl phosphate
- Triphenylphosphate
-

Of those listed above, two are target analytes, 2,4-DDE and chloroform. 2,4-DDE was identified as a TIC in the SVOC (SW-8270C) analysis of one sample (SRC1-AI18-0) but was not detected in the organochlorine pesticide (SW-8081) analysis of the same sample. Similarly, chloroform was identified as a TIC in the SVOC analysis of three samples (SRC1-AI16-0, SRC1-AI16-10, and SRC1-AK21-8), but was not detected in the VOC (SW-8260) analysis of the same samples. 1,1-Difluoroethane was indentified as a TIC in three VOC samples (SRC1-AI16-0, SRC1-AI19-0 and SRC1-AI19-16). It is used as an internal standard in some analyses and is not anticipated to be found at the Site. Triphenyl phosphate was detected in one sample (SRC1-AK21-0) and is a plasticizer. According to the Hazardous Substances Databank (HSDB) it has low toxicity and is

used as a component of adhesives in the food industry. Tributyl phosphate was identified as a TIC in only one sample.

In addition to the above, an unknown aldol condensate was also reported by the laboratory as being present in 27 samples; 24 of those reported concentrations were flagged "U" due to blank contamination. With the exception of the compounds discussed above, the other above named compounds are indicative of column breakdown and are not likely site related. Toxicity criteria have not been established for any of these TICs.

*Data Review Summary*

For 1,671 out of 10,063 analytical results, quality criteria were not met and various data qualifiers were added to indicate limitations and/or bias in the data. The definitions for the data qualifiers, or data validation flags, used during validation are those defined in SOP-40 (BRC, ERM and MWH 2009) and the *BRC Quality Assurance Project Plan* (QAPP; BRC and ERM 2009a). Sample results were rejected based on findings of serious deficiencies in the ability to properly collect or analyze the sample and meet QC criteria. Only rejected data were considered unusable for decision-making purposes and rejected analytical results are not used in the screening-level health risk assessment. No soil data were rejected. Other data points were excluded from the risk assessment if the sample was re-analyzed by the laboratory. These are presented in Attachment B, Table B-14 (on the enclosed CD in Attachment C). It includes six PAH results for samples SRC1-AJ19-11, SRC1-AI16-0, SRC1-AI16-10, and SRC1-AK21-0, one VOC sample, SRC1-AK21-0-FD and results for seven flux samples, SRC1-AI16, SRC1-AI18, SRC1-AI19, SRC1-AJ20, SRC1-AJ21, SRC1-AL24, and SRC1-AL25.

## 3.6 Criterion VI – Data Quality Indicators

DQIs are used to verify that sampling and analytical systems used in support of project activities are in control and the quality of the data generated for this project is appropriate for making decisions affecting future activities. The DQIs address the field and analytical data quality aspects as they affect uncertainties in the data collected for site characterization and risk assessment. The DQIs include precision, accuracy, representativeness, comparability, and completeness (PARCC). The project QAPP provides the definitions and specific criteria for assessing DQIs using field and laboratory QC samples and is the basis for determining the overall quality of the dataset. Data validation activities included the evaluation of PARCC parameters, and all data not meeting the established PARCC criteria were qualified during the validation process using the guidelines presented in the National Functional Guidelines for Laboratory Data Review, Organics and Inorganics and Dioxin/Furans (USEPA 1999, 2004c, 2005, 2008).

*Evaluation of Data Precision*

Precision is a measure of the degree of agreement between replicate measurements of the same source or sample. Precision is expressed by RPD between replicate measurements. Replicate measurements can be made on the same sample or on two samples from the same source. Precision is generally assessed using a subset of the measurements made. The precision of the data was evaluated using several laboratory QA/QC procedures. Based on ERM's review of the results of these procedures, the general level of precision for the Site data and the background data (BRC and ERM 2010) does not appear to limit the usability of a particular analyte, sample, method, or dataset as a whole.

*Evaluation of Data Accuracy*

Accuracy measures the level of bias that an analytical method or measurement exhibits. To measure accuracy, a standard or reference material containing a known concentration is analyzed or measured and the result is compared to the known value. Several QC parameters are used to evaluate the accuracy of reported analytical results:

- Holding times and sample temperatures;
- LCS percent recovery;
- MS/MSD percent recovery;
- Spike sample recovery (inorganics);
- Surrogate spike recovery (organics); and
- Blank sample results.

Detailed discussions of and tables with specific exceedances, with respect to precision and accuracy, are provided in the NDEP-approved DVSR (BRC and ERM 2010) and data qualified as a result of this evaluation are presented with qualifiers in the data usability tables in Attachment B (on the enclosed CD in Attachment C). As discussed in Section 3.5, the data validation process resulted in numerous sample results being qualified as estimated, and a few results being rejected (four data points, all non-detections). The four results were all surface flux data qualified due to calibration violations. The remaining results were considered sufficiently accurate for risk assessment purposes, as discussed in Section 3.7.

*Evaluation of Data 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 (USEPA 2002a). There is no standard method or formula for evaluating representativeness, which is a qualitative term. Representativeness is achieved through selection of sampling locations that are appropriate relative to the objective of the specific sampling task, and by collection of an adequate number of samples from the relevant types of locations. The sampling locations at the Site were based on both systematic sampling with random point placement, as well as focused samples collected from specific areas to further investigate potential areas.

The samples were analyzed for a broad spectrum of chemical classes across the Site. Samples were delivered to the laboratory in coolers with ice to minimize the loss of analytes. In a few instances, such as samples being analyzed beyond the holding time or delayed preservation of SPLP samples, the representativeness of the associated data is in question; however, there were limited instances of this, as discussed in Section 3.7. As previously noted, no sample results were qualified based on sample temperatures.

Sample specific results are discussed in the DVSR (BRC and ERM 2010). A discussion of representativeness for the background dataset is provided in the *Background Shallow Soil Summary Report, BMI Complex and Common Areas Vicinity* (BRC/TIMET 2007).

*Evaluation of Data Completeness*

Completeness is commonly expressed as a percentage of measurements that are valid and usable relative to the total number of measurements made. Analytical completeness is a measure of the number of overall accepted analytical results, including estimated values, compared to the total number of analytical results requested on samples submitted for analysis after review of the analytical data. Some of the data were eliminated due to data usability concerns. The percent completeness for the Site is 99.9 percent and includes the surface flux data. The percent completeness for the soil only dataset is 100 percent and the percent completeness for the surface flux only dataset is 99.9 percent. This exceeds the BRC completeness goal of 90 percent. The asbestos results are not included in the completeness calculation.

*Evaluation of Data Comparability*

Comparability is a qualitative characteristic expressing the confidence with which one dataset can be compared with another. The desire for comparability is the basis for specifying the analytical methods; these methods are generally consistent with those used in previous

investigations of the Site. The comparability goal is achieved through using standard techniques to collect and analyze representative samples and reporting analytical results in appropriate units. The ranges of detected sample results from the current investigation are generally comparable to recent results at the Eastside property, as well as the site background dataset (see Section 5). There are differences in SQLs among datasets which may affect data comparability for datasets comprised primarily of non-detected values. An example of the differences in SQLs at the Site and in background for several analytes with low detection frequency is shown in the following table.

| Analyte | Background Min SQL | Background Max SQL | Site Min SQL | Site Max SQL[4] |
|---|---|---|---|---|
| Antimony | 0.0394 | 0.3298 | 0.126 | 0.315 |
| Boron | 3.2 | 3.2 | 2.99 | 16.5 |
| Mercury | 0.0072 | 0.0072 | 0.005 | 0.0115 |
| Thallium | 0.5428 | 0.5428 | 0.105 | 0.6 |

All results in units of mg/kg.

Cumulative probability plots and side-by-side boxplots for the Site and background and Site datasets are included in Attachment E. For these datasets, left-censored data can result in difficulties in differentiating whether datasets are actually different or merely an artifact of detection limits. Note that for constituents with SQLs that meet project limit requirements, comparisons between Site and background may be less important as these left-censored data are likely to indicate conditions that pose an "acceptable" risk and further evaluation is not necessary.

## 3.7 Data Analysis

Data validation and usability evaluations tend to look at the data on a result by result basis. The data analysis step is intended to take a step back and look at the dataset as a whole. The intent of this is to identify any anomalies or unusual data trends that may indicate any potential laboratory issues. This is performed by reviewing summary statistics, cumulative probability plots and side-by-side boxplots, or other visual aids. The soil dataset used for the screening-level health risk assessment is summarized in tabular format in Table 1. While it is not feasible to present all the detected analytes in a graphical format, cumulative probability plots and side-by-side boxplots are provided in Attachment E for the analytes included in the background comparisons (that is, metals and radionuclides). If there were any identified risk drivers, they would also be presented graphically. However, based on the results of the screening-level health risk assessment (see

[4] The SQLs reported here may differ from the detection limits reported elsewhere (e.g. background comparisons). Detection limits may be raised due to blank contamination.

Section 6.8), all risk estimates were below the target risk levels. No anomalies in the dataset were identified.

As discussed in Section 3.5, the data validation process resulted in numerous sample results being qualified as estimated, with only the above-listed results being rejected. Sample results qualified as estimated are likely to be quantitatively biased to some degree; estimated analytical results are used in the screening-level health risk assessment. Data qualified as anomalous, as defined in the DVSR, refers to data that were qualified ("U") due to blank contamination, and are used in the screening-level health risk assessment. These data usability decisions follow the guidelines provided in the *Guidance for Data Usability in Risk Assessment (Part A)* (USEPA 1992a).

For the screening-level health risk assessment, all data that were not rejected during data validation or replaced by re-analysis results were included. Data were often qualified as estimated due to recoveries being outside the acceptance criteria. In cases where the recoveries were higher than the acceptance criteria, the results have the potential of being similarly biased high and using these data in the screening-level health risk assessment could result in risks being calculated that are higher than would be associated with actual Site conditions. Of more concern for the screening-level health risk assessment is underestimation of risk, which could be associated with the use of data that are biased low. Results associated with the following QA/QC issues could lead to results that are biased low, and were subjected to further scrutiny during the data usability evaluation:

- Detections qualified during the data review as being non-detections due to laboratory or field blank contamination;
- Results associated with holding time exceedances;
- Results associated with calibration violations indicating a low bias; and/or
- Results associated with MS/MSD or LCS/LCSD recoveries below acceptance criteria.

Such data, which are listed above in Section 3.5, were evaluated during the data usability process to determine whether it was appropriate to use them in the screening-level health risk assessment. With the exception of the rejected data points, the data usability determined that the estimated results listed in Section 3.5 were appropriate for use in the screening-level health risk assessment, as discussed below.

*Blank Contamination*

As noted in Section 3.5, certain detections were flagged during the data review as being non-detections or estimated with a high bias due to laboratory or field blank contamination. If the associated constituent qualified as being a non-detection, in fact, were present in the samples related to the affected blank sample, revising its status to non-detect could result in risk underestimation. The constituents for which this potential concern has the most bearing in risk assessment are those in soil samples for which the detections are close to or exceed either 1) background conditions, or 2) relevant human health screening levels (i.e., BCLs). As determined during that evaluation, qualification of detections as non-detects based on blank contamination are not likely to have an appreciable effect on the risk calculations.

In Section 3.5, the constituents that have a censored value that exceeds either the maximum background concentration or BCL were listed. This evaluation provides an analysis of those results below:

| Constituent | # Records Revised (Maximum Detection) | Concern for Risk Underestimation? | Rationale |
|---|---|---|---|
| Antimony | 5 (0.78 mg/kg) | No | No detections in dataset; values < 454 mg/kg BCL |
| Boron | 4 (6 mg/kg) | No | Limited number of detections in dataset (5); values < 100,000 mg/kg BCL |
| Cadmium | 16 (0.17 mg/kg) | No | Values < 553 mg/kg BCL |
| Molybdenum | 6 (1 mg/kg) | No | Maximum value lower than maximum background (2 mg/kg); values < 5,680 mg/kg BCL |
| Selenium | 3 (1.2 mg/kg) | No | No detections in dataset; values < 5,680 mg/kg BCL |

*Holding Time Exceedances/Sample Condition*

There is a potential for analyte loss if the holding time for a sample is exceeded. For the Site, holding times were exceeded in two samples for chromium (VI) analysis, five soil samples and one surface flux sample for the VOC analyses. All samples were qualified as estimated. Since only two of 32 of the chromium (VI) analyses and five of 32 of the soil VOC analyses had holding times in exceedance, there is a low potential for a low bias to the datasets. Since one of

seven surface flux VOC analyses had holding times in exceedance, there is a moderate potential for a low bias, however, the exceedance was only one day past holding time.

As noted in the DVSR (BRC and ERM 2010), all samples with temperature requirements were received at the laboratory within the required range of 4°± 2° Celsius. No sample results were qualified based on sample temperatures.

Sixty-five SPLP sample results (SRC1-AJ19-11) were qualified since they were not filtered immediately upon extraction. The affected results were pesticides, metals, and general chemistry. Eight SPLP sample results (SRC1-AJ19-11) were qualified for the lack of sample preservation. Given the manner in which the SPLP data are incorporated in the risk assessment, as indicators of the leaching potential of the soils, the estimated results should pose no data usability concerns for the Site.

*Calibration Violations Indicating a Low Bias*

The instrument calibration checks which resulted in a low bias are summarized in the tables presented in Section 3.5. No concerns were identified for the results with associated BCLs, however, there were three TO-15 flux analytes, 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, and vinyl acetate which had recoveries below 50 percent in some samples. All of the 1,2-dichlorobenzene samples were qualified. The ambient air BCL for 1,2-dichlorobenzene is greater than 100 times the detected concentration and the SQLs for 1,2-dichlorobenzene. It is unlikely that risks for the Site were underestimated significantly due to 1,2-dichlorobenzene.

*MS/MSD or LCS/LCSD Recoveries Below Acceptance Criteria*

During the data usability review, results associated with MS/MSD and/or LCS/LCSD recoveries that were only slightly lower than the lower acceptance limit (*i.e.*, 50 to 75 percent recoveries for inorganics and the higher of greater than 30 percent or one-half the lower limit for organics) were accepted as usable without further evaluation. Samples with lower percent recoveries (*i.e.*, recoveries lower than 50 percent for inorganics and one-half the lower limit or 30 percent, whichever is greater, for organics) were reviewed more closely to assess whether it was appropriate to use them in the risk assessment. Inorganic results with MS/MSD recoveries less than 50 percent were as follows:

- Vanadium results for two soil samples in TestAmerica data package F8K1202310 (both detections);
- Antimony results for nine soil samples in TestAmerica data package F8K0702160 (all non-detections);

- Antimony results for two soil samples in TestAmerica data package F8K1102390 (all non-detections);

- Antimony results for three soil samples in TestAmerica data package F8K0602860 (all non-detections); and

- Antimony results for two soil samples in TestAmerica data package F8K1202310 (all non-detections).

The vanadium recovery was not significantly lower than the 50 percent recovery limit (*i.e.*, 47.5 percent). Vanadium was detected in 100 percent of site samples and the qualified results are both above the mean. It is unlikely to have been biased to such a degree that the risk calculations would be underestimated. The antimony recoveries were not significantly lower than the 50 percent recovery limit (lowest was 36.9 percent). In addition, antimony was not detected in any Site soil samples and it is unlikely that it was present in these 16 samples.

As noted in Section 3.5, LCS/LCSD recoveries lower than the lower laboratory control limit were observed for benzyl alcohol for one SPLP sample. The SPLP data is used to assess leaching potential and not to quantify risk. Therefore, the result would not lead to an underestimation of risk.

The other low LCS/LCSD recoveries (1,1-dichloroethene, 1,1-dichloroethane and vinyl chloride results for one surface flux sample) were slightly lower than the lower laboratory control limit and only affected one sample. No concerns were identified regarding their usability.

*Surrogate Percent Recoveries Below Laboratory Control Limit*

As previously noted, it was not necessary to further scrutinize results associated with surrogate recoveries outside laboratory control limits because no samples were identified with low surrogate recoveries during the data review.

*Data Usability Summary*

As discussed above, few results were found during the data usability evaluation to have potential for low bias that could lead to significant risk underestimation. Most results qualified for this reason were non-detections of constituents rarely, if ever, detected in Site samples or were associated with samples not directly used in risk assessment calculations (*e.g.*, SPLP samples).

The data usability evaluation also determined that the few rejected results (all non-detections) were associated with constituents either not routinely observed in Site samples or for constituents

with SQLs well below the ambient air BCLs. Therefore, the rejected data do not pose a data gap or the potential for risk underestimation.

## 4.0 Data Summary

The chemical dataset compiled for this Site consists of analytical results associated with 36 samples collected from 18 soil sampling locations across the length of the Site.[5] Surface flux samples were also collected at seven locations across the Site for VOC analysis.[6] Finally, leachate generated from one sample (the 11 ft below ground surface [bgs] sample from location SRC1-AJ19) using the Synthetic Precipitation Leaching Procedure (SPLP) was also analyzed for a broad suite of site-related compounds. Sample locations within the Site are shown on Figure 2. Sampling results are summarized on Tables 1 through 3 for the above-referenced analyses. The data associated with these analyses are included in the database excerpt provided on the enclosed CD in Attachment C. The complete dataset for the Site is provided electronically on the enclosed CD in Attachment C along with all report files in their native format and all calculation spreadsheets used for the screening-level health risk assessment.

Site data were collected during a two-phase sampling program conducted initially in October and November 2008 (samples with "SRC1" prefix), with follow-on sampling conducted in September 2009 (samples with "SRC2" prefix). As noted above, the initial sampling event was not conducted based on a Site-specific SAP, but samples within the Site were collected as part of the sampling and analysis for the Southern RIBs sub-area, which this Site was part of prior to extracting the footprint of the Warm Springs Road ROW.[7] Therefore, sampling and analysis was performed in accordance with an NDEP approved work plan (BRC and 2008; approved by

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[5] For samples with primary and field duplicate results, the Site sample and field duplicate are treated as independent samples and both are included in all subsequent data analyses, regardless of whether one or both are non-detect (see Section 3.5 regarding evaluation of differences between primary and field duplicate samples). This is considered appropriate because field duplicate samples represent a discrete and unique measurement of soil chemical conditions proximal to the primary sample (unlike split samples). The sample number varies by analyses (see Table 1) with a maximum of 32 samples collected for any one particular analyte. However, the total number of samples, when considering all analytes, is 36.

[6] Note that because the data used is a subset of the data collected during the Southern RIBs investigation, the principal investigator report of findings, which includes descriptions of sampling procedures, is not provided in this technical memorandum, but will be provided in the report for the Southern RIBs sub-area.

[7] As noted in Section 2, subsequent to the preparation of this report and issuance of the NFAD, a potential re-alignment of the Warm Springs Road ROW has been identified, due to development constraints on the original alignment. Sample locations associated with this re-alignment are shown on Figure 2. Because the status of this re-alignment is uncertain, the data associated with the sample locations in the re-alignment area have not been included in this report. However, these data are provided on the enclosed CD in Attachment F. A summary table of these data is provided in Attachment F. As shown in Attachment F, none of these results affect the results and conclusions of this report. In addition, these re-alignment data will be included in the closure report to be prepared for the Southern RIBs sub-area, including the data usability evaluation for this sub-area.

NDEP on September 11, 2008). Sample results identified a localized area within the Site (at sample location SRC1-AI19), at which elevated dioxins/furans concentrations were reported in surface soils (*i.e.*, the dioxin/furan toxic equivalency [TEQ] concentration of 121 parts per trillion [ppt] was higher than the Agency for Toxic Substances and Disease Registry [ATSDR] screening value and NDEP BCL of 50 ppt). In response to this result, BRC conducted a limited soil removal action in this area (as well as other areas in the Southern RIBs sub-area), in accordance with a letter work plan dated August 31, 2009 (BRC 2009). This work plan, which included confirmation sampling, was approved by NDEP on August 31, 2009. Confirmation samples near SRC1-AI19 were included in the confirmation sampling within the Site, with three of these samples falling within the Site (see Figure 2). At that time, BRC performed sampling at four more locations within the Site, due to changes to the boundary of the Southern RIBs sub-area. Data validation results are presented in the DVSR (BRC and ERM 2010), which was approved by NDEP on March 11, 2010.

During these two investigations, soil samples at various depths (maximum depth 21 feet bgs; note that sample depths are based on development plans for cut/fill as specific in the SAP [BRC and ERM 2008]) were collected and analyzed for VOCs, SVOCs, PAHs, organochlorine pesticides, PCBs, aldehydes, dioxins/furans, metals, perchlorate, radionuclides, and general chemistry. The data associated with these investigations are included in the database excerpt provided on the enclosed CD in Attachment C.

A summary of compound-specific chemical data for the Site is presented in Table 1 (soil data, all locations, all depths included), Table 2 (surface flux data), and Table 3 (SPLP data). Location-specific sampling results associated with the Site are provided in Attachment C, Tables C-1 through C-11 for soil samples and Table B-12 for surface flux samples, and are included electronically on the enclosed CD in Attachment C. Sample locations are shown on Figure 2.

## 4.1 Soil Data

As noted above, chemical data associated with soil samples collected within the Site boundaries are summarized in Table 1, and Attachment C, Tables C-1 through C-11. Various applicable constituent-specific comparison levels are provided on the tables for reference, specifically:

- NDEP BCLs for outdoor worker (NDEP 2010), hereinafter "$BCL_{OW}$"; and

- NDEP BCLs for protection of groundwater (LBCL), assuming dilution attenuation factors (DAF) of 1 and 20 (NDEP 2010), hereinafter "LBCL."

To assess the potential threat to human health, chemical detections in Site soils were compared to the $BCL_{OW}$. In addition, to assess the potential for impacts to groundwater quality, chemical detections at the Site were also compared to the LBCL (DAF 1; $LBCL_{DAF1}$) established for each chemical.

For comparing the Site data to background conditions, the background soil dataset for the BMI Common Areas presented in *Background Shallow Soil Summary Report, BMI Complex and Common Areas Vicinity* (BRC/TIMET 2007), which was approved by NDEP on July 26, 2007, was used. Establishment of background conditions for the BMI Common Areas project is complicated by the unique geologic conditions in the area, specifically, the BMI Common Areas location at the confluence of alluvial fan deposits from the McCullough Range to the southwest and the River Mountains to the east. The Site appears to be underlain by sediments that are derived from the McCullough Range, and background conditions associated with shallow soils in this area are expected to be comparable to those used as comparison levels in this report, which are primarily associated with alluvial fan deposits derived from the McCullough Range. The scope of the background comparisons are summarized in Section 5.

Chemical occurrence patterns for all constituents detected in the Site soil samples at concentrations in excess of the above comparison levels, including background comparisons, are provided below.

*Asbestos*

No long amphibole and only two long chrysotile fibers (at one sample location; SRC1-AK21) were detected in 13 Site soil samples in which they were analyzed (all surface samples; Table B-1). Asbestos is evaluated in the screening-level health risk assessment (Section 6).

*Aluminum*

Aluminum was detected in all 32 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 100,000 mg/kg $BCL_{OW}$, but all were higher than the 75 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a sample collected from 18 feet bgs at location SRC1-AL24 (18,400 mg/kg). Because the Site dataset was statistically higher than the background dataset (see Section 5), aluminium was included in the screening-level health risk assessment (Section 6).

*Arsenic*

Arsenic was detected in all 32 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were higher than the 1.77 mg/kg $BCL_{OW}$ and the 1 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a surface soil sample collected at location SRC1-AI18 (9.5 mg/kg). Because the Site dataset was statistically comparable to the background dataset (see Section 5), arsenic was not included in the screening-level health risk assessment (Section 6).

*Barium*

Barium was detected in all 32 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 100,000 mg/kg $BCL_{OW}$, but all were higher than the 82 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a surface soil sample collected at location SRC1-AI19 (490 mg/kg). Because the Site dataset was statistically higher than the background dataset (see Section 5), barium was included in the screening-level health risk assessment (Section 6).

*Chromium (Total)*

Chromium (total) was detected in all 32 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 100,000 mg/kg $BCL_{OW}$, but all were higher than the 2 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a surface soil sample collected at location SRC1-AK28 (19.7 mg/kg). Because the Site dataset was statistically higher than the background dataset (see Section 5), chromium (total) was included in the screening-level health risk assessment (Section 6).

*Chromium (VI)*

Chromium (VI) was detected in all 17 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 454 mg/kg $BCL_{OW}$, and lower than the 2 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a surface soil sample collected at location SRC1-AI18 (0.58 mg/kg). Because the Site dataset was statistically higher than the background dataset (see Section 5), chromium (VI) was included in the screening-level health risk assessment (Section 6).

*Iron*

Iron was detected in all 32 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 100,000 mg/kg $BCL_{OW}$, but all were higher than the 7.56 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a surface soil sample collected at location SRC1-AJ19 (23,700 mg/kg). Because the Site dataset was statistically higher than the background dataset (see Section 5), iron was included in the screening-level health risk assessment (Section 6).

*Magnesium*

Magnesium was detected in all 32 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 100,000 mg/kg $BCL_{OW}$, but all were higher than the 649 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a surface soil sample collected at location SRC1-AL25 (15,400 mg/kg). Because the Site dataset was statistically comparable to the background dataset (see Section 5), magnesium was not included in the screening-level health risk assessment (Section 6).

*Manganese*

Manganese was detected in all 32 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 13,700 mg/kg $BCL_{OW}$, but all were higher than the 3.26 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a surface soil sample collected at location SRC1-AI19 (1,800 mg/kg). Because the Site dataset was statistically higher than the background dataset (see Section 5), manganese was included in the screening-level health risk assessment (Section 6).

*Nickel*

Nickel was detected in all 32 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 20,100 mg/kg $BCL_{OW}$, but all were higher than the 7 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a surface soil sample collected at location SRC1-AL25 (30.3 mg/kg). Because the Site dataset was statistically comparable to the background dataset (see Section 5), nickel was not included in the screening-level health risk assessment (Section 6).

*Thallium*

Thallium was detected in seven of the 32 Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 79.5

mg/kg $BCL_{OW}$, but three were higher than the 0.4 mg/kg $LBCL_{DAF1}$ (surface soil samples SRC1-AI19 and SRC1-AI18 [0.86 and 0.96 mg/kg, respectively]; and subsurface sample SRC1-AJ19 at 11 feet bgs [0.58 mg/kg]). Because the Site dataset was statistically comparable to the background dataset (see Section 5), thallium was not included in the screening-level health risk assessment (Section 6).

*Organochlorine Pesticides*

Organochlorine pesticides were not routinely detected in the 32 Site soil samples in which they were analyzed (17 surface and 15 subsurface samples; Table B-6). Beta-BHC was the only organochlorine pesticide detected at a concentration higher than a comparison level. Two of the detections were higher than the 0.0001 mg/kg $LBCL_{DAF1}$ (surface soil samples SRC1-AI19 and SRC-AJ20 exhibited reported detections of 0.01 mg/kg and 0.003 mg/kg, respectively); both of these detections were lower than the 1.4 mg/kg $BCL_{OW}$.

*Radionuclides*

Radionuclides were detected in all 31 of the Site soil samples in which they were analyzed (16 surface and 15 subsurface samples; Table B-9). Three of the isotopes (radium-226 and radium-228, and thorium-228) were consistently detected at activities higher than the applicable $BCL_{OW}$ and $LBCL_{DAF1}$. In addition, the detections of thorium-230 and thorium-232 were higher than the $LBCL_{DAF1}$. However, because radionuclides were statistically comparable to the background dataset (see Section 5), they were not included in the screening-level health risk assessment (Section 6).

*Volatile Organic Compounds*

With the exception of acetone (detected in more than 50 percent of the samples), VOCs were not routinely detected in the 32 Site soil samples in which they were analyzed (17 surface and 15 subsurface samples; Table B-11). Dichloromethane was the only VOC detected at a concentration higher than its comparison levels. Three detections of this constituent (all at location SRC1-AI19) were higher than the 0.001 mg/kg $LBCL_{DAF1}$ (0.011 mg/kg at 0 feet bgs; 0.0052 mg/kg at 6 feet bgs; and 0.0093 mg/kg at 16 feet bgs). All of these detections were lower than the 22.3 mg/kg $BCL_{OW}$.

*Other Organic Compounds*

As seen on Table 1, no other organic compounds were detected at concentrations in excess of the soil comparison levels.

*Potential Re-Alignment Data*

With limited exceptions the maximum detected values present in data within the potential re-alignment were below the maximum detection of the original Site dataset. Those that exceed Site values are presented in the following table.

| Analyte | Original ROW Max Detect | Re-Alignment ROW Max Detect | Worker BCL | Maximum Background |
|---|---|---|---|---|
| Bromide | 2.6 mg/kg | 3.3 mg/kg | -- | -- |
| Strontium | 443 mg/kg | 484 mg/kg | 100,000 mg/kg | 808 mg/kg |
| Uranium | 1.9 mg/kg | 2.1 mg/kg | 3390 mg/kg | 2.7 mg/kg |
| Uranium-233/234 | 1.67 pCi/g | 1.89 pCi/g | 11 pCi/g | 2.84 pCi/g |

-- No value has been established.

As shown above, none of the maximum detections for the realignment data exceed their respective maximum background levels, where available, are all well below their respective BCLs. Therefore, data within the potential re-alignment would not affect the results and conclusions of this report.

## 4.2 Surface Flux Data

VOC data (TO-15 full scan and SIM analyses) associated with the seven surface flux samples collected within the Site boundaries are summarized in Table 2, and Attachment C, Table C-12. Ambient air concentrations were calculated from these data by first converting the surface flux data, in $\mu g/m^3$, to a flux rate, in $\mu g/m^2$-min (from BRC, ERM, and MWH 2009 [SOP-16]):

$$\text{VOC Flux } (\mu g/m^2\text{-min}) = (\mu g/m^3)(0.005\ m^3/\text{min})/(0.13\ m^2)$$

An outdoor air concentration was then obtained using the dispersion factor for volatiles ($Q/Cvol = 83.1\ g/m^2$-s per $kg/m^3$) from the *BRC Closure Plan* (BRC, ERM, and DBSA 2007). For reference, Table 2 includes constituent-specific comparison levels (NDEP's ambient air BCLs [NDEP 2010]). As seen in Table 2, no VOCs were detected at concentrations in excess of their respective ambient air BCLs.

The comparison of outdoor air concentrations (derived from surface flux chamber data) to ambient air BCLs does not account for multiple chemical exposures. However, ambient air BCLs were developed for residential exposures, which are greater than those for a worker receptor. In addition, maximum outdoor air concentrations were generally an order of

magnitude less than ambient air BCLs. With only two exceptions the maximum detected values present in data within the potential re-alignment were below the maximum detection of the original Site dataset. Those that exceed Site values, 1,4,-dioxane and Freon-11, are well below their respective BCLs. Therefore, BRC concludes that the residual concentrations of VOCs in Site soils are not likely to pose a threat to human health.

## 4.3 Leachate Data

As specified in the Southern RIBs SAP, one sample collected within the Site during those sampling activities was submitted for SPLP analysis, a sample collected from location SRC1-AJ19, from 11 feet bgs. As seen in Attachment C, this soil sample was analyzed for aldehydes, general chemistry/ions, metals, organochlorine pesticides, and VOCs. Formaldehyde was the only organic constituent detected in this sample, but this soil sample represented some of the higher general chemistry and metals detections in Site samples. The maximum values reported at the Site for beryllium, titanium, and vanadium are associated with this sample, and the detections of several other inorganic constituents fell within the highest quartile of the dataset (*i.e.*, chloride, sulfate, barium, chromium [total], cobalt, copper, iron, lithium, nickel, silver, sodium, and uranium).[8] Because of this, this sample is considered a good choice for evaluation of leachable potential.

Data associated with this SPLP sample are summarized in Table 3. For reference, Table 3 includes constituent-specific comparison levels (NDEP's residential water BCLs and USEPA Maximum Contaminant Levels). As summarized in Table 3, there were few detections in the leachate sample from SRC1-AJ19. All of the detections in this leachate sample were inorganic constituents (*i.e.*, general chemistry ions, metals and radionuclides); organic compounds were not detected. Of these detections, only the arsenic (0.003 mg/L) detection was higher than the comparison level used for this evaluation. The remaining detections were appreciably lower than the comparison levels (at least one order of magnitude lower, often two or more orders of magnitude lower).

BRC has concluded that the residual concentrations of chemicals in Site soils are not likely to pose a threat to groundwater quality in the future because of the following considerations:

[8] This does not suggest that this location is indicative of contamination or concentrations increasing with depth (in fact, most of the results are below the maximum measured background concentration and all are similar in concentration to the surface sample at this location); merely that the location is a good choice for evaluating the leaching potential of the analytes via the SPLP results.

- The future land use for the Site is as a road, and as such, the Site will be paved with an impermeable surface, which will reduce the potential for surface water to percolate into Site soils and to enhance chemical migration into groundwater;

- As discussed above, few constituents were detected in Site soils at concentrations above the LCBL DAF1, a conservative screening level developed for protection of groundwater quality;

- Chemical detections measured in leachate from a representative sample are relatively low for the majority of chemicals at the Site. The only SPLP detection higher than its leachate comparison level is arsenic, which had a soil concentration from this sample comparable to the background dataset established for Site soils; and

- Groundwater beneath the Site is greater than 50 feet bgs (based on Shallow water-bearing zone monitoring well HMWWT-4, within the Site, which is screened from 36 to 51 feet bgs and was dry during August 2009 water level measurement event). It should be noted that groundwater will be evaluated separately and remedial alternatives will be evaluated, as appropriate.

## 5.0 Evaluation of Concentrations Relative to Background Conditions

As noted above, the comparison of Site-related soil concentrations to background levels was conducted using the existing, shallow soils background data set presented in the *Background Shallow Soil Summary Report, BMI Complex and Common Area Vicinity* (BRC/TIMET 2007).[9] Background comparisons were performed using the Quantile test, Slippage test, the *t*-test, and the Wilcoxon Rank Sum test with Gehan modification. The computer statistical software program, Guided Interactive Statistical Decision Tools (GiSdT®; Neptune and Company 2009), was used to perform all background comparison statistics.

For radionuclides, the reported activities were used without censoring to conduct the statistical analyses, as well as in all descriptive statistics and plots (*e.g.*, boxplots). For metals, a value of

[9] Although some data were collected below 10 feet bgs, comparisons to the deeper background dataset (BRC and ERM 2009b), collected from 20 feet bgs and deeper were not conducted. Only one sample was collected below 20 feet bgs (sample location SRC1-AJ20 at 21 feet bgs). Although for some metals there were significant differences between the shallow and deep datasets (for example, between the shallow and deep McCullough background datasets), for others no significant differences were found (for example, arsenic). For those metals for which differences between shallow and deep background are observed (that is, deep background is generally lower than shallow background, based on a comparison of maximum concentrations for each background dataset), the maximum Site concentrations for those metals that were not included in the screening-level health risk assessment (that is, antimony, boron, calcium, magnesium, mercury, molybdenum, nickel, potassium, thallium, and tin) were well below their respective BCL (less than 1/10th the BCL in all cases), where available.

one-half the SQL was used as a replacement value for non-detected data to conduct the statistical analyses. The SQL was used in all descriptive statistics and plots. For this evaluation, a nominal family-wise significance level of 0.05 was desired; thus, an adjusted significance level of 0.025 was used. A significance level of 0.025 is consistent with NDEP (2009d) guidance.

The results of the background comparison evaluation are presented in Table 4. The results of the comparisons noted above indicate that levels of the following metals exceed background levels:

- Aluminum
- Barium
- Beryllium
- Cadmium
- Chromium (Total)
- Chromium (VI)
- Cobalt
- Copper
- Iron
- Lead
- Manganese
- Sodium
- Strontium
- Titanium
- Tungsten
- Vanadium
- Zinc

Although the comparison statistics indicate that these metals levels at the Site are above background, small analytical differences or small differences related to geologic or depth differences as seen in the background dataset may be responsible for these results. Given that these chemicals are not expected to be found as contaminants at the Site, it is likely that the property and background datasets are representative of a single population. However, as discussed below, these metals are considered in the screening-level health risk assessment. Cumulative probability plots and side-by-side boxplots were also prepared and are included in Attachment E.

For radionuclides, secular equilibrium exists when the quantity of a radioactive isotope remains constant because its production rate (due to the decay of a parent isotope) is equal to its decay rate. In theory, if secular equilibrium exists, the parent isotope activity should be equivalent to the activity of all daughter radionuclides. Pure secular equilibrium is not expected in environmental samples because of the effect of natural chemical and physical processes. However, approximate secular equilibrium is expected under background conditions (NDEP 2009e). Only the uranium-238 chain was determined to be in approximate secular equilibrium following equivalence testing outlined in NDEP's *Guidance for Evaluating Secular Equilibrium at the BMI Complex and Common Areas February* (NDEP 2009e). No analytical reasons were discovered as to why the thorium-232 chain data are not in secular equilibrium. The results of the equivalence testing for secular equilibrium are as follows:

| Chain | Equivalence Test | | Secular Equilibrium? | Mean Proportion | | | |
|---|---|---|---|---|---|---|---|
| | Delta | p-value | | Ra-226 | Th-230 | U-233/234 | U-238 |
| U-238 | 0.1 | 0.0045 | Yes | 0.2575 | 0.2641 | 0.2433 | 0.2351 |
| | | | | Ra-228 | Th-228 | Th-232 | |
| Th-232 | 0.1 | 0.0825 | No | 0.3678 | 0.3302 | 0.3020 | |

As noted in Tables 1 and 4, background comparisons indicate that radionuclide levels do not exceed background levels. Background comparisons with metallic uranium also indicate that it is consistent with background levels. Coupled with the summary statistics, cumulative probability plots and side-by-side boxplots, and background comparisons for the individual radionuclides, it is reasonably to assume that radionuclides are similar to background. Therefore, these constituents are not considered in the screening-level health risk assessment.

## 6.0 Screening-Level Health Risk Assessment

The comparison levels in the Data Review section above do not take into account cumulative effects, nor do they consider all potential exposure pathways (for example, the construction dust pathway). Therefore, the purpose of the screening-level health risk assessment is to determine if chemical concentrations in Site soils are: (1) either representative of background conditions; or (2) do not pose an unacceptable risk to human health and the environment under current and anticipated future use conditions.

Human health risks are represented by estimated theoretical upper-bound cancer risks and non-cancer hazards derived in accordance with standard USEPA methods. The acceptable risk levels defined by USEPA for the protection of human health, and following those discussed previously with NDEP during development of the *BRC Closure Plan* (BRC, ERM, and DBS&A 2007) are:

1. For non-carcinogenic compounds, the acceptable criterion is a cumulative hazard index (HI) of one or less. If the screening HI is determined to be greater than 1.0, target organ-specific HIs will be calculated for primary and secondary organs. The final risk goal will be to achieve target organ-specific non-carcinogenic HIs of less than 1.0;

2. For known or suspected chemical and radionuclide carcinogens, the acceptable ceiling for a cumulative incremental lifetime cancer risk (ILCR) ranges from $10^{-6}$ to $10^{-4}$. The risk goal established by the NDEP is $10^{-6}$;

3. Where background levels exceed risk level goals, metals and radionuclides in Site soils are targeted to have risks no greater than those associated with background conditions; and

4. For asbestos, calculations are based upon cancer criterion and a risk goal of $10^{-6}$.

This screening-level health risk assessment follows the basic procedures outlined in USEPA *Risk Assessment Guidance for Superfund: Volume I—Human Health Evaluation Manual* (RAGS; USEPA 1989). Other guidance documents, including NDEP's *User's Guide and Background Technical Document for Nevada Division Of Environmental Protection (NDEP) Basic Comparison Levels (BCLs) for Human Health for the BMI Complex and Common Areas* (2010), were also consulted for the screening-level health risk assessment.

## 6.1 Selection of Chemicals of Potential Concern

The broad suite of analytes sampled for was the initial list of chemicals of potential concern (COPCs) at the Site. However, in order to ensure that a risk assessment focuses on those substances that contribute the greatest to the overall risk (USEPA 1989); only one procedure was used to eliminate the chemicals for quantitative evaluation in the screening-level health risk assessment:

- identification of chemicals with detected levels which are at or less than background concentrations (where applicable).

The procedure for evaluating chemicals relative to background conditions was presented in Section 5 above.

Another criterion that may warrant chemical reduction is the frequency of detection. In general, chemicals exhibiting a low frequency of detection will not contribute significantly to the risk estimates. USEPA (1989) suggests that chemicals with a frequency of detection less than or equal to five percent, with the exception of metals, known human carcinogens, and persistent, bioaccumulative, and toxic (PBT) chemicals as defined by the USEPA PBT program (USEPA 2010), may be considered for elimination. However, no chemicals were eliminated from further evaluation based on the frequency of detection criteria.

## 6.2 Determination of Exposure Point Concentrations

*Non-Asbestos COPCs*

A representative exposure concentration is a COPC-specific and media-specific concentration value. In risk assessment, these exposure concentrations are values incorporated into the exposure assessment equations from which potential baseline human exposures are calculated. Due to the uncertainty associated with determining the true average concentration at a site, where direct measurements of the site average are unavailable, the USEPA recommends using the lower of the maximum detected concentration or the 95 percent upper confidence limit

(UCL) as the concentration of a chemical to which an individual could be exposed over time (USEPA 1992b). For the 95 percent UCL concentration approach, the 95 percent UCL is typically computed in order to represent the area-wide exposure point concentrations. The 95 percent UCL is a statistic that quantifies the uncertainty associated with the sample mean. If randomly drawn subsets of site data are collected and the UCL is computed for each subset, the UCL will equal or exceed the true mean roughly 95 percent of the time. The purpose for using the 95 percent UCL is to derive a conservative, upper-bound estimate of the mean concentration, which takes into account the different concentrations a person may be exposed to at the Site. That is, an individual will be exposed to a range of concentrations that exist at an exposure area, from non-detect to the maximum concentration, over an entire exposure period.

However, while it may be more realistic to develop exposure concentrations consistent with the proposed development of the Site, the maximum detected concentration was selected as the exposure point concentration for each COPC, regardless of location, for evaluating Site risks in order to identify the worst-case risks for the Site.[10] It is conservatively assumed that individuals will be exposed to a consistent maximum COPC concentration in soil, based on the assumptions used in the assessment, regardless of where they are on the Site. That is, fluctuations in chemical concentrations, either spatially or temporally, are not considered.

*Asbestos*

The exposure point concentrations for asbestos were based on the pooled analytical sensitivity of the dataset (USEPA 2003b, NDEP 2009a). The asbestos data and analytical sensitivities are presented in Attachment C. Therefore, asbestos exposure point concentrations are determined differently than those for the other COPCs. The pooled analytical sensitivity was calculated as follows:

$$Pooled\ Analytical\ Sensitivity = 1/\left[\sum_i (1/analytical\ sensitivity\ \ for\ trial\ i)\right]$$

Two estimates of the asbestos concentration were evaluated, best estimate and upper bound as defined in the draft methodology (USEPA 2003b). The best estimate concentration is similar to a central tendency estimate, while the upper bound concentration is comparable to a reasonable maximum exposure estimate. The pooled analytical sensitivity is multiplied by the number of chrysotile or amphibole structures to estimate concentration:

[10] Post-scrape analyses associated with follow-up rounds of remediation focused on the analytes triggering that additional remediation (i.e., dioxins/furans), and did not include the full suite analyses of the original analytical program. Therefore, analytical results from the original sampling dataset were retained for all analytes except those that were re-analyzed after additional scraping.

$$\text{Estimated Bulk Concentration } (10^6 \text{ s/gPM10}) = \text{Long fiber count} \times \text{Pooled analytical sensitivity}$$

For the best estimate, the number of fibers measured across all samples is incorporated into the calculation above. The upper bound of the asbestos concentration was also evaluated. It is calculated as the 95 percent UCL of the Poisson distribution where the mean equals the number of structures detected. In EXCEL, the following equation may be employed to calculate this value:

95% UCL of Poisson Distribution ($10^6$ s/gPM10) = CHIINV(1-upper confidence percentile, 2 × (Long fiber count + 1))/2

This value is then multiplied by the pooled analytical sensitivity to estimate the upper bound concentration. The intent of the risk assessment methodology was to predict the risk associated with airborne asbestos.

In order to quantify the airborne asbestos concentration, the estimated dust levels or particulate emission factors (PEFs) were used:

$$\text{Estimated Airborne Concentration } (\text{s/cm}^3) = \text{Estimated bulk concentration } (10^6 \text{ s/gPM10}) \times \text{Estimated dust level } (\text{ug/cm}^3)$$

See NDEP's *Technical Guidance for the Calculation of Asbestos-Related Risk in Soils* (2009a) for further explanation on asbestos risk calculations and estimates.

The USEPA guidance for dust generated by construction activities (USEPA 2002b; from NDEP 2009a) was used for assessing short-term construction worker exposures:

$$PEF = \frac{1}{\left(\left(\frac{1}{PEF_{sc}}\right) + \left(\frac{1}{PEF_{sc\_road}}\right)\right)}$$

where:

$PEF_{sc}$ = Subchronic particulate emission factor for construction activities ($m^3$/kg)
$PEF_{sc\_road}$ = Subchronic particulate emission factor for unpaved road traffic ($m^3$/kg)

The construction dust model and all relevant equations and parameters utilized to generate the construction worker PEF from this guidance are provided in Table 5.

## 6.3 Risk Assessment Methodology

The method used in this screening-level health risk assessment consists of a simple comparison of maximum detected concentrations to NDEP outdoor commercial/industrial worker BCLs. Several chemicals have both cancer and non-cancer toxicity criteria. For these chemicals NDEP calculates BCLs for both cancer and non-cancer endpoints. These values are included in the calculation spreadsheet tables, and are both used in the screening-level risk assessment calculations.

## 6.4 Methods for Assessing Non-Cancer Health Effects

In this assessment, adverse non-cancer health effects were characterized by comparing the maximum measured soil concentrations with an exposure level at which no adverse health effects are expected to occur for a long period of exposure (*i.e.*, NDEP's BCLs). Maximum measured soil concentrations and BCLs are compared by dividing the maximum measured soil concentration by the BCL, as shown below:

$$Hazard\ Quotient = \frac{Maximum\ Measured\ Soil\ Concentration}{Outdoor\ Worker\ BCL}$$

If a person's representative exposure concentration is less than the BCL (i.e., if the hazard quotient is less than one), the chemical is considered unlikely to pose a significant non-cancer health hazard to individuals under the given exposure conditions assumed in the exposure parameters assumed in deriving the applicable BCL.

In accordance with standard risk assessment protocol, the hazard quotients for multiple chemicals are summed to determine whether the cumulative effect poses a potential health concern. The sum of the hazard quotients is known as a hazard index (HI).

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

An HI less than 1.0 indicates the exposure is unlikely to be associated with a potential health concern.

## 6.5 Methods for Assessing Cancer Risks

Carcinogenic risks are estimated as the incremental probability of an individual developing cancer over a lifetime as a result of a chemical exposure. When utilizing BCLs, carcinogenic risks are evaluated much in the same manner as hazard quotients.

$$Cancer\ Risk = \frac{Maximum\ Measured\ Soil\ Concentration}{Outdoor\ Worker\ BCL} \times 10^{-6}$$

In this fashion the BCL converts a measured concentration to incremental risk of an individual developing cancer. Because cancer risks are averaged over a person's lifetime, longer term exposure to a carcinogen will result in higher risks than shorter term exposure to the same carcinogen, if all other exposure assumptions are constant.

It is assumed that cancer risks from various exposure routes are additive. Thus, the result of the assessment is a high-end estimate of the total carcinogenic risk.

$$Total\ Carcinogenic\ Risk = \sum Risk_{individual\ \ chemicals}$$

Upper-bound carcinogenic risk estimates were compared to the USEPA acceptable risk range of 1 in 10,000 ($10^{-4}$) and 1 in 1 million ($10^{-6}$) and NDEP's acceptable level of $10^{-6}$. If the estimated risk falls within or below this risk range, the chemical is considered unlikely to pose an unacceptable carcinogenic risk to individuals under the given exposure conditions. A risk level of $1 \times 10^{-5}$ (1 E-5) represents a probability of one in 100,000 that an individual could develop cancer from exposure to the potential carcinogen under a defined set of exposure assumptions.

## 6.6 Methods for Assessing Asbestos Risks

Asbestos risks were assessed using the spreadsheets developed by NDEP in its *Technical Guidance for the Calculation of Asbestos-Related Risk in Soils* (2009a). See NDEP's guidance for further explanation on asbestos risk calculations and estimates.

## 6.7 Uncertainty Analysis

Risk estimates are values that have uncertainties associated with them. These uncertainties, which arise at every step of a risk assessment, are evaluated to provide an indication of the uncertainty associated with a risk estimate. Risk assessments are not intended to estimate actual risks to a receptor associated with exposure to chemicals in the environment. In fact, estimating actual risks is impossible because of the variability in the exposed or potentially exposed populations. Therefore, risk assessment is a means of estimating the probability that an adverse health effect (*e.g.*, cancer, impaired reproduction) will occur in a receptor in order to assist in decision making regarding the protection of human health. The multitude of conservative assumptions used in risk assessments guard against underestimation of risks.

Risk estimates are calculated by combining site data, assumptions about individual receptor's exposures to impacted media, and toxicity data. The uncertainties in this screening-level health risk assessment can be grouped into three main categories that correspond to these steps:

- Uncertainties in environmental sampling and analysis
- Uncertainties in assumptions concerning exposure scenarios
- Uncertainties in toxicity data and dose-response extrapolations

Some of the specific uncertainties associated with this screening-level health risk assessment are discussed below.

The screening-level health risk assessment for the Site was based on the sampling results obtained from investigations conducted between 2008 and 2009. Errors in sampling results can arise from the field sampling, laboratory analyses, and data analyses. Errors in laboratory analysis procedures are possible, although the impacts of these sorts of errors on the risk estimates are likely to be low. The environmental sampling at the Site is one source of uncertainty in the evaluation. However, despite the fact that a SAP was not prepared specific for the Site, the number of sampling locations and events is large and widespread, and sampling was performed using approved procedures; therefore, the sampling and analysis data is sufficient to characterize the impacts and the associated potential risks. Through data validation and data usability evaluations it is determined if there were issues with the laboratory analyses which would limit the usability of the data. Qualifiers are applied to the data to provide and indication of uncertainty and bias to the data points. These are discussed in detail in Section 3.

Laboratory reporting limits (PQLs) are standardized for the project; however, the SQLs used may vary from sample to sample. In addition to SQLs, results qualified due to blank contamination may have their reporting limits raised to a specific concentration. In particular, this may affect the metals and their comparability between the Site and background datasets. Three metals, boron, selenium and tin, failed one or more background comparison statistical tests, but were determined to be within background by plots and an examination of the data. Selenium was non-detect at the Site due to qualification of three samples due to blank contamination. Since selenium was 100 percent non-detect it is unlikely to provide a potential for risk underestimation. Reporting limits for boron were raised due to blank contamination in four samples. The maximum detect was below the background maximum detect, but the mean and median at the Site were greater than in background. This is biased by the raised reporting limits due to blank qualifications. Additionally, tin had reporting limits raised in five samples due to blank contamination.

The use of maximum concentrations across the Site causes a form of conservatism in the results. That is, if a similar risk assessment had been performed using the 95 percent UCL, then these screening risk assessments would produce lower risks. The use of maximum concentrations also assumes that individuals will be exposed to a consistent maximum concentration regardless of where they are on the Site. That is, fluctuations in chemical concentrations, either spatially or temporally, are not considered.

Because of the surface soil remediation for dioxins/furans, the new surface layer of the Site could have different chemical concentrations than those that were measured prior to remediation. Because only dioxins/furans were re-analyzed for in the post-scrape samples, the original measured surface soil data at the Site for all other chemicals was retained for further evaluation. However, because there are no historical uses of the Site, and based on the depth profiles of the chemicals, it is reasonable to assume that the concentration distribution did not change in any important way. It might also be reasonable to assume that concentrations are now lower for some chemicals because of the removal of some soil.

The screening-level health risk assessment evaluated exposures and risks to outdoor commercial/industrial receptors only (with the exception of asbestos). This receptor is considered to have the highest level of exposure at the Site. However, there are several metals, for example, beryllium, cadmium, chromium (VI), and manganese, for which non-cancer exposures may be higher for a construction worker than for an outdoor commercial/industrial receptor (this is generally not the case for cancer risks since these are average over a lifetime, therefore, the much longer outdoor commercial/industrial exposure [25 years versus 1 year] outweighs any other exposure considerations). These risks to construction workers were not quantitatively evaluated in the screening-level health risk assessment (except for asbestos). The highest individual non-cancer HI in the screening-level health risk assessment was 0.13 for manganese (see Section 6.8). Therefore, Site non-cancer risks for a construction worker would need to be over seven times greater than that evaluated in the screening-level health risk assessment. Given the limited exposures expected at the Site (much lower than the one year typically used to evaluate construction workers), the fact that sub-chronic non-cancer toxicity criteria would apply, and that target organs were not accounted for, it is unlikely that the screening-level health risk assessment underestimates Site risks, even for Site construction workers.

Overall, the exposure assumptions and toxicity criteria are considered conservative and the risk estimates calculated in this screening-level health risk assessment are likely to overestimate rather than underestimate potential risks.

## 6.8 Screening-Level Health Risk Assessment Results

This screening-level health risk assessment has evaluated potential risks to human health associated with chemicals detected in soil at the Warm Springs Road ROW, which bisects the Southern RIBs sub-area within the Eastside property. The calculated theoretical upper-bound ILCRs and non-cancer health effects are presented in Table 1. Asbestos risk calculations are presented in Table 6. All calculation spreadsheets for this screening-level health risk assessment are included on the enclosed CD in Attachment C.

The risk estimates are based on reasonable worst-case exposure scenarios, which results in estimates of the potential high-end risks associated with the Site, which are more conservative than a reasonable maximum exposure scenario. The total cumulative non-cancer HI for future commercial/industrial receptors at the Site is 0.34, which is below the target HI of 1.0. The primary contributor to this HI is manganese with an HI of 0.13. Because the total cumulative HI is below 1.0, the potential for adverse health effects is considered unlikely.

The total theoretical upper-bound ILCR for future commercial/industrial receptors at the Site is $3 \times 10^{-7}$. There are no individual chemicals whose theoretical upper-bound ILCR is greater than $10^{-7}$; the highest individual theoretical upper-bound ILCR is $5 \times 10^{-8}$ (formaldehyde). The ILCR is less than the risk goal of $1 \times 10^{-6}$. Because the total theoretical upper-bound ILCR is less than the risk goal, these results indicate that future receptor exposures at the Site should not result in unacceptable carcinogenic risks.

For construction workers, the best estimate and upper bound concentrations of asbestos range from $2 \times 10^{-8}$ to $5 \times 10^{-8}$ for chrysotile fibers, and from zero to $3 \times 10^{-6}$ for amphibole fibers. No long amphibole structures have been detected at the Site. The upper bound estimated risk for death from lung cancer or mesothelioma is associated with the UCL of the Poisson distribution which assumes the mean amphibole concentration is equal to three long amphibole structures per cubic centimeter. However, the high-end risk estimate for deaths from lung cancer or mesothelioma of $3 \times 10^{-6}$ is an overly conservative value for the following reasons:

- It is based on a 95 percent UCL of the Poisson distribution of three long amphibole structures although no long amphibole structures have been detected at the Site following remediation; and

- The values from Tables 8-2 of USEPA (2003b) should only be used for structures longer than 10 µm and thinner than 0.4 µm; and are recommended only for constant lifetime exposures, not short term exposures such as construction activities.

In addition, for dioxins/furans, the USEPA TEQ procedure, developed to describe the cumulative toxicity of these compounds, is used. This procedure involves assigning individual toxicity equivalency factors (TEFs) to the 2,3,7,8 substituted dioxin/furan and PCB congeners. TEFs are estimates of the toxicity of dioxin-like compounds relative to the toxicity of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD), which is assigned a TEF of 1.0. Calculating the TEQ of a mixture involves multiplying the concentration of individual congeners by their respective TEF. One-half the detection limit is used for calculating the TEQ for individual congeners that are non-detect in a particular sample. The sum of the TEQ concentrations for the individual congeners is the TCDD TEQ concentration for the mixture. TEFs from USEPA (2000) are used. The target goal for a non-residential land use is the NDEP worker BCL (NDEP 2010) of 1,000 ppt. None of the TCDD TEQ results exceed this level.

Thus, the results of the screening-level health risk assessment indicate that exposures to chemicals in soil at the Site should not result in adverse health effects to all future on-site receptors.

## 7.0 Data Quality Assessment

Sample size calculations were conducted for four analytes (arsenic, manganese, TCDD TEQ, and benzo[a]pyrene) for the Site.[11] Arsenic and TCDD TEQ are chemical of primary concern for the overall project, often exceeding comparison levels, while manganese and benzo(a)pyrene contribute the greatest amount to the non-cancer and cancer risk estimates, respectively. The formula used here for calculation of sample size is based on a non-parametric test (the Wilcoxon signed rank test), and on simulation studies performed by Pacific Northwest National Laboratories that formed the basis for an approximate formula that is based on the normal distribution. Essentially, the formula is the one that would be used if a normal-based test were being performed, but an adjustment is made (multiply by 1.16) to account for the intent to perform a non-parametric test. The formula is as follows:

$$n = 1.16\left[\frac{s^2}{\Delta^2}(z_{1-\alpha} + z_{1-\beta(\mu)})^2 + 0.5z_{1-\alpha}^2\right]$$

where,

[11] Sample size calculations were not conducted for asbestos. NDEP (2009b) has a worksheet for determining the number of asbestos samples needed to reach prescribed risk target levels. Similar to arsenic, a $10^{-5}$ target cancer risk level may be a more appropriate point of comparison for amphibole long fibers. Given this, and the fact that no amphibole long fibers have been detected at the Site, or in the surrounding Southern RIBs sub-area samples, the number of asbestos samples collected is considered adequate for the Site

| | | |
|---|---|---|
| n | = | number of samples |
| *s* | = | estimated standard deviation of concentrations/fibers |
| Δ | | width of the gray region (the difference between the threshold value in stated in the hypothesis and the point at which β is specified) |
| α | | significance level or Type I error tolerance |
| β (μ) | | Type II error tolerance; and |
| z | | quantile from the standard normal distribution |

For each chemical, inputs for the calculations include an estimate of the variance from the measured data, a desired significance level, and desired power of the test that must be specified at a concentration of interest (which determines the tolerable difference from the threshold value). For arsenic, the Site mean concentration exceeds its BCL based on the target cancer risk level of $10^{-6}$. It is not appropriate to apply this calculation where the threshold value is less than the mean concentration. Therefore, an adjustment of the threshold value was used based on a $10^{-5}$ target cancer risk level. The calculations provided here cover a range of Type I and Type II error tolerances, and the point at which the Type II error is specified. Results are presented in Table 7. In Table 7, various combinations of input values are used, including: values of α of 5%, 10% and 15%; values of β of 15%, 20%, and 25%; and a gray region of width 10%, 20% and 30% of the threshold level. It is clear from Table 7 that the number of samples collected is adequate for the Site.

## 8.0 Summary

Based on the results of the Site investigation, this data review, and the screening-level health risk assessment, exposures to residual levels of chemicals in soil at the Warm Springs Road ROW Site should not result in adverse health effects to all future receptors and groundwater quality. In summary, BRC concludes and hereby requests that the NDEP grant an NFAD for the Site. Note that this request for an NFAD for the Site includes the potential re-alignment of the Warm Springs Road ROW, as discussed in Section 4 and Attachment F, and shown on Figure 2.

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Attachments: Table 1 – Soil Data and Screening-Level Risk Assessment Results Summary
Table 2 – Surface Flux Data and Outdoor Air Evaluation
Table 3 – SPLP Data Summary
Table 4 – Background Comparison Summary
Table 5 – Construction Dust Model
Table 6 – Asbestos Risk Summary
Table 7 – Asbestos Risk Summary
Figure 1 – Warm Springs Road ROW Location
Figure 2 – Soil and Surface Flux Sampling Locations
Figure 3 – Conceptual Site Model Diagram for Potential Human Exposures
Attachment A – NDEP Comments and BRC's Response to Comments and Redline/Strikeout Text
Attachment B – Data Usability Tables (on the enclosed CD in Attachment B)
Attachment C – Warm Springs Road ROW Investigation Data Tables (Database and Electronic Files on CD)
Attachment D – Neptune and Company Data Usability Investigation of TO-15 SIM Data and Review by Steve Hoyt, Environmental Analytical Service
Attachment E – Cumulative Probability Plots and Boxplots
Attachment F – Potential Re-Alignment Data Summary

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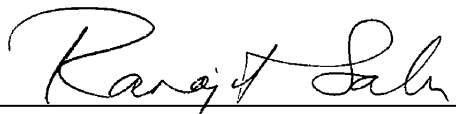
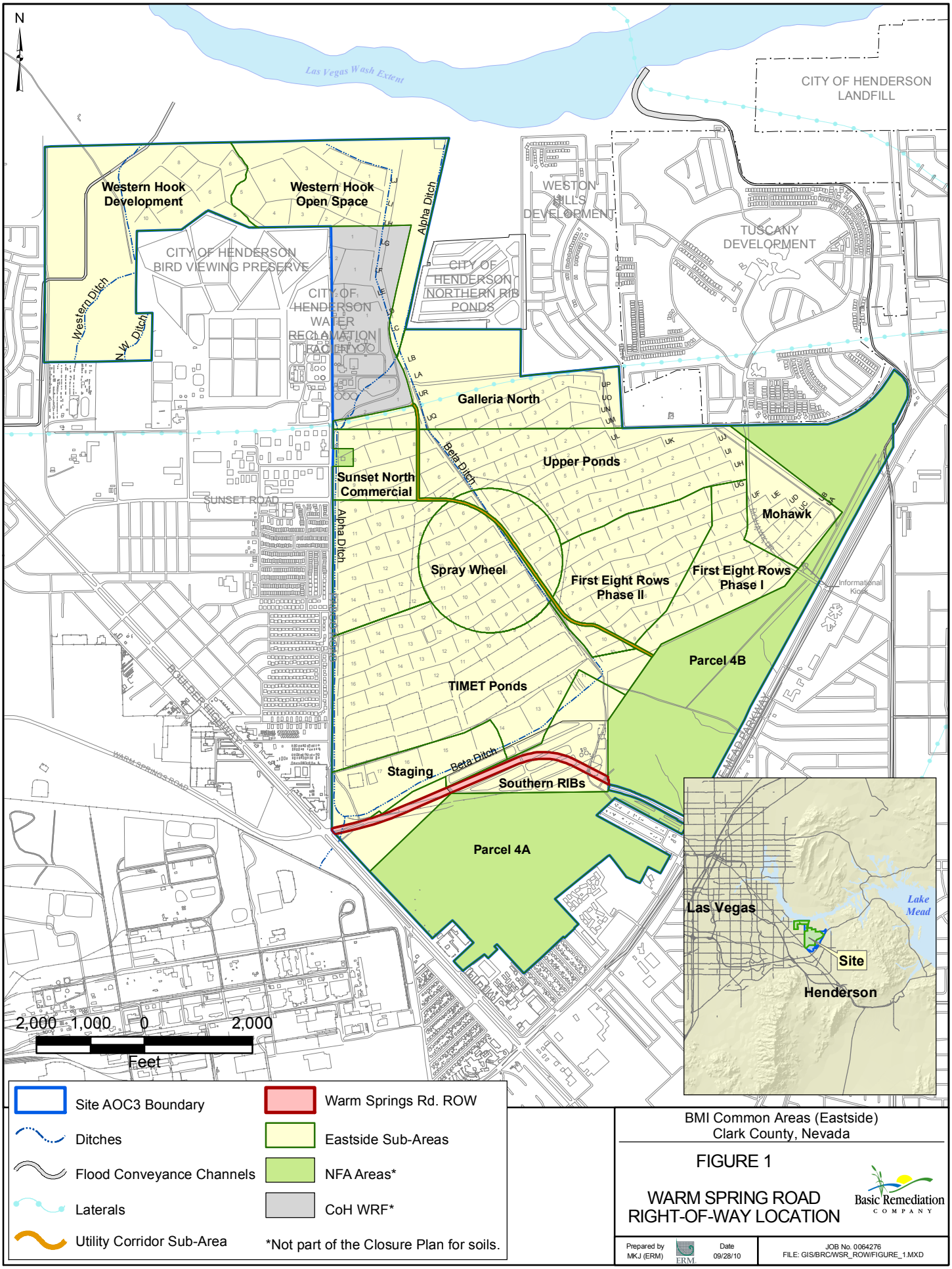
I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and to the best of my knowledge comply with all applicable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



September 30, 2010

Dr. Ranajit Sahu, C.E.M. (No. EM-1699, Exp. 10/07/2011) Date
BRC Project Manager

# FIGURES



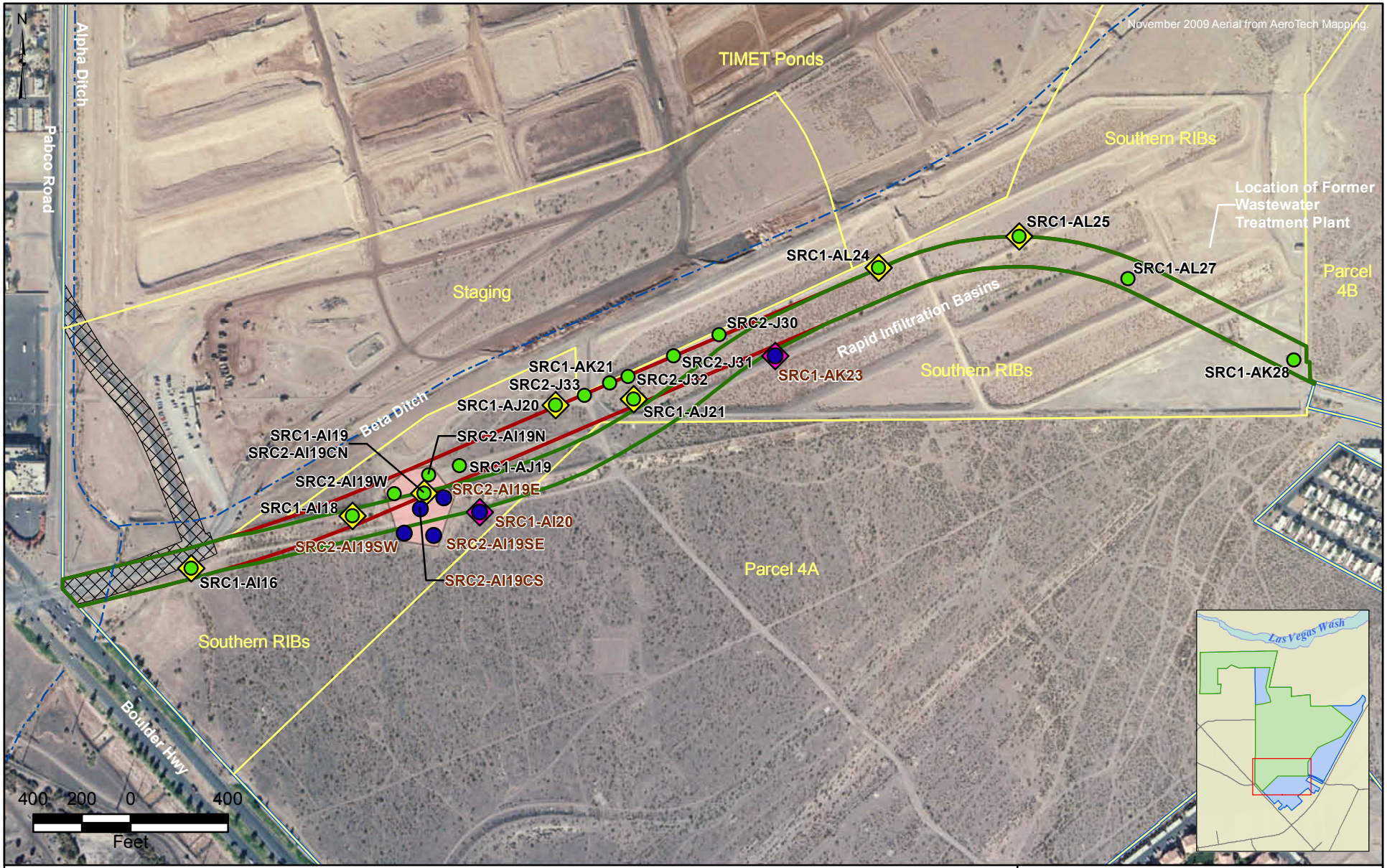

BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE 1

WARM SPRING ROAD
RIGHT-OF-WAY LOCATION

Basic Remediation Company

| Prepared by | Date | JOB No. 0064276 |
|---|---|---|
| MKJ (ERM) | 09/28/10 | FILE: GIS/BRC/WSR_ROW/FIGURE_1.MXD |



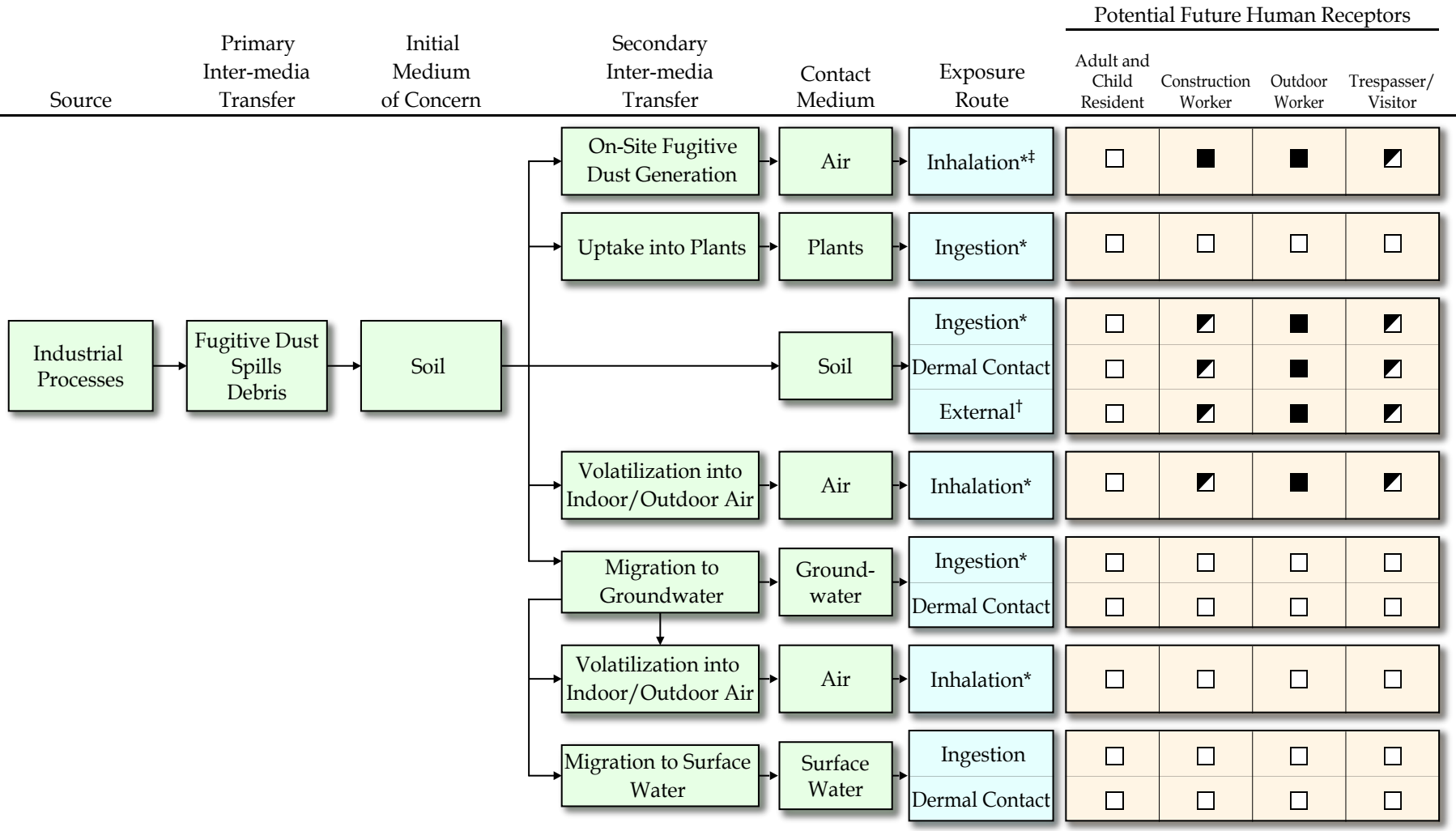

BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE 2

SOIL AND SURFACE FLUX SAMPLING LOCATIONS

Basic Remediation COMPANY

| Prepared by | Date | JOB No. 0064276 |
|---|---|---|
| MKJ (ERM) | 09/28/10 | FILE: GIS/BRC/WSR_ROW/REALIGN.MXD |




□ - Incomplete or insignificant exposure pathway.
■ - Complete or potentially complete exposure pathway.
◩ - Although a potentially complete exposure pathway, only outdoor worker receptors (and construction workers for asbestos exposures) were evaluated in the screening-level health risk assessment (see text).
*Includes radionuclide exposures.
†Only radionuclide exposures.
‡Includes asbestos exposures.

BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE 3

CONCEPTUAL SITE MODEL DIAGRAM FOR POTENTIAL HUMAN EXPOSURES

Basic Remediation COMPANY

Prepared by MKJ (ERM) | Date 09/28/10 | JOB No. 0064276 | FILE: GIS/BRC/WSR_ROW/FIGURE_3.AI

# TABLES

**TABLE 1**
**SOIL DATA AND SCREENING-LEVEL HEALTH RISK ASSESSMENT**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Parameter of Interest | Compound List | Units | Total Count | Detect Freq | Censored (Non-Detect) Data | | | | | | | Detected Data[a] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Count | Min | Q1 | Median | Mean | Q3 | Max | Count | Min | Q1 | Median | Mean | Q3 | Max |
| **Asbestos**[e] | Chrysotile | Structures | 13 | 7.7% | 12 | 0 | -- | -- | -- | -- | 0 | 1 | 2 | -- | -- | -- | -- | 2 |
| | Amphibole | Structures | 13 | 0% | 13 | 0 | -- | -- | -- | -- | 0 | 0 | -- | -- | -- | -- | -- | -- |
| **Aldehydes** | Acetaldehyde | mg/kg | 27 | 0% | 27 | 0.151 | 0.159 | 0.305 | 0.25 | 0.315 | 0.324 | 0 | -- | -- | -- | -- | -- | -- |
| | Formaldehyde | mg/kg | 27 | 44.4% | 15 | 0.101 | 0.106 | 0.205 | 0.181 | 0.211 | 0.216 | 12 | 0.14 | 0.237 | 0.429 | 0.689 | 1.07 | 2.05 |
| **Dioxins/ Furans** | 1,2,3,4,6,7,8-Heptachlorodibenzofuran | pg/g | 21 | 61.9% | 8 | 0.16 | 0.315 | 0.71 | 1.66 | 3.99 | 5.1 | 13 | 2.8 | 4.75 | 17 | 30.6 | 50.5 | 120 |
| | 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin | pg/g | 21 | 28.6% | 15 | 0.075 | 0.37 | 0.95 | 2.4 | 5 | 5.1 | 6 | 4.1 | 4.63 | 7.35 | 8.1 | 11.8 | 14 |
| | 1,2,3,4,7,8,9-Heptachlorodibenzofuran | pg/g | 21 | 42.9% | 12 | 0.054 | 0.253 | 1.13 | 2.14 | 5 | 5.1 | 9 | 3.3 | 6.95 | 12 | 19.2 | 29 | 53 |
| | 1,2,3,4,7,8-Hexachlorodibenzofuran | pg/g | 21 | 52.4% | 10 | 0.061 | 0.175 | 0.605 | 1.84 | 5 | 5.1 | 11 | 2.7 | 4.4 | 11 | 18.3 | 32 | 49 |
| | 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin | pg/g | 21 | 0% | 21 | 0.075 | 0.22 | 1 | 2.44 | 5 | 5.3 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,2,3,6,7,8-Hexachlorodibenzofuran | pg/g | 21 | 42.9% | 12 | 0.037 | 0.215 | 0.7 | 2.03 | 5 | 5.1 | 9 | 2.6 | 5.7 | 8.7 | 14.2 | 21.5 | 38 |
| | 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | pg/g | 21 | 4.8% | 20 | 0.059 | 0.283 | 1.35 | 2.41 | 5 | 5.3 | 1 | 3.5 | -- | 3.5 | 3.5 | -- | 3.5 |
| | 1,2,3,7,8,9-Hexachlorodibenzofuran | pg/g | 21 | 19.0% | 17 | 0.05 | 0.21 | 0.99 | 2.18 | 5 | 5.1 | 4 | 3 | 3.03 | 3.15 | 4.18 | 6.35 | 7.4 |
| | 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin | pg/g | 21 | 0% | 21 | 0.061 | 0.28 | 1.1 | 2.5 | 5 | 5.3 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,2,3,7,8-Pentachlorodibenzofuran | pg/g | 21 | 47.6% | 11 | 0.076 | 0.18 | 0.68 | 1.75 | 5 | 5.1 | 10 | 2.5 | 4.18 | 12 | 13.3 | 18.5 | 36 |
| | 1,2,3,7,8-Pentachlorodibenzo-p-dioxin | pg/g | 21 | 4.8% | 20 | 0.1 | 0.265 | 1.3 | 2.5 | 5 | 5.3 | 1 | 3.1 | -- | 3.1 | 3.1 | -- | 3.1 |
| | 2,3,4,6,7,8-Hexachlorodibenzofuran | pg/g | 21 | 23.8% | 16 | 0.042 | 0.14 | 1.16 | 2.24 | 5 | 5.1 | 5 | 2.7 | 3.45 | 4.7 | 5.42 | 7.75 | 8.7 |
| | 2,3,4,7,8-Pentachlorodibenzofuran | pg/g | 21 | 28.6% | 15 | 0.059 | 0.18 | 0.94 | 2.91 | 5 | 13 | 6 | 3.7 | 4.45 | 10.5 | 10.2 | 14 | 20 |
| | 2,3,7,8-Tetrachlorodibenzofuran | pg/g | 21 | 71.4% | 6 | 0.084 | 0.119 | 0.29 | 0.269 | 0.385 | 0.46 | 15 | 0.58 | 1.8 | 4.2 | 11.8 | 20 | 52 |
| | 2,3,7,8-Tetrachlorodibenzo-p-dioxin | pg/g | 21 | 19.0% | 17 | 0.054 | 0.18 | 0.6 | 0.593 | 1 | 1.4 | 4 | 0.56 | 0.575 | 0.66 | 0.795 | 1.15 | 1.3 |
| | Octachlorodibenzodioxin | pg/g | 21 | 28.6% | 15 | 0.14 | 1.7 | 2.6 | 5.18 | 10 | 10 | 6 | 8.3 | 10.3 | 21.5 | 32.1 | 48.5 | 98 |
| | Octachlorodibenzofuran | pg/g | 21 | 61.9% | 8 | 0.64 | 0.888 | 1.7 | 3.84 | 8.7 | 10 | 13 | 13 | 25.5 | 68 | 117 | 245 | 350 |
| | TCDD TEQ | pg/g | 21 | --[1] | -- | -- | -- | -- | -- | -- | -- | 21 | 0.28 | 0.825 | 6.5 | 7.99 | 12.2 | 33.2 |
| **General Chemistry** | Ammonia | mg/kg | 32 | 15.6% | 27 | 0.79 | 0.8 | 0.81 | 0.813 | 0.82 | 0.84 | 5 | 0.49 | 0.5 | 0.83 | 0.946 | 1.45 | 1.5 |
| | Bromide | mg/kg | 32 | 25.0% | 24 | 0.25 | 0.26 | 0.26 | 0.261 | 0.26 | 0.28 | 8 | 0.29 | 1.15 | 1.35 | 1.59 | 2.38 | 2.6 |
| | Chlorate | mg/kg | 32 | 0% | 32 | 0.48 | 0.54 | 0.55 | 0.542 | 0.558 | 0.57 | 0 | -- | -- | -- | -- | -- | -- |
| | Chloride | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 2.7 | 9.95 | 34 | 85.6 | 90.2 | 395 |
| | Cyanide, Total | mg/kg | 32 | 34.4% | 21 | 0.08 | 0.0825 | 0.083 | 0.0881 | 0.0855 | 0.11 | 11 | 0.17 | 0.19 | 0.2 | 0.223 | 0.26 | 0.33 |
| | Fluoride | mg/kg | 32 | 90.6% | 3 | 0.1 | 0.1 | 0.1 | 0.103 | 0.11 | 0.11 | 29 | 0.23 | 0.755 | 1.4 | 1.6 | 2.4 | 4.4 |
| | Nitrate | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 0.75 | 1.6 | 4.05 | 19.4 | 13 | 165 |
| | Nitrite | mg/kg | 32 | 9.4% | 29 | 0.02 | 0.021 | 0.021 | 0.0222 | 0.021 | 0.034 | 3 | 0.15 | 0.15 | 0.16 | 0.157 | 0.16 | 0.16 |
| | Orthophosphate as P | mg/kg | 32 | 21.9% | 25 | 0.5 | 0.515 | 0.52 | 0.706 | 0.53 | 5.1 | 7 | 1 | 1.3 | 5.4 | 5.6 | 11.6 | 11.8 |
| | Perchlorate | mg/kg | 29 | 69.0% | 9 | 0.0103 | 0.0105 | 0.0106 | 0.0106 | 0.0108 | 0.0108 | 20 | 0.0249 | 0.0472 | 0.119 | 0.325 | 0.312 | 3.03 |
| | Sulfate | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 11.4 | 30.2 | 92.3 | 203 | 191 | 2190 |
| | Sulfide | mg/kg | 32 | 9.4% | 29 | 0.84 | 1.8 | 1.9 | 1.79 | 1.9 | 1.9 | 3 | 20.2 | 20.2 | 20.3 | 33.7 | 60.5 | 60.5 |
| | Total Kjeldahl Nitrogen (TKN) | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 22.9 | 50.6 | 84 | 119 | 154 | 647 |
| **Metals** | Aluminum | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 8250 | 9940 | 12200 | 12000 | 13200 | 18400 |
| | Antimony | mg/kg | 32 | 0% | 32 | 0.126 | 0.126 | 0.176 | 0.193 | 0.252 | 0.315 | 0 | -- | -- | -- | -- | -- | -- |
| | Arsenic | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 2 | 2.68 | 3.65 | 4.15 | 5.53 | 9.5 |
| | Barium | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 155 | 211 | 247 | 257 | 273 | 490 |
| | Beryllium | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 0.53 | 0.575 | 0.65 | 0.654 | 0.718 | 0.84 |
| | Boron | mg/kg | 32 | 15.6% | 27 | 2.99 | 6.6 | 6.6 | 8.01 | 13.2 | 16.5 | 5 | 4.8 | 5.3 | 6.8 | 7.28 | 9.5 | 9.9 |
| | Cadmium | mg/kg | 32 | 37.5% | 20 | 0.04 | 0.04 | 0.04 | 0.052 | 0.08 | 0.08 | 12 | 0.11 | 0.12 | 0.14 | 0.184 | 0.25 | 0.37 |
| | Calcium | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 10900 | 15700 | 20700 | 25100 | 28500 | 92200 |
| | Chromium (Total) | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 7.7 | 9.73 | 12.3 | 12.6 | 14.2 | 19.7 |
| | Chromium (VI) | mg/kg | 32 | 53.1% | 15 | 0.1 | 0.1 | 0.1 | 0.105 | 0.11 | 0.11 | 17 | 0.11 | 0.13 | 0.19 | 0.224 | 0.28 | 0.58 |
| | Cobalt | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 5.7 | 8.9 | 9.8 | 9.91 | 10.6 | 14.4 |
| | Copper | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 13 | 16.8 | 18.3 | 19.1 | 22.2 | 24.5 |
| | Iron | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 11100 | 16100 | 17700 | 17800 | 18900 | 23700 |
| | Lead | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 5.9 | 8.35 | 10.3 | 14.7 | 12.1 | 79.3 |
| | Lithium | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 8.5 | 10.7 | 12.1 | 12.5 | 13.9 | 21 |
| | Magnesium | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 5530 | 9240 | 9950 | 10100 | 10900 | 15400 |
| | Manganese | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 240 | 420 | 494 | 577 | 620 | 1800 |
| | Mercury | mg/kg | 28 | 28.6% | 20 | 0.005 | 0.0115 | 0.0115 | 0.0102 | 0.0115 | 0.0115 | 8 | 0.011 | 0.0122 | 0.0181 | 0.0209 | 0.0265 | 0.0438 |
| | Molybdenum | mg/kg | 32 | 65.6% | 11 | 0.2 | 0.2 | 0.376 | 0.296 | 0.376 | 0.376 | 21 | 0.29 | 0.38 | 0.48 | 0.678 | 0.675 | 2.3 |
| | Nickel | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 11.7 | 15.3 | 16.3 | 17 | 17.7 | 30.3 |
| | Potassium | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 863 | 1370 | 1810 | 1790 | 2210 | 2800 |
| | Selenium | mg/kg | 32 | 0% | 32 | 0.16 | 0.16 | 0.32 | 5.45 | 0.4 | 24 | 0 | -- | -- | -- | -- | -- | -- |
| | Silver | mg/kg | 32 | 68.8% | 10 | 0.044 | 0.044 | 0.088 | 0.0748 | 0.088 | 0.088 | 22 | 0.076 | 0.13 | 0.14 | 0.163 | 0.203 | 0.28 |
| | Sodium | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 332 | 520 | 659 | 680 | 829 | 1140 |

**TABLE 1**
**SOIL DATA AND SCREENING-LEVEL HEALTH RISK ASSESSMENT**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 2 of 10)**

| Parameter of Interest | Compound List | Units | Total Count | Detect Freq | Censored (Non-Detect) Data | | | | | | | Detected Data[a] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Count | Min | Q1 | Median | Mean | Q3 | Max | Count | Min | Q1 | Median | Mean | Q3 | Max |
| **Metals** | Strontium | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 209 | 263 | 313 | 309 | 353 | 443 |
| | Thallium | mg/kg | 32 | 21.9% | 25 | 0.105 | 0.3 | 0.3 | 0.345 | 0.6 | 0.6 | 7 | 0.25 | 0.28 | 0.36 | 0.517 | 0.86 | 0.96 |
| | Tin | mg/kg | 32 | 40.6% | 19 | 0.3 | 0.3 | 0.6 | 0.529 | 0.75 | 0.75 | 13 | 0.41 | 0.435 | 0.48 | 0.678 | 0.935 | 1.3 |
| | Titanium | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 553 | 598 | 740 | 755 | 838 | 1270 |
| | Tungsten | mg/kg | 32 | 28.1% | 23 | 0.185 | 0.5 | 0.5 | 0.562 | 1 | 1 | 9 | 0.25 | 0.29 | 0.56 | 1.39 | 2.95 | 4 |
| | Uranium | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 0.7 | 0.885 | 1.1 | 1.14 | 1.3 | 1.9 |
| | Vanadium | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 34.6 | 45.7 | 49.3 | 50.8 | 57.2 | 71.4 |
| | Zinc | mg/kg | 32 | 100% | 0 | -- | -- | -- | -- | -- | -- | 32 | 25.1 | 39.1 | 45.1 | 49.8 | 54.8 | 106 |
| **OCPs** | 2,4-DDD | mg/kg | 32 | 0% | 32 | 0.00014 | 0.00031 | 0.00032 | 0.000421 | 0.00032 | 0.0032 | 0 | -- | -- | -- | -- | -- | -- |
| | 2,4-DDE | mg/kg | 32 | 9.4% | 29 | 0.00013 | 0.00021 | 0.00021 | 0.000294 | 0.00021 | 0.0021 | 3 | 0.0025 | 0.0025 | 0.0037 | 0.00443 | 0.0071 | 0.0071 |
| | 4,4-DDD | mg/kg | 32 | 0% | 32 | 0.00009 | 0.000093 | 0.0000935 | 0.000134 | 0.000096 | 0.00093 | 0 | -- | -- | -- | -- | -- | -- |
| | 4,4-DDE | mg/kg | 32 | 21.9% | 25 | 0.0002 | 0.0002 | 0.0002 | 0.000291 | 0.0002 | 0.002 | 7 | 0.002 | 0.0022 | 0.0068 | 0.00986 | 0.022 | 0.025 |
| | 4,4-DDT | mg/kg | 32 | 12.5% | 28 | 0.00021 | 0.00021 | 0.00021 | 0.000283 | 0.00021 | 0.0021 | 4 | 0.0046 | 0.0049 | 0.0119 | 0.0156 | 0.03 | 0.034 |
| | Aldrin | mg/kg | 32 | 0% | 32 | 0.000092 | 0.0000973 | 0.000099 | 0.000138 | 0.0001 | 0.00099 | 0 | -- | -- | -- | -- | -- | -- |
| | alpha-BHC | mg/kg | 32 | 0% | 32 | 0.000095 | 0.00029 | 0.00029 | 0.000383 | 0.0003 | 0.0029 | 0 | -- | -- | -- | -- | -- | -- |
| | alpha-Chlordane | mg/kg | 32 | 0% | 32 | 0.0001 | 0.000213 | 0.00022 | 0.000292 | 0.00022 | 0.0022 | 0 | -- | -- | -- | -- | -- | -- |
| | beta-BHC | mg/kg | 32 | 6.3% | 30 | 0.00013 | 0.00019 | 0.00019 | 0.000267 | 0.0002 | 0.0019 | 2 | 0.003 | -- | 0.0065 | 0.0065 | -- | 0.01 |
| | Chlordane | mg/kg | 32 | 3.1% | 31 | 0.0015 | 0.0024 | 0.0024 | 0.00298 | 0.0025 | 0.024 | 1 | 0.031 | -- | 0.031 | 0.031 | -- | 0.031 |
| | delta-BHC | mg/kg | 32 | 0% | 32 | 0.00011 | 0.00017 | 0.00017 | 0.000234 | 0.00018 | 0.0017 | 0 | -- | -- | -- | -- | -- | -- |
| | Dieldrin | mg/kg | 32 | 0% | 32 | 0.000092 | 0.000095 | 0.0000955 | 0.000134 | 0.000097 | 0.00095 | 0 | -- | -- | -- | -- | -- | -- |
| | Endosulfan I | mg/kg | 32 | 0% | 32 | 0.000096 | 0.00011 | 0.00011 | 0.000152 | 0.00011 | 0.0011 | 0 | -- | -- | -- | -- | -- | -- |
| | Endosulfan II | mg/kg | 32 | 0% | 32 | 0.000094 | 0.000097 | 0.000098 | 0.00014 | 0.0001 | 0.00097 | 0 | -- | -- | -- | -- | -- | -- |
| | Endosulfan sulfate | mg/kg | 32 | 0% | 32 | 0.00013 | 0.00027 | 0.00027 | 0.000363 | 0.00028 | 0.0027 | 0 | -- | -- | -- | -- | -- | -- |
| | Endrin | mg/kg | 32 | 0% | 32 | 0.000084 | 0.000086 | 0.000087 | 0.000126 | 0.0000898 | 0.00087 | 0 | -- | -- | -- | -- | -- | -- |
| | Endrin aldehyde | mg/kg | 32 | 0% | 32 | 0.00015 | 0.00018 | 0.00019 | 0.000259 | 0.00019 | 0.0019 | 0 | -- | -- | -- | -- | -- | -- |
| | Endrin ketone | mg/kg | 32 | 0% | 32 | 0.00013 | 0.00017 | 0.00017 | 0.000233 | 0.00017 | 0.0017 | 0 | -- | -- | -- | -- | -- | -- |
| | gamma-BHC (Lindane) | mg/kg | 32 | 0% | 32 | 0.0001 | 0.00013 | 0.00013 | 0.000178 | 0.00013 | 0.0013 | 0 | -- | -- | -- | -- | -- | -- |
| | gamma-Chlordane | mg/kg | 32 | 0% | 32 | 0.000084 | 0.000086 | 0.000087 | 0.000122 | 0.000088 | 0.00087 | 0 | -- | -- | -- | -- | -- | -- |
| | Heptachlor | mg/kg | 32 | 0% | 32 | 0.000096 | 0.00018 | 0.00018 | 0.00024 | 0.00018 | 0.0018 | 0 | -- | -- | -- | -- | -- | -- |
| | Heptachlor epoxide | mg/kg | 32 | 0% | 32 | 0.00012 | 0.00013 | 0.00014 | 0.000192 | 0.00014 | 0.0014 | 0 | -- | -- | -- | -- | -- | -- |
| | Methoxychlor | mg/kg | 32 | 0% | 32 | 0.00032 | 0.00033 | 0.00033 | 0.000464 | 0.00034 | 0.0033 | 0 | -- | -- | -- | -- | -- | -- |
| | Toxaphene | mg/kg | 32 | 0% | 32 | 0.0057 | 0.006 | 0.0061 | 0.00845 | 0.0061 | 0.06 | 0 | -- | -- | -- | -- | -- | -- |
| **PAHs** | Acenaphthene | mg/kg | 29 | 3.4% | 28 | 0.00169 | 0.00171 | 0.00176 | 0.00175 | 0.00178 | 0.00182 | 1 | 0.0038 | -- | 0.0038 | 0.0038 | -- | 0.0038 |
| | Acenaphthylene | mg/kg | 29 | 3.4% | 28 | 0.00169 | 0.00172 | 0.00176 | 0.00175 | 0.00178 | 0.00182 | 1 | 0.00315 | -- | 0.00315 | 0.00315 | -- | 0.00315 |
| | Anthracene | mg/kg | 29 | 6.9% | 27 | 0.00169 | 0.00171 | 0.00176 | 0.00175 | 0.00178 | 0.00182 | 2 | 0.00375 | -- | 0.00436 | 0.00436 | -- | 0.00496 |
| | Benzo(a)anthracene | mg/kg | 29 | 20.7% | 23 | 0.00169 | 0.00173 | 0.00176 | 0.00176 | 0.00178 | 0.00181 | 6 | 0.00206 | 0.00207 | 0.00691 | 0.00768 | 0.013 | 0.0162 |
| | Benzo(a)pyrene | mg/kg | 29 | 20.7% | 23 | 0.00169 | 0.00171 | 0.00176 | 0.00175 | 0.00178 | 0.00181 | 6 | 0.00176 | 0.00322 | 0.00995 | 0.00876 | 0.0132 | 0.0144 |
| | Benzo(b)fluoranthene | mg/kg | 29 | 24.1% | 22 | 0.00169 | 0.00171 | 0.00177 | 0.00176 | 0.00178 | 0.00181 | 7 | 0.00196 | 0.00311 | 0.00974 | 0.0187 | 0.0344 | 0.0576 |
| | Benzo(g,h,i)perylene | mg/kg | 29 | 20.7% | 23 | 0.00169 | 0.00171 | 0.00176 | 0.00175 | 0.00178 | 0.00181 | 6 | 0.00248 | 0.00349 | 0.0396 | 0.0392 | 0.0735 | 0.0772 |
| | Benzo(k)fluoranthene | mg/kg | 29 | 13.8% | 25 | 0.00169 | 0.00171 | 0.00176 | 0.00175 | 0.00178 | 0.00181 | 4 | 0.00239 | 0.00331 | 0.00635 | 0.00554 | 0.00695 | 0.00705 |
| | Chrysene | mg/kg | 29 | 20.7% | 23 | 0.00169 | 0.00171 | 0.00178 | 0.00288 | 0.00179 | 0.015 | 6 | 0.00374 | 0.0102 | 0.0193 | 0.0219 | 0.0377 | 0.0394 |
| | Dibenzo(a,h)anthracene | mg/kg | 29 | 0% | 29 | 0.00169 | 0.00171 | 0.00176 | 0.00175 | 0.00178 | 0.00182 | 0 | -- | -- | -- | -- | -- | -- |
| | Indeno(1,2,3-cd)pyrene | mg/kg | 29 | 20.7% | 23 | 0.00169 | 0.00171 | 0.00176 | 0.00175 | 0.00178 | 0.00181 | 6 | 0.00183 | 0.00259 | 0.0352 | 0.0373 | 0.0722 | 0.0786 |
| | Phenanthrene | mg/kg | 29 | 10.3% | 26 | 0.00169 | 0.00171 | 0.00176 | 0.00175 | 0.00178 | 0.00181 | 3 | 0.00542 | 0.00542 | 0.0172 | 0.015 | 0.0225 | 0.0225 |
| | Pyrene | mg/kg | 29 | 20.7% | 23 | 0.00169 | 0.00171 | 0.00176 | 0.00175 | 0.00178 | 0.00181 | 6 | 0.002 | 0.00274 | 0.0135 | 0.0153 | 0.0272 | 0.0356 |
| **PCBs** | PCB 105 | pg/g | 20 | 80.0% | 4 | 2 | 2.03 | 2.1 | 2.7 | 3.98 | 4.6 | 16 | 2.3 | 8.03 | 44.5 | 86.9 | 175 | 260 |
| | PCB 114 | pg/g | 20 | 50.0% | 10 | 2 | 2 | 2 | 2.04 | 2.1 | 2.1 | 10 | 2.3 | 2.8 | 9.3 | 9.57 | 14 | 20 |
| | PCB 118 | pg/g | 20 | 80.0% | 4 | 2.1 | 2.43 | 5.4 | 5.4 | 8.38 | 8.7 | 16 | 3.3 | 17.5 | 89.5 | 154 | 290 | 430 |
| | PCB 123 | pg/g | 20 | 0% | 20 | 2 | 2 | 2.05 | 2.06 | 2.1 | 2.2 | 0 | -- | -- | -- | -- | -- | -- |
| | PCB 126 | pg/g | 20 | 40.0% | 12 | 2 | 2 | 2 | 2.04 | 2.1 | 2.1 | 8 | 3.3 | 3.73 | 4.9 | 5.78 | 6.25 | 13 |
| | PCB 156 | pg/g | 20 | 60.0% | 8 | 2 | 2 | 2.05 | 2.05 | 2.1 | 2.1 | 12 | 2.8 | 7.65 | 29.5 | 30.3 | 46.8 | 90 |
| | PCB 157 | pg/g | 20 | 45.0% | 11 | 2 | 2 | 2 | 2.05 | 2.1 | 2.1 | 9 | 2 | 5.15 | 7.7 | 10.5 | 12 | 33 |
| | PCB 167 | pg/g | 20 | 55.0% | 9 | 2 | 2 | 2 | 2.04 | 2.1 | 2.1 | 11 | 2.2 | 3.9 | 11 | 15.4 | 20 | 55 |
| | PCB 169 | pg/g | 20 | 5.0% | 19 | 2 | 2 | 2 | 2.05 | 2.1 | 2.2 | 1 | 2.8 | -- | 2.8 | 2.8 | -- | 2.8 |
| | PCB 189 | pg/g | 20 | 40.0% | 12 | 2 | 2 | 2 | 2.04 | 2.1 | 2.1 | 8 | 2.9 | 4.23 | 5.1 | 9.3 | 9.2 | 36 |
| | PCB 209 | pg/g | 20 | 75.0% | 5 | 2 | 2 | 2.1 | 2.06 | 2.1 | 2.1 | 15 | 48 | 110 | 570 | 1150 | 1800 | 6600 |
| | PCB 77 | pg/g | 20 | 0% | 20 | 2 | 2 | 2.05 | 2.06 | 2.1 | 2.2 | 0 | -- | -- | -- | -- | -- | -- |
| | PCB 81 | pg/g | 20 | 0% | 20 | 2 | 2 | 2.05 | 2.06 | 2.1 | 2.2 | 0 | -- | -- | -- | -- | -- | -- |

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**SOIL DATA AND SCREENING-LEVEL HEALTH RISK ASSESSMENT**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Parameter of Interest | Compound List | Units | Total Count | Detect Freq | Censored (Non-Detect) Data | | | | | | | Detected Data[a] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Count | Min | Q1 | Median | Mean | Q3 | Max | Count | Min | Q1 | Median | Mean | Q3 | Max |
| **Radio-nuclides[g]** | Radium-226 | pCi/g | 31 | 93.5% | 2 | -- | -- | -- | -- | -- | -- | 29 | 0.154 | 0.75 | 0.88 | 0.952 | 1.19 | 1.8 |
| | Radium-228 | pCi/g | 31 | 100% | 0 | -- | -- | -- | -- | -- | -- | 31 | 1.09 | 1.38 | 1.78 | 1.83 | 2.24 | 2.98 |
| | Thorium-228 | pCi/g | 31 | 100% | 0 | -- | -- | -- | -- | -- | -- | 31 | 1.3 | 1.42 | 1.66 | 1.69 | 1.92 | 2.23 |
| | Thorium-230 | pCi/g | 31 | 87.1% | 4 | -- | -- | -- | -- | -- | -- | 27 | 0.668 | 0.942 | 1.04 | 1.06 | 1.13 | 1.74 |
| | Thorium-232 | pCi/g | 31 | 100% | 0 | -- | -- | -- | -- | -- | -- | 31 | 0.893 | 1.14 | 1.38 | 1.52 | 1.77 | 2.67 |
| | Uranium-233/234 | pCi/g | 31 | 96.8% | 1 | -- | -- | -- | -- | -- | -- | 30 | 0.629 | 0.839 | 1.03 | 1.05 | 1.23 | 1.67 |
| | Uranium-235/236 | pCi/g | 31 | 12.9% | 27 | -- | -- | -- | -- | -- | -- | 4 | -0.19 | #NUM! | 0.054 | 0.0701 | 0.178 | 0.246 |
| | Uranium-238 | pCi/g | 31 | 100% | 0 | -- | -- | -- | -- | -- | -- | 31 | 0.534 | 0.788 | 0.972 | 0.972 | 1.15 | 1.35 |
| **SVOCs** | 1,2,4,5-Tetrachlorobenzene | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,2-Diphenylhydrazine | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,4-Dioxane | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | 2,2'-Dichlorobenzil | mg/kg | 29 | 0% | 29 | 0.0116 | 0.113 | 0.115 | 0.105 | 0.118 | 0.12 | 0 | -- | -- | -- | -- | -- | -- |
| | 2,4,5-Trichlorophenol | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | 2,4,6-Trichlorophenol | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | 2,4-Dichlorophenol | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | 2,4-Dimethylphenol | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | 2,4-Dinitrophenol | mg/kg | 29 | 0% | 29 | 0.128 | 0.13 | 0.134 | 0.133 | 0.136 | 0.138 | 0 | -- | -- | -- | -- | -- | -- |
| | 2,4-Dinitrotoluene | mg/kg | 29 | 0% | 29 | 0.0338 | 0.0342 | 0.0352 | 0.0351 | 0.0357 | 0.0364 | 0 | -- | -- | -- | -- | -- | -- |
| | 2,6-Dinitrotoluene | mg/kg | 29 | 0% | 29 | 0.0338 | 0.0342 | 0.0352 | 0.0351 | 0.0357 | 0.0364 | 0 | -- | -- | -- | -- | -- | -- |
| | 2-Chloronaphthalene | mg/kg | 29 | 0% | 29 | 0.0118 | 0.012 | 0.0123 | 0.0123 | 0.0125 | 0.0128 | 0 | -- | -- | -- | -- | -- | -- |
| | 2-Chlorophenol | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | 2-Methylnaphthalene | mg/kg | 29 | 3.4% | 28 | 0.00676 | 0.00684 | 0.00705 | 0.00701 | 0.00714 | 0.00729 | 1 | 0.0142 | -- | 0.0142 | 0.0142 | -- | 0.0142 |
| | 2-Nitroaniline | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | 2-Nitrophenol | mg/kg | 29 | 0% | 29 | 0.0338 | 0.0342 | 0.0352 | 0.0351 | 0.0357 | 0.0364 | 0 | -- | -- | -- | -- | -- | -- |
| | 3,3-Dichlorobenzidine | mg/kg | 29 | 0% | 29 | 0.101 | 0.103 | 0.106 | 0.105 | 0.107 | 0.109 | 0 | -- | -- | -- | -- | -- | -- |
| | 3-Nitroaniline | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | 4-Bromophenyl phenyl ether | mg/kg | 29 | 0% | 29 | 0.0338 | 0.0342 | 0.0352 | 0.0351 | 0.0357 | 0.0364 | 0 | -- | -- | -- | -- | -- | -- |
| | 4-Chloro-3-methylphenol | mg/kg | 29 | 0% | 29 | 0.0338 | 0.0342 | 0.0352 | 0.0351 | 0.0357 | 0.0364 | 0 | -- | -- | -- | -- | -- | -- |
| | 4-Chlorophenyl phenyl ether | mg/kg | 29 | 0% | 29 | 0.0338 | 0.0342 | 0.0352 | 0.0351 | 0.0357 | 0.0364 | 0 | -- | -- | -- | -- | -- | -- |
| | 4-Chlorothioanisole | mg/kg | 29 | 0% | 29 | 0.0396 | 0.113 | 0.115 | 0.108 | 0.118 | 0.12 | 0 | -- | -- | -- | -- | -- | -- |
| | 4-Nitroaniline | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | 4-Nitrophenol | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | Acetophenone | mg/kg | 29 | 3.4% | 28 | 0.0338 | 0.0342 | 0.0352 | 0.035 | 0.0357 | 0.0361 | 1 | 0.0453 | -- | 0.0453 | 0.0453 | -- | 0.0453 |
| | Aniline | mg/kg | 29 | 0% | 29 | 0.118 | 0.12 | 0.123 | 0.123 | 0.125 | 0.128 | 0 | -- | -- | -- | -- | -- | -- |
| | Benzenethiol | mg/kg | 29 | 0% | 29 | 0.112 | 0.114 | 0.116 | 0.128 | 0.119 | 0.235 | 0 | -- | -- | -- | -- | -- | -- |
| | Benzoic acid | mg/kg | 29 | 0% | 29 | 0.169 | 0.171 | 0.176 | 0.175 | 0.178 | 0.182 | 0 | -- | -- | -- | -- | -- | -- |
| | Benzyl alcohol | mg/kg | 29 | 0% | 29 | 0.101 | 0.103 | 0.106 | 0.105 | 0.107 | 0.109 | 0 | -- | -- | -- | -- | -- | -- |
| | bis(2-Chloroethoxy)methane | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | bis(2-Chloroethyl) ether | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | bis(2-Chloroisopropyl) ether | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | bis(2-Ethylhexyl) phthalate | mg/kg | 29 | 3.4% | 28 | 0.0676 | 0.0684 | 0.0705 | 0.0701 | 0.0714 | 0.0729 | 1 | 0.0877 | -- | 0.0877 | 0.0877 | -- | 0.0877 |
| | bis(p-Chlorophenyl) sulfone | mg/kg | 29 | 0% | 29 | 0.00786 | 0.113 | 0.115 | 0.105 | 0.118 | 0.12 | 0 | -- | -- | -- | -- | -- | -- |
| | bis(p-Chlorophenyl)disulfide | mg/kg | 29 | 0% | 29 | 0.0294 | 0.113 | 0.115 | 0.107 | 0.118 | 0.12 | 0 | -- | -- | -- | -- | -- | -- |
| | Butylbenzyl phthalate | mg/kg | 29 | 3.4% | 28 | 0.0676 | 0.0684 | 0.0705 | 0.0701 | 0.0714 | 0.0729 | 1 | 0.0722 | -- | 0.0722 | 0.0722 | -- | 0.0722 |
| | Carbazole | mg/kg | 29 | 0% | 29 | 0.0101 | 0.0103 | 0.0106 | 0.0105 | 0.0107 | 0.0109 | 0 | -- | -- | -- | -- | -- | -- |
| | Dibenzofuran | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | Dichloromethyl ether | mg/kg | 29 | 0% | 29 | 0.112 | 0.113 | 0.116 | 0.116 | 0.118 | 0.12 | 0 | -- | -- | -- | -- | -- | -- |
| | Diethyl phthalate | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | Dimethyl phthalate | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | Di-n-butyl phthalate | mg/kg | 29 | 0% | 29 | 0.0338 | 0.0342 | 0.0352 | 0.0351 | 0.0357 | 0.0364 | 0 | -- | -- | -- | -- | -- | -- |
| | Di-n-octyl phthalate | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | Diphenyl disulfide | mg/kg | 29 | 0% | 29 | 0.0277 | 0.113 | 0.115 | 0.107 | 0.118 | 0.12 | 0 | -- | -- | -- | -- | -- | -- |
| | Diphenyl sulfide | mg/kg | 29 | 0% | 29 | 0.0287 | 0.113 | 0.115 | 0.107 | 0.118 | 0.12 | 0 | -- | -- | -- | -- | -- | -- |
| | Diphenyl sulfone | mg/kg | 29 | 0% | 29 | 0.0181 | 0.113 | 0.115 | 0.106 | 0.118 | 0.12 | 0 | -- | -- | -- | -- | -- | -- |
| | Diphenylamine | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | Fluoranthene | mg/kg | 29 | 10.3% | 26 | 0.0101 | 0.0103 | 0.0106 | 0.0105 | 0.0107 | 0.0108 | 3 | 0.0195 | 0.0195 | 0.0223 | 0.0247 | 0.0323 | 0.0323 |
| | Fluorene | mg/kg | 29 | 0% | 29 | 0.0101 | 0.0103 | 0.0106 | 0.0105 | 0.0107 | 0.0109 | 0 | -- | -- | -- | -- | -- | -- |
| | Hexachlorobenzene | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | Hexachlorobutadiene | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |

**TABLE 1**
**SOIL DATA AND SCREENING-LEVEL HEALTH RISK ASSESSMENT**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Parameter of Interest | Compound List | Units | Total Count | Detect Freq | Censored (Non-Detect) Data | | | | | | | Detected Data[a] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Count | Min | Q1 | Median | Mean | Q3 | Max | Count | Min | Q1 | Median | Mean | Q3 | Max |
| SVOCs | Hexachlorocyclopentadiene | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | Hexachloroethane | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | Hydroxymethyl phthalimide | mg/kg | 29 | 0% | 29 | 0.0509 | 0.113 | 0.115 | 0.109 | 0.118 | 0.12 | 0 | -- | -- | -- | -- | -- | -- |
| | Isophorone | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | m,p-Cresols | mg/kg | 29 | 0% | 29 | 0.135 | 0.137 | 0.141 | 0.14 | 0.143 | 0.146 | 0 | -- | -- | -- | -- | -- | -- |
| | Naphthalene | mg/kg | 29 | 0% | 29 | 0.0101 | 0.0103 | 0.0106 | 0.0105 | 0.0107 | 0.0109 | 0 | -- | -- | -- | -- | -- | -- |
| | Nitrobenzene | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | N-nitrosodi-n-propylamine | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | o-Cresol | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | Octachlorostyrene | mg/kg | 29 | 0% | 29 | 0.0195 | 0.113 | 0.115 | 0.106 | 0.118 | 0.12 | 0 | -- | -- | -- | -- | -- | -- |
| | p-Chloroaniline | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | p-Chlorobenzenethiol | mg/kg | 29 | 0% | 29 | 0.112 | 0.114 | 0.116 | 0.128 | 0.119 | 0.235 | 0 | -- | -- | -- | -- | -- | -- |
| | Pentachlorobenzene | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | Pentachlorophenol | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | Phenol | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| | Phthalic acid | mg/kg | 29 | 0% | 29 | 0.0202 | 0.113 | 0.115 | 0.119 | 0.118 | 0.505 | 0 | -- | -- | -- | -- | -- | -- |
| | Pyridine | mg/kg | 29 | 0% | 29 | 0.0676 | 0.0684 | 0.0704 | 0.0701 | 0.0714 | 0.0729 | 0 | -- | -- | -- | -- | -- | -- |
| VOCs | 1,1,1,2-Tetrachloroethane | mg/kg | 32 | 0% | 32 | 0.00018 | 0.000183 | 0.00019 | 0.000218 | 0.00019 | 0.00041 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,1,1-Trichloroethane | mg/kg | 32 | 0% | 32 | 0.00011 | 0.00011 | 0.00011 | 0.000131 | 0.00011 | 0.00025 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,1,2,2-Tetrachloroethane | mg/kg | 32 | 0% | 32 | 0.000079 | 0.000081 | 0.000082 | 0.00014 | 0.0000828 | 0.00048 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,1,2-Trichloroethane | mg/kg | 32 | 0% | 32 | 0.000068 | 0.0000693 | 0.00007 | 0.000116 | 0.000071 | 0.00039 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,1-Dichloroethane | mg/kg | 32 | 0% | 32 | 0.000071 | 0.0000723 | 0.000073 | 0.00012 | 0.000074 | 0.0004 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,1-Dichloroethene | mg/kg | 32 | 0% | 32 | 0.00012 | 0.00012 | 0.00013 | 0.000144 | 0.00013 | 0.00025 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,1-Dichloropropene | mg/kg | 32 | 0% | 32 | 0.000088 | 0.00009 | 0.000091 | 0.000112 | 0.000092 | 0.00024 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,2,3-Trichlorobenzene | mg/kg | 32 | 0% | 32 | 0.00039 | 0.0004 | 0.00041 | 0.000415 | 0.00041 | 0.00049 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,2,3-Trichloropropane | mg/kg | 32 | 0% | 32 | 0.00025 | 0.00026 | 0.00026 | 0.000297 | 0.000268 | 0.00052 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,2,4-Trichlorobenzene | mg/kg | 32 | 0% | 32 | 0.00031 | 0.00034 | 0.00034 | 0.000341 | 0.00035 | 0.00036 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,2,4-Trimethylbenzene | mg/kg | 32 | 3.1% | 31 | 0.00014 | 0.00014 | 0.00014 | 0.000183 | 0.00014 | 0.00043 | 1 | 0.0051 | -- | 0.0051 | 0.0051 | -- | 0.0051 |
| | 1,2-Dichlorobenzene | mg/kg | 32 | 0% | 32 | 0.00012 | 0.00013 | 0.00013 | 0.000165 | 0.00013 | 0.00038 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,2-Dichloroethane | mg/kg | 32 | 0% | 32 | 0.000067 | 0.0000683 | 0.000069 | 0.00011 | 0.00007 | 0.00035 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,2-Dichloroethene | mg/kg | 32 | 0% | 32 | 0.00011 | 0.00011 | 0.00011 | 0.000193 | 0.00011 | 0.00067 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,2-Dichloropropane | mg/kg | 32 | 0% | 32 | 0.00011 | 0.00011 | 0.00012 | 0.000157 | 0.00012 | 0.0004 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,3,5-Trichlorobenzene | mg/kg | 32 | 0% | 32 | 0.00037 | 0.00038 | 0.00039 | 0.000408 | 0.00039 | 0.00055 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,3,5-Trimethylbenzene | mg/kg | 32 | 3.1% | 31 | 0.000099 | 0.0001 | 0.0001 | 0.000125 | 0.0001 | 0.00027 | 1 | 0.00021 | -- | 0.00021 | 0.00021 | -- | 0.00021 |
| | 1,3-Dichlorobenzene | mg/kg | 32 | 0% | 32 | 0.00013 | 0.00014 | 0.00014 | 0.000187 | 0.00014 | 0.00047 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,3-Dichloropropane | mg/kg | 32 | 0% | 32 | 0.000052 | 0.000053 | 0.000053 | 0.000111 | 0.000054 | 0.00044 | 0 | -- | -- | -- | -- | -- | -- |
| | 1,4-Dichlorobenzene | mg/kg | 32 | 0% | 32 | 0.00014 | 0.00014 | 0.00014 | 0.000168 | 0.00014 | 0.00033 | 0 | -- | -- | -- | -- | -- | -- |
| | 2,2,3-Trimethylbutane | mg/kg | 32 | 0% | 32 | 0.00021 | 0.00022 | 0.00022 | 0.000269 | 0.00022 | 0.00057 | 0 | -- | -- | -- | -- | -- | -- |
| | 2,2-Dichloropropane | mg/kg | 32 | 0% | 32 | 0.00024 | 0.00024 | 0.00024 | 0.000253 | 0.00025 | 0.00033 | 0 | -- | -- | -- | -- | -- | -- |
| | 2,2-Dimethylpentane | mg/kg | 32 | 0% | 32 | 0.00028 | 0.000283 | 0.00029 | 0.000327 | 0.00029 | 0.00057 | 0 | -- | -- | -- | -- | -- | -- |
| | 2,3-Dimethylpentane | mg/kg | 32 | 0% | 32 | 0.00023 | 0.00023 | 0.00023 | 0.000267 | 0.00024 | 0.00047 | 0 | -- | -- | -- | -- | -- | -- |
| | 2,4-Dimethylpentane | mg/kg | 32 | 0% | 32 | 0.0002 | 0.0002 | 0.0002 | 0.000247 | 0.0002 | 0.00052 | 0 | -- | -- | -- | -- | -- | -- |
| | 2-Chlorotoluene | mg/kg | 32 | 0% | 32 | 0.00025 | 0.00026 | 0.00026 | 0.000272 | 0.00026 | 0.00036 | 0 | -- | -- | -- | -- | -- | -- |
| | 2-Hexanone | mg/kg | 32 | 0% | 32 | 0.00024 | 0.00025 | 0.00025 | 0.000253 | 0.00025 | 0.0003 | 0 | -- | -- | -- | -- | -- | -- |
| | 2-Methylhexane | mg/kg | 32 | 0% | 32 | 0.00021 | 0.00021 | 0.00021 | 0.000259 | 0.000218 | 0.00054 | 0 | -- | -- | -- | -- | -- | -- |
| | 2-Nitropropane | mg/kg | 32 | 0% | 32 | 0.00032 | 0.000613 | 0.00063 | 0.000581 | 0.00063 | 0.00065 | 0 | -- | -- | -- | -- | -- | -- |
| | 3,3-Dimethylpentane | mg/kg | 32 | 0% | 32 | 0.00021 | 0.00021 | 0.00021 | 0.000254 | 0.000218 | 0.00051 | 0 | -- | -- | -- | -- | -- | -- |
| | 3-Ethylpentane | mg/kg | 32 | 0% | 32 | 0.00021 | 0.00022 | 0.00022 | 0.000257 | 0.00022 | 0.00048 | 0 | -- | -- | -- | -- | -- | -- |
| | 3-Methylhexane | mg/kg | 32 | 0% | 32 | 0.00014 | 0.000143 | 0.00015 | 0.000198 | 0.00015 | 0.0005 | 0 | -- | -- | -- | -- | -- | -- |
| | 4-Chlorotoluene | mg/kg | 32 | 0% | 32 | 0.00017 | 0.00018 | 0.00018 | 0.000191 | 0.00018 | 0.00027 | 0 | -- | -- | -- | -- | -- | -- |
| | 4-Methyl-2-pentanone (MIBK) | mg/kg | 32 | 0% | 32 | 0.00029 | 0.0003 | 0.0003 | 0.000302 | 0.000308 | 0.00033 | 0 | -- | -- | -- | -- | -- | -- |
| | Acetone | mg/kg | 32 | 53.1% | 15 | 0.0017 | 0.0018 | 0.0018 | 0.00274 | 0.0018 | 0.0066 | 17 | 0.0028 | 0.0078 | 0.013 | 0.0162 | 0.021 | 0.055 |
| | Acetonitrile | mg/kg | 32 | 0% | 32 | 0.0035 | 0.00553 | 0.0056 | 0.00533 | 0.0057 | 0.0059 | 0 | -- | -- | -- | -- | -- | -- |
| | Benzene | mg/kg | 32 | 0% | 32 | 0.000088 | 0.00009 | 0.000091 | 0.000129 | 0.000092 | 0.00035 | 0 | -- | -- | -- | -- | -- | -- |
| | Bromobenzene | mg/kg | 32 | 0% | 32 | 0.00012 | 0.00013 | 0.00013 | 0.000168 | 0.00013 | 0.0004 | 0 | -- | -- | -- | -- | -- | -- |
| | Bromodichloromethane | mg/kg | 32 | 0% | 32 | 0.00022 | 0.00022 | 0.00022 | 0.000238 | 0.00023 | 0.00034 | 0 | -- | -- | -- | -- | -- | -- |
| | Bromoform | mg/kg | 32 | 0% | 32 | 0.00006 | 0.000061 | 0.000062 | 0.000118 | 0.0000628 | 0.00044 | 0 | -- | -- | -- | -- | -- | -- |
| | Bromomethane | mg/kg | 32 | 0% | 32 | 0.00013 | 0.000133 | 0.00014 | 0.000179 | 0.00014 | 0.00043 | 0 | -- | -- | -- | -- | -- | -- |
| | Carbon disulfide | mg/kg | 32 | 0% | 32 | 0.00012 | 0.00013 | 0.00013 | 0.000152 | 0.00013 | 0.0003 | 0 | -- | -- | -- | -- | -- | -- |

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**SOIL DATA AND SCREENING-LEVEL HEALTH RISK ASSESSMENT**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Parameter of Interest | Compound List | Units | Total Count | Detect Freq | Censored (Non-Detect) Data | | | | | | | Detected Data[a] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Count | Min | Q1 | Median | Mean | Q3 | Max | Count | Min | Q1 | Median | Mean | Q3 | Max |
| **VOCs** | Carbon tetrachloride | mg/kg | 32 | 0% | 32 | 0.00021 | 0.00021 | 0.000215 | 0.000229 | 0.00022 | 0.00033 | 0 | -- | -- | -- | -- | -- | -- |
| | Chlorobenzene | mg/kg | 32 | 0% | 32 | 0.00011 | 0.00011 | 0.00011 | 0.000141 | 0.00011 | 0.00032 | 0 | -- | -- | -- | -- | -- | -- |
| | Chlorobromomethane | mg/kg | 32 | 0% | 32 | 0.00023 | 0.00023 | 0.00024 | 0.000268 | 0.00024 | 0.00047 | 0 | -- | -- | -- | -- | -- | -- |
| | Chloroethane | mg/kg | 32 | 0% | 32 | 0.00031 | 0.00047 | 0.00048 | 0.000456 | 0.000488 | 0.0005 | 0 | -- | -- | -- | -- | -- | -- |
| | Chloroform | mg/kg | 32 | 0% | 32 | 0.0001 | 0.0001 | 0.0001 | 0.000144 | 0.00011 | 0.00038 | 0 | -- | -- | -- | -- | -- | -- |
| | Chloromethane | mg/kg | 32 | 0% | 32 | 0.00027 | 0.00028 | 0.00028 | 0.000279 | 0.00028 | 0.00029 | 0 | -- | -- | -- | -- | -- | -- |
| | cis-1,2-Dichloroethene | mg/kg | 32 | 0% | 32 | 0.000055 | 0.000056 | 0.000057 | 0.000101 | 0.000057 | 0.00036 | 0 | -- | -- | -- | -- | -- | -- |
| | cis-1,3-Dichloropropene | mg/kg | 32 | 0% | 32 | 0.0001 | 0.0001 | 0.0001 | 0.000125 | 0.00011 | 0.00025 | 0 | -- | -- | -- | -- | -- | -- |
| | Cymene (Isopropyltoluene) | mg/kg | 32 | 0% | 32 | 0.00013 | 0.00013 | 0.00013 | 0.000151 | 0.00013 | 0.00028 | 0 | -- | -- | -- | -- | -- | -- |
| | Dibromochloromethane | mg/kg | 32 | 0% | 32 | 0.00012 | 0.00012 | 0.00012 | 0.000148 | 0.000128 | 0.00031 | 0 | -- | -- | -- | -- | -- | -- |
| | Dibromochloropropane | mg/kg | 32 | 0% | 32 | 0.00021 | 0.00022 | 0.00022 | 0.000281 | 0.00022 | 0.00064 | 0 | -- | -- | -- | -- | -- | -- |
| | Dibromomethane | mg/kg | 32 | 0% | 32 | 0.00017 | 0.00017 | 0.00017 | 0.000201 | 0.00018 | 0.00037 | 0 | -- | -- | -- | -- | -- | -- |
| | Dichloromethane | mg/kg | 32 | 9.4% | 29 | 0.00071 | 0.0035 | 0.0078 | 0.0075 | 0.00945 | 0.024 | 3 | 0.0052 | 0.0052 | 0.0093 | 0.0085 | 0.011 | 0.011 |
| | Dimethyldisulfide | mg/kg | 32 | 0% | 32 | 0.00018 | 0.00018 | 0.00018 | 0.00023 | 0.00019 | 0.00051 | 0 | -- | -- | -- | -- | -- | -- |
| | Ethanol | mg/kg | 32 | 0% | 32 | 0.048 | 0.049 | 0.05 | 0.0515 | 0.05 | 0.066 | 0 | -- | -- | -- | -- | -- | -- |
| | Ethylbenzene | mg/kg | 32 | 3.1% | 31 | 0.000059 | 0.00006 | 0.000061 | 0.0000985 | 0.000062 | 0.00031 | 1 | 0.00027 | -- | 0.00027 | 0.00027 | -- | 0.00027 |
| | Freon-11 (Trichlorofluoromethane) | mg/kg | 32 | 3.1% | 31 | 0.00022 | 0.00023 | 0.00023 | 0.000243 | 0.00023 | 0.00033 | 1 | 0.00031 | -- | 0.00031 | 0.00031 | -- | 0.00031 |
| | Freon-113 (1,1,2-Trifluoro-1,2,2-trichloroet | mg/kg | 32 | 0% | 32 | 0.00015 | 0.00015 | 0.00015 | 0.000167 | 0.00015 | 0.00027 | 0 | -- | -- | -- | -- | -- | -- |
| | Freon-12 (Dichlorodifluoromethane) | mg/kg | 32 | 0% | 32 | 0.00025 | 0.0003 | 0.0003 | 0.000294 | 0.0003 | 0.00031 | 0 | -- | -- | -- | -- | -- | -- |
| | Heptane | mg/kg | 32 | 0% | 32 | 0.00017 | 0.00017 | 0.00017 | 0.000204 | 0.00017 | 0.0004 | 0 | -- | -- | -- | -- | -- | -- |
| | Isopropylbenzene | mg/kg | 32 | 0% | 32 | 0.0001 | 0.00011 | 0.00011 | 0.000138 | 0.00011 | 0.0003 | 0 | -- | -- | -- | -- | -- | -- |
| | m,p-Xylenes | mg/kg | 32 | 3.1% | 31 | 0.00017 | 0.00017 | 0.00017 | 0.000219 | 0.00018 | 0.00049 | 1 | 0.00055 | -- | 0.00055 | 0.00055 | -- | 0.00055 |
| | Methyl ethyl ketone | mg/kg | 32 | 6.3% | 30 | 0.00057 | 0.00089 | 0.000905 | 0.000873 | 0.00091 | 0.00094 | 2 | 0.004 | -- | 0.00425 | 0.00425 | -- | 0.0045 |
| | Methyl iodide | mg/kg | 32 | 0% | 32 | 0.00013 | 0.00013 | 0.00013 | 0.000171 | 0.00013 | 0.00041 | 0 | -- | -- | -- | -- | -- | -- |
| | MTBE (Methyl tert-butyl ether) | mg/kg | 32 | 0% | 32 | 0.00009 | 0.0000923 | 0.000093 | 0.000153 | 0.000094 | 0.0005 | 0 | -- | -- | -- | -- | -- | -- |
| | n-Butyl benzene | mg/kg | 32 | 0% | 32 | 0.00018 | 0.00019 | 0.00019 | 0.000207 | 0.00019 | 0.00032 | 0 | -- | -- | -- | -- | -- | -- |
| | Nonanal | mg/kg | 32 | 0% | 32 | 0.00036 | 0.00048 | 0.00049 | 0.00047 | 0.00049 | 0.00051 | 0 | -- | -- | -- | -- | -- | -- |
| | n-Propylbenzene | mg/kg | 32 | 0% | 32 | 0.00011 | 0.00011 | 0.00011 | 0.000138 | 0.00012 | 0.00029 | 0 | -- | -- | -- | -- | -- | -- |
| | o-Xylene | mg/kg | 32 | 3.1% | 31 | 0.000077 | 0.000079 | 0.00008 | 0.000105 | 0.000081 | 0.00025 | 1 | 0.00025 | -- | 0.00025 | 0.00025 | -- | 0.00025 |
| | sec-Butylbenzene | mg/kg | 32 | 0% | 32 | 0.00011 | 0.00011 | 0.00011 | 0.000145 | 0.00011 | 0.00035 | 0 | -- | -- | -- | -- | -- | -- |
| | Styrene | mg/kg | 32 | 0% | 32 | 0.00018 | 0.00018 | 0.00018 | 0.000186 | 0.00018 | 0.00022 | 0 | -- | -- | -- | -- | -- | -- |
| | tert-Butyl benzene | mg/kg | 32 | 0% | 32 | 0.0001 | 0.0001 | 0.0001 | 0.000123 | 0.00011 | 0.00024 | 0 | -- | -- | -- | -- | -- | -- |
| | Tetrachloroethene | mg/kg | 32 | 0% | 32 | 0.000088 | 0.00009 | 0.000091 | 0.000151 | 0.000092 | 0.0005 | 0 | -- | -- | -- | -- | -- | -- |
| | Toluene | mg/kg | 32 | 3.1% | 31 | 0.00024 | 0.00033 | 0.00034 | 0.000323 | 0.00034 | 0.00035 | 1 | 0.00048 | -- | 0.00048 | 0.00048 | -- | 0.00048 |
| | trans-1,2-Dichloroethene | mg/kg | 32 | 0% | 32 | 0.000091 | 0.0000933 | 0.000094 | 0.000133 | 0.000095 | 0.00036 | 0 | -- | -- | -- | -- | -- | -- |
| | trans-1,3-Dichloropropene | mg/kg | 32 | 0% | 32 | 0.0001 | 0.0001 | 0.0001 | 0.000116 | 0.00011 | 0.00019 | 0 | -- | -- | -- | -- | -- | -- |
| | Trichloroethene | mg/kg | 32 | 0% | 32 | 0.00011 | 0.00011 | 0.00011 | 0.000135 | 0.00011 | 0.00028 | 0 | -- | -- | -- | -- | -- | -- |
| | Vinyl acetate | mg/kg | 32 | 0% | 32 | 0.00024 | 0.00025 | 0.00025 | 0.000272 | 0.00025 | 0.00041 | 0 | -- | -- | -- | -- | -- | -- |
| | Vinyl chloride | mg/kg | 32 | 0% | 32 | 0.00011 | 0.00012 | 0.00012 | 0.000152 | 0.00012 | 0.00035 | 0 | -- | -- | -- | -- | -- | -- |
| | Xylenes (total) | mg/kg | 32 | 3.1% | 31 | 0.00023 | 0.00024 | 0.00024 | 0.000307 | 0.00025 | 0.00069 | 1 | 0.00079 | -- | 0.00079 | 0.00079 | -- | 0.00079 |

**Notes:**

BCL = Basic Comparison Levels (BCLs) from NDEP 2010. Values used are outdoor worker soil BCLs.
LBCL = Leaching-based BCLs from NDEP 2010.
Max = Maximum
Min = Minimum
Q1 = 1st quartile (25th percentile)
Q3 = 3rd quartile (75th percentile)
Values for Q1, median, mean, and Q3 are rounded to 2 significant figures. BCLs are rounded to 3 significant figures.
a - Range of detections include estimated values of detect results between the detection limit and reporting limit. As such some minimum detected concentrations may be below the minimum reporting limit. In these cases the respective sample results are flagged in the dataset.
b - Based on results of statistical comparison tests performed between shallow background and site datasets (see Table 4).
c - Non-cancer hazard indices were calculated by dividing the maximum detected value by its non-cancer BCL. The total non-cancer hazard index is the sum of all chemical-specific hazard indices.
d - Theoretical upper-bound incremental lifetime cancer risks were calculated by were calculated by dividing the maximum detected value by its cancer BCL times 1E-6. The total incremental lifetime cancer risk is the sum of all chemical-specific cancer risks.
e - Asbestos results shown are for long protocol structures (>10um).
f - TCDD TEQ values are calculated from congener-specific concentrations. An individual TCDD TEQ value may include detect and non-detect congeners. Therefore, the number of detects and non-detects, and a frequency of detection for TCDD TEQ are not presented.
g - Because both non-detect and detected radionuclides have reported activity levels, calculated summary statistics (and exceedances of comparison levels) are presented as detected regardless of the lab detect flag. Lab detect flags are represented by the censored (non-detect) and detect count fields in the table.
-- = Not applicable or no value has been established.

**TABLE 1**
**SOIL DATA AND SCREENING-LEVEL HEALTH RISK ASSESSMENT**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Parameter of Interest | Compound List | Units | Outdoor Worker BCL | Count of Detects > BCL | LBCL (DAF = 1) | Count of Detects > LBCL (1) | LBCL (DAF = 20) | Count of Detects > LBCL (20) | Above Bkgrd?[b] | Non-Cancer-Based Outdoor Worker BCL | Cancer-Based Outdoor Worker BCL | Non-Cancer Hazard Index[c] | Incremental Lifetime Cancer Risk[d] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Asbestos**[e] | Chrysotile | Structures | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | See Table 6 |
| | Amphibole | Structures | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| **Aldehydes** | Acetaldehyde | mg/kg | 25.9 | -- | -- | -- | -- | -- | -- | 183 | 25.9 | -- | -- |
| | Formaldehyde | mg/kg | 41.6 | 0 | -- | -- | -- | -- | -- | 136000 | 41.6 | 0.000015 | 5 E-8 |
| **Dioxins/ Furans** | 1,2,3,4,6,7,8-Heptachlorodibenzofuran | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3,4,7,8,9-Heptachlorodibenzofuran | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3,4,7,8-Hexachlorodibenzofuran | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3,6,7,8-Hexachlorodibenzofuran | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3,7,8,9-Hexachlorodibenzofuran | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3,7,8-Pentachlorodibenzofuran | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3,7,8-Pentachlorodibenzo-p-dioxin | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2,3,4,6,7,8-Hexachlorodibenzofuran | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2,3,4,7,8-Pentachlorodibenzofuran | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2,3,7,8-Tetrachlorodibenzofuran | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2,3,7,8-Tetrachlorodibenzo-p-dioxin | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Octachlorodibenzodioxin | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Octachlorodibenzofuran | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | TCDD TEQ | pg/g | 1000 | 0 | -- | -- | -- | -- | -- | -- | 1000 | -- | 3 E-8 |
| **General Chemistry** | Ammonia | mg/kg | 100000 | 0 | -- | -- | -- | -- | -- | 195000000 | -- | 7.7E-09 | -- |
| | Bromide | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Chlorate | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Chloride | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Cyanide, Total | mg/kg | 13700 | 0 | 2 | 0 | 40 | 0 | -- | 13,700 | -- | 0.000024 | -- |
| | Fluoride | mg/kg | 41000 | 0 | -- | -- | -- | -- | -- | 41,000 | -- | 0.00011 | -- |
| | Nitrate | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Nitrite | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Orthophosphate as P | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Perchlorate | mg/kg | 795 | 0 | -- | -- | -- | -- | -- | 795 | -- | 0.0038 | -- |
| | Sulfate | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Sulfide | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Total Kjeldahl Nitrogen (TKN) | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Metals** | Aluminum | mg/kg | 100000 | 0 | 75 | 32 | 1500 | 32 | YES | 1020000 | -- | 0.018 | -- |
| | Antimony | mg/kg | 454 | -- | 0.3 | -- | 6 | -- | NO | 454 | -- | -- | -- |
| | Arsenic | mg/kg | 1.77 | 32 | 1 | 32 | 20 | 0 | NO | 282 | 1.77 | -- | -- |
| | Barium | mg/kg | 100000 | 0 | 82 | 32 | 1640 | 0 | YES | 184000 | -- | 0.0027 | -- |
| | Beryllium | mg/kg | 2150 | 0 | 3 | 0 | 60 | 0 | YES | 2150 | 2270 | 0.00039 | 4 E-10 |
| | Boron | mg/kg | 100000 | 0 | 23.4 | 0 | 467 | 0 | NO | 226,000 | -- | -- | -- |
| | Cadmium | mg/kg | 553 | 0 | 0.4 | 0 | 8 | 0 | YES | 553 | 3030 | 0.00067 | 1 E-10 |
| | Calcium | mg/kg | -- | -- | -- | -- | -- | -- | NO | -- | -- | -- | -- |
| | Chromium (Total) | mg/kg | 100000 | 0 | 2 | 32 | 40 | 0 | YES | -- | 100000 | -- | 2 E-10 |
| | Chromium (VI) | mg/kg | 454 | 0 | 2 | 0 | 40 | 0 | YES | 2,800 | 454 | 0.00021 | 1 E-9 |
| | Cobalt | mg/kg | 331 | 0 | 33 | 0 | 660 | 0 | YES | 331 | 606 | 0.044 | 2 E-8 |
| | Copper | mg/kg | 42200 | 0 | 35.2 | 0 | 704 | 0 | YES | 42200 | -- | 0.00058 | -- |
| | Iron | mg/kg | 100000 | 0 | 7.56 | 32 | 151 | 32 | YES | 795,000 | -- | 0.030 | -- |
| | Lead | mg/kg | 800 | 0 | -- | -- | -- | -- | YES | 800 | -- | 0.099 | -- |
| | Lithium | mg/kg | 2270 | 0 | -- | -- | -- | -- | NO | 2270 | -- | -- | -- |
| | Magnesium | mg/kg | 100000 | 0 | 649 | 32 | 13000 | 1 | NO | 3880000 | -- | -- | -- |
| | Manganese | mg/kg | 13700 | 0 | 3.26 | 32 | 65.2 | 32 | YES | 13,700 | -- | 0.13 | -- |
| | Mercury | mg/kg | 182 | 0 | 0.104 | 0 | 2.09 | 0 | NO | 182 | -- | -- | -- |
| | Molybdenum | mg/kg | 5680 | 0 | 3.64 | 0 | 72.7 | 0 | NO | 5680 | -- | -- | -- |
| | Nickel | mg/kg | 20100 | 0 | 7 | 32 | 140 | 0 | NO | 20100 | -- | -- | -- |
| | Potassium | mg/kg | -- | -- | -- | -- | -- | -- | NO | -- | -- | -- | -- |
| | Selenium | mg/kg | 5680 | -- | 0.3 | -- | 6 | -- | NO | 5,680 | -- | -- | -- |
| | Silver | mg/kg | 5680 | 0 | 2 | 0 | 40 | 0 | NO | 5,680 | -- | -- | -- |
| | Sodium | mg/kg | -- | -- | -- | -- | -- | -- | YES | -- | -- | -- | -- |

**TABLE 1**
**SOIL DATA AND SCREENING-LEVEL HEALTH RISK ASSESSMENT**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Parameter of Interest | Compound List | Units | Outdoor Worker BCL | Count of Detects > BCL | LBCL (DAF = 1) | Count of Detects > LBCL (1) | LBCL (DAF = 20) | Count of Detects > LBCL (20) | Above Bkgrd?[b] | Non-Cancer-Based Outdoor Worker BCL | Cancer-Based Outdoor Worker BCL | Non-Cancer Hazard Index[c] | Incremental Lifetime Cancer Risk[d] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metals** | Strontium | mg/kg | 100000 | 0 | -- | -- | -- | -- | YES | 681000 | -- | 0.00065 | -- |
| | Thallium | mg/kg | 79.5 | 0 | 0.4 | 3 | 8 | 0 | NO | 79.5 | -- | -- | -- |
| | Tin | mg/kg | 100000 | 0 | -- | -- | -- | -- | NO | 681000 | -- | -- | -- |
| | Titanium | mg/kg | 100000 | 0 | 150000 | 0 | 3000000 | 0 | YES | 4,540,000 | -- | 0.00028 | -- |
| | Tungsten | mg/kg | 8510 | 0 | 41.2 | 0 | 823 | 0 | YES | 8510 | -- | 0.00047 | -- |
| | Uranium | mg/kg | 3390 | 0 | 13.5 | 0 | 270 | 0 | NO | 3390 | -- | -- | -- |
| | Vanadium | mg/kg | 5680 | 0 | 300 | 0 | 6000 | 0 | YES | 5680 | -- | 0.013 | -- |
| | Zinc | mg/kg | 100000 | 0 | 620 | 0 | 12400 | 0 | YES | 341000 | -- | 0.00031 | -- |
| **OCPs** | 2,4-DDD | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2,4-DDE | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4,4-DDD | mg/kg | 11.1 | -- | 0.8 | -- | 16 | -- | -- | -- | 11.1 | -- | -- |
| | 4,4-DDE | mg/kg | 7.8 | 0 | 3 | 0 | 60 | 0 | -- | -- | 7.8 | -- | 3 E-9 |
| | 4,4-DDT | mg/kg | 7.8 | 0 | 2 | 0 | 40 | 0 | -- | 474 | 7.8 | 0.000072 | 4 E-9 |
| | Aldrin | mg/kg | 0.113 | -- | 0.02 | -- | 0.4 | -- | -- | 20.5 | 0.113 | -- | -- |
| | alpha-BHC | mg/kg | 0.399 | -- | 0.00003 | -- | 0.0006 | -- | -- | 7190 | 0.399 | -- | -- |
| | alpha-Chlordane | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | beta-BHC | mg/kg | 1.4 | 0 | 0.0001 | 2 | 0.002 | 2 | -- | -- | 1.4 | -- | 7 E-9 |
| | Chlordane | mg/kg | 7.19 | 0 | 0.5 | 0 | 10 | 0 | -- | 449 | 7.19 | 0.000069 | 4 E-9 |
| | delta-BHC | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Dieldrin | mg/kg | 0.12 | -- | 0.0002 | -- | 0.004 | -- | -- | 34.2 | 0.12 | -- | -- |
| | Endosulfan I | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Endosulfan II | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Endosulfan sulfate | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Endrin | mg/kg | 205 | -- | 0.05 | -- | 1 | -- | -- | 205 | -- | -- | -- |
| | Endrin aldehyde | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Endrin ketone | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | gamma-BHC (Lindane) | mg/kg | 1.93 | -- | 0.0005 | -- | 0.01 | -- | -- | 269 | 1.93 | -- | -- |
| | gamma-Chlordane | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Heptachlor | mg/kg | 0.426 | -- | 1 | -- | 20 | -- | -- | 342.00 | 0.426 | -- | -- |
| | Heptachlor epoxide | mg/kg | 0.21 | -- | 0.03 | -- | 0.6 | -- | -- | 8.89 | 0.21 | -- | -- |
| | Methoxychlor | mg/kg | 3420 | -- | 8 | -- | 160 | -- | -- | 3,420 | -- | -- | -- |
| | Toxaphene | mg/kg | 1.74 | -- | 2 | -- | 40 | -- | -- | -- | 1.74 | -- | -- |
| **PAHs** | Acenaphthene | mg/kg | 68100 | 0 | 29 | 0 | 580 | 0 | -- | 68,100 | -- | 0.000000056 | -- |
| | Acenaphthylene | mg/kg | 147 | 0 | -- | -- | -- | -- | -- | 34100 | -- | 0.000000092 | -- |
| | Anthracene | mg/kg | 100000 | 0 | 590 | 0 | 11800 | 0 | -- | 341000 | -- | 0.000000015 | -- |
| | Benzo(a)anthracene | mg/kg | 2.34 | 0 | 0.08 | 0 | 1.6 | 0 | -- | -- | 2.34 | -- | 7 E-9 |
| | Benzo(a)pyrene | mg/kg | 0.234 | 0 | 0.4 | 0 | 8 | 0 | -- | -- | 0.234 | -- | 6 E-8 |
| | Benzo(b)fluoranthene | mg/kg | 2.34 | 0 | 0.2 | 0 | 4 | 0 | -- | -- | 2.34 | -- | 2 E-8 |
| | Benzo(g,h,i)perylene | mg/kg | 34100 | 0 | -- | -- | -- | -- | -- | 34100 | -- | 0.0000023 | -- |
| | Benzo(k)fluoranthene | mg/kg | 23.4 | 0 | 2 | 0 | 40 | 0 | -- | -- | 23.4 | -- | 3 E-10 |
| | Chrysene | mg/kg | 234 | 0 | 8 | 0 | 160 | 0 | -- | -- | 234 | -- | 2 E-10 |
| | Dibenzo(a,h)anthracene | mg/kg | 0.234 | -- | 0.08 | -- | 1.6 | -- | -- | -- | 0.234 | -- | -- |
| | Indeno(1,2,3-cd)pyrene | mg/kg | 2.34 | 0 | 0.7 | 0 | 14 | 0 | -- | -- | 2.34 | -- | 3 E-8 |
| | Phenanthrene | mg/kg | 24.5 | 0 | -- | -- | -- | -- | -- | 34,100 | -- | 0.00000066 | -- |
| | Pyrene | mg/kg | 34100 | 0 | 210 | 0 | 4200 | 0 | -- | 34100 | -- | 0.0000010 | -- |
| **PCBs** | PCB 105 | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | PCB 114 | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | PCB 118 | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | PCB 123 | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | PCB 126 | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | PCB 156 | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | PCB 157 | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | PCB 167 | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | PCB 169 | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | PCB 189 | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | PCB 209 | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | PCB 77 | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | PCB 81 | pg/g | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**TABLE 1**
**SOIL DATA AND SCREENING-LEVEL HEALTH RISK ASSESSMENT**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Parameter of Interest | Compound List | Units | Outdoor Worker BCL | Count of Detects > BCL | LBCL (DAF = 1) | Count of Detects > LBCL (1) | LBCL (DAF = 20) | Count of Detects > LBCL (20) | Above Bkgrd?[b] | Non-Cancer-Based Outdoor Worker BCL | Cancer-Based Outdoor Worker BCL | Non-Cancer Hazard Index[c] | Incremental Lifetime Cancer Risk[d] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radio-nuclides[g]** | Radium-226 | pCi/g | 0.023 | 31 | 0.016 | 31 | 0.32 | 30 | NO | -- | 0.023 | -- | -- |
| | Radium-228 | pCi/g | 0.041 | 31 | 0.016 | 31 | 0.32 | 31 | NO | -- | 0.041 | -- | -- |
| | Thorium-228 | pCi/g | 0.025 | 31 | 0.0023 | 31 | 0.045 | 31 | NO | -- | 0.025 | -- | -- |
| | Thorium-230 | pCi/g | 8.3 | 0 | 0.00084 | 31 | 0.017 | 31 | NO | -- | 8.3 | -- | -- |
| | Thorium-232 | pCi/g | 7.4 | 0 | 0.0029 | 31 | 0.058 | 31 | NO | -- | 7.4 | -- | -- |
| | Uranium-233/234 | pCi/g | 11 | 0 | -- | -- | -- | -- | NO | -- | 11 | -- | -- |
| | Uranium-235/236 | pCi/g | 0.35 | 0 | -- | -- | -- | -- | NO | -- | 0.35 | -- | -- |
| | Uranium-238 | pCi/g | 1.4 | 0 | -- | -- | -- | -- | NO | -- | 1.4 | -- | -- |
| **SVOCs** | 1,2,4,5-Tetrachlorobenzene | mg/kg | 205 | -- | -- | -- | -- | -- | -- | 205 | -- | -- | -- |
| | 1,2-Diphenylhydrazine | mg/kg | 2.39 | -- | -- | -- | -- | -- | -- | -- | 2.39 | -- | -- |
| | 1,4-Dioxane | mg/kg | 174 | -- | -- | -- | -- | -- | -- | 7010000000 | 174 | -- | -- |
| | 2,2'-Dichlorobenzil | mg/kg | 341 | -- | 0.0003 | -- | 0.006 | -- | -- | 341 | -- | -- | -- |
| | 2,4,5-Trichlorophenol | mg/kg | 68400 | -- | 14 | -- | 280 | -- | -- | 68400 | -- | -- | -- |
| | 2,4,6-Trichlorophenol | mg/kg | 174 | -- | 0.008 | -- | 0.16 | -- | -- | 684 | 174 | -- | -- |
| | 2,4-Dichlorophenol | mg/kg | 2050 | -- | 0.05 | -- | 1 | -- | -- | 2,050 | -- | -- | -- |
| | 2,4-Dimethylphenol | mg/kg | 13700 | -- | 0.4 | -- | 8 | -- | -- | 13700 | -- | -- | -- |
| | 2,4-Dinitrophenol | mg/kg | 1370 | -- | 0.01 | -- | 0.2 | -- | -- | 1370 | -- | -- | -- |
| | 2,4-Dinitrotoluene | mg/kg | 6.18 | -- | 0.00004 | -- | 0.0008 | -- | -- | 1,370 | 6.18 | -- | -- |
| | 2,6-Dinitrotoluene | mg/kg | 684 | -- | 0.00003 | -- | 0.0006 | -- | -- | 684 | -- | -- | -- |
| | 2-Chloronaphthalene | mg/kg | 90800 | -- | -- | -- | -- | -- | -- | 90800 | -- | -- | -- |
| | 2-Chlorophenol | mg/kg | 5680 | -- | 0.2 | -- | 4 | -- | -- | 5680 | -- | -- | -- |
| | 2-Methylnaphthalene | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2-Nitroaniline | mg/kg | 2030 | -- | -- | -- | -- | -- | -- | 2030 | -- | -- | -- |
| | 2-Nitrophenol | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 3,3-Dichlorobenzidine | mg/kg | 4.26 | -- | 0.0003 | -- | 0.006 | -- | -- | -- | 4.26 | -- | -- |
| | 3-Nitroaniline | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4-Bromophenyl phenyl ether | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4-Chloro-3-methylphenol | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4-Chlorophenyl phenyl ether | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4-Chlorothioanisole | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4-Nitroaniline | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4-Nitrophenol | mg/kg | 5470 | -- | -- | -- | -- | -- | -- | 5,470 | -- | -- | -- |
| | Acetophenone | mg/kg | 1740 | 0 | -- | -- | -- | -- | -- | 114000 | -- | 0.00000040 | -- |
| | Aniline | mg/kg | 336 | -- | -- | -- | -- | -- | -- | 4,780 | 336 | -- | -- |
| | Benzenethiol | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Benzoic acid | mg/kg | 100000 | -- | 20 | -- | 400 | -- | -- | 2740000 | -- | -- | -- |
| | Benzyl alcohol | mg/kg | 100000 | -- | -- | -- | -- | -- | -- | 342,000 | -- | -- | -- |
| | bis(2-Chloroethoxy)methane | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | bis(2-Chloroethyl) ether | mg/kg | 0.616 | -- | 0.00002 | -- | 0.0004 | -- | -- | -- | 0.616 | -- | -- |
| | bis(2-Chloroisopropyl) ether | mg/kg | 8.18 | -- | -- | -- | -- | -- | -- | 45400 | 8.18 | -- | -- |
| | bis(2-Ethylhexyl) phthalate | mg/kg | 137 | 0 | 180 | 0 | 3600 | 0 | -- | 13700 | 137 | 0.0000064 | 6 E-10 |
| | bis(p-Chlorophenyl) sulfone | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | bis(p-Chlorophenyl)disulfide | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Butylbenzyl phthalate | mg/kg | 240 | 0 | 810 | 0 | 16200 | 0 | -- | 137000 | -- | 0.00000053 | -- |
| | Carbazole | mg/kg | 95.8 | -- | 0.03 | -- | 0.6 | -- | -- | -- | 95.8 | -- | -- |
| | Dibenzofuran | mg/kg | 2270 | -- | -- | -- | -- | -- | -- | 2270 | -- | -- | -- |
| | Dichloromethyl ether | mg/kg | 0.000477 | -- | -- | -- | -- | -- | -- | -- | 0.000477 | -- | -- |
| | Diethyl phthalate | mg/kg | 100000 | -- | -- | -- | -- | -- | -- | 547000 | -- | -- | -- |
| | Dimethyl phthalate | mg/kg | 100000 | -- | -- | -- | -- | -- | -- | 6,840,000 | -- | -- | -- |
| | Di-n-butyl phthalate | mg/kg | 68400 | -- | 270 | -- | 5400 | -- | -- | 68400 | -- | -- | -- |
| | Di-n-octyl phthalate | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Diphenyl disulfide | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Diphenyl sulfide | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Diphenyl sulfone | mg/kg | 2050 | -- | -- | -- | -- | -- | -- | 2050 | -- | -- | -- |
| | Diphenylamine | mg/kg | 17100 | -- | -- | -- | -- | -- | -- | 17,100 | -- | -- | -- |
| | Fluoranthene | mg/kg | 24400 | 0 | 210 | 0 | 4200 | 0 | -- | 24400 | -- | 0.0000013 | -- |
| | Fluorene | mg/kg | 45400 | -- | 28 | -- | 560 | -- | -- | 45400 | -- | -- | -- |
| | Hexachlorobenzene | mg/kg | 1.2 | -- | 0.1 | -- | 2 | -- | -- | 547 | 1.2 | -- | -- |
| | Hexachlorobutadiene | mg/kg | 24.6 | -- | 0.1 | -- | 2 | -- | -- | 684 | 24.6 | -- | -- |

**TABLE 1**
**SOIL DATA AND SCREENING-LEVEL HEALTH RISK ASSESSMENT**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Parameter of Interest | Compound List | Units | Outdoor Worker BCL | Count of Detects > BCL | LBCL (DAF = 1) | Count of Detects > LBCL (1) | LBCL (DAF = 20) | Count of Detects > LBCL (20) | Above Bkgrd?[b] | Non-Cancer-Based Outdoor Worker BCL | Cancer-Based Outdoor Worker BCL | Non-Cancer Hazard Index[c] | Incremental Lifetime Cancer Risk[d] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SVOCs** | Hexachlorocyclopentadiene | mg/kg | 4060 | -- | 20 | -- | 400 | -- | -- | 4060 | -- | -- | -- |
| | Hexachloroethane | mg/kg | 137 | -- | 0.02 | -- | 0.4 | -- | -- | 684 | 137 | -- | -- |
| | Hydroxymethyl phthalimide | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Isophorone | mg/kg | 2020 | -- | 0.03 | -- | 0.6 | -- | -- | 137,000 | 2020 | -- | -- |
| | m,p-Cresols | mg/kg | 3420 | -- | -- | -- | -- | -- | -- | 3420 | -- | -- | -- |
| | Naphthalene | mg/kg | 5.79 | -- | 4 | -- | 80 | -- | -- | 209 | 5.79 | -- | -- |
| | Nitrobenzene | mg/kg | 5.02 | -- | 0.007 | -- | 0.14 | -- | -- | 503 | 5.02 | -- | -- |
| | N-nitrosodi-n-propylamine | mg/kg | 0.274 | -- | 0.000002 | -- | 0.00004 | -- | -- | -- | 0.274 | -- | -- |
| | o-Cresol | mg/kg | 34200 | -- | 0.8 | -- | 16 | -- | -- | 34200 | -- | -- | -- |
| | Octachlorostyrene | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | p-Chloroaniline | mg/kg | 2740 | -- | 0.03 | -- | 0.6 | -- | -- | 2740 | -- | -- | -- |
| | p-Chlorobenzenethiol | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Pentachlorobenzene | mg/kg | 547 | -- | -- | -- | -- | -- | -- | 547 | -- | -- | -- |
| | Pentachlorophenol | mg/kg | 10 | -- | 0.001 | -- | 0.02 | -- | -- | 12900 | 10 | -- | -- |
| | Phenol | mg/kg | 100000 | -- | 5 | -- | 100 | -- | -- | 205000 | -- | -- | -- |
| | Phthalic acid | mg/kg | 100000 | -- | -- | -- | -- | -- | -- | 2270000 | -- | -- | -- |
| | Pyridine | mg/kg | 684 | -- | -- | -- | -- | -- | -- | 684 | -- | -- | -- |
| **VOCs** | 1,1,1,2-Tetrachloroethane | mg/kg | 7.59 | -- | -- | -- | -- | -- | -- | 34100 | 7.59 | -- | -- |
| | 1,1,1-Trichloroethane | mg/kg | 1390 | -- | 0.1 | -- | 2 | -- | -- | 19300 | -- | -- | -- |
| | 1,1,2,2-Tetrachloroethane | mg/kg | 0.97 | -- | 0.0002 | -- | 0.004 | -- | -- | 4540 | 0.97 | -- | -- |
| | 1,1,2-Trichloroethane | mg/kg | 2.08 | -- | 0.0009 | -- | 0.018 | -- | -- | 4540 | 2.08 | -- | -- |
| | 1,1-Dichloroethane | mg/kg | 8 | -- | 1 | -- | 20 | -- | -- | 227000 | 8 | -- | -- |
| | 1,1-Dichloroethene | mg/kg | 474 | -- | 0.003 | -- | 0.06 | -- | -- | 474 | -- | -- | -- |
| | 1,1-Dichloropropene | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3-Trichlorobenzene | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3-Trichloropropane | mg/kg | 1.59 | -- | -- | -- | -- | -- | -- | 6810 | 1.59 | -- | -- |
| | 1,2,4-Trichlorobenzene | mg/kg | 265 | -- | 0.3 | -- | 6 | -- | -- | 265 | -- | -- | -- |
| | 1,2,4-Trimethylbenzene | mg/kg | 224 | 0 | -- | -- | -- | -- | -- | 224 | -- | 0.000023 | -- |
| | 1,2-Dichlorobenzene | mg/kg | 373 | -- | 0.9 | -- | 18 | -- | -- | 3,630 | -- | -- | -- |
| | 1,2-Dichloroethane | mg/kg | 0.841 | -- | 0.001 | -- | 0.02 | -- | -- | 10,400 | 0.841 | -- | -- |
| | 1,2-Dichloroethene | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2-Dichloropropane | mg/kg | 1.62 | -- | 0.001 | -- | 0.02 | -- | -- | 24 | 1.62 | -- | -- |
| | 1,3,5-Trichlorobenzene | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,3,5-Trimethylbenzene | mg/kg | 78.3 | 0 | -- | -- | -- | -- | -- | 78.3 | -- | 0.0000027 | -- |
| | 1,3-Dichlorobenzene | mg/kg | 373 | -- | -- | -- | -- | -- | -- | 3410 | -- | -- | -- |
| | 1,3-Dichloropropane | mg/kg | 1130 | -- | 0.001 | -- | 0.02 | -- | -- | 22,700 | -- | -- | -- |
| | 1,4-Dichlorobenzene | mg/kg | 5.15 | -- | 0.1 | -- | 2 | -- | -- | 11300 | 5.15 | -- | -- |
| | 2,2,3-Trimethylbutane | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2,2-Dichloropropane | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2,2-Dimethylpentane | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2,3-Dimethylpentane | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2,4-Dimethylpentane | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2-Chlorotoluene | mg/kg | 511 | -- | -- | -- | -- | -- | -- | 22,700 | -- | -- | -- |
| | 2-Hexanone | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2-Methylhexane | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2-Nitropropane | mg/kg | 0.338 | -- | -- | -- | -- | -- | -- | 6490 | 0.338 | -- | -- |
| | 3,3-Dimethylpentane | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 3-Ethylpentane | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 3-Methylhexane | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4-Chlorotoluene | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4-Methyl-2-pentanone (MIBK) | mg/kg | 17200 | -- | -- | -- | -- | -- | -- | 52,200 | -- | -- | -- |
| | Acetone | mg/kg | 100000 | 0 | 0.8 | 0 | 16 | 0 | -- | 391000 | -- | 0.00000014 | -- |
| | Acetonitrile | mg/kg | 2280 | -- | -- | -- | -- | -- | -- | 2280 | -- | -- | -- |
| | Benzene | mg/kg | 1.58 | -- | 0.002 | -- | 0.04 | -- | -- | 132 | 1.58 | -- | -- |
| | Bromobenzene | mg/kg | 103 | -- | -- | -- | -- | -- | -- | 103 | -- | -- | -- |
| | Bromodichloromethane | mg/kg | 51.3 | -- | 0.03 | -- | 0.6 | -- | -- | 22700 | 51.3 | -- | -- |
| | Bromoform | mg/kg | 242 | -- | 0.04 | -- | 0.8 | -- | -- | 13700 | 242 | -- | -- |
| | Bromomethane | mg/kg | 14.6 | -- | 0.01 | -- | 0.2 | -- | -- | 14.6 | -- | -- | -- |
| | Carbon disulfide | mg/kg | 721 | -- | 2 | -- | 40 | -- | -- | 1340 | -- | -- | -- |

**TABLE 1**
**SOIL DATA AND SCREENING-LEVEL HEALTH RISK ASSESSMENT**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Parameter of Interest | Compound List | Units | Outdoor Worker BCL | Count of Detects > BCL | LBCL (DAF = 1) | Count of Detects > LBCL (1) | LBCL (DAF = 20) | Count of Detects > LBCL (20) | Above Bkgrd?[b] | Non-Cancer-Based Outdoor Worker BCL | Cancer-Based Outdoor Worker BCL | Non-Cancer Hazard Index[c] | Incremental Lifetime Cancer Risk[d] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VOCs** | Carbon tetrachloride | mg/kg | 0.582 | -- | 0.003 | -- | 0.06 | -- | -- | 344 | 0.582 | -- | -- |
| | Chlorobenzene | mg/kg | 503 | -- | 0.07 | -- | 1.4 | -- | -- | 503 | -- | -- | -- |
| | Chlorobromomethane | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Chloroethane | mg/kg | 1100 | -- | -- | -- | -- | -- | -- | 20500 | 1100 | -- | -- |
| | Chloroform | mg/kg | 0.577 | -- | 0.03 | -- | 0.6 | -- | -- | 449 | 0.577 | -- | -- |
| | Chloromethane | mg/kg | 2.98 | -- | -- | -- | -- | -- | -- | 173 | 2.98 | -- | -- |
| | cis-1,2-Dichloroethene | mg/kg | 1200 | -- | 0.02 | -- | 0.4 | -- | -- | 11400 | -- | -- | -- |
| | cis-1,3-Dichloropropene | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Cymene (Isopropyltoluene) | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Dibromochloromethane | mg/kg | 2.3 | -- | 0.02 | -- | 0.4 | -- | -- | 22,700 | 2.3 | -- | -- |
| | Dibromochloropropane | mg/kg | 0.0196 | -- | -- | -- | -- | -- | -- | 8.15 | 0.0196 | -- | -- |
| | Dibromomethane | mg/kg | 11400 | -- | -- | -- | -- | -- | -- | 11,400 | -- | -- | -- |
| | Dichloromethane | mg/kg | 22.3 | 0 | 0.001 | 3 | 0.02 | 0 | -- | 4080 | 22.3 | 0.0000027 | 5 E-10 |
| | Dimethyldisulfide | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Ethanol | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Ethylbenzene | mg/kg | 7.37 | 0 | 0.7 | 0 | 14 | 0 | -- | 6370 | 7.37 | 0.000000042 | 4 E-11 |
| | Freon-11 (Trichlorofluoromethane) | mg/kg | 1420 | 0 | -- | -- | -- | -- | -- | 1420 | -- | 0.00000022 | -- |
| | Freon-113 (1,1,2-Trifluoro-1,2,2-trichloroet | mg/kg | 5550 | -- | -- | -- | -- | -- | -- | 76600 | -- | -- | -- |
| | Freon-12 (Dichlorodifluoromethane) | mg/kg | 340 | -- | -- | -- | -- | -- | -- | 343 | -- | -- | -- |
| | Heptane | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Isopropylbenzene | mg/kg | 602 | -- | -- | -- | -- | -- | -- | 602 | -- | -- | -- |
| | m,p-Xylenes | mg/kg | 214 | 0 | 10 | 0 | 200 | 0 | -- | 4960 | -- | 0.00000011 | -- |
| | Methyl ethyl ketone | mg/kg | 34100 | 0 | -- | -- | -- | -- | -- | 128000 | -- | 0.000000035 | -- |
| | Methyl iodide | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | MTBE (Methyl tert-butyl ether) | mg/kg | 78.6 | -- | -- | -- | -- | -- | -- | 22400 | 78.6 | -- | -- |
| | n-Butyl benzene | mg/kg | 237 | -- | -- | -- | -- | -- | -- | 11400 | -- | -- | -- |
| | Nonanal | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | n-Propylbenzene | mg/kg | 237 | -- | -- | -- | -- | -- | -- | 11400 | -- | -- | -- |
| | o-Xylene | mg/kg | 282 | 0 | 9 | 0 | 180 | 0 | -- | 5770 | -- | 0.000000043 | -- |
| | sec-Butylbenzene | mg/kg | 223 | -- | -- | -- | -- | -- | -- | 11400 | -- | -- | -- |
| | Styrene | mg/kg | 1730 | -- | 0.2 | -- | 4 | -- | -- | 21400 | -- | -- | -- |
| | tert-Butyl benzene | mg/kg | 393 | -- | -- | -- | -- | -- | -- | 11400 | -- | -- | -- |
| | Tetrachloroethene | mg/kg | 1.74 | -- | 0.003 | -- | 0.06 | -- | -- | 1250 | 1.74 | -- | -- |
| | Toluene | mg/kg | 521 | 0 | 0.6 | 0 | 12 | 0 | -- | 21900 | -- | 0.000000022 | -- |
| | trans-1,2-Dichloroethene | mg/kg | 204 | -- | 0.03 | -- | 0.6 | -- | -- | 204 | -- | -- | -- |
| | trans-1,3-Dichloropropene | mg/kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Trichloroethene | mg/kg | 3.39 | -- | 0.003 | -- | 0.06 | -- | -- | 341 | 3.39 | -- | -- |
| | Vinyl acetate | mg/kg | 1550 | -- | 8 | -- | 160 | -- | -- | 1550 | -- | -- | -- |
| | Vinyl chloride | mg/kg | 0.863 | -- | 0.0007 | -- | 0.014 | -- | -- | 161 | 0.863 | -- | -- |
| | Xylenes (total) | mg/kg | 214 | 0 | 10 | 0 | 200 | 0 | -- | 707 | -- | 0.0000011 | -- |
| | | | | | | | | | | | **Total Non-Cancer Hazard Index:** | 0.34 | |
| | | | | | | | | | | | **Total Incremental Lifetime Cancer Risk:** | | 3 E-7 |

**Notes:**

BCL = Basic Comparison Levels (BCLs) from NDEP 2010. Values used are outdoor worker soil BCLs.
LBCL = Leaching-based BCLs from NDEP 2010.
Max = Maximum
Min = Minimum
Q1 = 1st quartile (25th percentile)
Q3 = 3rd quartile (75th percentile)
Values for Q1, median, mean, and Q3 are rounded to 2 significant figures. BCLs are rounded to 3 significant figures.
a - Range of detections include estimated values of detect results between the detection limit and reporting limit. As such some minimum detected concentrations may be below the minimum reporting limit. In these cases the respective sample results are flagged in the dataset.
b - Based on results of statistical comparison tests performed between shallow background and site datasets (see Table 4).
c - Non-cancer hazard indices were calculated by dividing the maximum detected value by its non-cancer BCL. The total non-cancer hazard index is the sum of all chemical-specific hazard indices.
d - Theoretical upper-bound incremental lifetime cancer risks were calculated by were calculated by dividing the maximum detected value by its cancer BCL times 1E-6. The total incremental lifetime cancer risk is the sum of all chemical-specific cancer risks.
e - Asbestos results shown are for long protocol structures (>10um).
f - TCDD TEQ values are calculated from congener-specific concentrations. An individual TCDD TEQ value may include detect and non-detect congeners. Therefore, the number of detects and non-detects, and a frequency of detection for TCDD TEQ are not presented.
g - Because both non-detect and detected radionuclides have reported activity levels, calculated summary statistics (and exceedances of comparison levels) are presented as detected regardless of the lab detect flag. Lab detect flags are represented by the censored (non-detect) and detect count fields in the table.
-- = Not applicable or no value has been established.

**TABLE 2**
**SURFACE FLUX DATA AND OUTDOOR AIR EVALUATION**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Analytical Method | Compound List | Total Count | Detect Freq | Censored (Non-Detect) Data - Surface Flux (ug/m$^2$,min$^{-1}$) | | | | | | | Detected Data - Surface Flux (ug/m$^2$,min$^{-1}$)[a] | | | | | | | Maximum Outdoor Air Concentration (ug/m$^3$)[b] | Ambient Air BCL (ug/m$^3$) | Count of Detects > BCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Count | Min | Q1 | Median | Mean | Q3 | Max | Count | Min | Q1 | Median | Mean | Q3 | Max | | | |
| TO-15 | 1,1,1,2-Tetrachloroethane | 9 | 0% | 9 | 0.0865 | 0.1 | 0.105 | 0.104 | 0.11 | 0.111 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.329 | 0 |
| | 1,1,1-Trichloroethane | 9 | 0% | 9 | 0.0785 | 0.091 | 0.0958 | 0.0943 | 0.1 | 0.101 | 0 | -- | -- | -- | -- | -- | -- | -- | 5210 | 0 |
| | 1,1,2,2-Tetrachloroethane | 9 | 0% | 9 | 0.116 | 0.122 | 0.198 | 0.183 | 0.245 | 0.252 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.042 | 0 |
| | 1,1,2-Trichloroethane | 9 | 0% | 9 | 0.0785 | 0.091 | 0.0958 | 0.0943 | 0.1 | 0.101 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.152 | 0 |
| | 1,1-Dichloroethane | 9 | 0% | 9 | 0.0577 | 0.0669 | 0.0704 | 0.0694 | 0.0738 | 0.0742 | 0 | -- | -- | -- | -- | -- | -- | -- | 1.52 | 0 |
| | 1,1-Dichloroethene | 9 | 0% | 9 | 0.0565 | 0.0656 | 0.0688 | 0.068 | 0.0723 | 0.0727 | 0 | -- | -- | -- | -- | -- | -- | -- | 209 | 0 |
| | 1,1-Dichloropropene | 9 | 0% | 9 | 0.0538 | 0.0623 | 0.0658 | 0.0647 | 0.0688 | 0.0692 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3-Trichloropropane | 9 | 0% | 9 | 0.0858 | 0.09 | 0.146 | 0.136 | 0.181 | 0.187 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.313 | 0 |
| | 1,2,4-Trimethylbenzene | 9 | 0% | 9 | 0.0831 | 0.0869 | 0.142 | 0.131 | 0.175 | 0.18 | 0 | -- | -- | -- | -- | -- | -- | -- | 7.3 | 0 |
| | 1,2-Dibromoethane | 9 | 0% | 9 | 0.113 | 0.131 | 0.138 | 0.136 | 0.144 | 0.145 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.00406 | 0 |
| | 1,2-Dichlorobenzene | 9 | 0% | 9 | 0.17 | 0.197 | 0.207 | 0.204 | 0.217 | 0.218 | 0 | -- | -- | -- | -- | -- | -- | -- | 209 | 0 |
| | 1,2-Dichloroethane | 9 | 0% | 9 | 0.0588 | 0.0683 | 0.0719 | 0.0709 | 0.0754 | 0.0758 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.0936 | 0 |
| | 1,2-Dichloropropane | 9 | 0% | 9 | 0.0673 | 0.0779 | 0.0819 | 0.0808 | 0.0858 | 0.0865 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.243 | 0 |
| | 1,3,5-Trimethylbenzene | 9 | 0% | 9 | 0.0862 | 0.0904 | 0.147 | 0.137 | 0.182 | 0.188 | 0 | -- | -- | -- | -- | -- | -- | -- | 6.26 | 0 |
| | 1,3-Dichlorobenzene | 9 | 0% | 9 | 0.173 | 0.201 | 0.211 | 0.208 | 0.221 | 0.222 | 0 | -- | -- | -- | -- | -- | -- | -- | 209 | 0 |
| | 1,3-Dichloropropane | 9 | 0% | 9 | 0.0542 | 0.0627 | 0.0662 | 0.0651 | 0.0692 | 0.0696 | 0 | -- | -- | -- | -- | -- | -- | -- | 4.17 | 0 |
| | 1,4-Dichlorobenzene | 9 | 0% | 9 | 0.173 | 0.201 | 0.211 | 0.208 | 0.221 | 0.222 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.221 | 0 |
| | 1,4-Dioxane | 9 | 0% | 9 | 0.0446 | 0.0517 | 0.0546 | 0.0537 | 0.0569 | 0.0577 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.316 | 0 |
| | 1-Propanol, 2-methyl- | 9 | 0% | 9 | 0.105 | 0.122 | 0.128 | 0.126 | 0.134 | 0.135 | 0 | -- | -- | -- | -- | -- | -- | -- | 31300 | 0 |
| | 2,2-Dichloropropane | 9 | 0% | 9 | 0.595 | 0.689 | 0.725 | 0.715 | 0.759 | 0.764 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2-Hexanone | 9 | 11.1% | 8 | 0.0508 | 0.0585 | 0.061 | 0.0606 | 0.0647 | 0.0654 | 1 | 0.0131 | -- | 0.0131 | 0.0131 | -- | 0.0131 | 0.0026 | 31.3 | 0 |
| | 4-Methyl-2-pentanone (MIBK) | 9 | 0% | 9 | 0.0531 | 0.0615 | 0.065 | 0.0639 | 0.0677 | 0.0685 | 0 | -- | -- | -- | -- | -- | -- | -- | 3130 | 0 |
| | Acetone | 9 | 100% | 0 | -- | -- | -- | -- | -- | -- | 9 | 0.128 | 0.168 | 0.26 | 0.355 | 0.442 | 1.12 | 0.22 | 32300 | 0 |
| | Acetonitrile | 9 | 44.4% | 5 | 0.0577 | 0.0619 | 0.0708 | 0.0685 | 0.0738 | 0.0738 | 4 | 0.0296 | 0.0343 | 0.0498 | 0.0558 | 0.0832 | 0.0938 | 0.019 | 62.6 | 0 |
| | Benzene | 9 | 33.3% | 6 | 0.0465 | 0.054 | 0.0837 | 0.0832 | 0.112 | 0.119 | 3 | 0.0335 | 0.0335 | 0.0385 | 0.0442 | 0.0608 | 0.0608 | 0.012 | 0.312 | 0 |
| | Benzyl chloride | 9 | 0% | 9 | 0.132 | 0.152 | 0.16 | 0.158 | 0.168 | 0.169 | 0 | -- | -- | -- | -- | -- | -- | -- | 1.04 | 0 |
| | Bromodichloromethane | 9 | 0% | 9 | 0.0758 | 0.0877 | 0.0923 | 0.0909 | 0.0965 | 0.0973 | 0 | -- | -- | -- | -- | -- | -- | -- | 1040 | 0 |
| | Bromoform | 9 | 0% | 9 | 0.136 | 0.157 | 0.166 | 0.163 | 0.173 | 0.175 | 0 | -- | -- | -- | -- | -- | -- | -- | 2.21 | 0 |
| | Bromomethane | 9 | 0% | 9 | 0.0569 | 0.066 | 0.0696 | 0.0684 | 0.0727 | 0.0731 | 0 | -- | -- | -- | -- | -- | -- | -- | 5.21 | 0 |
| | Carbon disulfide | 9 | 33.3% | 6 | 0.0458 | 0.0489 | 0.0867 | 0.0779 | 0.0988 | 0.0996 | 3 | 0.03 | 0.03 | 0.0412 | 0.0444 | 0.0619 | 0.0619 | 0.012 | 730 | 0 |
| | Carbon tetrachloride | 9 | 0% | 9 | 0.0904 | 0.105 | 0.11 | 0.109 | 0.115 | 0.117 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.162 | 0 |
| | Chlorobenzene | 9 | 0% | 9 | 0.0662 | 0.0767 | 0.0808 | 0.0796 | 0.0846 | 0.085 | 0 | -- | -- | -- | -- | -- | -- | -- | 52.1 | 0 |
| | Chlorobromomethane | 9 | 0% | 9 | 0.0642 | 0.0744 | 0.0785 | 0.0772 | 0.0819 | 0.0827 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Chloroethane | 9 | 0% | 9 | 0.0388 | 0.0448 | 0.0473 | 0.0465 | 0.0492 | 0.0496 | 0 | -- | -- | -- | -- | -- | -- | -- | 10400 | 0 |
| | Chloroform | 9 | 11.1% | 8 | 0.0704 | 0.0809 | 0.0858 | 0.0843 | 0.0896 | 0.0904 | 1 | 0.0177 | -- | 0.0177 | 0.0177 | -- | 0.0177 | 0.0035 | 0.106 | 0 |
| | Chloromethane | 9 | 22.2% | 7 | 0.0296 | 0.0338 | 0.0362 | 0.0354 | 0.0381 | 0.0381 | 2 | 0.00962 | -- | 0.0146 | 0.0146 | -- | 0.0196 | 0.0039 | 1.35 | 0 |
| | cis-1,2-Dichloroethene | 9 | 0% | 9 | 0.0577 | 0.0669 | 0.0704 | 0.0693 | 0.0735 | 0.0742 | 0 | -- | -- | -- | -- | -- | -- | -- | 62.6 | 0 |
| | cis-1,3-Dichloropropene | 9 | 0% | 9 | 0.0681 | 0.0787 | 0.0827 | 0.0816 | 0.0865 | 0.0873 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Cymene (Isopropyltoluene) | 9 | 0% | 9 | 0.141 | 0.163 | 0.172 | 0.169 | 0.18 | 0.181 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Dibromochloromethane | 9 | 0% | 9 | 0.107 | 0.124 | 0.131 | 0.129 | 0.137 | 0.138 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.0901 | 0 |
| | Dibromochloropropane | 8 | 0% | 8 | 0.655 | 0.755 | 0.811 | 0.789 | 0.835 | 0.841 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.000406 | 0 |
| | Dibromomethane | 9 | 0% | 9 | 0.0881 | 0.102 | 0.108 | 0.106 | 0.113 | 0.113 | 0 | -- | -- | -- | -- | -- | -- | -- | 4.17 | 0 |
| | Dichloromethane | 9 | 55.6% | 4 | 0.0508 | 0.053 | 0.06 | 0.0589 | 0.0638 | 0.065 | 5 | 0.0165 | 0.0165 | 0.0188 | 0.0196 | 0.0231 | 0.0262 | 0.0052 | 5.18 | 0 |
| | Ethanol | 9 | 66.7% | 3 | 0.065 | 0.065 | 0.0742 | 0.0728 | 0.0792 | 0.0792 | 6 | 0.0604 | 0.0604 | 0.122 | 0.152 | 0.257 | 0.306 | 0.061 | -- | -- |
| | Ethylbenzene | 9 | 0% | 9 | 0.0638 | 0.0738 | 0.0777 | 0.0765 | 0.0812 | 0.0819 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.973 | 0 |
| | Freon-11 | 9 | 11.1% | 8 | 0.0823 | 0.095 | 0.102 | 0.0994 | 0.105 | 0.106 | 1 | 0.0231 | -- | 0.0231 | 0.0231 | -- | 0.0231 | 0.0046 | 730 | 0 |
| | Freon-113 | 9 | 0% | 9 | 0.11 | 0.128 | 0.135 | 0.132 | 0.141 | 0.142 | 0 | -- | -- | -- | -- | -- | -- | -- | 31300 | 0 |
| | Freon-12 | 9 | 11.1% | 8 | 0.0735 | 0.0846 | 0.091 | 0.0884 | 0.0935 | 0.0942 | 1 | 0.0323 | -- | 0.0323 | 0.0323 | -- | 0.0323 | 0.0065 | 209 | 0 |
| | Heptane | 9 | 22.2% | 7 | 0.0558 | 0.0569 | 0.0612 | 0.0596 | 0.0619 | 0.0623 | 2 | 0.0108 | -- | 0.0119 | 0.0119 | -- | 0.0131 | 0.0026 | -- | -- |
| | Hexachlorobutadiene | 8 | 0% | 8 | 0.31 | 0.358 | 0.384 | 0.374 | 0.396 | 0.398 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.111 | 0 |
| | Isopropylbenzene | 9 | 0% | 9 | 0.0773 | 0.0812 | 0.132 | 0.122 | 0.163 | 0.168 | 0 | -- | -- | -- | -- | -- | -- | -- | 417 | 0 |
| | m,p-Xylenes | 9 | 33.3% | 6 | 0.126 | 0.14 | 0.156 | 0.151 | 0.161 | 0.162 | 3 | 0.0354 | 0.0354 | 0.0369 | 0.0376 | 0.0404 | 0.0404 | 0.0081 | 730 | 0 |
| | Methyl ethyl ketone | 9 | 0% | 9 | 0.0358 | 0.0413 | 0.0435 | 0.043 | 0.0458 | 0.0462 | 0 | -- | -- | -- | -- | -- | -- | -- | 5210 | 0 |
| | Methyl iodide | 9 | 0% | 9 | 0.168 | 0.195 | 0.205 | 0.202 | 0.215 | 0.216 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | MTBE (Methyl tert-butyl ether) | 9 | 0% | 9 | 0.0396 | 0.046 | 0.0485 | 0.0477 | 0.0508 | 0.0512 | 0 | -- | -- | -- | -- | -- | -- | -- | 9.36 | 0 |
| | n-Butyl benzene | 9 | 0% | 9 | 0.142 | 0.165 | 0.174 | 0.171 | 0.182 | 0.183 | 0 | -- | -- | -- | -- | -- | -- | -- | 417 | 0 |

**TABLE 2**
**SURFACE FLUX DATA AND OUTDOOR AIR EVALUATION**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Analytical Method | Compound List | Total Count | Detect Freq | Censored (Non-Detect) Data - Surface Flux (ug/m$^2$,min$^{-1}$) | | | | | | | Detected Data - Surface Flux (ug/m$^2$,min$^{-1}$)[a] | | | | | | | Maximum Outdoor Air Concentration (ug/m$^3$)[b] | Ambient Air BCL (ug/m$^3$) | Count of Detects > BCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Count | Min | Q1 | Median | Mean | Q3 | Max | Count | Min | Q1 | Median | Mean | Q3 | Max | | | |
| TO-15 | n-Propylbenzene | 9 | 0% | 9 | 0.0685 | 0.0715 | 0.117 | 0.108 | 0.144 | 0.149 | 0 | -- | -- | -- | -- | -- | -- | -- | 417 | 0 |
| | o-Xylene | 9 | 11.1% | 8 | 0.0627 | 0.072 | 0.075 | 0.0745 | 0.0793 | 0.0804 | 1 | 0.0169 | -- | 0.0169 | 0.0169 | -- | 0.0169 | 0.0034 | 730 | 0 |
| | sec-Butylbenzene | 9 | 0% | 9 | 0.141 | 0.163 | 0.172 | 0.169 | 0.18 | 0.181 | 0 | -- | -- | -- | -- | -- | -- | -- | 417 | 0 |
| | Styrene | 9 | 0% | 9 | 0.0619 | 0.0719 | 0.0758 | 0.0746 | 0.0792 | 0.0796 | 0 | -- | -- | -- | -- | -- | -- | -- | 1040 | 0 |
| | tert-Butyl benzene | 9 | 0% | 9 | 0.0819 | 0.0856 | 0.139 | 0.129 | 0.173 | 0.178 | 0 | -- | -- | -- | -- | -- | -- | -- | 417 | 0 |
| | Tetrachloroethene | 9 | 11.1% | 8 | 0.0977 | 0.112 | 0.117 | 0.116 | 0.124 | 0.125 | 1 | 0.0338 | -- | 0.0338 | 0.0338 | -- | 0.0338 | 0.0068 | 0.412 | 0 |
| | Toluene | 9 | 100% | 0 | -- | -- | -- | -- | -- | -- | 9 | 0.0273 | 0.0402 | 0.0688 | 0.0778 | 0.109 | 0.158 | 0.032 | 5210 | 0 |
| | trans-1,2-Dichloroethene | 9 | 0% | 9 | 0.0488 | 0.0565 | 0.0596 | 0.0586 | 0.0623 | 0.0627 | 0 | -- | -- | -- | -- | -- | -- | -- | 62.6 | 0 |
| | trans-1,3-Dichloropropene | 9 | 0% | 9 | 0.0665 | 0.0771 | 0.0812 | 0.08 | 0.085 | 0.0858 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Trichloroethene | 9 | 0% | 9 | 0.0781 | 0.0908 | 0.0954 | 0.0941 | 0.1 | 0.101 | 0 | -- | -- | -- | -- | -- | -- | -- | 1.22 | 0 |
| | Vinyl acetate | 9 | 11.1% | 8 | 0.0427 | 0.0491 | 0.0531 | 0.0515 | 0.0546 | 0.055 | 1 | 0.0254 | -- | 0.0254 | 0.0254 | -- | 0.0254 | 0.0051 | 209 | 0 |
| | Vinyl chloride | 9 | 0% | 9 | 0.0377 | 0.0435 | 0.0458 | 0.045 | 0.0477 | 0.0481 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.553 | 0 |
| TO-15 SIM | 1,1,2,2-Tetrachloroethane | 9 | 0% | 9 | 0.00831 | 0.00854 | 0.00912 | 0.00894 | 0.00927 | 0.00935 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.042 | 0 |
| | 1,1,2-Trichloroethane | 9 | 11.1% | 8 | 0.00135 | 0.00139 | 0.00148 | 0.00293 | 0.00571 | 0.00773 | 1 | 0.00196 | -- | 0.00196 | 0.00196 | -- | 0.00196 | 0.00039 | 0.152 | 0 |
| | 1,2,3-Trichloropropane | 9 | 11.1% | 8 | 0.00585 | 0.00601 | 0.00633 | 0.00626 | 0.0065 | 0.00658 | 1 | 0.0106 | -- | 0.0106 | 0.0106 | -- | 0.0106 | 0.0021 | 0.313 | 0 |
| | 1,2,4-Trichlorobenzene | 9 | 0% | 9 | 0.037 | 0.0381 | 0.0407 | 0.0398 | 0.0413 | 0.0416 | 0 | -- | -- | -- | -- | -- | -- | -- | 4.17 | 0 |
| | 1,2-Dibromoethane | 9 | 11.1% | 8 | 0.00192 | 0.00202 | 0.00213 | 0.00416 | 0.00804 | 0.0109 | 1 | 0.00473 | -- | 0.00473 | 0.00473 | -- | 0.00473 | 0.00095 | 0.00406 | 0 |
| | 1,2-Dichlorobenzene | 9 | 11.1% | 8 | 0.00727 | 0.00748 | 0.00788 | 0.00781 | 0.00812 | 0.00819 | 1 | 0.00581 | -- | 0.00581 | 0.00581 | -- | 0.00581 | 0.0012 | 209 | 0 |
| | 1,2-Dichloroethane | 9 | 77.8% | 2 | 0.00112 | -- | 0.00342 | 0.00342 | -- | 0.00573 | 7 | 0.00108 | 0.00112 | 0.00162 | 0.00157 | 0.00181 | 0.00254 | 0.00051 | 0.0936 | 0 |
| | 1,2-Dichloropropane | 9 | 0% | 9 | 0.00115 | 0.00121 | 0.00127 | 0.00293 | 0.00621 | 0.00654 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.243 | 0 |
| | 1,3-Dichlorobenzene | 9 | 11.1% | 8 | 0.00758 | 0.00778 | 0.00819 | 0.00812 | 0.00846 | 0.0085 | 1 | 0.00523 | -- | 0.00523 | 0.00523 | -- | 0.00523 | 0.001 | 209 | 0 |
| | 1,4-Dichlorobenzene | 9 | 11.1% | 8 | 0.00727 | 0.00748 | 0.00788 | 0.00781 | 0.00812 | 0.00819 | 1 | 0.00592 | -- | 0.00592 | 0.00592 | -- | 0.00592 | 0.0012 | 0.221 | 0 |
| | Benzene | 9 | 77.8% | 2 | 0.000885 | -- | 0.00496 | 0.00496 | -- | 0.00904 | 7 | 0.0231 | 0.0295 | 0.0309 | 0.0346 | 0.0345 | 0.0615 | 0.012 | 0.312 | 0 |
| | Benzyl chloride | 9 | 11.1% | 8 | 0.00477 | 0.00489 | 0.00515 | 0.00511 | 0.00531 | 0.00535 | 1 | 0.00554 | -- | 0.00554 | 0.00554 | -- | 0.00554 | 0.0011 | 1.04 | 0 |
| | Bromodichloromethane | 9 | 66.7% | 3 | 0.00123 | 0.00123 | 0.00569 | 0.00437 | 0.00619 | 0.00619 | 6 | 0.00127 | 0.00188 | 0.00223 | 0.00219 | 0.00262 | 0.00273 | 0.00055 | 1040 | 0 |
| | Carbon tetrachloride | 9 | 100% | 0 | -- | -- | -- | -- | -- | -- | 9 | 0.00204 | 0.00327 | 0.00446 | 0.00501 | 0.00619 | 0.0104 | 0.0021 | 0.162 | 0 |
| | Chloroform | 9 | 100% | 0 | -- | -- | -- | -- | -- | -- | 9 | 0.00308 | 0.00454 | 0.00638 | 0.00865 | 0.0135 | 0.0143 | 0.0029 | 0.106 | 0 |
| | Dibromochloromethane | 9 | 11.1% | 8 | 0.00785 | 0.00806 | 0.00848 | 0.0084 | 0.00873 | 0.00881 | 1 | 0.00185 | -- | 0.00185 | 0.00185 | -- | 0.00185 | 0.00037 | 0.0901 | 0 |
| | Dibromochloropropane | 9 | 0% | 9 | 0.0253 | 0.026 | 0.0278 | 0.0272 | 0.0282 | 0.0284 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.000406 | 0 |
| | Dichloromethane | 9 | 100% | 0 | -- | -- | -- | -- | -- | -- | 9 | 0.0025 | 0.00494 | 0.0101 | 0.0127 | 0.0118 | 0.0502 | 0.01 | 5.18 | 0 |
| | Hexachlorobutadiene | 9 | 11.1% | 8 | 0.0134 | 0.0138 | 0.0145 | 0.0144 | 0.015 | 0.0151 | 1 | 0.00838 | -- | 0.00838 | 0.00838 | -- | 0.00838 | 0.0017 | 0.111 | 0 |
| | Naphthalene | 9 | 22.2% | 7 | 0.0135 | 0.0138 | 0.0148 | 0.0167 | 0.015 | 0.0305 | 2 | 0.00392 | -- | 0.165 | 0.165 | -- | 0.326 | 0.065 | 0.0716 | 0 |
| | Tetrachloroethene | 9 | 55.6% | 4 | 0.00169 | 0.0017 | 0.00175 | 0.00176 | 0.00183 | 0.00185 | 5 | 0.00642 | 0.00702 | 0.00777 | 0.00961 | 0.0131 | 0.0159 | 0.0032 | 0.412 | 0 |
| | Trichloroethene | 9 | 11.1% | 8 | 0.00135 | 0.00139 | 0.00148 | 0.0029 | 0.00563 | 0.00762 | 1 | 0.00923 | -- | 0.00923 | 0.00923 | -- | 0.00923 | 0.0019 | 1.22 | 0 |
| | Vinyl chloride | 9 | 0% | 9 | 0.000654 | 0.000673 | 0.000731 | 0.00163 | 0.00344 | 0.00362 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.553 | 0 |

BCL = Basic Comparison Levels (BCLs) from NDEP 2010. Values used are ambient air BCLs.
Max = Maximum
Min = Minimum
Q1 = 1st quartile (25th percentile)
Q3 = 3rd quartile (75th percentile)
Values for Q1, median, mean, and Q3 are rounded to 3 significant figures. Maximum outdoor air concentration are rounded to 2 significant figures. BCLs are rounded to 3 significant figures.
a - Range of detections include estimated values of detect results between the detection limit and reporting limit. As such some minimum detected concentrations may be below the minimum reporting limit. In these cases the respective sample results are flagged in the dataset.
b - Calculated value (see text).
-- = Not applicable or no value has been established.

**TABLE 3**
**SPLP DATA SUMMARY**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 1 of 3)**

| Parameter of Interest | Compound List | Units | Total Count | Result | Residential Water BCL[c] | Count of Detects > BCL | MCL | Count of Detects > MCL |
|---|---|---|---|---|---|---|---|---|
| **Aldehydes** | Acetaldehyde | mg/L | 1 | < 0.0082 U | 0.066 | -- | -- | -- |
| | Formaldehyde | mg/L | 1 | < 0.021 U | 0.0015 | -- | -- | -- |
| **General Chemistry** | Ammonia | mg/L | 1 | < 0.0078 UJ | 0.73 | -- | -- | -- |
| | Bromide | mg/L | 1 | < 0.025 UJ | -- | -- | -- | -- |
| | Chlorate | mg/L | 1 | < 0.053 UJ | -- | -- | -- | -- |
| | Chloride | mg/L | 1 | 16 J | -- | -- | -- | -- |
| | Fluoride | mg/L | 1 | 0.11 J | 2.2 | 0 | 4 | 0 |
| | Nitrite | mg/L | 1 | < 0.02 UJ | 1 | -- | 1 | -- |
| | Orthophosphate as P | mg/L | 1 | < 0.05 UJ | -- | -- | -- | -- |
| | Perchlorate | mg/L | 1 | < 0.001 U | 0.026 | -- | 0.018/0.0245(1) | -- |
| | Total Kjeldahl Nitrogen (TKN) | mg/L | 1 | < 0.25 UJ | -- | -- | -- | -- |
| **Metals** | Aluminum | mg/L | 1 | 0.0602 J | 37 | 0 | -- | -- |
| | Antimony | mg/L | 1 | < 0.00068 UJ | 0.015 | -- | 0.006 | -- |
| | Arsenic | mg/L | 1 | 0.003 J | 0.000045 | 1 | 0.01 | 0 |
| | Barium | mg/L | 1 | 0.0404 J | 7.3 | 0 | 2 | 0 |
| | Beryllium | mg/L | 1 | < 0.000128 UJ | 0.073 | -- | 0.004 | -- |
| | Boron | mg/L | 1 | 0.0948 J | 7.3 | 0 | -- | -- |
| | Cadmium | mg/L | 1 | < 0.000042 UJ | 0.018 | -- | 0.005 | -- |
| | Calcium | mg/L | 1 | 7.71 J | -- | -- | -- | -- |
| | Chromium (Total) | mg/L | 1 | < 0.003 UJ | -- | -- | 0.1 | -- |
| | Chromium (VI) | mg/L | 1 | < 0.002 UJ | 0.11 | -- | 0.1 | -- |
| | Cobalt | mg/L | 1 | < 0.000244 UJ | 0.011 | -- | -- | -- |
| | Copper | mg/L | 1 | < 0.00081 UJ | 1.4 | -- | 1.3 | -- |
| | Iron | mg/L | 1 | < 0.016 UJ | 26 | -- | -- | -- |
| | Lead | mg/L | 1 | < 0.000492 UJ | 0.015 | -- | 0.015 | -- |
| | Lithium | mg/L | 1 | < 0.0002 UJ | 0.073 | -- | -- | -- |
| | Magnesium | mg/L | 1 | 3.3 J | 210 | 0 | -- | -- |
| | Manganese | mg/L | 1 | < 0.0006 UJ | 0.51 | -- | -- | -- |
| | Mercury | mg/L | 1 | 0.00008 J | 0.0058 | 0 | 0.002 | 0 |
| | Molybdenum | mg/L | 1 | 0.00087 J | 0.18 | 0 | -- | -- |
| | Nickel | mg/L | 1 | < 0.000487 UJ | 0.73 | -- | -- | -- |
| | Potassium | mg/L | 1 | 0.207 J | -- | -- | -- | -- |
| | Selenium | mg/L | 1 | < 0.00048 UJ | 0.18 | -- | 0.05 | -- |
| | Silver | mg/L | 1 | < 0.000203 UJ | 0.18 | -- | -- | -- |
| | Sodium | mg/L | 1 | 13.5 J | -- | -- | -- | -- |
| | Strontium | mg/L | 1 | 0.184 J | 22 | 0 | -- | -- |
| | Thallium | mg/L | 1 | < 0.00006 UJ | 0.0026 | -- | 0.002 | -- |
| | Tin | mg/L | 1 | < 0.00068 UJ | 22 | -- | -- | -- |
| | Titanium | mg/L | 1 | 0.0012 J | 150 | 0 | -- | -- |
| | Tungsten | mg/L | 1 | < 0.00151 UJ | 0.27 | -- | -- | -- |
| | Uranium | mg/L | 1 | 0.00052 J | 0.11 | 0 | 0.03 | 0 |
| | Vanadium | mg/L | 1 | 0.0113 J | 0.18 | 0 | -- | -- |
| | Zinc | mg/L | 1 | < 0.004 UJ | 11 | -- | -- | -- |
| **OCPs** | 2,4-DDD | mg/L | 1 | < 0.000011 UJ | -- | -- | -- | -- |
| | 2,4-DDE | mg/L | 1 | < 0.000009 UJ | -- | -- | -- | -- |
| | 4,4-DDD | mg/L | 1 | < 0.000004 UJ | 0.00028 | -- | -- | -- |
| | 4,4-DDE | mg/L | 1 | < 0.000003 UJ | 0.0002 | -- | -- | -- |
| | 4,4-DDT | mg/L | 1 | < 0.000006 UJ | 0.0002 | -- | -- | -- |
| | Aldrin | mg/L | 1 | < 0.000004 UJ | 0.000004 | -- | -- | -- |
| | alpha-BHC | mg/L | 1 | < 0.000003 UJ | 0.000011 | -- | -- | -- |
| | alpha-Chlordane | mg/L | 1 | < 0.000003 UJ | -- | -- | -- | -- |
| | beta-BHC | mg/L | 1 | < 0.000013 UJ | 0.000037 | -- | -- | -- |
| | Chlordane | mg/L | 1 | < 0.00018 UJ | 0.00019 | -- | 0.002 | -- |
| | delta-BHC | mg/L | 1 | < 0.000006 UJ | -- | -- | -- | -- |
| | Dieldrin | mg/L | 1 | < 0.000002 UJ | 0.0000042 | -- | -- | -- |
| | Endosulfan I | mg/L | 1 | < 0.000003 UJ | -- | -- | -- | -- |
| | Endosulfan II | mg/L | 1 | < 0.00001 UJ | -- | -- | -- | -- |
| | Endosulfan sulfate | mg/L | 1 | < 0.000017 UJ | -- | -- | -- | -- |
| | Endrin | mg/L | 1 | < 0.000003 UJ | 0.011 | -- | 0.002 | -- |

**TABLE 3**
**SPLP DATA SUMMARY**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 2 of 3)**

| Parameter of Interest | Compound List | Units | Total Count | Result | Residential Water BCL[c] | Count of Detects > BCL | MCL | Count of Detects > MCL |
|---|---|---|---|---|---|---|---|---|
| **OCPs** | Endrin aldehyde | mg/L | 1 | < 0.000003 UJ | -- | -- | -- | -- |
| | Endrin ketone | mg/L | 1 | < 0.000016 UJ | -- | -- | -- | -- |
| | gamma-BHC (Lindane) | mg/L | 1 | < 0.000003 UJ | 0.000052 | -- | 0.0002 | -- |
| | gamma-Chlordane | mg/L | 1 | < 0.000003 UJ | -- | -- | -- | -- |
| | Heptachlor | mg/L | 1 | < 0.000003 UJ | 0.000015 | -- | 0.0004 | -- |
| | Heptachlor epoxide | mg/L | 1 | < 0.000003 UJ | 0.0000074 | -- | 0.0002 | -- |
| | Methoxychlor | mg/L | 1 | < 0.000005 UJ | 0.18 | -- | 0.04 | -- |
| | Toxaphene | mg/L | 1 | < 0.00033 UJ | 0.000061 | -- | 0.003 | -- |
| **PAHs** | Acenaphthene | mg/L | 1 | < 0.00025 U | 2.2 | -- | -- | -- |
| | Acenaphthylene | mg/L | 1 | < 0.00025 U | 1.1 | -- | -- | -- |
| | Anthracene | mg/L | 1 | < 0.00025 U | 11 | -- | -- | -- |
| | Benzo(a)anthracene | mg/L | 1 | < 0.00025 U | 0.000092 | -- | -- | -- |
| | Benzo(a)pyrene | mg/L | 1 | < 0.00025 U | 0.0000092 | -- | 0.0002 | -- |
| | Benzo(b)fluoranthene | mg/L | 1 | < 0.00025 U | 0.000092 | -- | -- | -- |
| | Benzo(g,h,i)perylene | mg/L | 1 | < 0.00025 U | 1.1 | -- | -- | -- |
| | Benzo(k)fluoranthene | mg/L | 1 | < 0.00025 U | 0.00092 | -- | -- | -- |
| | Chrysene | mg/L | 1 | < 0.00025 U | 0.0092 | -- | -- | -- |
| | Dibenzo(a,h)anthracene | mg/L | 1 | < 0.00025 U | 0.0000092 | -- | -- | -- |
| | Indeno(1,2,3-cd)pyrene | mg/L | 1 | < 0.00025 U | 0.000092 | -- | -- | -- |
| | Phenanthrene | mg/L | 1 | < 0.00025 U | 1.1 | -- | -- | -- |
| | Pyrene | mg/L | 1 | < 0.00025 U | 1.1 | -- | -- | -- |
| **Radio-nuclides** | Radium-226 | pCi/L | 1 | 0.216 UJ | 5 | -- | -- | -- |
| | Radium-228 | pCi/L | 1 | -0.896 UJ | 5 | -- | -- | -- |
| | Thorium-228 | pCi/L | 1 | -0.00316 UJ | 0.11 | -- | -- | -- |
| | Thorium-230 | pCi/L | 1 | 0.512 UJ | 0.042 | -- | -- | -- |
| | Thorium-232 | pCi/L | 1 | 0.103 UJ | 0.14 | -- | -- | -- |
| | Uranium-233/234 | pCi/L | 1 | 1.55 J- | -- | -- | -- | -- |
| | Uranium-235/236 | pCi/L | 1 | -0.0426 UJ | -- | -- | -- | -- |
| | Uranium-238 | pCi/L | 1 | 0.397 UJ | -- | -- | -- | -- |
| **SVOCs** | 1,2,4,5-Tetrachlorobenzene | mg/L | 1 | < 0.01 U | 0.011 | -- | -- | -- |
| | 1,2-Diphenylhydrazine | mg/L | 1 | < 0.01 U | 0.000084 | -- | -- | -- |
| | 1,4-Dioxane | mg/L | 1 | < 0.005 UJ | 0.0061 | -- | -- | -- |
| | 2,2'-Dichlorobenzil | mg/L | 1 | < 0.0165 U | 0.011 | -- | -- | -- |
| | 2,4,5-Trichlorophenol | mg/L | 1 | < 0.005 U | 3.7 | -- | -- | -- |
| | 2,4,6-Trichlorophenol | mg/L | 1 | < 0.01 U | 0.0061 | -- | -- | -- |
| | 2,4-Dichlorophenol | mg/L | 1 | < 0.01 U | 0.11 | -- | -- | -- |
| | 2,4-Dimethylphenol | mg/L | 1 | < 0.01 U | 0.73 | -- | -- | -- |
| | 2,4-Dinitrophenol | mg/L | 1 | < 0.05 U | 0.073 | -- | -- | -- |
| | 2,4-Dinitrotoluene | mg/L | 1 | < 0.01 U | 0.00022 | -- | -- | -- |
| | 2,6-Dinitrotoluene | mg/L | 1 | < 0.01 U | 0.037 | -- | -- | -- |
| | 2-Chloronaphthalene | mg/L | 1 | < 0.00175 U | 2.9 | -- | -- | -- |
| | 2-Chlorophenol | mg/L | 1 | < 0.01 U | 0.18 | -- | -- | -- |
| | 2-Methylnaphthalene | mg/L | 1 | < 0.0015 U | -- | -- | -- | -- |
| | 2-Nitroaniline | mg/L | 1 | < 0.01 U | 0.11 | -- | -- | -- |
| | 2-Nitrophenol | mg/L | 1 | < 0.01 U | -- | -- | -- | -- |
| | 3,3-Dichlorobenzidine | mg/L | 1 | < 0.005 U | 0.00015 | -- | -- | -- |
| | 3-Nitroaniline | mg/L | 1 | < 0.01 U | -- | -- | -- | -- |
| | 4-Bromophenyl phenyl ether | mg/L | 1 | < 0.01 U | -- | -- | -- | -- |
| | 4-Chloro-3-methylphenol | mg/L | 1 | < 0.01 U | -- | -- | -- | -- |
| | 4-Chlorophenyl phenyl ether | mg/L | 1 | < 0.01 U | -- | -- | -- | -- |
| | 4-Chlorothioanisole | mg/L | 1 | < 0.0165 U | -- | -- | -- | -- |
| | 4-Nitroaniline | mg/L | 1 | < 0.015 U | -- | -- | -- | -- |
| | 4-Nitrophenol | mg/L | 1 | < 0.01 U | 0.29 | -- | -- | -- |
| | Acetophenone | mg/L | 1 | < 0.01 UJ | 3.7 | -- | -- | -- |
| | Aniline | mg/L | 1 | < 0.0125 U | 0.012 | -- | -- | -- |
| | Benzenethiol | mg/L | 1 | < 0.033 U | -- | -- | -- | -- |
| | Benzoic acid | mg/L | 1 | < 0.03 U | 150 | -- | -- | -- |
| | Benzyl alcohol | mg/L | 1 | < 0.01 UJ | 18 | -- | -- | -- |
| | bis(2-Chloroethoxy)methane | mg/L | 1 | < 0.015 U | -- | -- | -- | -- |

**TABLE 3**
**SPLP DATA SUMMARY**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 3 of 3)**

| Parameter of Interest | Compound List | Units | Total Count | Result | Residential Water BCL[c] | Count of Detects > BCL | MCL | Count of Detects > MCL |
|---|---|---|---|---|---|---|---|---|
| SVOCs | bis(2-Chloroethyl) ether | mg/L | 1 | < 0.01 U | 0.000054 | -- | -- | -- |
| | bis(2-Chloroisopropyl) ether | mg/L | 1 | < 0.01 U | 0.0009 | -- | -- | -- |
| | bis(2-Ethylhexyl) phthalate | mg/L | 1 | < 0.01 U | 0.0048 | -- | 0.006 | -- |
| | bis(p-Chlorophenyl) sulfone | mg/L | 1 | < 0.0165 U | -- | -- | -- | -- |
| | bis(p-Chlorophenyl)disulfide | mg/L | 1 | < 0.0165 U | -- | -- | -- | -- |
| | Butylbenzyl phthalate | mg/L | 1 | < 0.01 U | 7.3 | -- | -- | -- |
| | Carbazole | mg/L | 1 | < 0.001 U | 0.0034 | -- | -- | -- |
| | Dibenzofuran | mg/L | 1 | < 0.01 U | 0.073 | -- | -- | -- |
| | Diethyl phthalate | mg/L | 1 | < 0.01 U | 29 | -- | -- | -- |
| | Dimethyl phthalate | mg/L | 1 | < 0.01 U | 370 | -- | -- | -- |
| | Di-n-butyl phthalate | mg/L | 1 | < 0.01 U | 3.7 | -- | -- | -- |
| | Di-n-octyl phthalate | mg/L | 1 | < 0.015 U | -- | -- | -- | -- |
| | Diphenyl disulfide | mg/L | 1 | < 0.0165 U | -- | -- | -- | -- |
| | Diphenyl sulfide | mg/L | 1 | < 0.0165 U | -- | -- | -- | -- |
| | Diphenyl sulfone | mg/L | 1 | < 0.0165 U | 0.11 | -- | -- | -- |
| | Diphenylamine | mg/L | 1 | < 0.015 U | 0.91 | -- | -- | -- |
| | Fluoranthene | mg/L | 1 | < 0.001 U | 1.5 | -- | -- | -- |
| | Fluorene | mg/L | 1 | < 0.001 U | 1.5 | -- | -- | -- |
| | Hexachlorobenzene | mg/L | 1 | < 0.01 U | 0.000042 | -- | 0.001 | -- |
| | Hexachlorobutadiene | mg/L | 1 | < 0.01 U | 0.00086 | -- | -- | -- |
| | Hexachlorocyclopentadiene | mg/L | 1 | < 0.01 U | 0.22 | -- | 0.05 | -- |
| | Hexachloroethane | mg/L | 1 | < 0.01 U | 0.0048 | -- | -- | -- |
| | Hydroxymethyl phthalimide | mg/L | 1 | < 0.0165 U | -- | -- | -- | -- |
| | Isophorone | mg/L | 1 | < 0.01 U | 0.071 | -- | -- | -- |
| | m,p-Cresols | mg/L | 1 | < 0.015 U | 0.18 | -- | -- | -- |
| | Naphthalene | mg/L | 1 | < 0.0015 U | 0.0043 | -- | -- | -- |
| | Nitrobenzene | mg/L | 1 | < 0.015 U | 0.0037 | -- | -- | -- |
| | N-nitrosodi-n-propylamine | mg/L | 1 | < 0.01 U | 0.0000096 | -- | -- | -- |
| | o-Cresol | mg/L | 1 | < 0.01 U | 1.8 | -- | -- | -- |
| | Octachlorostyrene | mg/L | 1 | < 0.0165 U | -- | -- | -- | -- |
| | p-Chloroaniline | mg/L | 1 | < 0.01 U | 0.15 | -- | -- | -- |
| | p-Chlorobenzenethiol | mg/L | 1 | < 0.0165 U | -- | -- | -- | -- |
| | Pentachlorobenzene | mg/L | 1 | < 0.01 U | 0.029 | -- | -- | -- |
| | Pentachlorophenol | mg/L | 1 | < 0.01 U | 0.00056 | -- | 0.001 | -- |
| | Phenol | mg/L | 1 | < 0.005 U | 11 | -- | -- | -- |
| | Pyridine | mg/L | 1 | < 0.005 U | 0.037 | -- | -- | -- |

BCL = Basic Comparison Levels (BCLs) from NDEP 2010. Values used are residential water BCLs.

MCL = USEPA Maximum Contaminant Level.

[(1)]A MCL for perchlorate has not been promulgated. The USEPA Drinking Water Equivalent Level of 24.5 ug/L was used.

**TABLE 4**
**BACKGROUND COMPARISON SUMMARY**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Chemical | Warm Springs | | | | | | | | Background | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. of Detects | Total Samples | % Detects | Minimum Detect | Maximum Detect | Median | Mean | Standard Deviation | No. of Detects | Total Samples | % Detects | Minimum Detect | Maximum Detect | Median | Mean | Standard Deviation |
| **Aluminum** | 32 | 32 | 100% | 8250 | 18400 | 12150 | 12020 | 2443 | 101 | 101 | 100% | 3740 | 15300 | 8470 | 9131 | 2668 |
| Antimony | 0 | 32 | NA | NA | NA | 0.08775 | 0.09633 | 0.03602 | 43 | 101 | 43% | 0.12 | 0.5 | 0.1649 | 0.1886 | 0.08519 |
| Arsenic | 32 | 32 | 100% | 2 | 9.5 | 3.65 | 4.147 | 1.845 | 101 | 101 | 100% | 2.1 | 7.2 | 3.9 | 4.112 | 1.143 |
| **Barium** | 32 | 32 | 100% | 155 | 490 | 246.5 | 256.8 | 77.98 | 101 | 101 | 100% | 73 | 465 | 175 | 182.3 | 64.83 |
| **Beryllium** | 32 | 32 | 100% | 0.53 | 0.84 | 0.65 | 0.6541 | 0.09005 | 101 | 101 | 100% | 0.16 | 0.89 | 0.54 | 0.5811 | 0.1596 |
| Boron | 5 | 32 | 16% | 4.8 | 9.9 | 3.3 | 4.516 | 2.325 | 34 | 95 | 36% | 5.2 | 11.6 | 1.6 | 3.573 | 2.811 |
| **Cadmium** | 12 | 32 | 38% | 0.11 | 0.37 | 0.04 | 0.08531 | 0.09544 | 6 | 101 | 6% | 0.095 | 0.16 | 0.06455 | 0.06757 | 0.01333 |
| Calcium | 32 | 32 | 100% | 10900 | 92200 | 20700 | 25100 | 16100 | 95 | 95 | 100% | 9440 | 82800 | 24500 | 29030 | 14960 |
| **Chromium (Total)** | 32 | 32 | 100% | 7.7 | 19.7 | 12.3 | 12.63 | 3.213 | 101 | 101 | 100% | 2.6 | 16.7 | 9 | 9.029 | 3.015 |
| **Chromium (VI)** | 17 | 32 | 53% | 0.11 | 0.58 | 0.115 | 0.1433 | 0.1198 | 0 | 95 | NA | NA | NA | 0.13 | 0.1291 | 0.004333 |
| **Cobalt** | 32 | 32 | 100% | 5.7 | 14.4 | 9.8 | 9.909 | 1.593 | 101 | 101 | 100% | 3.7 | 16.3 | 8.8 | 8.672 | 2.283 |
| **Copper** | 32 | 32 | 100% | 13 | 24.5 | 18.3 | 19.11 | 3.004 | 101 | 101 | 100% | 10.1 | 25.9 | 17.6 | 17.49 | 3.563 |
| **Iron** | 32 | 32 | 100% | 11100 | 23700 | 17700 | 17790 | 2639 | 101 | 101 | 100% | 5410 | 19700 | 13500 | 13200 | 3320 |
| **Lead** | 32 | 32 | 100% | 5.9 | 79.3 | 10.25 | 14.69 | 14.63 | 101 | 101 | 100% | 3 | 35.1 | 7.3 | 8.467 | 4.291 |
| Lithium | 32 | 32 | 100% | 8.5 | 21 | 12.1 | 12.53 | 2.764 | 95 | 95 | 100% | 7.5 | 26.5 | 12.9 | 14.04 | 4.439 |
| Magnesium | 32 | 32 | 100% | 5530 | 15400 | 9950 | 10130 | 1653 | 101 | 101 | 100% | 4690 | 17500 | 10200 | 10180 | 2799 |
| **Manganese** | 32 | 32 | 100% | 240 | 1800 | 493.5 | 576.5 | 288.8 | 101 | 101 | 100% | 151 | 863 | 409 | 416 | 126.8 |
| Mercury | 8 | 28 | 29% | 0.011 | 0.0438 | 0.00575 | 0.009618 | 0.00924 | 79 | 101 | 78% | 0.0084 | 0.11 | 0.014 | 0.01824 | 0.01641 |
| Molybdenum | 21 | 32 | 66% | 0.29 | 2.3 | 0.38 | 0.4956 | 0.5101 | 101 | 101 | 100% | 0.17 | 2 | 0.48 | 0.5328 | 0.2528 |
| Nickel | 32 | 32 | 100% | 11.7 | 30.3 | 16.25 | 16.96 | 3.268 | 101 | 101 | 100% | 7.9 | 30 | 16 | 15.93 | 4.076 |
| Potassium | 32 | 32 | 100% | 863 | 2800 | 1810 | 1793 | 523.8 | 95 | 95 | 100% | 625 | 3890 | 1580 | 1754 | 759.3 |

**TABLE 4**
**BACKGROUND COMPARISON SUMMARY**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Chemical | Warm Springs | | | | | | | | Background | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. of Detects | Total Samples | % Detects | Minimum Detect | Maximum Detect | Median | Mean | Standard Deviation | No. of Detects | Total Samples | % Detects | Minimum Detect | Maximum Detect | Median | Mean | Standard Deviation |
| Selenium | 0 | 32 | NA | NA | NA | 0.16 | 2.725 | 4.987 | 39 | 101 | 39% | 0.1 | 0.6 | 0.07895 | 0.1666 | 0.1241 |
| Silver | 22 | 32 | 69% | 0.076 | 0.28 | 0.13 | 0.1241 | 0.07248 | 6 | 101 | 6% | 0.043 | 0.083 | 0.1305 | 0.1262 | 0.01762 |
| **Sodium** | 32 | 32 | 100% | 332 | 1140 | 659 | 680.3 | 196.9 | 95 | 95 | 100% | 128 | 1320 | 487 | 498.4 | 284.7 |
| **Strontium** | 32 | 32 | 100% | 209 | 443 | 312.5 | 308.5 | 59.47 | 95 | 95 | 100% | 75.5 | 808 | 192 | 232.5 | 133.4 |
| Thallium | 7 | 32 | 22% | 0.25 | 0.96 | 0.15 | 0.2479 | 0.2088 | 27 | 101 | 27% | 0.13 | 1.8 | 0.2714 | 0.508 | 0.4806 |
| Tin | 13 | 32 | 41% | 0.41 | 1.3 | 0.375 | 0.4323 | 0.3009 | 95 | 95 | 100% | 0.24 | 0.8 | 0.51 | 0.4985 | 0.112 |
| **Titanium** | 32 | 32 | 100% | 553 | 1270 | 739.5 | 755.5 | 169.8 | 101 | 101 | 100% | 262 | 1010 | 533 | 552.1 | 150.4 |
| **Tungsten** | 9 | 32 | 28% | 0.25 | 4 | 0.25 | 0.5923 | 0.9372 | 0 | 95 | NA | NA | NA | 0.00875 | 0.00875 | 0 |
| Uranium | 32 | 32 | 100% | 0.7 | 1.9 | 1.1 | 1.136 | 0.3049 | 94 | 94 | 100% | 0.62 | 2.7 | 0.97 | 1.032 | 0.3092 |
| **Vanadium** | 32 | 32 | 100% | 34.6 | 71.4 | 49.25 | 50.78 | 8.921 | 101 | 101 | 100% | 20.2 | 59.1 | 36.9 | 38.26 | 8.827 |
| **Zinc** | 32 | 32 | 100% | 25.1 | 106 | 45.1 | 49.82 | 16.86 | 101 | 101 | 100% | 15.4 | 121 | 38.9 | 38.48 | 12.87 |
| Radium-226 | 31 | 31 | 100% | 0.154 | 1.8 | 0.88 | 0.9515 | 0.3216 | 95 | 95 | 100% | 0.494 | 2.36 | 1.09 | 1.148 | 0.3403 |
| Radium-228 | 31 | 31 | 100% | 1.09 | 2.98 | 1.78 | 1.828 | 0.4782 | 81 | 81 | 100% | 0.946 | 2.92 | 1.93 | 1.894 | 0.3905 |
| Thorium-228 | 31 | 31 | 100% | 1.3 | 2.23 | 1.66 | 1.689 | 0.2829 | 101 | 101 | 100% | 1.15 | 2.28 | 1.78 | 1.737 | 0.262 |
| Thorium-230 | 31 | 31 | 100% | 0.668 | 1.74 | 1.04 | 1.06 | 0.2147 | 101 | 101 | 100% | 0.73 | 3.01 | 1.21 | 1.294 | 0.3894 |
| Thorium-232 | 31 | 31 | 100% | 0.893 | 2.67 | 1.38 | 1.521 | 0.4622 | 101 | 101 | 100% | 1.22 | 2.23 | 1.66 | 1.656 | 0.2554 |
| Uranium-233/234 | 31 | 31 | 100% | 0.629 | 1.67 | 1.03 | 1.05 | 0.286 | 101 | 101 | 100% | 0.63 | 2.84 | 1.05 | 1.186 | 0.4564 |
| Uranium-235/236 | 31 | 31 | 100% | -0.19 | 0.246 | 0.054 | 0.07007 | 0.1001 | 101 | 101 | 100% | 0.0009 | 0.21 | 0.06 | 0.06962 | 0.03806 |
| Uranium-238 | 31 | 31 | 100% | 0.534 | 1.35 | 0.972 | 0.9724 | 0.2342 | 101 | 101 | 100% | 0.65 | 2.37 | 1.05 | 1.157 | 0.3583 |

Note: Summary and background comparison statistics were performed using one-half the detection limit for metals and using GISdT® (Neptune and Company 2009).
**BOLD with Highlight indicates Site concentrations are greater than background.**
WRS = Wilcoxon Rank Sum Test with the Gehan Modification
mg/kg - milligrams per kilogram
pCi/g - picoCuries per gram

**TABLE 4**
**BACKGROUND COMPARISON SUMMARY**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Chemical | T Test | | Quantile | | Slippage | | WRS | | Greater than Background? | Units | Basis |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *p* | Greater than Background? | Test *p* | Greater than Background? | Test *p* | Greater than Background? | Test *p* | Wilcoxon Result | | | |
| **Aluminum** | 2.3 E-7 | YES | 5.8 E-2 | NO | 2.9 E-3 | YES | 1.1 E-6 | YES | YES | mg/kg | Multiple tests |
| Antimony | 1.0 E+0 | NO | 1.0 E+0 | NO | 1.0 E+0 | NO | 1.0 E+0 | NO | NO | mg/kg | ND in Site data |
| Arsenic | 4.6 E-1 | NO | 1.3 E-1 | NO | 5.7 E-2 | NO | 8.4 E-1 | NO | NO | mg/kg | Multiple tests |
| **Barium** | 6.4 E-6 | YES | 5.2 E-3 | YES | 2.4 E-1 | NO | 5.5 E-8 | YES | YES | mg/kg | Multiple tests |
| **Beryllium** | 8.1 E-4 | YES | 6.5 E-1 | NO | 1.0 E+0 | NO | 4.6 E-3 | YES | YES | mg/kg | Multiple tests |
| Boron | 3.2 E-2 | NO | 8.9 E-1 | NO | 1.0 E+0 | NO | 1.4 E-5 | YES | NO | mg/kg | Multiple tests |
| **Cadmium** | 1.5 E-1 | NO | 6.6 E-4 | YES | 2.9 E-3 | YES | 1.0 E+0 | NO | YES | mg/kg | Multiple tests; Site max detect > background |
| Calcium | 8.9 E-1 | NO | 8.9 E-1 | NO | 2.5 E-1 | NO | 9.6 E-1 | NO | NO | mg/kg | Multiple tests |
| **Chromium (Total)** | 4.4 E-7 | YES | 1.5 E-2 | YES | 2.9 E-3 | YES | 3.2 E-7 | YES | YES | mg/kg | Multiple tests |
| **Chromium (VI)** | 2.5 E-1 | NO | 1.1 E-8 | YES | NA | NO | 1.0 E+0 | NO | YES | mg/kg | ND in background data |
| **Cobalt** | 5.1 E-4 | YES | 2.2 E-1 | NO | 1.0 E+0 | NO | 9.1 E-4 | YES | YES | mg/kg | Multiple tests |
| **Copper** | 7.1 E-3 | YES | 3.8 E-1 | NO | 1.0 E+0 | NO | 2.1 E-2 | YES | YES | mg/kg | Multiple tests |
| **Iron** | 1.3 E-11 | YES | 3.5 E-4 | YES | 2.9 E-3 | YES | 1.5 E-10 | YES | YES | mg/kg | Multiple tests |
| **Lead** | 1.2 E-2 | YES | 2.4 E-2 | YES | 5.7 E-2 | NO | 3.6 E-6 | YES | YES | mg/kg | Multiple tests |
| Lithium | 9.9 E-1 | NO | 9.8 E-1 | NO | 1.0 E+0 | NO | 9.1 E-1 | NO | NO | mg/kg | Multiple tests |
| Magnesium | 5.6 E-1 | NO | 9.8 E-1 | NO | 1.0 E+0 | NO | 5.6 E-1 | NO | NO | mg/kg | Multiple tests |
| **Manganese** | 2.2 E-3 | YES | 5.2 E-3 | YES | 1.3 E-2 | YES | 2.4 E-4 | YES | YES | mg/kg | Multiple tests |
| Mercury | 1.0 E+0 | NO | 9.7 E-1 | NO | 1.0 E+0 | NO | 9.6 E-1 | NO | NO | mg/kg | Multiple tests |
| Molybdenum | 6.5 E-1 | NO | 4.5 E-1 | NO | 5.7 E-2 | NO | 9.8 E-1 | NO | NO | mg/kg | Multiple tests |
| Nickel | 7.4 E-2 | NO | 4.5 E-1 | NO | 2.4 E-1 | NO | 1.4 E-1 | NO | NO | mg/kg | Multiple tests |
| Potassium | 3.7 E-1 | NO | 9.8 E-1 | NO | 1.0 E+0 | NO | 1.5 E-1 | NO | NO | mg/kg | Multiple tests |

**TABLE 4**
**BACKGROUND COMPARISON SUMMARY**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Chemical | T Test | | Quantile | | Slippage | | WRS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *p* | Greater than Background? | Test *p* | Greater than Background? | Test *p* | Greater than Background? | Test *p* | Wilcoxon Result | Greater than Background? | Units | Basis |
| Selenium | 3.4 E-3 | YES | 1.0 E+0 | NO | 1.0 E+0 | NO | 1.8 E-8 | YES | NO | mg/kg | ND in Site data |
| Silver | 5.6 E-1 | NO | 2.4 E-1 | NO | 2.9 E-4 | YES | 1.0 E+0 | NO | NO | mg/kg | Multiple tests |
| **Sodium** | 7.1 E-5 | YES | 4.2 E-1 | NO | 1.0 E+0 | NO | 3.1 E-4 | YES | YES | mg/kg | Multiple tests |
| **Strontium** | 1.2 E-5 | YES | 9.8 E-1 | NO | 1.0 E+0 | NO | 3.2 E-6 | YES | YES | mg/kg | Multiple tests |
| Thallium | 1.0 E+0 | NO | 1.0 E+0 | NO | 1.0 E+0 | NO | 1.0 E+0 | NO | NO | mg/kg | Multiple tests |
| Tin | 8.8 E-1 | NO | 2.0 E-1 | NO | 3.5 E-3 | YES | 7.2 E-2 | NO | NO | mg/kg | Multiple tests |
| **Titanium** | 1.0 E-7 | YES | 5.2 E-3 | YES | 1.3 E-2 | YES | 8.4 E-9 | YES | YES | mg/kg | Multiple tests |
| **Tungsten** | 6.8 E-4 | YES | 1.6 E-6 | YES | NA | NO | 0.0 E+0 | YES | YES | mg/kg | Multiple tests |
| Uranium | 5.1 E-2 | NO | 2.0 E-2 | YES | 1.0 E+0 | NO | 2.6 E-2 | NO | NO | mg/kg | Multiple tests; plots |
| **Vanadium** | 3.2 E-9 | YES | 8.2 E-4 | YES | 2.7 E-5 | YES | 2.5 E-9 | YES | YES | mg/kg | Multiple tests |
| **Zinc** | 5.5 E-4 | YES | 5.2 E-3 | YES | 1.0 E+0 | NO | 8.9 E-5 | YES | YES | mg/kg | Multiple tests |
| Radium-226 | 1.0 E+0 | NO | 9.7 E-1 | NO | 1.0 E+0 | NO | 1.0 E+0 | NO | NO | pCi/g | Multiple tests; Uranium results |
| Radium-228 | 7.5 E-1 | NO | 4.4 E-1 | NO | 2.8 E-1 | NO | 8.1 E-1 | NO | NO | pCi/g | Multiple tests; Uranium results |
| Thorium-228 | 8.0 E-1 | NO | 6.9 E-1 | NO | 1.0 E+0 | NO | 8.4 E-1 | NO | NO | pCi/g | Multiple tests; Uranium results |
| Thorium-230 | 1.0 E+0 | NO | 9.7 E-1 | NO | 1.0 E+0 | NO | 1.0 E+0 | NO | NO | pCi/g | Multiple tests; Uranium results |
| Thorium-232 | 9.4 E-1 | NO | 2.0 E-1 | NO | 1.2 E-2 | YES | 9.9 E-1 | NO | NO | pCi/g | Multiple tests; Uranium results |
| Uranium-233/234 | 9.7 E-1 | NO | 1.0 E+0 | NO | 1.0 E+0 | NO | 8.8 E-1 | NO | NO | pCi/g | Multiple tests; Uranium results |
| Uranium-235/236 | 4.9 E-1 | NO | 2.8 E-4 | YES | 1.2 E-2 | YES | 7.7 E-1 | NO | NO | pCi/g | Multiple tests; Uranium results |
| Uranium-238 | 1.0 E+0 | NO | 1.0 E+0 | NO | 1.0 E+0 | NO | 9.8 E-1 | NO | NO | pCi/g | Multiple tests; Uranium results |

Note: Summary and background comparison statistics were performed using one-half the detection limit for metals and using GISdT® (Neptune and Company 2009).
**BOLD with Highlight indicates Site concentrations are greater than background.**
WRS = Wilcoxon Rank Sum Test with the Gehan Modification
mg/kg - milligrams per kilogram
pCi/g - picoCuries per gram

**TABLE 5**
**CONSTRUCTION DUST MODEL**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 1 of 3)**

| Parameter | Abbrev. | Units | Value |
|---|---|---|---|
| **Wind Erosion and Construction Activities** | | | |
| **Fugitive dust from wind erosion**[1] | $M_{wind}$ | g | **1.8E+05** |
| Fraction of vegetative cover[2] | V | -- | 0.00 |
| Mean annual wind speed[3] | $U_m$ | m/s | 4.10 |
| Equivalent threshold value of wind speed[2] | $U_t$ | m/s | 11.32 |
| Function dependent on $U/U_t$[2] | F(x) | -- | 0.194 |
| Areal Extent of site surface contamination[4] | $A_{surf}$ | $m^2$ | 63133.20 |
| Exposure duration[5] | ED | year | 1 |
| **Fugitive dust from excavation soil dumping**[6] | $M_{excav}$ | g | **4.7E+03** |
| In situ wet soil bulk density[7] | $\rho_{soil}$ | $Mg/m^3$ | 1.83 |
| Gravimetric Soil Moisture Content %[8] | M | % | 12.00 |
| Areal extent of site excavation[9] | $A_{excav}$ | $m^2$ | 12626.64 |
| Average depth of site excavation[2] | $d_{excav}$ | m | 1.00 |
| Number of times soil is dumped[2] | $N_A$ | -- | 2.00 |
| **Fugitive dust from dozing**[10] | $M_{doz}$ | g | **1.3E+03** |
| Soil silt content %[7] | s | % | 6.90 |
| Gravimetric Soil Moisture Content %[8] | M | % | 12.00 |
| Average dozing speed[2] | $S_{doz}$ | km/hr | 11.40 |
| Number of times area is dozed | $N_{doze}$ | -- | 3.00 |
| Length of dozer blade | $B_d$ | m | 2.44 |
| Sum dozing kilometers traveled[11] | $VKT_{doz}$ | km | 77.62 |
| **Fugitive dust from grading**[12] | $M_{grade}$ | g | **3.4E+04** |
| Average grading speed[2] | $S_{grade}$ | km/hr | 11.40 |
| Number of times area is graded | $N_{grade}$ | -- | 3.00 |
| Length of grading blade | $B_g$ | m | 2.44 |
| Sum grading kilometers traveled[12] | $VKT_{grade}$ | km | 77.62 |
| **Fugitive dust from tilling**[13] | $M_{till}$ | g | **8.9E+03** |
| Soil silt content %[7] | s | % | 6.90 |
| Areal extent of site tilling[9] | $A_{till}$ | acre | 3.12 |
| Number of times soil is tilled[2] | $N_A$ | -- | 2.00 |
| **Total Time Averaged $PM_{10}$ Emission**[14] | **$J'_T$** | g/m2-sec | **1.17E-07** |
| Duration of construction[2] | T | sec | 3.15E+07 |

**TABLE 5**
**CONSTRUCTION DUST MODEL**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 2 of 3)**

| Parameter | Abbrev. | Units | Value |
|---|---|---|---|
| **Subchronic Dispersion Factor for Area Source[15]** | **$Q/C_{sa}$** | $g/m^2$-sec per $kg/m^3$ | **7.84** |
| Constant A[2] | A | -- | 2.45 |
| Constant B[2] | B | -- | 17.57 |
| Constant C[2] | C | -- | 189.04 |
| Areal Extent of site surface contamination[4] | $A_{surf}$ | acres | 15.60 |
| **Dispersion correction factor[16]** | **$F_D$** | -- | **0.186** |
| Duration of construction (time period during which construction activities occur) | $t_c$ | hr | 8760 |
| **Subchronic PEF for Construction Activities[17]** | **$PEF_{sc}$** | **$m^3/kg$** | **3.62E+08** |
| **Unpaved Road Traffic** | | | |
| Length of road segment[18] | $L_R$ | m | 251.26 |
| Width of road segment[2] | $W_R$ | m | 6.10 |
| Surface area of contaminated road segment[19] | $A_R$ | $m^2$ | 1531.70 |
| Road surface silt content %[20] | s | % | 8.50 |
| Mean vehicle weight[2] | W | tons | 8.00 |
| Percent moisture in dry road surface[20] | M | % | 0.20 |
| Number of days/year with at least 0.01 inches of precipitation[3] | p | days | 27.00 |
| Number of vehicles for duration of construction | $N_V$ | vehicles | 30.00 |
| Length of road traveled per day | $L_D$ | m/day | 251.26 |
| Sum of fleet vehicle kilometers traveled during the exposure duration[21] | $VKT_{road}$ | km | 979.93 |
| **Subchronic Dispersion Factor for road segment[22]** | $Q/C_{sr}$ | $g/m^2$-sec per $kg/m^3$ | 14.65 |
| Constant A[2] | A | | 12.94 |
| Constant B[2] | B | | 5.74 |
| Constant C[2] | C | | 71.77 |
| **Subchronic PEF for Unpaved Road Traffic[23]** | **$PEF_{sc\_road}$** | **$m^3/kg$** | **5.10E+06** |
| **Total construction related PEF[24]** | **$PEF_{sc\_total}$** | **$m^3/kg$** | **5.03E+06** |
| **Total outdoor ambient air dust concentration[25]** | **$D_{construct}$** | **$kg/m^3$** | **1.99E-07** |

(1) From USEPA. (2002). Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response, Washington, DC. OSWER 9355.4-24. December.

- $M_{wind} = 0.036 \times (1\text{-}V) \times (U_m/U_{t)}^3 \times F(x) \times A_{surf} \times ED \times 8760hr/yr.$

(2) Assumed value for the site based upon USEPA (2002).

(3) Based on long-term weather data for the area of interest - this value can change based on site specific characteristics.

(4) Site area - this value can change based on site characteristics (change in the Risk_Calculations worksheet).

(5) Construction worker ED.

(6) From USEPA 2002 - $M_{excav} = 0.35 \times 0.0016 \times [(U_m/2.2_{)}^{1.3}/(M/2)^{1.4}] \times \rho_{soil} \times A_{excav} \times d_{excav} \times N_A \times 10^3 g/kg.$

(7)NDEP default value. This value can change based on site specific characteristics.

(8) NDEP default value. This value can change based on site specific characteristics.

**TABLE 5**
**CONSTRUCTION DUST MODEL**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Parameter | Abbrev. | Units | Value |
|---|---|---|---|

(9) Assumed value of one fifth of the site based upon USEPA (2002).

(10) From USEPA 2002 - $M_{doz} = 0.75 \times [(0.45 \times s^{1.5})/(M)^{1.4}] \times \sum VKT_{doz}/S_{doz} \times 10^3 g/kg$.

(11) From USEPA 2002 - $VKT_{doz} = [(A_{surf}^{0.5}/2.44m) \times A_{surf}^{0.5} \times 3]/1{,}000$ m/km.

(12) From USEPA 2002 - $M_{grade} = 0.60 \times (0.0056 \times S^{2.0}) \times \sum VKT_{grade} \times 10^3 g/kg$.

(13) From USEPA 2002 - $M_{till} = 1.1 \times s^{0.6} \times A_{till} \times 4{,}047 m^2/acre \times 10^{-4} ha/m^2 \times 10^3 g/kg \times N_A$.

(14) From USEPA 2002 - $J'_T = (M_{wind} + M_{excav} + M_{doz} + M_{grade} + M_{till})/(A_{surf} \times T)$.

(15) From USEPA 2002 - $Q/C_{sa} = A \times \exp[(\ln(A_{surf}) - B)^2/C]$.

(16) From USEPA 2002 - $F_D = 0.1852 + (5.3537/t_c)+(-9.6318/t_c^2)$, $t_c = T/(3{,}600 sec/hour)$.

(17) From USEPA 2002 - $PEF_{sc} = Q/C_{sa} \times (1/F_D) \times (1/J'_T)$.

(18) Assumed value of the square root of the site area, based upon USEPA (2002).

(19) From USEPA 2002 - $A_R = L_R \times W_R * 0.092903$ m2/ft2

(20) Average of site data in Table E-4.

(21) From USEPA 2002 - $VKT_{road} = 30$ vehicles $\times L_R \times [(52$ wks/yr)/2] $\times$ (5 days/week) / (1000 m/km).

(22) From USEPA 2002 - $Q/C_{sr} = A \times \exp[(\ln(A_{surf}) - B)^2/C]$.

(23) From USEPA 2002 - $PEF_{sc\_road} = Q/C_{sr} \times (1/F_D) \times T \times A_R /$
$\{[2.6 \times (s/12)^{0.8} \times (W/3)^{0.4}/(M/0.2)^{0.3}] \times [(365\text{-}p)/365] \times 281.9 \times \sum VKT_{road}\}$.

(24) $PEF_{sc\_total} = \{1/[(1/PEF_{sc})+(1/PEF_{sc\_road})]\}$.

(25) $D_{construct} = 1/PEF_{sc\_total}$.

**TABLE 6**
**ASBESTOS RISK SUMMARY**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


***Asbestos Risk Calculations*** ***Risk = ($C_{soil}$ *URF*($ET_{out}$ +($ET_{in}$ *$ATT_{in}$))*EF*ED) / (PEF*AT)***

| | | CHRYSOTILE | | | | | AMPHIBOLE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***ESTIMATED RISK*** | **Units** | **Construc-tion** | **Off-Site Resident** | **Outdoor Worker** | **Indoor Worker** | **Onsite Resident** | **Construc-tion** | **Off-Site Resident** | **Outdoor Worker** | **Indoor Worker** | **Onsite Resident** |
| Estimated Risk (Total Structures) | Unitless | 2E-08 | | | | | 0E+00 | | | | |
| 95% UCL (Total Structures) | Unitless | 5E-08 | | | | | 3E-06 | | | | |
| ***ESTIMATED AIR CONCENTRATIONS*** | | | | | | | | | | | |
| Estimated Airborne Concentration, $C_{air}$ (best estimate)[A] | $f/m^3$ | 9.08E+01 | | | | | 0.00E+00 | | | | |
| Estimated Airborne Concentration (upper bound)[B] | $f/m^3$ | 2.86E+02 | | | | | 1.36E+02 | | | | |

[A] *Estimated Airborne Concentration = Estimated $C_{soil}$ * 1/PEF*

[B] *Estimated Airborne Concentration = 95% UCL (upper bound) * 1/PEF*

**TABLE 7**
**DATA QUALITY ASSESSMENT**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


Table 7a: Sample Size Results for Arsenic with 10x BCL = 17.7 mg/kg

| Number of samples = 32 | | s = 1.845 | | |
|---|---|---|---|---|
| Threshold = 17.7 mg/kg | | α = 5% | α = 10% | α = 15% |
| MDD = 10% (1.77 mg/kg) | β = 15% | 11 | 8 | 6 |
| | β = 20% | 9 | 7 | 5 |
| | β = 25% | 8 | 6 | 4 |
| MDD = 20% (3.54 mg/kg) | β = 15% | 4 | 3 | 2 |
| | β = 20% | 4 | 2 | 2 |
| | β = 25% | 3 | 2 | 2 |
| MDD = 30% (5.31 mg/kg) | β = 15% | 3 | 2 | 1 |
| | β = 20% | 2 | 2 | 1 |
| | β = 25% | 2 | 1 | 1 |

Table 7b: Sample Size Results for Manganese with BCL = 13,700 mg/kg

| Number of samples = 32 | | s = 288.8 | | |
|---|---|---|---|---|
| Threshold = 13,700 mg/kg | | α = 5% | α = 10% | α = 15% |
| MDD = 10% (1,370 mg/kg) | β = 15% | 2 | 1 | 1 |
| | β = 20% | 2 | 1 | 1 |
| | β = 25% | 2 | 1 | 1 |
| MDD = 20% (2,740 mg/kg) | β = 15% | 2 | 1 | 1 |
| | β = 20% | 2 | 1 | 1 |
| | β = 25% | 2 | 1 | 1 |
| MDD = 30% (4,110 mg/kg) | β = 15% | 2 | 1 | 1 |
| | β = 20% | 2 | 1 | 1 |
| | β = 25% | 2 | 1 | 1 |

Table 7c: Sample Size Results for TCDD TEQ with BCL = 1,000 pg/g

| Number of samples = 21 | | s = 25.57 | | |
|---|---|---|---|---|
| Threshold = 1,000 pg/g | | α = 5% | α = 10% | α = 15% |
| MDD = 10% (100 mg/kg) | β = 15% | 2 | 1 | 1 |
| | β = 20% | 2 | 1 | 1 |
| | β = 25% | 2 | 1 | 1 |
| MDD = 20% (200 mg/kg) | β = 15% | 2 | 1 | 1 |
| | β = 20% | 2 | 1 | 1 |
| | β = 25% | 2 | 1 | 1 |
| MDD = 30% (300 mg/kg) | β = 15% | 2 | 1 | 1 |
| | β = 20% | 2 | 1 | 1 |
| | β = 25% | 2 | 1 | 1 |

Table 7d: Sample Size Results for Benzo(a)pyrene with BCL = 0.234 mg/kg

| Number of samples = 29 | | s = 0.003627 | | |
|---|---|---|---|---|
| Threshold = 0.234 mg/kg | | α = 5% | α = 10% | α = 15% |
| MDD = 10% (0.0234 mg/kg) | β = 15% | 2 | 1 | 1 |
| | β = 20% | 2 | 1 | 1 |
| | β = 25% | 2 | 1 | 1 |
| MDD = 20% (0.0468 mg/kg) | β = 15% | 2 | 1 | 1 |
| | β = 20% | 2 | 1 | 1 |
| | β = 25% | 2 | 1 | 1 |
| MDD = 30% (0.0702 mg/kg) | β = 15% | 2 | 1 | 1 |
| | β = 20% | 2 | 1 | 1 |
| | β = 25% | 2 | 1 | 1 |

α = alpha
β = beta
s = standard deviation of sample data

# ATTACHMENT A

# NDEP COMMENTS AND BRC'S RESPONSE TO COMMENTS AND REDLINE/STRIKEOUT TEXT

**Response to NDEP Comments Dated May 12, 2010 on the Technical Memorandum – Data Review for the Warm Springs Road Right-of-Way Investigation Dated May 6, 2010**

1. General comment, please note that specific comments are made on the red-line strike-out version (RLSO) of the Deliverable.

***Response:*** *Noted.*

2. General comment, please note that the RLSO version of the Deliverable and the response-to-comments (RTCs) were not included in the hard copy version of the Deliverable. Please include this in the next version.

***Response:*** *Agreed. The responses to comments and RLSO version of the document have been included in this submittal of the report.*

3. Section 2.2, page 4, last sentence of section, please note that the fact that NDEP developed a spreadsheet for assessing asbestos risks is not a reason for evaluating the construction worker scenario. Please reword.

***Response:*** *The sentence has been revised to read "Therefore, the screening-level health risk assessment also evaluates the construction worker receptor for asbestos exposures, using the spreadsheet NDEP has developed for assessing asbestos risks (NDEP 2009b)."*

4. Section 3.2, page 6, last sentence of section, this does not seem like a good reason for not doing data validation. Asbestos data are very different than chemical data. It seems that the best approach to data validation for asbestos is to thoroughly review the asbestos worksheets to ensure that the counts are correct (it is noted that this may have already been done by the laboratory, however, this is not clear).

***Response:*** *This sentence has been replaced with the following: "Due to the limited information provided in the asbestos laboratory reports, asbestos data did not undergo the same data validation process as for the other analytes. Instead, the asbestos worksheets were thoroughly reviewed to ensure that the reported counts were correct."*

5. Section 5.0, page 24, 1st paragraph insert regarding use of sample quantitation limits (SQLs), etc. It is not clear if one half of the detection limit (DL) was used in the risk assessment if the maximum value for a chemical is a non-detect (ND). Please explain if the non-detect was used if it was the maximum value reported, and if so, if ½ SQL was used, and, if not, that the maximum reported detect was used instead. Such discussion could be included in Section 6.1 instead. It appears as though the maximum reported detect has been used. Please note that one such instance is 1,3,5-trimethylbenzene.

***Response:*** *The word 'detected' was inserted into the first sentence of the second paragraph of Section 6.2 (that is, "…the maximum detected concentration was selected as the exposure point concentration for each COPC …).*

6. Section 6.7, added text about the construction worker, it is not clear why simple risk calculations for the construction worker have not been run. These are not difficult to run in a screening mode. NDEP ran these calculations for the construction worker scenario for manganese, cadmium, and hexavalent chromium with standard inputs for construction, including using the maximum concentration to be consistent with the general risk screening approach for this site. The hazard index for manganese is 1.7, the incremental lifetime cancer risk (ILCR) for hexavalent chromium is 3x10-7 and for cadmium is 3x10-8. This suggests that the construction worker scenario should be evaluated, and that the risks presented in the Deliverable understate construction worker risks. NDEP recognizes the conservative use of maximum concentrations, and of assuming 1 year of construction (and other conservatisms), nevertheless, the maintenance worker was also evaluated conservatively, hence the construction worker should be evaluated similarly, and the risk assessment completed accordingly (perhaps using a 2nd tier for the construction worker that uses upper confidence limits instead of maxima, etc.).

***Response:*** *It was discussed and agreed upon during a teleconference on May 3, 2010, that justification be provided for not quantitatively evaluating the construction worker scenario in the uncertainty analysis section of the report. This was included in the revised document. To revise the report as suggested by this current comment would involve a significant revamping of the report, would be inconsistent with what has already been done for the outdoor worker for which the NFAD was granted, and would require a more detailed review from NDEP beyond that in making other changes based on the other comments on the document. Therefore, given the stage of the project such effort is considered unwarranted. As discussed in the document, given the issues noted above regarding the hazard index for manganese of 1.7 (use of maximum concentrations, assuming a 1 year exposure duration), plus other considerations (e.g., use of a chronic reference concentration for a sub-chronic exposure), it is unlikely that the screening-level health risk assessment underestimates Site risks, even for Site construction workers. Therefore, the conclusions of the report would be unchanged.*

7. Responses-to-comments (RTCs), NDEP provides the following comments:
   a. RTC #4, Dr. Schmidt's flux chamber report (minus the laboratory report and the sample location figure) was provided by BRC on May 10, 2010. NDEP held a teleconference with Dr. Schmidt and Mark Jones (for BRC) on May 10, 2010 to discuss the "R" flags in the data validation summary report (DVSR) for certain TO-15 analytes in some samples. Dr. Steve Hoyt (director of the analytical laboratory) has advised Dr. Schmidt that the data are usable and will prepare a supplemental narrative to provide backup for this decision. It was agreed that BRC will post the laboratory reports and the original sample location figure on the ERM ftp site.

***Response:*** *The laboratory reports for the Southern RIBs sub-area, of which this Site is a part of, has been provided on the ERM FTP site. Dr. Steve Hoyt's memo regarding the "R" flagged data has been provided in Attachment D. These data have been re-validated based on this information, and the report has been revised with this previously rejected, re-validated, data. A DVSR for the re-validated surface data is in preparation and will be submitted to NDEP at a later date. The data used have been re-validated, and the lack of an approved DVSR does not affect the results and conclusions of the report.*

b. RTC #6, although NDEP agrees that BRC should not wait on a new asbestos worksheet, the other change should be made (that is, a change to a linked cell should not be made, and the change should have been made in cell D56 of the front page instead).

***Response:*** *Subsequent to these comments, NDEP has provided a new asbestos worksheet. This new worksheet has been used in the revised report.*

c. RTC #18, the data usability evaluation is incomplete and does not follow USEPA 1992 or NDEP 2008 data usability guidance documents, which require that each problematic data point be discussed individually. Accordingly, uncertainties regarding these data points have not been addressed and should be covered in the revised Deliverable.

***Response:*** *The data usability evaluation has been updated as requested by this comment.*

d. RTC #19, BRC should demonstrate that the reporting limits were adequate for the full scan TO-15 data set that was used.

***Response:*** *Only two compounds, 1,2-dibromoethane and dibromochloropropane, had outdoor air concentrations based on reporting limits above ambient air BCLs. Both of these compounds also have SIM analysis data.*

e. RTC #20, second sentence, please note that the intent is to perform some exploratory data analysis (EDA) so that unusual data that are not picked up by the data validation (DV) might still be found. Section 3.7 should probably be called "Exploratory Data Analysis". For this Site, for example, the EDA might have picked up on the flux chamber data problems (that are now resolved, but require additional documentation). The EDA found ND issues that were not identified as problematic in the DV. This is a good example of how Section 3.7 can support the data usability (DU) process.

***Response:*** *This section has been re-titled "Exploratory Data Analysis." See response to comment #7a regarding the surface flux data problems.*

f. RTC #22, uncertainties regarding the low matrix recoveries have not been adequately addressed and should be addressed more fully in the revised Deliverable.

***Response:*** *Additional discussion has been provided in Section 3.7 and the data usability tables in Attachment B.*

g. RTC #25, this comment has not been adequately addressed. The issue is that NDEP guidance suggests treating field duplicates as independent samples unless there are obvious difference in variability between a Site sample and its duplicate and variability between Site samples. This comparison, which does not need to be performed statistically, has not been done ,however, there is a statement on Page 8 that "Field duplicate differences in excess of acceptance limits were noted in five field duplicate pairs". This statement brings the comparison of variabilities into question. Please clarify by qualitatively determining if the duplicate variability is similar to variability between site samples.

***Response:*** *Additional discussion has been provided in Section 3.5.*

h. RTC #26, the added text needs to be changed from "No long amphibole and only two long chrysotile fibers (at one sample location; SRC1-AK21) were detected in 13 Site soil samples in which it they were analyzed (all surface samples; Table B-1). Asbestos were evaluated in the screening-level health risk assessment (Section 6)." To "No long amphibole and only two long chrysotile fibers (at one sample location; SRC1-AK21) were detected in 13 Site soil samples in which they were analyzed (all surface samples; Table B-1). Asbestos is evaluated in the screening-level health risk assessment (Section 6)."

***Response:*** *This change has been made to the document.*

i. RTC #29, as a consequence of the response, some changed formatting is needed in the Thallium section.

***Response:*** *As noted in the previous response, the thallium section was made consistent with the organochlorine pesticides section below it due to there being only a few results that exceeded comparison levels (and it is generally consistent with the other metals sections). BRC is unclear what formatting changes are needed to the thallium section. No changes have been made to the report in response to this comment.*

j. RTC#37, the footnote is not adequate. It is suggested that BRC also state that, for those chemicals (metals) for which differences between shallow and deep background are observed, the maximum concentrations do not pose a health risk (i.e. are less than 1/10th of the BCL or whatever is applicable).

***Response:*** *The following sentence has been added to the footnote: "For those metals for which differences between shallow and deep background are observed (that is, deep background is generally lower than shallow background, based on a comparison of maximum concentrations for each background dataset), the maximum Site concentrations for those metals that were not included in the screening-level health risk assessment (that is, antimony, boron, calcium, magnesium, mercury, molybdenum, nickel, potassium, thallium, and tin) were well below their respective BCL (less than 1/10th the BCL in all cases), where available."*

k. RTC #46, this response is inadequate. It is not reasonable for NDEP to have to look through Table 1 to find the main contributors for these low risk numbers. Even though the risks are low, some context would help. For example, state that there are no chemicals for which the risk is greater than 10-7, the highest is 5 x 10-8. At this point it becomes clearer how low the risks are. For the hazard index (HI) for the maintenance worker (outdoor worker BCLs), the main contributor is manganese at a value of 0.13.

***Response:*** *The total theoretical upper-bound ILCR is $3 \times 10^{-7}$. This value alone tells us how low the risks are for the Site. Regardless, additional information has been provided in response to this comment.*

l. RTC #51, NDEP expects that Dr. Hoyt's supplemental narrative will address this issue.

***Response:*** *See response to comment #7a regarding the surface flux data problems.*

m. RTC #52b, BRC did not respond to the main comment that the frequency of detection (FOD) can also be evaluated. Considering previous comments 52a and 52b, some discussion of the impacts of the lack of comparability between site and background data sets for the chemicals listed in previous comment 52a should be provided. There is some discussion on Section 3.6 under data usability, but mostly this discussion is generic. It is noted that the NDs are sufficiently below risk levels, and for arsenic there is not an issue. This should be made clear in data review or uncertainty analysis sections. In the meantime, the issue of difference in detection limits for background and site data should be addressed – that is, why is this occurring to this extent (this is the type of result of the exploratory data analysis that could also be discussed in Section 3.7). It is also noted that boron, tin and selenium fail background comparisons according to the statistical background comparison tests. Boron for the WRS test, tin for the slippage test, and selenium for two tests. These failures are probably because of detection limit issues, but, given the nature of this screening risk assessment, they should probably be carried through to the screening risk assessment, and hence included in the final calculations. Alternately, some explanation should be given for their exclusion.

***Response:*** *BRC disagrees that these three metals should be included in the screening-level health risk assessment, given the results of the comparison statistics, and visual comparison of the summary statistsics and box plots. Selenium in particular is non-detect and using the*

*maximum detection to estimate risk would not result in any additional risk. Additional text has been added has been added to the uncertainty analysis section regarding the issue of non-detects and detection limits.*

n. RTC #55, Figure 2 shows SRC1-AK21 as a flux sample location; however, in the EXCEL® file provided by BRC, SRC1-AK21 does not have flux data available, please clarify.

***Response:*** *The correct sample location is SRC1-AJ21, as presented in the database and tables; the figure has been corrected in the revised document.*

o. RTC #59, the text does state that the dioxin TEQ methodology was used to address dioxins and PCBs. However, because the backup TEQ calculations are not presented, the accuracy of the total TEQ cannot be determined. A table presenting the original measured concentrations, the toxicity equivalency factors (TEFs), and the resulting TEQ concentrations should be provided. Further, the TEFs used are not cited. This information should be presented.

***Response:*** *The source of the TEFs is provided in Section 6.8 of the document (USEPA 2000, as directed by NDEP). The original measured concentrations are provided in both Attachment B and the Site database*

## Response to NDEP Comments Received via Email on April 30, 2010 on the Technical Memorandum – Data Review for Warm Springs Road Right-of-Way Investigation Dated April 13, 2010

1. General comment, please note that page numbers referenced are for the hard copy version of the Deliverable.

***Response:*** *BRC acknowledged that page numbers referenced are for the hard copy version.*

2. General comment, the Deliverable does not follow the risk assessment process as described in Chapter 9 of the BRC Closure Plan or in the NDEP BCL guidance. Cumulative risks for all chemicals of potential concern (COPCs) for all receptors must be characterized or maximum exposure point concentrations (EPCs) should be documented to be below one-tenth the BCL.

***Response:*** *As discussed on the May 3, 2010 teleconference, because of the time-critical nature of this aspect of the project, an approach similar to that conducted for the Tronox Parcels A/B report was used, instead of the more rigorous Closure Plan methodology. BRC intends to conduct all subsequent risk assessments, especially for those for the defined Eastside sub-areas, in accordance with the Closure Plan, and using the Mohawk sub-area report, once finalized, as a template.*

3. General comment, it appears that BRC SOP-0 has not been implemented. Please insure that BRC SOP-0 is implemented in all Deliverables to the NDEP. Please note that the comments below should not be considered to be comprehensive due to the deficient nature of the Deliverable.

***Response:*** *BRC strives to implement SOP-0 on all deliverables.*

4. General comment, as requested for prior BRC Deliverables, please include all pertinent back-up documentation so that a thorough review may be conducted. Please include the flux chamber investigation report (including laboratory report), laboratory reports for soil data, and all (live) EXCEL calculation spreadsheets.

***Response:*** *To the extent possible, all backup documentation has been included in the document. Because this document is for a specific carve-out of the Southern RIBs sub-area, and only contains a subset of the sampling data, neither the flux chamber investigation report, nor the laboratory reports were included (however, the Excel calculation spreadsheets were included). The flux chamber investigation report will be included in the report for the Southern RIBs sub-area, and the laboratory reports are included in the DVSR for the site. A reference to the DVSR that contains the laboratory report has been added on page 4, as well as the date the DVSR was approved by NDEP.*

5. General comment, as requested for prior BRC Deliverables, please include a table of contents (TOC) which lists the individual tables in all attachments (e.g., Attachment B has several associated tables).General comment, surface soil remediation for dioxins/furans is briefly mentioned at the end of the Deliverable. As such, this HRA is considered a post-remediation HRA. Pre-remediation data and a summary of the remedial activities (including delineation of the area remediated) should be presented and discussed.

***Response:*** *As noted above, because this is a specific carve-out of the Southern RIBs sub-area, information on the pre-remediation data, and a summary of all remedial activities will be described in the report for the Southern RIBs sub-area.*

6. General comment, electronic spreadsheets, the asbestos spreadsheet should be modified. The intent in the spreadsheet is that the dark green cells are the ones that can be changed. This is stated clearly upfront in the NDEP version of the spreadsheet. BRC has, instead, changed a linked cell value in the PEF construction worker worksheet. Instead, the value that should have been changed is on the risk calculations worksheet in cell D56. NDEP notes also that the asbestos worksheet is currently under revision, and might be revised prior to submittal of a revision to this document. If so, the new worksheet should be used for asbestos risk assessment calculations.

***Response:*** *BRC acknowledged that a new asbestos worksheet may supercede the one used; however, as discussed on the May 3, 2010 teleconference, no changes have been made in response to this comment.*

7. Section 1.0, page 1, it is suggested that the previously addressed portion of the Warm Springs Road right-of-way (ROW) be excluded from this evaluation.

***Response:*** *Additional information on the previous NFAD is provided on page 1. Figure 2 has been updated to show the extent of the previous NFAD for the Warm Springs Road ROW.*

8. Section 2.0, page 2, BRC only references the sampling and analysis plan (SAP) for the Southern RIBs Sub-Area, however, it appears that this Warm Springs Road ROW crosses several sub-areas. Please reference all applicable documentation.

***Response:*** *The Warm Springs Road ROW covered in this document (that is, the portion between the previous ROW and Parcel 4B NFAD parcels) is entirely within the Southern RIBs sub-area.*

9. Section 2.2, page 4, first paragraph, the Deliverable states that the construction worker receptor is only evaluated for asbestos exposure. Please provide documentation for the elimination of other chemicals of potential concern (COPCs) in soil and vapor for the construction worker. Alternately, please include the remainder of the pathways and chemicals.

***Response:*** *As discussed on the May 3, 2010 teleconference, additional discussion has been added to this section regarding construction worker exposures. In addition, further discussion has been added to the uncertainty analysis (Section 6.7).*

10. Section 3.0, general comment, it would be helpful for NDEP if the soil, flux chamber and asbestos datasets were clearly separated in the data usability (DU) evaluation.

***Response:*** *BRC has modified the section to provide a better delineation of discussions for the different media.*

11. Section 3.1, page 5, 4th and 5th bullets. Please indicate that Attachment B refers to the electronic version, since Attachment B also includes hard copy tables of the data.

***Response:*** *Clarification has been added regarding data contained on the CD in Attachment B.*

12. Section 3.3, page 7, 1st paragraph. Please provide rationale for not collecting soil samples in the area where the Beta Ditch intersects the site. Also, Figure 2 does not show the locations of the flux chamber samples, however, the legend indicates that flux chamber samples should be marked by a yellow circle. Please provide the original data report so that reviewers can cross-check flux chamber sample locations and verify the number of flux chamber samples for this site.

***Response:*** *See response to comment #7. As shown on Figure 2, the previous NFAD covers the ROW that crosses the beta ditch. The symbol for the surface flux sample locations has been changed to ease identification on the figure.*

13. Section 3.4, page 7, 2nd paragraph. The paragraph starts with a reference to reporting limits (RLs), and ends with a discussion of detection limits (DLs). Please clarify the intent. Perhaps RLs were intended for the first sentence, rather than sample quantitation limits (SQLs), however, SQLs are used for data analysis for non-detects. This should be clarified to be consistent with NDEP guidance (with appropriate references to the NDEP guidance).

***Response:*** *The paragraph has been revised to properly refer to PQLs and SQLs.*

14. Section 3.5, page 9; 1st sentence, please indicate that Attachment A is referring to the electronic version. Also, please indicate where Table A-11 is located in the electronic reference – the current version has a naming convention that lists constituent classes for the different spreadsheet tabs instead of Table A-1 through A-N. This comment is global and will not be repeated.

***Response:*** *Reference is provided to the CD in Attachment B. The tables were numbered A-1 through A-12; however, the Excel tab names indicated only the contents of the spreadsheets. The tab names have been revised to indicate the table number.*

15. Section 3.5, page 9, last line before imbedded table, insert “or pCi/L” in the parenthetical.

***Response:*** *This change has been made to the document.*

16. Section 3.5, page 9; paragraph under MS/MSD and/or LCS LCSD section, 2nd sentence, this sentence is awkward. Please reword this sentence.

***Response:*** *This change has been made to the document.*

17. Section 3.5, page 10, last paragraph, last two sentences, please note that the valid results reported for the TO-15 full scan analysis were used for those SIM analyses that were rejected for flux samples: SRC1-A116, SRC1-A118, SRC1-A119, SRC1-A120, and SRC1-AL24. In addition, based on the last sentence, please list the “other data points” that were excluded from the health risk assessment (HRA) if the sample was re-analyzed by the laboratory.

***Response:*** *This change has been made to the document.*

18. Sections 3.6 and 3.7, general comment, please employ the USEPA (1992) DU guidance and the NDEP (2008) Supplemental DU guidance as the basis for the assessment of data review and data quality indicators. Regardless of the data validation summary report (DVSR) results, it is necessary to follow the components of the DU framework and to discuss each instance of laboratory control issues and the impact on uncertainties in the HRA. As stated in the NDEP Supplemental DU guidance: “For each data point carried into the HRA database that had laboratory QC issues (e.g., outside control limits, missing QC, missed holding time, or elevated RL) ["Category 1"], provide a discussion of why (even though the required criteria were not met) the data were considered usable, if so. And for each data point identified as unusable and eliminated from the HRA dataset ["Category 2"], a discussion should be included as to why the data point was considered not usable and why elimination of the data point does not lead to a data gap. Provide a list of the specific sample identifications (IDs), and the associated analytes within those sample IDs, that fall into Category 1 and into Category 2, and discuss, for each of the Category 1 and Category 2 data points, why the risk assessor made the decision of whether the data point was usable or not.” Please address this issue in the DU evaluation.

***Response:*** *Due to the large number of qualified results, it is not possible to include a discussion in the DU text of why every result was either included or excluded from the screening-level health risk assessment. That is why the reader is referred to the tables in Attachment A. Select items are discussed in the text. Also due to the large dataset and large number of results included in the data usability evaluation, there needs to some consistency in the presentation of reason for inclusion or exclusion. The reasons in Attachment A have been modified to try to address this comment.*

19. Section 3.6, page 11, please document that surface flux characterization is representative given the number of rejected samples versus total number of samples.

***Response:*** *As noted above, full scan results were used for the rejected SIM results. Therefore,surface flux characterization is still representative considering the availability of the full scan analyses for those locations. The section has been updated to reflect this.*

20. Section 3.7, page 13, this section misses the intent of the NDEP DU guidance. The intent is to perform some exploratory data analysis (EDA) to determine if there are unusual or anomalous data that were not observed in the preceding data validation and data usability steps. The EDA could include box plots, spatial plots, summary statistics or any other simple exploratory analyses that can be used to highlight unusual data, if any. Data validation (DV) and DU involve looking at each datum. This additional step is meant to consider the data as a whole. The first sentence is reasonable. However, the rest of the section belongs in a (preceding) data validation section or current Section 3.6. Instead, this section should follow with a discussion of any unusual or anomalous data observed in the EDA. If there are none, then it is reasonable to say that none were found. Although the first sentence is reasonable, there is no graphical presentation of data other than for metals and radionuclides for background comparisons. This should be clarified.

***Response:*** *This section has been revised per the discussion with NDEP on the May 3, 2010 teleconference. NDEP indicated that this discussion is primarily intended for risk drivers of which there are none in this evaluation.*

21. Section 3.7, page 15; 1st sentence under bullets, for 1,4-dioxane, it appears that approximately 50% of the samples were qualified as estimated with a low bias based on 14 samples (out of a total of 29 samples) identified in Appendix A and Table 1. Please clarify.

***Response:*** *The sentence has been corrected to read 50 percent.*

22. Section 3.7, page 15, second paragraph, the Deliverable states that "data qualified on the basis of MS/MSD recoveries lower than 50 percent were found acceptable for use" based upon the LCS/LCSD recoveries. As discussed in the NDEP Supplemental DU guidance: "It is important to note that unless every sample is spiked, spike recoveries indicate only a trend rather than a specific quantitative measure. It is also important to note that the results of the LC sample provide information on recovery of a chemical spike from distilled/deionized water, whereas the results of a matrix spike provide information on recovery of a chemical from the matrix (e.g., soil). Finally, for MS data, it should be documented if the laboratory used a site-specific sample for the MS." Please address this issue in the DU evaluation.

***Response:*** *The paragraph has been revised to reflect this comment.*

23. Section 4.0, page 15, 1st paragraph, Figure 2 only shows 17 sample locations. Please confirm if there are one or two field duplicates. Also, as noted above, the flux chamber locations are not shown on Figure 2.

***Response:*** *As shown on Figure 2, two samples (SRC2-AI19 and SRC2-AI19CN), which were collected on separate dates, were collected at the same location. Therefore, the number of sample locations is 18. The number of field duplicates varies by analysis, as shown on the tables in Attachment B, and are not indicated on the figure.*

24. Section 4.0, page 15, 1st sentence, based on Figure 2, it seems that there are 17 soil sampling locations across the Site, not 18 as indicated in the text. Please clarify. Also, it is unclear how 36 samples could be taken at each location when the electronic dataset indicates that 32 soil samples were collected at each location.

***Response:*** *See response to comment #23 above regarding the number of sample locations. The number of samples collected for a particular analyte varies based on the sample depths collected from, number of field duplicates, etc. The following sentence has been added to the footnote on page 16: "The sample number varies by analyses (see Table 1) with a maximum of 32 samples collected for any one particular analyte. However, the total number of samples, when considering all analytes, is 36."*

25. Footnote 4, page 15, please note that the intent of the NDEP guidance on field duplicates is that the variability of the duplicates will be qualitatively compared to the variability of the site samples before making a decision to treat the field duplicates as independent samples.

***Response:*** *Reference to Section 3.5 is provided regarding evaluation of differences between primary and field duplicate samples.*

26. Section 4.1, general comment, the asbestos data should be discussed in Section 4.1.

***Response:*** *A discussion on asbestos has been added on page 18.*

27. Section 4.1, page 18; Chromium sub-section. Because this subsection refers to total chromium, please change the $BCL_{OW}$ to 100,000 mg/kg.

***Response:*** *The BCL has been corrected. In addition, a discussion on chromium (VI) has been added.*

28. Section 4.1, page 18, please include a discussion for hexavalent chromium data. Please clarify if hexavalent chromium was eliminated as a COPC based on a comparison of the data to one-tenth of the BCL. If greater than one-tenth the BCL, NDEP requests that hexavalent chromium be retained as a COPC.

***Response:*** *A discussion on chromium (VI) has been added, and it is retained as a COPC in the screening-level health risk assessment.*

29. Section 4.1, page 19, it is not clear why extra detail was provided for the thallium data. Please explain or make the discussion of thallium consistent with the remainder of the chemicals.

***Response:*** *Thallium was the only metal for which only a few results either exceeded or were below comparison levels. In all other cases, metal results either all exceeded or were below comparison levels. Since NDEP routinely asks that specific instances be called out, when practical, this was done for thallium. However, the discussion for thallium has been made consistent with that for the organochlorine pesticides, as far as individual call-outs.*

30. Section 4.2, page 21, the comparison of ambient air concentrations (derived from flux chamber data) to ambient air BCLs does not account for multiple chemical exposures. Unless the maximum predicted air concentrations are less than one-tenth of the air BCL, incremental lifetime cancer risks (ILCRs)/ and hazard indices (His) should be calculated and added to the soil ILCR/HIs.

***Response:*** *As discussed on the May 3, 2010 teleconference, a discussion on this issue is included in Section 4.2.*

31. Section 4.3, general comment, it is noted that the single soil sample collected from SRC-AJ19 at 11 feet bgs "represented some of the higher general chemistry and metals detections in Site samples". Given the depth of this sample, please document that vertical extent was delineated for soil or provide further discussion for how this pathway will be addressed in the future. This also brings into question the language on page 30, 3rd paragraph, which states, "However, because there are no historical uses of the Site, and based on the depth profiles of the chemicals, it is reasonable to assume that the concentration distribution did not change in an important way".

***Response:*** *The following has been added as a footnote to this section: "This does not suggest that this location is indicative of contamination or concentrations increasing with depth (in fact, most of the results are below the maximum measured background concentration and all are similar in concentration to the surface sample at this location); merely that the location is a good choice for evaluating the leaching potential of the analytes via the SPLP results."*

32. Section 4.3, page 22, 3rd sentence & Table 3, please enter a "1" for thorium-230 in Table 3 under the "count of detects > BCL" column to be consistent with the text.

***Response:*** *Thorium-230 for this sample was non-detect. Therefore, the text has been revised to be consistent with the table.*

33. Section 4.3, page 22, last bullet, please clarify that groundwater will be evaluated separately and remedial alternatives will be evaluated, as appropriate.

***Response:*** *This has been added to the text of this bullet.*

34. Section 5.0, list of metals above background, according to the Table 1, beryllium is below background while boron is above background. Please correct the discrepancy between the text and table. Also, hexavalent chromium is stated to be less than background, however, hexavalent chromium is not a naturally occurring element for this area and should not be assessed as a background metal. In addition, the plots in Attachment C do not support the fact that the site data is homogenous.

***Response:*** *These changes have been made to the document.*

35. Section 5.0, pages 22 and 23, please include more explanation on how the background tests are carried out and how a decision is made with respect to determining if a given chemical exceeds background. For example, it is not clear how non-detects were incorporated, or what family-wise and individual test significance level was used. NDEP guidance indicates that failure of one of the tests at that tests significance level is sufficient to fail the background comparisons. Please clarify. Please also elaborate on the role of probability plots and box plots in the context of comparing Site data to background data.

***Response:*** *Additional discussion has been added regarding non-detects and significance level.*

36. Section 5.0, page 23; bullet list, selenium and tin are listed as exceeding background levels, but they are not shown as exceeding background in Table 4. Also, copper is not listed, but it shown as exceeding background in Table 4. Please clarify.

***Response:*** *These discrepancies have been corrected.*

37. Section 5.0, page 23, paragraph under bullet list, this explanation, although potentially reasonable, should be investigated further. There are some deep samples in the dataset that are included in the comparisons with the shallow soil McCullough background data set. Please discuss how the deeper McCullough background (Qal) data compare. For example if there is sufficient justification for seeing somewhat higher values in the deeper samples. Or if the deeper samples have somewhat higher values. Perhaps the same logic in reverse applies to the radionuclides, and explains why their concentrations are slightly lower in the site samples, however, discussion is needed.

***Response:*** *A discussion regarding the deep background dataset has been added in a footnote in Section 5.0).*

38. Section 5.0, page 23, secular equilibrium table and associated text. The p-value for the thorium chain is 0.0825. This shows marginal significance. Coupled with the radionuclide summary statistics, box plots, probability plots and background comparisons for the

individual radionuclides in this chain, a weight of evidence argument can be made reasonably that these radionuclides are similar to background. Please add some clarifying text.

***Response:*** *Additional text has been added regarding this issue.*

39.

40. Section 6.0, page 24, for the risk goals, please cite the BRC Closure Plan as the source.

***Response:*** *Reference to the Closure Plan has been added.*

41. Section 6.0, page 24, last paragraph, please cite the "other guidance documents" such as the NDEP BCLs.

***Response:*** *Reference to NDEP's BCL document has been added.*

42. Section 6.1, pages 25 through 29, chemicals and asbestos should be divided into their own sub-sections when it comes to describing their respective risk assessment methodologies.

***Response:*** *Non-asbestos and asbestos have been divided into separate sub-sections.*

43. Section 6.2, page 25, previous reviews of BRC documents have requested a different definition for UCLs. Please replace it with the following "The 95 percent UCL is a statistic that quantifies the uncertainty associated with the sample mean. If randomly drawn subsets of site data are collected and the UCL is computed for each subset, the UCL will equal or exceed the true mean roughly 95 percent of the time. The purpose for using the 95 percent UCL is to derive a conservative, upper-bound estimate of the mean concentration, which takes into account the different concentrations a person may be exposed to at the Site. That is, an individual will be exposed to a range of concentrations that exist at an exposure area, from non-detect to the maximum concentration, over an entire exposure period".

***Response:*** *The text within this comment has been used to replace the text in the document.*

44. Sections 6.3, 6.4, and 6.5, general comment, for the construction worker, please quantify ILCRs/HIs for all COPCs and exposure pathways. For the outdoor worker, please include risks associated with inhalation of VOCs unless no estimated outdoor air concentrations exceed one-tenth the respective BCL.

***Response:*** *See response to comment #9*

45. Section 6.6, general comment, please discuss in the uncertainty analysis the data usability issues (low recoveries, rejected data, etc.) as per the NDEP Supplemental DU guidance.

***Response:*** *A brief discussion on data usability has been added to the uncertainty analysis (Section 6.7).*

46. Section 6.7, general comment, it would be helpful if a table that summarized the ILCRs and His was provided.

***Response:*** *Given the few number of results, a table has not been added to the document.*

47. Section 8.0, general comment, please delete the last sentence of this section as the risk management determination for this site lies with the NDEP.

***Response:*** *BRC disagrees with deleting this last sentence, and does not agree that it is a risk management determination. This is a BRC document, and BRC should be allowed to provide a conclusion that an NFAD is warranted, if appropriate as in this case. Regardless, the sentence has been changed to the following: 'In summary, BRC concludes and hereby requests that the NDEP grant an NFAD for the Site."*

48. Figures, general comment, please provide spatial plots for the risk driver compounds.

***Response:*** *As discussed on the May 3, 2010 teleconference, because of the time-critical nature of the project, the fact that maximum concentrations were used in the assessment, and that no risk drivers exist, spatial plots have not been prepared for the document.*

49. Tables , general comment regarding summary statistics, it is not clear if or when ½ DL was used for some of the summary statistics. Please clarify what method was used for the non-detects when calculating summary statistics, UCLs and performing background comparisons.

***Response:*** *See response to comment #35.*

50. Table 1, NDEP provides the following comments:
    a. The "Cancer-Based Outdoor Worker BCL" for both benzo(a)pyrene and radium-228 are listed as "0" when in fact they should be 0.23 and 0.025, respectively. This may simply be a function of the Excel® cell not showing enough significant digits as the "Incremental Lifetime Cancer Risk" cells for each display the correct value. Please clarify.

***Response:*** *This has been corrected in the revised document.*

    b. The summary statistics for boron, and possibly some other metals, appear as though the non-detects are greater than several of the detects. This may be an issue of using RLs instead of SQLs, please verify.

***Response:*** *SQLs were used for all analytes.*

c. Page 5 of 10, there are many table footnotes on this page that have not appeared yet. NDEP suggests deleting the footnotes from this page, and including at the end of Table 1 only.

***Response:*** *This is an artifact of how Excel produces hard copies. This has been addressed in the PDF and hard copy version of the report, but not the Excel spreadsheet itself.*

d. Page 10 of 10, the table footnotes are incomplete because of a wrapping problem in the EXCEL spreadsheet. Please correct.

***Response:*** *This issue has been corrected.*

51. Table 2, please clarify if rejected data are included in this data summary table.

***Response:*** *The table has been revised and does not include any rejected data (nor did the original version of the table).*

52. Table 4, NDEP has the following comments:

a. There are several metals for which the background comparisons are potentially compromised by detection limit issues (lack of comparability). Some of these were described in Section 3, however, they potentially include antimony, boron, cadmium, chromium VI, mercury, selenium, silver, thallium and tungsten. Insufficient information is presented to determine the influence of the detection limit comparability issues. In particular, summary statistics for the background data for these metals are not provided at a level of detail that allows the impact of detection limits to be evaluated. In addition, the plots do not distinguish between detects and non-detects.

***Response:*** *The boxplots do distinguish between detects (solid circles) versus non-detects (open circles).*

b. In addition, NDEP has requested previously that the impact of non-detects can also be evaluated by considering the frequency of detection if the DLs in background and site data are similar, and that comparison can be made between detected values only if the proportion of non-detects is similar between both datasets, and the DLs are similar.

***Response:*** *BRC acknowledged that page numbers referenced are for the hard copy version.*

c. Data Quality Assessment should also be performed for asbestos. This is important for amphibole rather than chrysotile. However, the number of samples needed for amphibole depends on the risk threshold. In this case, since the amphibole (upper bound) risk is greater than 10-6 and there were zero fibers observed, not enough asbestos samples have been collected. If the target is different then, enough samples have been collected. So, for example, enough samples have been collected to satisfy a 3x10-6 risk threshold (i.e, the upper bound amphibole risk). In general, a risk target should be selected, and the

number of samples needed to meet that risk target when zero amphibole fibers are detected should be calculated. The NDEP asbestos spreadsheet can be used to facilitate that calculation.

***Response:*** *As discussed on the May 3, 2010 teleconference, a footnote has been added on page 34 regarding the fact that there are no detections of amphibole and that 1E-5 may be a more appropriate point of comparison for DQA.*

53. Table 5, the formatting on this table cuts off several superscript and text items in the table and footnotes. Please correct.

***Response:*** *This issue has been corrected.*

54. Table 6, this table does not need to include the off-site residential results.

***Response:*** *This receptor has been removed from the table.*

55. Figure 2, see comments above regarding missing flux chamber sampling locations.

***Response:*** *As discussed on the May 3, 2010 teleconference, the symbols for the flux chamber sample locations have been changed.*

56. Figure 3, see comments above regarding complete exposure pathways and scenarios.

***Response:*** *See response to comment #2.*

57. Presentation of Attachment A and B is confusing. Please clarify. Attachment A references a CD that appears in Attachment B. Attachment B references the same CD, and then provides a series of tables of data. Some clarification is needed here, and in the main text whenever Attachments A and B, and Tables in Attachment B are referenced.

***Response:*** *Only one CD is included in the document. This CD is included in Attachment B. Clarification has been added in the text regarding this issue.*

58. Attachment B, Table B-1, it is noteworthy that 9 out of 10 chrysotile fibers and 2 out of 2 long chrysotile fibers come from one sample. Some discussion of the asbestos data should be provided in the main text, including discussion of the implications of finding asbestos in only one sample. For example, if it is reasonable to combine the data when asbestos is found in only one sample (primarily).

***Response:*** *Additional discussion on asbestos has been added (see response to comment #26). Given the sporadic nature of asbestos detections across the entire Eastside, it is not surprising that one sample has detections and others do not. Perhaps more notable is the fact that only two*

*chrysotile long fibers and no amphibole long fibers were detected across the Site. It should be recognized that this is a linear feature through the Southern RIBs sub-area and not all the surrounding sample results are included or presented.*

59. Attachment B, Table B-8, data for dioxin-like PCB congeners should be included in the TCDD TEQ concentration. It does not appear that this was done. Also, the NDEP did not find Aroclor analyses for PCBs, please clarify.

***Response:*** *It should not be assumed that because PCBs congeners were presented in a separate table from the dioxins/furans (they were analyzed via a separate analytical method), that they were not included in the TCDD TEQ concentrations. To the contrary, as discussed in Section 6.7 (now Section 6.8) "…for dioxins/furans, the USEPA TEQ procedure, developed to describe the cumulative toxicity of these compounds, is used. This procedure involves assigning individual toxicity equivalency factors (TEFs) to the 2,3,7,8 substituted dioxin/furan and PCB congeners." This has been the case for all aspects of the project. Regarding Aroclors, as discussed and approved by NDEP, and included in each SAP, Aroclors are only analyzed if the results of the analysis of total PCB congeners are greater than 33 ppb (which coincides with the standard reporting limit for this analysis). This condition was not met for the Site.*

60. Attachment C, these plots should distinguish between detects and non-detects. The one instance in which they do is for uranium-235, for which such a distinction is unnecessary because it is a radionuclide, and hence subject to NDEP guidance for radionuclides, which suggests using the reported concentration regardless of detection status.

***Response:*** *As noted in response to comment 52e (and other previous response to comments), the boxplots do distinguish between detects (solid circles) versus non-detects (open circles).*

REDLINE/STRIKEOUT TEXT

Basic Remediation COMPANY

# TECHNICAL MEMORANDUM

**To** BMI Compliance Coordinator (NDEP)

**From:** Ranajit Sahu (BRC)

**cc:** Jim Najima/Greg Lovato (NDEP)
Mark Jones (ERM)
NDEP c/o McGinley and Associates
Teri Copeland
Paul Black (Neptune and Co.)
Joanne Otani Fehling

**Date:** September 30~~May 6~~, 2010

**Subject:** Technical Memorandum – Data Review for the Warm Springs Road Right-of-Way Investigation, BMI Common Areas (Eastside), Clark County, Nevada

## 1.0 Introduction

The objective of this Technical Memorandum is to present the results of investigations Basic Remediation Company (BRC) has performed for the Warm Springs Road right-of way (ROW; the Site; Figure 1) within the BMI Common Areas in Clark County, Nevada. The Site represents a continuation of Warm Springs Road that extends approximately 600 feet east of Boulder Highway, and bisects the Southern RIBs sub-area. On October 6, 1998, the Nevada Division of Environmental Protection (NDEP) granted a No Further Action Determination (NFAD) for the segment of Warm Springs Road that extends from Boulder Highway to Pabco Road (see Figure 2 for the location of the NFAD for the existing ROW). Therefore, the focus of this technical memorandum is on the portion of the Warm Springs Road ROW that extends east of Pabco Road (that is, that portion of the ROW not covered by the previous NFAD).

This revision of the report, Revision 1, incorporates comments received from the NDEP, dated May 12, 2010, on the May 6, 2010 version of the report. The NDEP comments and BRC's response to these comments are included in Attachment A. Also included in Attachment A is a redline/strikeout version of the text showing the revisions from both the May 6, 2010 version of the report.

The Site is adjacent to Eastside lands located to the north of the Site that contain (1) unlined wastewater effluent evaporation/infiltration ponds that were built and into which various plant wastewaters were discharged from 1942 through 1976; and (2) conveyance ditches associated

with the historical effluent discharge (primarily unlined). One of these ditches transects the western-most edge of the Site, beneath the existing Warm Springs Road. The eastern half of the Site traverses an area formerly used by the City of Henderson as Rapid Infiltration Basins (RIBs), which were in use from approximately 1992 to 2002 by the City of Henderson for municipal wastewater treatment.

Based on the data collected, an NFAD is being sought from the NDEP in order to support the construction of a road on this Site. No residential or commercial use is planned, and no structures will be built on the Site. This technical memorandum, which has been prepared in support of this objective, includes the following primary tasks:

- Conceptual site model (CSM);
- Data usability evaluation;
- Summary of data, including evaluation to comparison levels;
- Screening-level health risk assessment, including statistical comparison to background concentrations; and
- Data quality assessment.

Each of these tasks is discussed below.

## 2.0 Conceptual Site Model

The CSM is used to describe relationships between chemicals and potentially exposed human receptor populations, thereby delineating the relationships between the suspected sources of chemicals identified at the Site, the mechanisms by which the chemicals might be released and transported in the environment, and the means by which the receptors could come in contact with the chemicals. The CSM provides a basis for defining data quality objectives and developing exposure scenarios. Additional information for the Site than that presented below is provided in the NDEP-approved *Sampling and Analysis Plan for the Southern RIBs Sub-Area* (SAP; BRC and ERM 2008; approved by NDEP on September 11, 2008).[1]

[1] A sampling and analysis plan was not developed specifically for the Site. This Site was originally part of the Southern RIBs sub-area, but schedule constraints necessitated pursuing an NFAD for the Site prior to the remainder of the Southern RIBs sub-area. However, many of the samples for the Southern RIBs sub-area fall within the footprint of the Site. These samples are used in this Technical Memorandum.

The Site comprises approximately 15.6 acres of undeveloped land with very little surface relief that is gently sloping to the northwest.[2] As noted above, it is part of an area referred to as the Southern RIBs sub-area. It is located in close proximity to waste conveyance and disposal facilities historically operated by the BMI Complex, including the Beta Ditch and TIMET Ponds, and crosses the municipal wastewater infiltration ponds formerly operated by the City of Henderson (the "Southern RIBs;" see Figure 2). While the Southern RIBs have not been decommissioned, they have not been used since May 2005.

Land use in the vicinity is mixed, ranging from industrial in the BMI Complex itself to light industrial at the margins of the Complex to commercial and residential on the periphery of the Southern RIBs sub-area. Lands surrounding the BMI Complex are zoned commercial and residential, and are mostly developed. Other structures are also located in proximity to the Site, including the St. Rose of Lima Hospital, several shopping centers, a mobile home park, and an apartment complex.

The CSM considers current and potential future land-use conditions. Currently, the Site is undeveloped. Current receptors that may use the Site include on-site trespassers. Therefore, current exposures to native soils at the Site are likely to be minimal. In addition, exposures to future on-site workers will be much greater than current exposures. For example, future receptors include outdoor commercial/industrial workers, who are assumed to be exposed to soil at the Site for 225 days per year for 25 years which is much greater than any current exposures.

U.S. Environmental Protection Agency (USEPA 1989) guidance states that potential future land use should be considered in addition to current land use when evaluating the potential for human exposure at a site. Therefore, the CSM also considers other future land-uses. For example, the CSM includes the planned use of the Site for redevelopment into roadway for the future development of the Eastside property. The potentially exposed populations and their potential routes of exposure are presented in Figure 3.

## 2.1 Potential Source Areas

As discussed above potential sources of chemicals in Site soils include (1) nearby features associated with historical discharge of plant wastewater effluent (*i.e.*, unlined wastewater

[2] Note that subsequent to the preparation of this report and issuance of the NFAD, a potential re-alignment of the Warm Springs Road ROW has been identified, due to development constraints on the original alignment. This potential re-alignment is shown on Figure 2.

effluent evaporation/infiltration ponds and conveyance ditches); and (2) the former City of Henderson RIBs.

### 2.2 Potential Human Exposure Scenarios

Given the planned development of the Site, potential human receptors include on-site construction workers and outdoor workers. Potential migration pathways, exposure pathways, and routes of exposure are shown on Figure 3. Although several potential human receptors may occur on the Site in the future, the screening-level health risk assessment focuses on the outdoor commercial/industrial receptor (as defined in NDEP's *User's Guide and Background Technical Document for Nevada Division Of Environmental Protection (NDEP) Basic Comparison Levels (BCLs) for Human Health for the BMI Complex and Common Areas* [2010~~2009a~~]). This receptor is considered to have the highest level of exposure at the Site. Other receptors generally have lower exposures, and thus lower risk estimates. Although there may be some exceptions to this, for example, several metals might generate construction worker risk estimates higher than those for outdoor commercial/industrial receptors, these cannot be evaluated in a screening level process because of the lack of available BCLs. However, given the nature of the Site and potential exposures, it is unlikely that the screening-level health risk assessment underestimates Site risks. This issue is discussed further in Section 6.7. Therefore, risk estimates generated for outdoor commercial/industrial receptors are considered protective of other potential receptors at the Site.

One exception to this is construction worker exposures to asbestos. This is because asbestos risks are only evaluated for the dust inhalation exposure pathway, with construction activities generating more dust than under normal circumstances. Therefore, ~~because NDEP has developed a spreadsheet for assessing asbestos risks (NDEP 2009b),~~ the screening-level health risk assessment also evaluates the construction worker receptor for asbestos exposures, using the spreadsheet NDEP has developed for assessing asbestos risks (NDEP 2009a).

## 3.0 Data Usability Evaluation

The primary objective of the data review and usability evaluation was to identify appropriate data for use in the screening-level health risk assessment. The analytical data were reviewed for applicability and usability following procedures in the *Guidance for Data Usability in Risk Assessment (Part A)* (USEPA 1992a) and USEPA (1989) and NDEP's *Data Usability Guidance for the BMI Complex and Common Areas* (NDEP 2008). A quality assurance/quality control (QA/QC) review of the analytical results was conducted during the sampling events. According

to the USEPA Data Usability Guidance, there are six principal evaluation criteria by which data are judged for usability in risk assessment. The six criteria are:

- reports to risk assessor (availability of information associated with Site data)
- documentation;
- data sources;
- analytical methods and detection limits;
- data review; and
- data quality indicators (DQIs), including precision, accuracy, representativeness, comparability, and completeness.

A summary of these six criteria for determining data usability is provided below. In addition to the six principal evaluation criteria, NDEP's Data Usability Guidance includes a step for data usability analysis, which is discussed after these six USEPA evaluation criteria. Data usability evaluation tables are provided electronically in Attachment B~~A~~ (on the enclosed CD in Attachment C~~B~~).

## 3.1 Criterion I – Availability of Information Associated with Site Data

The usability analysis of the site characterization data requires the availability of sufficient data for review. The required information is available from documentation associated with the Site data and data collection efforts. Data have been validated per the NDEP-approved *Data Validation Summary Report, Southern RIBs Sub-Area Soil Investigations October-November 2008; February 2009; September 2009 (Dataset 53)* (DVSR; BRC and ERM 2010; approved by NDEP on March 11, 2010). Several TO-15 selective ion mode (SIM) results were initially rejected due to an invalid initial calibration. Attachment D contains memos from Neptune and Company and Dr. Steve Hoyt of Environmental Analytical Service, discussing this issue. The laboratory revised the dataset using a different internal standard which passed quality control parameters. A DVSR for the re-validated surface flux data is currently being prepared as a separate deliverable. This revision of the report incorporates the revised surface flux dataset. The following lists the information sources and the availability of such information for the data usability process:

- A property description provided in the NDEP-approved SAP (BRC and ERM 2008) and Sections 1 and 2 identifies the location and features of the property, the characteristics of the vicinity, and contaminant transport mechanisms.
- A site map with sample locations is provided in Figure 2.
- Sampling design and procedures were provided in the NDEP-approved SAP (BRC and ERM 2008).
- Analytical methods and detection limits are provided on the enclosed CD in Attachment CB.
- A complete data set is provided on the enclosed CD in Attachment CB.
- Laboratory reports for all samples included in Site data set are provided in the NDEP-approved DVSR (BRC and ERM 2010).
- A narrative of qualified data is provided with each analytical data package, the laboratory provided a narrative of QA/QC procedures and results. These narratives are included as part of the NDEP-approved DVSR (BRC and ERM 2010).
- QC results are provided by the laboratory, including blanks, replicates, and spikes. The laboratory QC results are included as part of the NDEP-approved DVSR (BRC and ERM 2010).
- Data flags used by the laboratory were defined adequately as part of the NDEP-approved DVSR (BRC and ERM 2010).
- Electronic files containing the raw data made available by the laboratory are included as part of the NDEP-approved DVSR (BRC and ERM 2010).

## 3.2 Criterion II – Documentation Review

The objective of the documentation review is to confirm that the analytical results provided are associated with a specific sample location and collection procedure, using available documentation. For the purposes of this data usability analysis, the chain-of-custody forms prepared in the field were reviewed and compared to the analytical data results provided by the laboratory to ensure completeness of the data set as discussed in the DVSR (BRC and ERM 2010). Based on the documentation review, all samples analyzed by the laboratory were correlated to the correct geographic location at the property. The samples were collected in accordance with the SAP and Confirmation Sampling Plan (BRC and ERM 2008; BRC 2009),

the standard operating procedures (SOPs) developed for the BMI Common Areas as provided in the Field Sampling and Standard Operating Procedures (FSSOP; BRC, ERM and MWH 2009). Field procedures included documentation of sample times, dates and locations, other sample specific information such as depth bgs were also recorded. Information from field forms generated during sample collection activities was imported into the project database.

Measurement of asbestos was conducted consistent with NDEP's *Technical Guidance for the Calculation of Asbestos-Related Risk in Soils* (2009a2009b). The analytical data were reported in a format that provides adequate information for evaluation, including appropriate quality control measures and acceptance criteria. Each laboratory report describes the analytical method used, provides results on a sample by sample basis along with sample quantitation limits (SQLs), and provides the results of appropriate quality control samples such as laboratory control spike samples, sample surrogates and internal standards, and matrix spike samples. All laboratory reports, except for asbestos, provided the documentation required by USEPA's Contract Laboratory Program (USEPA 2003a, 2004a,b) which includes chain of custody records, calibration data, QC results for blanks, duplicates, and spike samples from the field and laboratory, and all supporting raw data generated during sample analysis. Reported sample analysis results were imported into the project database. The recommended method for providing asbestos data which are useful for risk assessment purposes was performed by EMSL Analytical Inc in Westmont, New Jersey. This laboratory is not currently certified in the State of Nevada, but has California and national accreditation for asbestos analysis. Because many of the QC procedures associated with other analyses do not apply to asbestos analyses (*e.g.*, laboratory blanks, duplicates and spikes), data validation of the asbestos laboratory reports involved a somewhat lesser level of effort than for other analyses. The asbestos worksheets were thoroughly reviewed to ensure that the reported counts were correctDue to the limited information provided in the asbestos laboratory reports, asbestos data did not undergo data validation.

## 3.3 Criterion III –Data Sources

The review of data sources is performed to determine whether the analytical techniques used in the site characterization process are appropriate for risk assessment purposes. The data collection activities were developed to characterize a broad spectrum of chemicals potentially present on the property, including volatile organic compounds (VOCs) (including surface flux), semi-volatile organic compounds (SVOCs), polynuclear aromatic hydrocarbons (PAHs), organochlorine pesticides, polychlorinated biphenyls (PCBs), aldehydes, dioxins/furans, metals, perchlorate, radionuclides, and general chemistry. Figure 2 demonstrates that samples were collected over the entire Site.

The State of Nevada is in the process of certifying the laboratories used to generate the analytical data. As such, standards of practice in these laboratories follow the quality program developed by the Nevada Revised Statutes (NRS) and are within the guidelines of the analytical methodologies established by the USEPA. Based on the review of the available information, the data sources for chemical and physical parameter measurements are adequate for use in a risk assessment.

## 3.4 Criterion IV – Analytical Methods and Detection Limits

In addition to the appropriateness of the analytical techniques evaluated as part of Criterion III, it is necessary to evaluate whether the detection limits are low enough to allow adequate characterization of risks. At a minimum, this data usability criterion can be met through the determination that routine USEPA and U.S. Department of Energy (DOE) reference analytical methods were used in analyzing samples collected from the property. The USEPA and DOE methods that were used in conducting the laboratory analysis of soil and surface flux samples are identified in the electronic dataset on the enclosed CD in Attachment C.~~B.~~ Each of the identified USEPA methods is considered the most appropriate method for the respective constituent class and each was approved by NDEP as part of the SAP (BRC and ERM 2008).

Laboratory practical quantitation limits (PQLs) were based on those outlined in the reference method, the SAP, and the *BRC Closure Plan* (BRC, ERM, and DBS&A 2007). In accordance with respective laboratory SOPs, the analytical processes included performing instrument calibration, laboratory method blanks, and other verification standards used to ensure quality control during the analyses of collected samples. The range of SQLs achieved in field samples was compared to NDEP's BCLs (NDEP 2010~~2009a~~). None of the SQLs exceeded the BCLs. Therefore, the SQLs are considered adequate for risk assessment purposes.

## 3.5 Criterion V – Data Review

The data review portion of the data usability process focuses primarily of the quality of the analytical data received from the laboratory. Soil and surface flux sample data were subject to data validation. A DVSR was prepared as a separate deliverable (BRC and ERM 2010). The analytical data were validated according to the internal procedures using the principles of USEPA National Functional Guidelines (USEPA 1999, 2004c, 2005, 2008) and were designed to ensure completeness and adequacy of the data set. Additionally, the DVSR (BRC and ERM 2010) was prepared utilizing NDEP's two *Supplemental Guidance on Data Validation* documents (NDEP 2009b,c). Any analytical errors and/or limitations in the data have been addressed and an explanation for data qualification provided in the respective data tables. The

results of ERM's data review for these issues are presented in the DVSR and are summarized below.

A small number of results for certain analytes/samples (two data points, all non-detections) were rejected as unusable due to calibration violations:

- The flux results for dibromochloropropane and hexachlorobutadiene for SRC1-AI19 were rejected due calibration violations.

Given the general lack of detections of these constituents none of the rejections~~Although certain laboratory limits, such as percent recovery (PR) and relative percent difference (RPD) between sample and duplicate, exceeded for certain compounds or analyses, as identified by the laboratory (and confirmed during ERM's review of the data), none of these exceedances resulted in rejection of data points. None of the exceedances~~ reflected a larger concern for a particular compound, sample, or method. Data qualifications are discussed in the subsections that follow.

*Holding Time Exceedances/Sample Condition Qualifications*

Holding time refers to the period of time between sample collection and the preparation and/or analysis of the sample. The accuracy of analytical results may depend upon analysis within specified holding times and sample temperature. In general, a longer holding time is assumed to result in a less accurate measurement due to the potential for loss or degradation of the analyte over time. Sample temperature is of greatest concern for VOCs that may volatilize from the sample at higher temperatures. As described in the DVSR (BRC and ERM 2010), sample results were reviewed for compliance with the method-prescribed preparation and analysis holding times.

USEPA guidance for validation allows professional judgment to be used in evaluating qualification due to holding time exceedances. Sample results that were generated after the required holding time but less than two times after the holding time were qualified as estimated (J or UJ). If the samples were prepared after two times the holding time was exceeded, non-detect results were qualified as rejected (R). No data were rejected due to holding time exceedances. Qualifications to eight samples were made on the basis of exceeded holding times (see Table 2-2 of the DVSR), as follows:

- Hexavalent chromium results for two soil samples in one laboratory data package (TestAmerica data package F8K150163 [2 samples]) were qualified as estimated due to holding time exceedances. Holding time was exceeded by one day for these samples.

- VOC results for five soil samples in two laboratory data packages (TestAmerica data package F9I150136 [three samples] and F9I180183 [two samples]) were qualified as estimated due to holding time exceedances. Holding time was exceeded by four or eight days for these samples.

- VOC results for one surface flux sample in one laboratory data package (EAS data package 208610) was qualified as estimated due to holding time exceedances. Holding time was exceeded by one day for these samples.

As noted in the DVSR (BRC and ERM 2010), all samples were received at the laboratory within the required temperatures range of 4°± 2° Celsius. No sample results were qualified based on sample temperatures.

Sixty-five SPLP sample results (SRC1-AJ19-11) were qualified since they were not filtered immediately upon extraction. The affected results were pesticides, metals, and general chemistry. Eight SPLP sample results (SRC1-AJ19-11) were qualified for the lack of sample preservation. The affected results were radionuclides analyzed by method HASL 300 (thorium-228, thorium-230, and thorium-232, and uranium-233/234, uranium-235/236, and uranium-238). The soil samples were tumbled but not acidified prior to shipment for SPLP analysis. The acid was added upon receipt at the laboratory. Per preparation method EPA 1312, the acidification should be "immediate;" therefore the samples were qualified as estimated.

*Blank Contamination*

Blanks are artificial samples designed to evaluate the nature and extent of contamination of environmental samples that may be introduced by field or laboratory procedures. Field and laboratory blanks, consisting of contaminant-free water, were prepared and analyzed as part of standard QA/QC procedures to monitor for potential contamination of field equipment, laboratory process reagents, and sample containers. As presented in the DVSR (BRC and ERM 2010) 240 results were qualified as undetected (U) or estimated (J+) due to laboratory blank contamination, and 59 results were qualified as undetected (U) or estimated (J+) due to field blank contamination~~,~~ as discussed below. Detections of constituents qualified as non-detections due to comparable detections in laboratory or field blanks are known as "censored" data, and are presented in Tables 2-5 and 2-6 of the DVSR (BRC and ERM 2010). In these cases, non-detections are represented in the database as "< [*the PQL*]" in the case of inorganics detected below the PQL, or as "<[*result value*]" for all others.

These censored data are summarized in Attachment B, Table B-11 (on the enclosed CD in Attachment C) by compound class. As seen in Attachment B, in 275 instances, analytes were

initially reported as detections in samples, but were later qualified as non-detections based on the presence of comparable concentrations of that analyte in blank samples. Compounds most often censored for soil or surface flux results included the following:

- Cadmium (14 samples)
- Benzene (35 samples)
- Cyanide (10 samples)
- Dichloromethane (22 samples)
- Formaldehyde (11 samples)
- Total Organic Carbon (17 samples)
- 1,2,4-Trimethylbenzene (17 samples)
- Unknown aldol condensate (SVOC TIC) (24 samples)

In addition, the following eight sample results were flagged as estimated with a high bias (J+) due to the presence of the respective metals at comparable concentrations in the associated laboratory or field blanks.

| Field Sample ID | Lab Sample ID | Analyte | Result | Unit | SQL | Reported Concen-tration | Blank Concen-tration |
|---|---|---|---|---|---|---|---|
| SRC1-AJ19-11 | F8L020248002 | Sodium | 13500 | ug/l | 10 | 13500 | 3530 |
| 'SRC1-AJ20-0 | F8K060286013 | Cadmium | 0.26 | mg/kg | 0.08 | 0.26 | 0.073 mg/kg, 0.2 ug/L |
| SRC1-AJ21-12 | F8K070216012 | Total Organic Carbon | 3 | g/kg | 0.065 | 3 | 2 |
| SRC1-AK21-18 | F8K070216010 | Total Organic Carbon | 3.1 | g/kg | 0.065 | 3.1 | 2 |
| SRC1-AK21-8 | F8K070216009 | Total Organic Carbon | 3.3 | g/kg | 0.065 | 3.3 | 2 |
| SRC1-AL25-0 | F8K110239005 | Total Organic Carbon | 6.4 | g/kg | 0.065 | 6.4 | 2 |
| SRC1-AK21-0 | F8K070216007 | Tin | 0.42 | mg/kg | 0.3 | 0.42 | 3.0 ug/L |
| SRC1-AL24-18 | F8K070216006 | Tin | 0.45 | mg/kg | 0.3 | 0.45 | 3.0 ug/L |

*Sample/Duplicate Differences Outside Permissible Range or Greater than Permissible Values*

During the data validation process, sample/duplicate results are evaluated to determine whether differences in those results suggest potential issues with data quality. Specifically, the analyst reviews the following:

- Matrix spike/matrix spike duplicate (MS/MSD) RPDs, to determine whether the RPDs are outside acceptance limits;
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPDs, to determine whether the RPDs are outside acceptance limits;
- Sample/field duplicate results to determine whether differences are greater than the permissible value; and

- Sample/laboratory duplicate results to determine whether differences are greater than the permissible value.

*Qualifications due to MS/MSD Recoveries Outside Acceptance Criteria*

As discussed in the DVSR (BRC and ERM 2010), inorganic constituent ~~no~~ results for 26 samples were qualified as estimated (either UJ for non-detections~~due to RPDs for MS/MSD RPDs~~ or J for detections; "+" or " – " added to denote potential high or low bias, respectively) based on MS/MSD recoveries; there were no rejections of data associated with MS/MSD recoveries. The qualifications applied on the basis of MS/MSD recoveries were as follows:

- The radium-228 result for one soil sample (SRC1-AJ19-0) was qualified as estimated due to a recovery below than the ~~LCS/LCSD being outside~~ acceptance criteria.

- Metals results for soil samples in seven laboratory data packages (TestAmerica packages F8K0101440 [three samples], F8K0402270 [four samples], F8K0602860 [three samples], F8K0702160 [nine samples], F8K1102390 [two samples], F8K1202310 [two samples] and F9I1501360 [three samples] were qualified due to recoveries outside the acceptance criteria, as summarized in the table below:

| Laboratory Data Package | Antimony | Barium | Copper | Magnesium | Silver | Sodium | Strontium | Tungsten | Vanadium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|
| F8K0101440 | - | | | | + | | + | | | - |
| F8K0402270 | - | | - | - | | | | | | |
| F8K0602860 | - | + | | | + | | | - | - | |
| F8K0702160 | - | | - | - | | - | | - | | - |
| F8K1102390 | - | | | | + | | | - | | - |
| F8K1202310 | - | -&+ | | | + | | | - | - | |
| F9I1501360 | - | + | | | | | - | - | | |

+ = Recovery greater than the acceptance limits
- = Recovery less than the acceptance limits
Blank entry signifies that the recovery was within the acceptance limits

- Total Kjeldahl Nitrogen results for soil samples in two laboratory data packages (Test America packages F8K0702160 [nine samples] and F9I1501360 [two samples]) were qualified due to recoveries greater than the acceptance criteria.

- Total Organic Carbon results for soil samples in two laboratory data packages (Test America packages F8K0402270 [two samples] and F8K0101440 [three samples]) were qualified due to recoveries greater than the acceptance criteria.

- Perchlorate results for one soil sample (SRC1-AK21-0) was qualified due to recoveries greater than the acceptance criteria.

Attachment B, Table B-12 (on the enclosed CD in Attachment C) lists the samples and associated analytes exhibiting MS/MSD percent recoveries below the laboratory control limits. In cases where the recoveries were higher than the acceptance criteria, the results have the potential of being similarly biased high and using these data in the screening-level health risk assessment could result in risks being calculated that are higher than would be associated with actual Site conditions. Of more concern for the screening-level health risk assessment is underestimation of risk, which could be associated with the use of data that are biased low.

As indicated in that table, reported detections and non-detects for soil data were flagged as estimated ("J-" or "UJ," respectively) due to low MS/MSD recoveries (*i.e.*, from 30 to 74 percent for metals)[3]. Detections associated with "very low" MS/MSD recoveries (*i.e.*, less than 30 percent for metals), are generally rejected as unusable. Because none of the MS/MSD recoveries were that low, no data were rejected on this basis.

The data flagged as estimated based on low MS/MSD recoveries were subjected to further review in terms of data usability for the Site, as discussed in Section 3.7.

*Qualifications due to LCS/LCSD Recoveries Outside Acceptance Criteria*

Organic and inorganic constituent results for 18 samples were qualified as estimated (either UJ for non-detections or J for detections; "+" or " – " added to denote potential high or low bias, respectively) based on LCS/LCSD recoveries. The qualifications applied on the basis of LCS/LCSD recoveries were as follows:

- Benzyl alcohol result for one SPLP sample (GEL data package 219578) was qualified due to a recovery lower than the acceptance criteria.

- Arsenic results for three soil samples (TestAmerica data package F8K0602860) were qualified due to recoveries higher than the acceptance criteria.

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[3] If additional validation criteria (aside from the MS/MSD recoveries) did not suggest a low bias for a given result, the sample result was flagged with "J" (no bias inferred).

- Molybdenum results for nine soil samples (TestAmerica data package F8K0702160) were qualified due to recoveries higher than acceptance criteria.
- 1,1-Dichloroethane, 1,1-dichloroethene, benzene and vinyl chloride results for one surface flux sample were qualified due to recoveries lower than the acceptance criteria.
- Tetrachloroethene results for four surface flux samples were qualified due to recoveries below and above the acceptance criteria.
- Trichloroethene results for two surface flux samples were qualified due to recoveries below the acceptance criteria.

As noted above, recoveries below the lower laboratory limits are of the most concern in terms of data usability. Attachment B, Table B-12 (on the enclosed CD in Attachment C) lists the samples and associated analytes exhibiting LCS/LCSD percent recoveries below the lower laboratory control limit. The data flagged as estimated based on low LCS/LCSD recoveries were subjected to further review in terms of data usability for the Site, as discussed in Section 3.7.

*Qualifications due to Sample/Field Duplicate Differences Outside Acceptance Criteria*

The following five soil field duplicates were collected during the sampling activities

- SRC1-AK21-0-FD
- SRC1-AI19-FD
- SRC2-AI19W-FD
- SRC2-J33-0-DUP
- SRC1-AK21-FD

In addition, the following two surface flux field duplicates were also collected during the sampling activities:

- SRC1-AI19
- SRC1-AL25

~~limits.~~ Field duplicate differences in excess of acceptance limits were noted in three ~~five~~ field duplicate pairs of soil samples and in two field duplicate pair of surface flux samples. The differences are presented in Attachment B~~A~~, Table B-13~~A-11~~ (on the enclosed CD in Attachment C). Field duplicates are treated as independent samples and the variability noted in the samples does not differ from the variability of results across the Site.~~B).~~ All associated data were flagged as ~~either~~ estimated (J/UJ). No data were rejected on the basis of sample/field duplicate differences.~~) or "X" to indicate that they are part of a re-analysis and another result was selected as usable.~~

*Qualifications due to Sample/Laboratory Duplicate Differences Outside Acceptance Criteria*

Of the samples representing post-remediation conditions (*i.e.*, not including those data points associated with samples from soil intervals subsequently removed from the Site), the following seven samples had sample/laboratory duplicate differences greater than the 1 picoCurie per gram (or liter; pCi/g or pCi/L) permissible value:

| Lab Sample ID | Field Sample ID | Analyte | Result | Units | Notes |
|---|---|---|---|---|---|
| 218570014 | SRC1-AI19-0 | Thorium-232 | 1.62 J | pCi/g | Difference = 1.14 |
| 218570016 | SRC1-AI19-16 | Thorium-232 | 2.27 J | pCi/g | Difference = 1.14 |
| 218570015 | SRC1-AI19-6 | Thorium-232 | 2.17 J | pCi/g | Difference = 1.14 |
| 219578002 | SRC1-AJ19-11 | Thorium-230 | <0.512 UJ | pCi/L | Difference = 1.215 |
| 219578001 | SRC1-AJ19-0 | Radium-228 | 2.68 J | pCi/g | Difference = 1.45 |
| 219578005 | SRC1-AK28-0 | Radium-228 | 2.02 J | pCi/g | Difference = 1.45 |
| 219578006 | SRC1-AK28-11 | Radium-228 | 1.3 J | pCi/g | Difference = 1.45 |

The above data flagged as estimated based on sample/laboratory duplicate differences were subjected to further review in terms of data usability for the Site, as discussed in Section 3.7. No data were rejected on the basis of sample/laboratory duplicate differences~~6~~.

*Internal Standards Outside Acceptance Criteria*

Internal standards are prepared for certain organic GC/MS and ICP/MS analyses by adding compounds similar to target compounds of interest to sample aliquots. Internal standards are used in the quantitation of target compounds in the sample or sample extract. The evaluation of internal standards involved comparing the instrument response and retention time from the target compounds in the sample with the response and retention time of specific internal standards added to the sample extract prior to analysis.

No results were rejected due to internal standard exceedances. The following results were qualified due to internal standard exceedances:

- PCB results for one soil sample (SRC1-AL25-0).
- Metals results for two soil samples (SRC1-AJ21-0 and SRC1-AL24-18).
- VOC results for one surface flux sample (SRC1-AI18).
- VOC results for 11 soil samples as follows:

| Laboratory Data Package # | Sample ID |
|---|---|
| F8K0402270 | SRC1-AI18-11 |

| | | |
|---|---|---|
| F8K0101440 | SRC1-AI19-0 | |
| F8K0602860 | SRC1-AJ20-0 | |
| F8K0702160 | SRC1-AJ21-12<br>SRC1-AK21-8 | SRC1-AK21-0-FD |
| F8K1102390 | SRC1-AL25-0 | SRC1-AL25-11 |
| F9I1501360 | SRC2-J30-0<br>SRC2-J32-0 | SRC2-J31-0 |

- Dioxin/furan results for six soil samples as follows

| Laboratory Data Package # | Sample ID |
|---|---|
| F8K010440 | SRC1-AI19-6 |
| F8K0402270 | SRC1-AI16-0 |
| F8K0602860 | SRC1-AJ20-0 |
| F8K0702160 | SRC1-AK21-0 |
| F8K1102390 | SRC1-AL25-0 |
| F9I1501360 | SRC2-J30-0 |

*Surrogate Percent Recoveries Outside Laboratory Control Limit*

As discussed in the DVSR (BRC and ERM 2010), surrogate spikes were added to each of the samples submitted for organic analysis to monitor potential interferences from the matrix. Results ~~*MS/MSD and/or LCS/LCSD Recoveries Below Acceptance Criteria*~~

~~Attachment A, Table A-12 (on the enclosed CD in Attachment B) lists the samples and~~ associated with unacceptable surrogate~~analytes exhibiting MS/MSD or LCS/LCSD percent~~ recoveries were qualified as estimated (J+). Generally, when surrogate recoveries are less than 10 percent, associated non-detect results are qualified as rejected (R) because false negatives are a possibility. No sample results were rejected due to surrogate recoveries. All of the recoveries outside the acceptance criteria were higher than the upper~~below the lower~~ laboratory control limit, and as such did not warrant~~. As indicated in Table A-12, reported detections and non-detects for soil and surface flux data were flagged as estimated, "J" or "UJ," respectively, due to low MS/MSD recoveries (*i.e.*, from 30 to 74 percent for metals).[4] All of the MS/MSD and LCS/LCSD recoveries were higher than 30 percent. The data flagged as estimated based on low MS/MSD recoveries were subjected to~~ further review in terms of data usability for the Site~~, as discussed in Section 3.6~~.

~~[4] If additional validation criteria (aside from the MS/MSD recoveries) did not suggest a low bias for a given result, the sample result was flagged with "J" (no bias inferred).~~

*Calibrations Outside Laboratory Control Limits*

Requirements for instrument calibration ensure that the instrument is capable of producing acceptable quantitative data. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of analytical run. Continuing calibrations checks document satisfactory maintenance and adjustment of the instrument on a day-to-day basis. As presented in the DVSR (BRC and ERM 2010), certain data were qualified due to initial or continuing calibration issues. Of specific concern, are analytes with a final qualifier indicating a low bias due to calibration. In the following tables the percentage of analyte recovered is based on the percent difference of the actual amount and recovered amount reported from the continuing calibration. As the percentage decrease the potential for false negatives increases.

The following table summarizes those analytes for organochlorine pesticides:

| Laboratory Data Package # | Analyte | # of Samples Qualified | Percent of Qualified Non-detect | Percentage of Analyte Recovered as Indicated by Outlier |
|---|---|---|---|---|
| TestAmerica #F8K0402270 | 4,4-DDD | 6 | 100% | 83% |
| TestAmerica #F8K0402270 | 4,4-DDT | 6 | 83% | 80% |
| TestAmerica #F8K1102390 | Alpha-Chlordane | 2 | 100% | 84% |
| TestAmerica #F8K1102390 | Endosulfan II | 2 | 100% | 80% |
| TestAmerica #F8K0402270 | Endosulfan sulfate | 6 | 100% | 80% |
| TestAmerica #F8K0402270 | Endrin aldehyde | 6 | 100% | 75% |
| TestAmerica #F8K0402270 | Endrin ketone | 6 | 100% | 75% |
| TestAmerica #F8K1102390 | Gamma-chlordane | 2 | 100% | 80% |
| TestAmerica #F8K0402270 | Methoxychlor | 6 | 100% | 75% |
| TestAmerica #F8K0402270 | Toxaphene | 5 | 100% | 80% |

Of those listed, only 4,4-DDT was detected at the Site. The maximum SQLs for the analytes listed in the table were compared to the outdoor commercial/industrial worker BCL using the percentage recovered provided in the table above. It is very unlikely that any of the analytes, even with a potential false negative that the bias could affect the result to such a degree that the hypothetical missed detections were in excess of the BCL.

The following table summarizes those analytes for SVOCs:

| Laboratory Data Package # | Analyte | # of Samples Qualified | Percent of Qualified Non-detect | Percentage of Analyte Recovered as Indicated by Outlier |
|---|---|---|---|---|
| GEL #218843 | 1,4-Dioxane | 4 | 100% | 70% |
| GEL #218570 | 1,4-Dioxane | 3 | 100% | 70% |
| GEL #219578 | 1,4-Dioxane | 2 | 100% | 65-70% |
| GEL #218845 | 1,4-Dioxane | 3 | 100% | 55% |
| GEL #218980 | 1,4-Dioxane | 2 | 100% | 70% |
| GEL #219578 | 3-Nitroaniline | 1 | 100% | 60% |
| GEL #218845 | 3-Nitroaniline | 3 | 100% | 70% |
| GEL #218980 | 3-Nitroaniline | 2 | 100% | 75% |
| GEL #218570 | 4-Nitroaniline | 3 | 100% | 60% |
| GEL #219578 | 4-Nitroaniline | 1 | 100% | 50% |
| GEL #218980 | 4-Nitroaniline | 2 | 100% | 60% |
| GEL #218980 | 4-Nitrophenol | 2 | 100% | 70% |
| GEL #219578 | Acetophenone | 1 | 100% | 65% |
| GEL #218845 | Acetophenone | 3 | 100% | 70% |
| GEL #237201 | Benzyl alcohol | 3 | 100% | 55% |
| GEL #237201 | Phthalic acid | 3 | 100% | 70% |

Of those listed, only acetophenone was detected at the Site. The maximum SQLs for the analytes listed in the table were compared to the outdoor commercial/industrial worker BCL using the percentage recovered provided in the table above. It is very unlikely that any of the analytes, even with a potential false negative that the bias could affect the result to such a degree that the hypothetical missed detections were in excess of the BCL.

The following table summarizes those analytes for VOCs:

| Laboratory Data Package # | Analyte | # of Samples Qualified | Percent of Qualified Non-detect | Percentage of Analyte Recovered as Indicated by Outlier |
|---|---|---|---|---|
| TestAmerica #F8K1102390 | 2,2,3-Trimethylbutane | 2 | 100% | 60% |
| TestAmerica #F8K1102390 | 3-Methylhexane | 2 | 100% | 65% |
| TestAmerica #F8K0402270 | Freon-12 [Dichlorodifluoromethane] | 4 | 100% | 73% |
| TestAmerica #F8K0101440 | Freon-12 [Dichlorodifluoromethane] | 3 | 100% | 73% |
| TestAmerica #F8K0602860 | Freon-12 [Dichlorodifluoromethane] | 3 | 100% | 73% |
| TestAmerica #F8K0702160 | Freon-12 [Dichlorodifluoromethane] | 9 | 100% | 73% |

None of the above listed chemicals were detected at the Site. The maximum SQLs for the analytes listed in the table were compared to the outdoor commercial/industrial worker BCL using the percentage recovered provided in the table above. It is very unlikely that any of the analytes, even with a potential false negative that the bias could affect the result to such a degree that the hypothetical missed detections were in excess of the BCL. In addition, all of the acetonitrile and ethanol results were qualified as estimated with no bias direction. Acetonitrile

and ethanol were non-detect in all samples. These two both had a low response on the instrument and have a potential for false negatives. Both were detected in flux samples.

The following table summarizes those analytes for surface flux VOCs:

| Laboratory Data Package # | Analyte | # of Samples Qualified | Percent of Qualified Non-detect | Percentage of Analyte Recovered as Indicated by Outlier |
|---|---|---|---|---|
| EAS #208610 | 1,2,3-Trichloropropane | 2 | 50% | 68% |
| EAS #208610 | 1,2,4-Trichlorobenzene | 2 | 100% | 43% |
| EAS #208610 | 1,2-Dichlorobenzene | 7 | 86% | 49-60% |
| EAS #208610 | 1,3-Dichlorobenzene | 6 | 83% | 59-68% |
| EAS #208610 | 1,4-Dichlorobenzene | 1 | 100% | 60% |
| EAS #208610 | Acetonitrile | 3 | 33% | 67% |
| EAS #208610 | Benzyl chloride | 4 | 100% | 62-70% |
| EAS #208610 | Chlorobromomethane | 1 | 100% | 65% |
| EAS #208610 | Dibromochloropropane | 1 | 100% | 62% |
| EAS #208610 | Ethanol | 3 | 0% | 63-67% |
| EAS #208610 | Heptane | 1 | 100% | 52% |
| EAS #208610 | n-Propylbenzene | 1 | 100% | 58% |
| EAS #208610 | Tert-Butylbenzene | 5 | 100% | 54-67% |
| EAS #208610 | Vinyl acetate | 1 | 0% | 49% |
| EAS #208610 | 1,2-Dichloropropane | 4 | 100% | 65-67% |

Surface flux data are compared to the ambient air BCLs. The percentages below 50 percent are of particular concern. Those are reported for the surface flux analytes, 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, and vinyl acetate. The maximum SQLs were compared to the ambient air BCLs using the percentage recovered provided in the table above. It is very unlikely that that any of the analytes, even with a potential false negative that the bias could affect the result to such a degree that the hypothetical missed detections were in excess of the BCL.

*Tentatively Identified Compounds*

For the ~~soil~~ GC/MS methods used for soil samples, a list and estimated concentrations for tentatively identified compounds (TICs) were provided if detected. Many~~The majority~~ of the reported TICs were identified as "unknown". The TICs that were ~~None of the~~ identified are as follows:

- 1,1-Difluoroethane
- 3-(hexahydro-1H-aze 1,2-Benzisothiazole
- 11,12-Dibromo-tetradecan-1-ol acetate
- 1-Bromo-11-iodoundecane
- 2,4-DDE
- 28-Nor-17.beta.(H)-hopane
- 2-Dodecen-1-yl(-)succinic anhydride
- ,2,3,3,4-pentamethyl-Cyclopentene
- 1,2,3,4,5-pentamethyl-Cyclopentene
- E-8-Methyl-9-tetradecen-1-ol acetate
- Eicosane
- Ethisterone
- 2-(1,1-dimethylethyl)-4-methyl-Furan
- Hexadecanamide

- 4-[3-Ethoxypropylamino]benzo-1,2,3-triaz
- 2-amino-1,5-dihydro-4H-Imidazol-4-one
- 5-Methyl-2-thiophenecarboxaldehyde thios
- (z)-9-Octadecenamide
- Androstane
- (5.beta.)-Androstane
- Chloroform
- dodecamethyl-Cyclohexasiloxane
- octadecamethyl-Cyclononasiloxane
- decamethyl Cyclopentasiloxane
- oxybis[dichloro-Methane
- n-Hexadecane
- Octadecanamide
- Octamethylcyclotetrasiloxane
- Pentadecane
- 11-[(trimethylsilyl Pregnane-3,20-dione
- trichlorooctadecyl-Silane
- Tributyl phosphate
- Triphenylphosphate
-

Of those listed above, two are target analytes, 2,4-DDE and chloroform. 2,4-DDE was identified as a TIC in the SVOC (SW-8270C) analysis of one sample (SRC1-AI18-0) but was not detected in the organochlorine pesticide (SW-8081) analysis of the same sample. Similarly, chloroform was identified as a TIC in the SVOC analysis of three samples (SRC1-AI16-0, SRC1-AI16-10, and SRC1-AK21-8), but was not detected in the VOC (SW-8260) analysis of the same samples. 1,1-Difluoroethane was indentified as a TIC in three VOC samples (SRC1-AI16-0, SRC1-AI19-0 and SRC1-AI19-16). It is used as an internal standard in some analyses and is not anticipated to be found at the Site. Triphenyl phosphate was detected in one sample (SRC1-AK21-0) and is a plasticizer. According to the Hazardous Substances Databank (HSDB) it has lowchemicals have associated toxicity and is used as a component of adhesives in the food industry. Tributyl phosphate was identified as a TIC in only one sample.

In addition to the above, an unknown aldol condensate was also criteria. Other TICs reported by the laboratory as being present in 27 samples; 24 of those reported concentrations were flagged "U" due to blank contamination. With the exception of the compounds discussed above, the other above named compoundsinclude amides which are indicative of column breakdown and are not likely site related. Toxicity criteria have not been established for any of these TICssaturated fatty acids.

*Data Review Summary*

For 1,671349 out of 10,0638,635 analytical results, quality criteria were not met and various data qualifiers were added to indicate limitations and/or bias in the data. The definitions for the data qualifiers, or data validation flags, used during validation are those defined in SOP-40 (BRC, ERM and MWH 2009) and the *BRC Quality Assurance Project Plan* (QAPP; BRC and ERM 2009a). Sample results were rejected based on findings of serious deficiencies in the ability to properly collect or analyze the sample and meet QC criteria. Only rejected data were considered

unusable for decision-making purposes and rejected analytical results are not used in the screening-level health risk assessment. No soil data were rejected. Several surface flux VOC results for TO-15 selective ion mode (SIM) were rejected because the samples weren't analyzed under a valid initial calibration for certain analytes. A valid initial calibration was analyzed after the samples. The samples affected include SRC1-AI16, SRC1-AI18, SRC1-AI19, SRC1-AJ20, and SRC1-AL24. Valid results were reported for the TO-15 full scan analysis, and are used in the evaluation in Section 4.2. Other data points were excluded from the risk assessment if the sample was re-analyzed by the laboratory. These are presented in Attachment BAttachment A, Table B-14A-11 (on the enclosed CD in Attachment CB). It includes six PAH results for samples SRC1-AJ19-11, SRC1-AI16-0, SRC1-AI16-10, and SRC1-AK21-0, one VOC sample, SRC1-AK21-0-FD and results for seven flux samples, SRC1-AI16, SRC1-AI18, SRC1-AI19, SRC1-AJ20, SRC1-AJ21, SRC1-AL24, and SRC1-AL25..

## 3.6 Criterion VI – Data Quality Indicators

DQIs are used to verify that sampling and analytical systems used in support of project activities are in control and the quality of the data generated for this project is appropriate for making decisions affecting future activities. The DQIs address the field and analytical data quality aspects as they affect uncertainties in the data collected for site characterization and risk assessment. The DQIs include precision, accuracy, representativeness, comparability, and completeness (PARCC). The project QAPP provides the definitions and specific criteria for assessing DQIs using field and laboratory QC samples and is the basis for determining the overall quality of the dataset. Data validation activities included the evaluation of PARCC parameters, and all data not meeting the established PARCC criteria were qualified during the validation process using the guidelines presented in the National Functional Guidelines for Laboratory Data Review, Organics and Inorganics and Dioxin/Furans (USEPA 1999, 2004c, 2005, 2008).

### *Evaluation of Data Precision*

Precision is a measure of the degree of agreement between replicate measurements of the same source or sample. Precision is expressed by RPD between replicate measurements. Replicate measurements can be made on the same sample or on two samples from the same source. Precision is generally assessed using a subset of the measurements made. The precision of the data was evaluated using several laboratory QA/QC procedures. Based on ERM's review of the results of these procedures, the general level of precision for the Site data and the background data (BRC and ERM 2010) does not appear to limit the usability of a particular analyte, sample, method, or dataset as a whole.

*Evaluation of Data Accuracy*

Accuracy measures the level of bias that an analytical method or measurement exhibits. To measure accuracy, a standard or reference material containing a known concentration is analyzed or measured and the result is compared to the known value. Several QC parameters are used to evaluate the accuracy of reported analytical results:

- Holding times and sample temperatures;
- LCS percent recovery;
- MS/MSD percent recovery;
- Spike sample recovery (inorganics);
- Surrogate spike recovery (organics); and
- ~~Tracer recovery (radionuclides); and~~
- Blank sample results.

Detailed discussions of and tables with specific exceedances, with respect to precision and accuracy, are provided in the NDEP-approved DVSR (BRC and ERM 2010) and data qualified as a result of this evaluation are presented with qualifiers in the data usability tables in Attachment B ~~A~~ (on the enclosed CD in Attachment C~~B~~). As discussed in Section 3.5, the data validation process resulted in numerous sample results being qualified as estimated, and a few results being rejected (four data points, all non-detections). The four results were all surface flux data ~~. In Attachment A,~~ qualified due to calibration violations. The remaining results were considered sufficiently accurate for risk assessment purposes, as discussed in Section 3.7.

*Evaluation of Data 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 (USEPA 2002a). There is no standard method or formula for evaluating representativeness, which is a qualitative term. Representativeness is achieved through selection of sampling locations that are appropriate relative to the objective of the specific sampling task, and by collection of an adequate number of samples from the relevant types of locations. The sampling locations at the Site were based on both systematic sampling with random point placement, as well as focused samples collected from specific areas to further investigate potential areas.

The samples were analyzed for a broad spectrum of chemical classes across the Site. Samples were delivered to the laboratory in coolers with ice to minimize the loss of analytes. In a few instances, such as samples being analyzed beyond the holding time or delayed preservation of SPLP samples, the representativeness of the associated data is in question; however, there were limited instances of this, as discussed in Section 3.7. As previously noted, no sample results wereare categorized into two categories: 1) qualified based on sample temperatures.

Sample specific results are discussed in the DVSR (BRC and ERM 2010). A discussion of representativeness for the background dataset is provided in the *Background Shallow Soil Summary Report, BMI Complex and Common Areas Vicinity* (BRC/TIMET 2007).

*Evaluation of Data Completeness*

Completeness is commonly expressed as a percentage of measurements that are valid and usable relative to the total number of measurements made. Analytical completeness is a measure of the number of overall accepted analytical results, including estimated values, compared to the total number of analytical results requested on samples submitted for analysis after review of the analytical data. Some of the data were eliminated due to data usability concerns. The percent completeness for the Site is 99.9 percent and includes the surface flux data. The percent completeness for the soil only dataset is 100 percent and the percent completeness for the surface flux only dataset is 99.9 percent. This exceeds the BRC completeness goal of 90 percent. The asbestos results are not included in the completeness calculation.

*Evaluation of Data Comparability*

Comparability is a qualitative characteristic expressing the confidence with which one dataset can be compared with another. The desire for comparability is the basis for specifying the analytical methods; these methods are generally consistent with those used in previous investigations of the Site. The comparability goal is achieved through using standard techniques to collect and analyze representative samples and reporting analytical results in appropriate units. The ranges of detected sample results from the current investigation are generally comparable to recent results at the Eastside property, as well as the site background dataset (see Section 5). There are differences in SQLs among datasets which may affect data comparability for datasets comprised primarily of non-detected values. An example of the differences in SQLs at the Site and in background for several analytes with low detection frequency is shown in the following table.

| Analyte | Background Min SQL | Background Max SQL | Site Min SQL | Site Max SQL[5] |
|---|---|---|---|---|
| Antimony | 0.0394 | 0.3298 | 0.126 | 0.315 |
| Boron | 3.2 | 3.2 | 2.99 | 16.5 |
| Mercury | 0.0072 | 0.0072 | 0.005 | 0.0115 |
| Thallium | 0.5428 | 0.5428 | 0.105 | 0.6 |

All results in units of mg/kg.

Cumulative probability plots and side-by-side boxplots for the Site and background and Site datasets are included in Attachment E. For these datasets, left-censored data can result in difficulties in differentiating whether datasets are actually different or merely an artifact of detection limits. Note that for constituents with SQLs that meet project limit requirements, comparisons between Site and background may be less important as these left-censored data are likely to indicate conditions that pose an "acceptable" risk and further evaluation is not necessary.

## 3.7 Data Analysis

Data validation and usability evaluations tend to look at the data on a result by result basis. The data analysis step is intended to take a step back and look at the dataset as a whole. The intent of this is to identify any anomalies or unusual data trends that may indicate any potential laboratory issues. This is performed by reviewing summary statistics, cumulative probability plots and side-by-side boxplots, or other visual aids. The soil dataset used for the screening-level health ~~the risk assessment; and 2) data excluded from the~~ risk assessment is summarized in tabular format in Table 1. While it is not feasible to present all the detected analytes in a graphical format, cumulative probability plots and side-by-side boxplots are provided in Attachment E for the analytes included in the background comparisons (that is, metals and radionuclides). If there were any identified risk drivers, they would also be presented graphically. However, based on the results of the screening-level health risk assessment (see Section 6.8), all risk estimates were below the target risk levels. No anomalies in the dataset were identified.

As discussed in Section 3.5, the data validation process resulted in numerous sample results being qualified as estimated, with only the above-listed results being rejected. Sample results qualified as estimated are likely to be quantitatively biased to some degree; estimated analytical results are used in the screening-level health risk assessment. Data qualified as anomalous, as defined in the DVSR~~s~~, refers to data that were qualified ("U") due to blank contamination, and

[5] The SQLs reported here may differ from the detection limits reported elsewhere (e.g. background comparisons). Detection limits may be raised due to blank contamination.

are used in the screening-level health risk assessment. These data usability decisions follow the guidelines provided in the *Guidance for Data Usability in Risk Assessment (Part A)* (USEPA 1992a).

For the screening-level health risk assessment, all data that were not rejected during data validation or replaced by re-analysis results were included. Data were often qualified as estimated due to recoveries being outside the acceptance criteria. In cases where the recoveries were higher than the acceptance criteria, the results have the potential of being similarly biased high and using these data in the screening-level health risk assessment could result in risks being calculated that are higher than would be associated with actual Site conditions. Of more concern for the screening-level health risk assessment is underestimation of risk, which could be associated with the use of data that are biased low. Results associated with the following QA/QC issues could lead to results that are biased low, and were subjected to further scrutiny during the data usability evaluation:

- Detections qualified during the data review as being non-detections due to laboratory or field blank contamination;
- Results associated with holding time exceedances;
- Results associated with calibration violations indicating a low bias; and/or
- Results associated with MS/MSD or LCS/LCSD recoveries below acceptance criteria.

Such data, which are listed above in Section 3.5, were evaluated during the data usability process to determine whether it was appropriate to use them in the screening-level health risk assessment. With the exception of the rejected data points, the data usability determined that the estimated results listed in Section 3.5 were appropriate for use in the screening-level health risk assessment, as discussed below.

*Blank Contamination*

As noted in Section 3.5, certain detections were flagged during the data review as being non-detections or estimated with a high bias due to laboratory or field blank contamination. If the associated constituent qualified as being a non-detection, in fact, were present in the samples related to the affected blank sample, revising its status to non-detect could result in risk underestimation. The constituents for which this potential concern has the most bearing in risk assessment are those in soil samples for which the detections are close to or exceed either 1) background conditions, or 2) relevant human health screening levels (i.e., BCLs). As determined

during that evaluation, qualification of detections as non-detects based on blank contamination are not likely to have an appreciable effect on the risk calculations.

In Section 3.5, the constituents that have a censored value that exceeds either the maximum background concentration or BCL were listed. This evaluation provides an analysis of those results below:

| Constituent | # Records Revised (Maximum Detection) | Concern for Risk Underestimation? | Rationale |
|---|---|---|---|
| Antimony | 5 (0.78 mg/kg) | No | No detections in dataset; values < 454 mg/kg BCL |
| Boron | 4 (6 mg/kg) | No | Limited number of detections in dataset (5); values < 100,000 mg/kg BCL |
| Cadmium | 16 (0.17 mg/kg) | No | Values < 553 mg/kg BCL |
| Molybdenum | 6 (1 mg/kg) | No | Maximum value lower than maximum background (2 mg/kg); values < 5,680 mg/kg BCL |
| Selenium | 3 (1.2 mg/kg) | No | No detections in dataset; values < 5,680 mg/kg BCL |

*Holding Time Exceedances/Sample Condition*

There is a potential for analyte loss if the holding time for a sample is exceeded. For the Site, holding times were exceeded in two samples for chromium (VI) analysis, five soil samples and one surface flux sample for the VOC analyses. All samples were qualified as estimated. Since only two of 32 of the chromium (VI) analyses and five of 32 of the soil VOC analyses had holding times in exceedance, there is a low potential for a low bias to the datasets. Since one of seven surface flux VOC analyses had holding times in exceedance, there is a moderate potential for a low bias, however, the exceedance was only one day past holding time.

As noted in the DVSR (BRC and ERM 2010), all samples with temperature requirements were received at the laboratory within the required range of 4°± 2° Celsius. No sample results were qualified based on sample temperatures.

Sixty-five SPLP sample results (SRC1-AJ19-11) were qualified since they were not filtered immediately upon extraction. The affected results were pesticides, metals, and general chemistry. Eight SPLP sample results (SRC1-AJ19-11) were qualified for the lack of sample preservation.

Given the manner in which the SPLP data are incorporated in the risk assessment, as indicators of the leaching potential of the soils, the estimated results should pose no data usability concerns for the Site.

*Calibration Violations Indicating a Low Bias*

The instrument calibration checks which resulted in a low bias are summarized in the tables presented in Section 3.5. No concerns~~Calibration violations indicating a low bias occur when either the initial or continuing calibration compound is recovered with a lower than expected response. The tables provided in Attachment A indicate which data are qualified with a low bias due to calibration violations. Data~~ were identified~~qualified~~ for the results with associated BCLs, however, there were three TO-15 flux~~following soil~~ analytes, 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, and vinyl acetate which had recoveries below 50 percent in some samples. All of the 1,2-dichlorobenzene ~~:~~

- ~~4,4-DDD~~
- ~~4,4-DDT~~
- ~~Alpha-Chlordane~~
- ~~Endosulfan II~~
- ~~Endosulfan sulfate~~
- ~~Endrin aldehyde~~
- ~~Endrin ketone~~
- ~~Gamma-Chlordane~~
- ~~Methoxychlor~~
- ~~Toxaphene~~
- ~~1,4-Dioxane~~
- ~~3-Nitroaniline~~
- ~~4-Nitroaniline~~
- ~~4-Nitrophenol~~
- ~~Acetophenone~~
- ~~Benzyl alcohol~~
- ~~Phthalic Acid~~
- ~~Freon-12~~
- ~~3-Methylhexane~~

~~For the 1,4-dioxane approximately 50 percent of the samples were qualified as estimated with a low bias. For Freon-12 approximately 60 percent of the~~ samples were qualified. The ambient air BCL for 1,2-dichlorobenzene is greater than 100 times the detected concentration and the SQLs for 1,2-dichlorobenzene. It is unlikely that risks for the Site were underestimated significantly due to 1,2-dichlorobenzene. ~~as estimated with a low bias. The effect on the remainder of the analytes is limited. The dataset for 1,4-dioxane and Freon-12 may be biased low.~~

~~In addition, the following surface flux analytes were qualified due to a low bias during instrument calibration:~~

- ~~1,2,4-Trichlorobenzene~~
- ~~1,2,3-Trichloropropane~~

- 1,3-Dichlorobenzene
- Acetone
- Benzyl chloride
- Dibromochloropropane
- Heptane
- tert-Butyl benzene
- Vinyl acetate
- 1,2-Dichlorobenzene
- 1,4-Dichlorobenzene
- Acetonitrile
- Chlorobromomethane
- Ethanol
- n-Propylbenzene

*MS/MSD or LCS/LCSD Recoveries Below Acceptance Criteria*

The laboratories use project samples for the matrix spikes at a frequency of at least 1 in 20 samples. The spike recoveries provide specific information regarding the sample that is spiked, but can be used to identify a trend in an analytes' recovery for samples of a similar matrix. Qualifications based on MS/MSD recovery exceedances are only made when a project sample is spiked. LCS or "blank spike", where deionized water is spiked to provide information on the instruments' accuracy. During the data usability review, results associated with MS/MSD and/or LCS/LCSD recoveries that were only slightly lower than the 75 percent lower acceptance limit (*i.e.*, 50 to 75 percent recoveries for inorganics and the higher of greater than 30 percent or one-half the lower limit for organicsmetals) were accepted as usable without further evaluation. Samples with lower percent recoveries (*i.e.*, recoveries lower than 50 percent for inorganics and one-half the lower limit or 30 percent, whichever is greater, for organics) were reviewed more closely to assess whether it was appropriate to use them in the screening level health risk assessment. Inorganic results with MS/MSD recoveries less than 50 percent were as follows:

- Vanadium results for two soil samples in TestAmerica The data package F8K1202310 (both detections);
- Antimony results for nine soil samples in TestAmerica data package F8K0702160 (all non-detections);
- Antimony results for two soil samples in TestAmerica data package F8K1102390 (all non-detections);
- Antimony results for three soil samples in TestAmerica data package F8K0602860 (all non-detections); and
- Antimony results for two soil samples in TestAmerica data package F8K1202310 (all non-detections).

The vanadium recovery was not significantly lower than the 50 percent recovery limit (*i.e.*, 47.5 percent). Vanadium was detected in 100 percent of site samples and the qualified results are both aboveon the mean. It is unlikely to have been biased to such a degree that the risk calculations would be underestimated. The antimony recoveries were not significantly lower than the 50 percent recovery limit (lowest was 36.9 percent). In addition, antimony was not detected in any Site soil samples and it is unlikely that it was present in these 16 samples.

As noted in Section 3.5, LCS/LCSD recoveries lower than the lower laboratory control limit were observed for benzyl alcohol for one SPLP sample. The SPLP data is used to assess leaching potential and not to quantify risk. Therefore, the result would not lead to an underestimationbasis of risk.

The other low LCS/LCSDMS/MSD recoveries (1,1-dichloroethene, 1,1-dichloroethane and vinyl chloride results for one surface flux sample) were slightly lower than the lower laboratory control limit and only affected one sample. No concerns were identified regarding their usability.

*Surrogate Percent Recoveries Below Laboratory Control Limit*

As previously noted, it was not necessary to further scrutinize results associated with surrogate recoveries outside laboratory control limits because no samples were identified with low surrogate recoveries during the data review.

*Data Usability Summary*

As discussed above, few results 50 percent were found during the data usability evaluation to have potential for low bias that could lead to significant risk underestimation. Most results qualified for this reason were non-detections of constituents rarely, if ever, detected in Site samples or were associated with samples not directly used in acceptable for use in the screening-level health risk assessment calculations (*e.g.*, SPLP samples). because the LCS/LCSD recoveries for those samples were within the acceptable ranges. No samples were rejected due to very low MS/MSD or LCS/LCSD recoveries.

The data usability evaluation also determined that the few rejected results (all non-detections) were associated with constituents either not routinely observed in Site samples or for constituents with SQLs well below the ambient air BCLs. Therefore, the rejected data do not pose a data gap or the potential for risk underestimation.

Representativeness is the degree to which data accurately and precisely represent a characteristic of the population at a sampling point or an environmental condition (USEPA 2002a). There is no standard method or formula for evaluating representativeness, which is a qualitative term.

Representativeness is achieved through selection of sampling locations that are appropriate relative to the objective of the specific sampling task, and by collection of an adequate number of samples from the relevant types of locations. The sampling locations at the Site were based on both systematic sampling with random point placement within each grid cell, as well as focused samples collected from specific areas to further investigate potential areas. The samples were analyzed for a broad spectrum of chemical classes across the Site. Samples were delivered to the laboratory in coolers with ice to minimize the loss of analytes. At times the samples were analyzed beyond the holding time. Sample specific results are discussed in the DVSRs. Five TO-15 SIM surface flux samples were rejected; however, considering the availability of the full scan results for these sample locations for use in the screening-level health risk assessment, the dataset is considered representative. A discussion of representativeness for the background dataset is provided in the *Background Shallow Soil Summary Report, BMI Complex and Common Areas Vicinity* (BRC/TIMET 2007).

Completeness is commonly expressed as a percentage of measurements that are valid and usable relative to the total number of measurements made. Analytical completeness is a measure of the number of overall accepted analytical results, including estimated values, compared to the total number of analytical results requested on samples submitted for analysis after review of the analytical data. Some of the data were eliminated due to data usability concerns. The percent completeness for the Site is 99.4 percent and includes the surface flux data. The percent completeness for the soil only dataset is 100 percent and the percent completeness for the surface flux only dataset is 89 percent. This is just slightly below the BRC completeness goal of 90 percent. All of the rejected data are for the TO-15 SIM analysis and have a usable full scan result for each location. The asbestos results are not included in the completeness calculation since they did not undergo data validation.

Comparability is a qualitative characteristic expressing the confidence with which one dataset can be compared with another. The desire for comparability is the basis for specifying the analytical methods; these methods are generally consistent with those used in previous investigations of the Site. The comparability goal is achieved through using standard techniques to collect and analyze representative samples and reporting analytical results in appropriate units. The ranges of detected sample results from the current investigation are generally comparable to recent results at the Eastside (for example, the Parcel 4B sub-area), as well as the site background dataset (see Section 5). There are differences in SQLs among datasets which may affect data comparability for datasets comprised primarily of non-detected values. An example of the differences in SQLs at the site and in background for several analytes with low detection frequency is shown in the following table.

| Analyte | Background Min SQL | Background Max SQL | Site Min SQL | Site Max SQL[6] |
|---|---|---|---|---|
| Antimony | 0.0394 | 0.3298 | 0.126 | 0.315 |
| Boron | 3.2 | 3.2 | 2.99 | 16.5 |
| Mercury | 0.0072 | 0.0072 | 0.005 | 0.0115 |
| Thallium | 0.5428 | 0.5428 | 0.105 | 0.6 |

All results in units of mg/kg.

Cumulative probability plots and side-by-side boxplots for the Site and background datasets are included in Attachment C. For these datasets, left-censored data can result in difficulties in differentiating whether datasets are actually different or merely an artifact of detection limits. Note that for constituents with SQLs that meet project limit requirements, comparisons between Site and background may be less important as these left-censored data are likely to indicate conditions that pose an "acceptable" risk and further evaluation is not necessary.

### 3.7 Data Analysis

Data validation and usability evaluations tend to look at the data on a result by result basis. The data analysis step is intended to take a step back and look at the dataset as a whole. The intent of this is to identify any anomalies or unusual data trends that may indicate any potential laboratory issues. This is performed by reviewing summary statistics, cumulative probability plots and side-by-side boxplots, or other visual aids. The soil dataset used for the screening-level health risk assessment is summarized in tabular format in Table 1. While it is not feasible to present all the detected analytes in a graphical format, cumulative probability plots and side-by-side boxplots are provided in Attachment C for the analytes included in the background comparisons (that is, metals and radionuclides). If there were any identified risk drivers, they would also be presented graphically. However, based on the results of the screening-level health risk assessment (see Section 6.8), all risk estimates were below the target risk levels. No anomalies in the dataset were identified.

## 4.0 Data Summary

The chemical dataset compiled for this Site consists of analytical results associated with 36 samples collected from 18 soil sampling locations across the length of the Site.[7] Surface flux

[6] The SQLs reported here may differ from the detection limits reported elsewhere (e.g. background comparisons). Detection limits may be raised due to blank contamination.

[7] For samples with primary and field duplicate results, the Site sample and field duplicate are treated as independent samples and both are included in all subsequent data analyses, regardless of whether one or both are non-detect (see Section 3.5 regarding evaluation of differences between primary and field duplicate samples).

samples were also collected at seven locations across the Site for VOC analysis.[8] Finally, leachate generated from one sample (the 11 ft below ground surface [bgs] sample from location SRC1-AJ19) using the Synthetic Precipitation Leaching Procedure (SPLP) was also analyzed for a broad suite of site-related compounds. Sample locations within the Site are shown on Figure 2. Sampling results are summarized on Tables 1 through 3 for the above-referenced analyses. The data associated with these analyses are included in the database excerpt provided on the enclosed CD in Attachment C.~~B.~~ The complete dataset for the Site is provided electronically on the enclosed CD in Attachment C~~B~~ along with all report files in their native format and all calculation spreadsheets used for the screening-level health risk assessment.

Site data were collected during a two-phase sampling program conducted initially in October and November 2008 (samples with "SRC1" prefix), with follow-on sampling conducted in September 2009 (samples with "SRC2" prefix). As noted above, the initial sampling event was not conducted based on a Site-specific SAP, but samples within the Site were collected as part of the sampling and analysis for the Southern RIBs sub-area, which this Site was part of prior to extracting the footprint of the Warm Springs Road ROW.[9] Therefore, sampling and analysis was performed in accordance with an NDEP approved work plan (BRC and 2008; approved by NDEP on September 11, 2008). Sample results identified a localized area within the Site (at sample location SRC1-AI19), at which elevated dioxins/furans concentrations were reported in surface soils (*i.e.*, the dioxin/furan toxic equivalency [TEQ] concentration of 121 parts per trillion [ppt] was higher than the Agency for Toxic Substances and Disease Registry [ATSDR] screening value and NDEP BCL of 50 ppt). In response to this result, BRC conducted a limited soil removal action in this area (as well as other areas in the Southern RIBs sub-area), in accordance with a letter work plan dated August 31, 2009 (BRC 2009). This work plan, which included confirmation sampling, was approved by NDEP on August 31, 2009. Confirmation

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This is considered appropriate because field duplicate samples represent a discrete and unique measurement of soil chemical conditions proximal to the primary sample (unlike split samples). The sample number varies by analyses (see Table 1) with a maximum of 32 samples collected for any one particular analyte. However, the total number of samples, when considering all analytes, is 36.

[8] Note that because the data used is a subset of the data collected during the Southern RIBs investigation, the principal investigator report of findings, which includes descriptions of sampling procedures, is not provided in this technical memorandum, but will be provided in the report for the Southern RIBs sub-area.

[9] As noted in Section 2, subsequent to the preparation of this report and issuance of the NFAD, a potential re-alignment of the Warm Springs Road ROW has been identified, due to development constraints on the original alignment. Sample locations associated with this re-alignment are shown on Figure 2. Because the status of this re-alignment is uncertain, the data associated with the sample locations in the re-alignment area have not been included in this report. However, these data are provided on the enclosed CD in Attachment F. A summary table of these data is provided in Attachment F. As shown in Attachment F, none of these results affect the results and conclusions of this report. In addition, these re-alignment data will be included in the closure report to be prepared for the Southern RIBs sub-area, including the data usability evaluation for this sub-area.

samples near SRC1-AI19 were included in the confirmation sampling within the Site, with three of these samples falling within the Site (see Figure 2). At that time, BRC performed sampling at four more locations within the Site, due to changes to the boundary of the Southern RIBs sub-area. Data validation results are presented in the DVSR ~~for dataset 53~~ (BRC and ERM 2010), which was approved by NDEP on March 11, 2010.

During these two investigations, soil samples at various depths (maximum depth 21 feet bgs; note that sample depths are based on development plans for cut/fill as specific in the SAP [BRC and ERM 2008]) were collected and analyzed for VOCs, SVOCs, PAHs, organochlorine pesticides, PCBs, aldehydes, dioxins/furans, metals, perchlorate, radionuclides, and general chemistry. The data associated with these investigations are included in the database excerpt provided on the enclosed CD in Attachment C~~B~~.

A summary of compound-specific chemical data for the Site is presented in Table 1 (soil data, all locations, all depths included), Table 2 (surface flux data), and Table 3 (SPLP data). Location-specific sampling results associated with the Site are provided in Attachment C~~B~~, Tables C~~B~~-1 through C~~B~~-11 for soil samples and Table B-12 for surface flux samples, and are included electronically on the enclosed CD in Attachment C.~~B.~~ Sample locations are shown on Figure 2.

## 4.1 Soil Data

As noted above, chemical data associated with soil samples collected within the Site boundaries are summarized in Table 1, and Attachment C~~B~~, Tables C~~B~~-1 through C~~B~~-11. Various applicable constituent-specific comparison levels are provided on the tables for reference, specifically:

- NDEP BCLs for outdoor worker (NDEP 2010~~2009a~~), hereinafter "$BCL_{OW}$"; and
- NDEP BCLs for protection of groundwater (LBCL), assuming dilution attenuation factors (DAF) of 1 and 20 (NDEP 2010~~2009a~~), hereinafter "LBCL."

To assess the potential threat to human health, chemical detections in Site soils were compared to the $BCL_{OW}$. In addition, to assess the potential for impacts to groundwater quality, chemical detections at the Site were also compared to the LBCL (DAF 1; $LBCL_{DAF1}$) established for each chemical.

For comparing the Site data to background conditions, the background soil dataset for the BMI Common Areas presented in *Background Shallow Soil Summary Report, BMI Complex and Common Areas Vicinity* (BRC/TIMET 2007), which was approved by NDEP on July 26, 2007, was used. Establishment of background conditions for the BMI Common Areas project is

complicated by the unique geologic conditions in the area, specifically, the BMI Common Areas location at the confluence of alluvial fan deposits from the McCullough Range to the southwest and the River Mountains to the east. The Site appears to be underlain by sediments that are derived from the McCullough Range, and background conditions associated with shallow soils in this area are expected to be comparable to those used as comparison levels in this report, which are primarily associated with alluvial fan deposits derived from the McCullough Range. The scope of the background comparisons are summarized in Section 5.

Chemical occurrence patterns for all constituents detected in the Site soil samples at concentrations in excess of the above comparison levels, including background comparisons, are provided below.

*Asbestos*

No long amphibole and only two long chrysotilechysotile fibers (at one sample location; SRC1-AK21) were detected in 13 Site soil samples in which it they were analyzed (all surface samples; Table B-1). Asbestos iswere evaluated in the screening-level health risk assessment (Section 6).

*Aluminum*

Aluminum was detected in all 32 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 100,000 mg/kg $BCL_{OW}$, but all were higher than the 75 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a sample collected from 18 feet bgs at location SRC1-AL24 (18,400 mg/kg). Because the Site dataset was statistically higher than the background dataset (see Section 5), aluminium was included in the screening-level health risk assessment (Section 6).

*Arsenic*

Arsenic was detected in all 32 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were higher than the 1.77 mg/kg $BCL_{OW}$ and the 1 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a surface soil sample collected at location SRC1-AI18 (9.5 mg/kg). Because the Site dataset was statistically comparable to the background dataset (see Section 5), arsenic was not included in the screening-level health risk assessment (Section 6).

*Barium*

Barium was detected in all 32 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 100,000 mg/kg $BCL_{OW}$, but all were higher than the 82 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a surface soil sample collected at location SRC1-AI19 (490 mg/kg). Because the Site dataset was statistically higher than the background dataset (see Section 5), barium was included in the screening-level health risk assessment (Section 6).

*Chromium (Total)*

Chromium (total) was detected in all 32 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 100,000 mg/kg $BCL_{OW}$, but all were higher than the 2 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a surface soil sample collected at location SRC1-AK28 (19.7 mg/kg). Because the Site dataset was statistically higher than the background dataset (see Section 5), chromium (total) was included in the screening-level health risk assessment (Section 6).

*Chromium (VI)*

Chromium (VI) was detected in all 17 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 454 mg/kg $BCL_{OW}$, and lower than the 2 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a surface soil sample collected at location SRC1-AI18 (0.58 mg/kg). Because the Site dataset was statistically higher than the background dataset (see Section 5), chromium (VI) was included in the screening-level health risk assessment (Section 6).

*Iron*

Iron was detected in all 32 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 100,000 mg/kg $BCL_{OW}$, but all were higher than the 7.56 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a surface soil sample collected at location SRC1-AJ19 (23,700 mg/kg). Because the Site dataset was statistically higher than the background dataset (see Section 5), iron was included in the screening-level health risk assessment (Section 6).

*Magnesium*

Magnesium was detected in all 32 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 100,000 mg/kg $BCL_{OW}$, but all were higher than the 649 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a surface soil sample collected at location SRC1-AL25 (15,400 mg/kg). Because the Site dataset was statistically comparable to the background dataset (see Section 5), magnesium was not included in the screening-level health risk assessment (Section 6).

*Manganese*

Manganese was detected in all 32 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 13,700 mg/kg $BCL_{OW}$, but all were higher than the 3.26 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a surface soil sample collected at location SRC1-AI19 (1,800 mg/kg). Because the Site dataset was statistically higher than the background dataset (see Section 5), manganese was included in the screening-level health risk assessment (Section 6).

*Nickel*

Nickel was detected in all 32 of the Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 20,100 mg/kg $BCL_{OW}$, but all were higher than the 7 mg/kg $LBCL_{DAF1}$. The maximum detection was associated with a surface soil sample collected at location SRC1-AL25 (30.3 mg/kg). Because the Site dataset was statistically comparable to the background dataset (see Section 5), nickel was not included in the screening-level health risk assessment (Section 6).

*Thallium*

Thallium was detected in seven of the 32 Site soil samples in which it was analyzed (17 surface and 15 subsurface samples; Table B-5). All of the detections were lower than the 79.5 mg/kg $BCL_{OW}$, but three were higher than the 0.4 mg/kg $LBCL_{DAF1}$ (surface soil samples SRC1-AI19 and SRC1-AI18 [0.86 and 0.96 mg/kg, respectively]; and subsurface sample SRC1-AJ19 at 11 feet bgs [0.58 mg/kg]). Because the Site dataset was statistically comparable to the background dataset (see Section 5), thallium was not included in the screening-level health risk assessment (Section 6).

*Organochlorine Pesticides*

Organochlorine pesticides were not routinely detected in the 32 Site soil samples in which they were analyzed (17 surface and 15 subsurface samples; Table B-6). Beta-BHC was the only organochlorine pesticide detected at a concentration higher than a comparison level. Two of the detections were higher than the 0.0001 mg/kg $LBCL_{DAF1}$ (surface soil samples SRC1-AI19 and SRC-AJ20 exhibited reported detections of 0.01 mg/kg and 0.003 mg/kg, respectively); both of these detections were lower than the 1.4 mg/kg $BCL_{OW}$.

*Radionuclides*

Radionuclides were detected in all 31 of the Site soil samples in which they were analyzed (16 surface and 15 subsurface samples; Table B-9). Three of the isotopes (radium-226 and radium-228, and thorium-228) were consistently detected at activities higher than the applicable $BCL_{OW}$ and $LBCL_{DAF1}$. In addition, the detections of thorium-230 and thorium-232 were higher than the $LBCL_{DAF1}$. However, because radionuclides were statistically comparable to the background dataset (see Section 5), they were not included in the screening-level health risk assessment (Section 6).

*Volatile Organic Compounds*

With the exception of acetone (detected in more than 50 percent~~%~~ of the samples), VOCs were not routinely detected in the 32 Site soil samples in which they were analyzed (17 surface and 15 subsurface samples; Table B-11). Dichloromethane was the only VOC detected at a concentration higher than its comparison levels. Three detections of this constituent (all at location SRC1-AI19) were higher than the 0.001 mg/kg $LBCL_{DAF1}$ (0.011 mg/kg at 0 feet bgs; 0.0052 mg/kg at 6 feet bgs; and 0.0093 mg/kg at 16 feet bgs). All of these detections were lower than the 22.3 mg/kg $BCL_{OW}$.

*Other Organic Compounds*

As seen on Table 1, no other organic compounds were detected at concentrations in excess of the soil comparison levels.

*Potential Re-Alignment Data*

With limited exceptions the maximum detected values present in data within the potential re-alignment were below the maximum detection of the original Site dataset. Those that exceed Site values are presented in the following table.

| Analyte | Original ROW Max Detect | Re-Alignment ROW Max Detect | Worker BCL | Maximum Background |
|---|---|---|---|---|
| Bromide | 2.6 mg/kg | 3.3 mg/kg | -- | -- |
| Strontium | 443 mg/kg | 484 mg/kg | 100,000 mg/kg | 808 mg/kg |
| Uranium | 1.9 mg/kg | 2.1 mg/kg | 3390 mg/kg | 2.7 mg/kg |
| Uranium-233/234 | 1.67 pCi/g | 1.89 pCi/g | 11 pCi/g | 2.84 pCi/g |

-- No value has been established.

As shown above, none of the maximum detections for the realignment data exceed their respective maximum background levels, where available, are all well below their respective BCLs. Therefore, data within the potential re-alignment would not affect the results and conclusions of this report.

## 4.2 Surface Flux Data

VOC data (TO-15 full scan and SIM analyses) associated with the seven surface flux samples collected within the Site boundaries are summarized in Table 2, and Attachment CB, Table C-~~Table B-~~12. Ambient air concentrations were calculated from these data by first converting the surface flux data, in µg/m$^3$, to a flux rate, in µg/m$^2$-min (from BRC, ERM, and MWH 2009 [SOP-16]):

$$\text{VOC Flux } (\mu g/m^2\text{-min}) = (\mu g/m^3)(0.005\ m^3/\text{min})/(0.13\ m^2)$$

An outdoor air concentration was then obtained using the dispersion factor for volatiles (Q/Cvol = 83.1 g/m$^2$-s per kg/m$^3$) from the *BRC Closure Plan* (BRC, ERM, and DBSA 2007). For reference, Table 2 includes constituent-specific comparison levels (NDEP's ambient air BCLs [NDEP 2010~~2009a~~]). As seen in Table 2, no VOCs were detected at concentrations in excess of their respective ambient air BCLs.

The comparison of outdoor air concentrations (derived from surface flux chamber data) to ambient air BCLs does not account for multiple chemical exposures. However, ambient air BCLs were developed for residential exposures, which are greater than those for a worker receptor. In addition, maximum outdoor air concentrations were generally an order of magnitude less than ambient air BCLs. With only two exceptions the maximum detected values present in data within the potential re-alignment were below the maximum detection of the original Site dataset. Those that exceed Site values, 1,4,-dioxane and Freon-11, are well below their respective BCLs. Therefore, BRC concludes that the residual concentrations of VOCs in Site soils are not likely to pose a threat to human health.

## 4.3 Leachate Data

As specified in the Southern RIBs SAP, one sample collected within the Site during those sampling activities was submitted for SPLP analysis, a sample collected from location SRC1-AJ19, from 11 feet bgs. As seen in Attachment C~~B~~, this soil sample was analyzed for aldehydes, general chemistry/ions, metals, organochlorine pesticides, and VOCs. Formaldehyde was the only organic constituent detected in this sample, but this soil sample represented some of the higher general chemistry and metals detections in Site samples. The maximum values reported at the Site for beryllium, titanium, and vanadium are associated with this sample, and the detections of several other inorganic constituents fell within the highest quartile of the dataset (*i.e.*, chloride, sulfate, barium, chromium [total], cobalt, copper, iron, lithium, nickel, silver, sodium, and uranium).[10] Because of this, this sample is considered a good choice for evaluation of leachable potential.

Data associated with this SPLP sample are summarized in Table 3. For reference, Table 3 includes constituent-specific comparison levels (NDEP's residential water BCLs and USEPA Maximum Contaminant Levels). As summarized in Table 3, there were few detections in the leachate sample from SRC1-AJ19. All of the detections in this leachate sample were inorganic constituents (*i.e.*, general chemistry ions, metals and radionuclides); organic compounds were not detected. Of these detections, only the arsenic (0.003 mg/L) detection was higher than the comparison level used for this evaluation. The remaining detections were appreciably lower than the comparison levels (at least one order of magnitude lower, often two or more orders of magnitude lower).

BRC has concluded that the residual concentrations of chemicals in Site soils are not likely to pose a threat to groundwater quality in the future because of the following considerations:

- The future land use for the Site is as a road, and as such, the Site will be paved with an impermeable surface, which will reduce the potential for surface water to percolate into Site soils and to enhance chemical migration into groundwater;

- As discussed above, few constituents were detected in Site soils at concentrations above the LCBL DAF1, a conservative screening level developed for protection of groundwater quality;

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[10] This does not suggest that this location is indicative of contamination or concentrations increasing with depth (in fact, most of the results are below the maximum measured background concentration and all are similar in concentration to the surface sample at this location); merely that the location is a good choice for evaluating the leaching potential of the analytes via the SPLP results.

- Chemical detections measured in leachate from a representative sample are relatively low for the majority of chemicals at the Site. The only SPLP detection higher than its leachate comparison level is arsenic, which had a soil concentration from this sample comparable to the background dataset established for Site soils; and

- Groundwater beneath the Site is greater than 50 feet bgs (based on Shallow water-bearing zone monitoring well HMWWT-4, within the Site, which is screened from 36 to 51 feet bgs and was dry during August 2009 water level measurement event). It should be noted that groundwater will be evaluated separately and remedial alternatives will be evaluated, as appropriate.

## 5.0 Evaluation of Concentrations Relative to Background Conditions

As noted above, the comparison of Site-related soil concentrations to background levels was conducted using the existing, shallow soils background data set presented in the *Background Shallow Soil Summary Report, BMI Complex and Common Area Vicinity* (BRC/TIMET 2007).[11] Background comparisons were performed using the Quantile test, Slippage test, the *t*-test, and the Wilcoxon Rank Sum test with Gehan modification. The computer statistical software program, Guided Interactive Statistical Decision Tools (GiSdT®; Neptune and Company 2009), was used to perform all background comparison statistics.

For radionuclides, the reported activities were used without censoring to conduct the statistical analyses, as well as in all descriptive statistics and plots (*e.g.*, boxplots). For metals, a value of one-half the SQL was used as a replacement value for non-detected data to conduct the statistical analyses. The SQL was used in all descriptive statistics and plots. For this evaluation, a nominal family-wise significance level of 0.05 was desired; thus, an adjusted significance level of 0.025 was used. A significance level of 0.025 is consistent with NDEP (2009d~~2009c~~) guidance.

[11] Although some data were collected below 10 feet bgs, comparisons to the deeper background dataset (BRC and ERM 2009b), collected from 20 feet bgs and deeper were not conducted. Only one sample was collected below 20 feet bgs (sample location SRC1-AJ20 at 21 feet bgs). Although for some metals there were significant differences between the shallow and deep datasets (for example, between the shallow and deep McCullough background datasets), for others no significant differences were found (for example, arsenic). For those metals for which differences between shallow and deep background are observed (that is, deep background is generally lower than shallow background, based on a comparison of maximum concentrations for each background dataset), the maximum Site concentrations for those metals that were not included in the screening-level health risk assessment (that is, antimony, boron, calcium, magnesium, mercury, molybdenum, nickel, potassium, thallium, and tin) were well below their respective BCL (less than 1/10th the BCL in all cases), where available.

The results of the background comparison evaluation are presented in Table 4. The results of the comparisons noted above indicate that levels of the following metals exceed background levels:

- Aluminum
- Barium
- Beryllium
- Cadmium
- Chromium (Total)
- Chromium (VI)
- Cobalt
- Copper
- Iron
- Lead
- Manganese
- Sodium
- Strontium
- Titanium
- Tungsten
- Vanadium
- Zinc

Although the comparison statistics indicate that these metals levels at the Site are above background, small analytical differences or small differences related to geologic or depth differences as seen in the background dataset may be responsible for these results. Given that these chemicals are not expected to be found as contaminants at the Site, it is likely that the property and background datasets are representative of a single population. However, as discussed below, these metals are considered in the screening-level health risk assessment. Cumulative probability plots and side-by-side boxplots were also prepared and are included in Attachment EC.

For radionuclides, secular equilibrium exists when the quantity of a radioactive isotope remains constant because its production rate (due to the decay of a parent isotope) is equal to its decay rate. In theory, if secular equilibrium exists, the parent isotope activity should be equivalent to the activity of all daughter radionuclides. Pure secular equilibrium is not expected in environmental samples because of the effect of natural chemical and physical processes. However, approximate secular equilibrium is expected under background conditions (NDEP 2009e2009d). Only the uranium-238 chain was determined to be in approximate secular equilibrium following equivalence testing outlined in NDEP's *Guidance for Evaluating Secular Equilibrium at the BMI Complex and Common Areas February* (NDEP 2009e2009d). No analytical reasons were discovered as to why the thorium-232 chain data are not in secular equilibrium. The results of the equivalence testing for secular equilibrium are as follows:

| Chain | Equivalence Test | | Secular Equilibrium? | Mean Proportion | | | |
|---|---|---|---|---|---|---|---|
| | Delta | p-value | | Ra-226 | Th-230 | U-233/234 | U-238 |
| U-238 | 0.1 | 0.0045 | Yes | 0.2575 | 0.2641 | 0.2433 | 0.2351 |
| | | | | Ra-228 | Th-228 | Th-232 | |
| Th-232 | 0.1 | 0.0825 | No | 0.3678 | 0.3302 | 0.3020 | |

As noted in Tables 1 and 4, background comparisons indicate that radionuclide levels do not exceed background levels. Background comparisons with metallic uranium also indicate that it is consistent with background levels. Coupled with the summary statistics, cumulative probability plots and side-by-side boxplots, and background comparisons for the individual radionuclides, it is reasonably to assume that radionuclides are similar to background. Therefore, these constituents are not considered in the screening-level health risk assessment.

## 6.0 Screening-Level Health Risk Assessment

The comparison levels in the Data Review section above do not take into account cumulative effects, nor do they consider all potential exposure pathways (for example, the construction dust pathway). Therefore, the purpose of the screening-level health risk assessment is to determine if chemical concentrations in Site soils are: (1) either representative of background conditions; or (2) do not pose an unacceptable risk to human health and the environment under current and anticipated future use conditions.

Human health risks are represented by estimated theoretical upper-bound cancer risks and non-cancer hazards derived in accordance with standard USEPA methods. The acceptable risk levels defined by USEPA for the protection of human health, and following those discussed previously with NDEP during development of the *BRC Closure Plan* (BRC, ERM, and DBS&A 2007) are:

1. For non-carcinogenic compounds, the acceptable criterion is a cumulative hazard index (HI) of one or less. If the screening HI is determined to be greater than 1.0, target organ-specific HIs will be calculated for primary and secondary organs. The final risk goal will be to achieve target organ-specific non-carcinogenic HIs of less than 1.0;

2. For known or suspected chemical and radionuclide carcinogens, the acceptable ceiling for a cumulative incremental lifetime cancer risk (ILCR) ranges from $10^{-6}$ to $10^{-4}$. The risk goal established by the NDEP is $10^{-6}$;

3. Where background levels exceed risk level goals, metals and radionuclides in Site soils are targeted to have risks no greater than those associated with background conditions; and

4. For asbestos, calculations are based upon cancer criterion and a risk goal of $10^{-6}$.

This screening-level health risk assessment follows the basic procedures outlined in USEPA *Risk Assessment Guidance for Superfund: Volume I—Human Health Evaluation Manual* (RAGS; USEPA 1989). Other guidance documents, including NDEP's *User's Guide and Background Technical Document for Nevada Division Of Environmental Protection (NDEP) Basic*

*Comparison Levels (BCLs) for Human Health for the BMI Complex and Common Areas* (20102009a), were also consulted for the screening-level health risk assessment.

## 6.1 Selection of Chemicals of Potential Concern

The broad suite of analytes sampled for was the initial list of chemicals of potential concern (COPCs) at the Site. However, in order to ensure that a risk assessment focuses on those substances that contribute the greatest to the overall risk (USEPA 1989); only one procedure was used to eliminate the chemicals for quantitative evaluation in the screening-level health risk assessment:

- identification of chemicals with detected levels which are at or less than background concentrations (where applicable).

The procedure for evaluating chemicals relative to background conditions was presented in Section 5 above.

Another criterion that may warrant chemical reduction is the frequency of detection. In general, chemicals exhibiting a low frequency of detection will not contribute significantly to the risk estimates. USEPA (1989) suggests that chemicals with a frequency of detection less than or equal to five percent, with the exception of metals, known human carcinogens, and persistent, bioaccumulative, and toxic (PBT) chemicals as defined by the USEPA PBT program (USEPA 2010), may be considered for elimination. However, no chemicals were eliminated from further evaluation based on the frequency of detection criteria.

## 6.2 Determination of Exposure Point Concentrations

*Non-Asbestos COPCs*

A representative exposure concentration is a COPC-specific and media-specific concentration value. In risk assessment, these exposure concentrations are values incorporated into the exposure assessment equations from which potential baseline human exposures are calculated. Due to the uncertainty associated with determining the true average concentration at a site, where direct measurements of the site average are unavailable, the USEPA recommends using the lower of the maximum detected concentration or the 95 percent upper confidence limit (UCL) as the concentration of a chemical to which an individual could be exposed over time (USEPA 1992b). For the 95 percent UCL concentration approach, the 95 percent UCL is typically computed in order to represent the area-wide exposure point concentrations. The 95 percent UCL is a statistic that quantifies the uncertainty associated with the sample mean. If

randomly drawn subsets of site data are collected and the UCL is computed for each subset, the UCL will equal or exceed the true mean roughly 95 percent of the time. The purpose for using the 95 percent UCL is to derive a conservative, upper-bound estimate of the mean concentration, which takes into account the different concentrations a person may be exposed to at the Site. That is, an individual will be exposed to a range of concentrations that exist at an exposure area, from non-detect to the maximum concentration, over an entire exposure period.

However, while it may be more realistic to develop exposure concentrations consistent with the proposed development of the Site, the maximum detected concentration was selected as the exposure point concentration for each COPC, regardless of location, for evaluating Site risks in order to identify the worst-case risks for the Site.[12] It is conservatively assumed that individuals will be exposed to a consistent maximum COPC concentration in soil, based on the assumptions used in the assessment, regardless of where they are on the Site. That is, fluctuations in chemical concentrations, either spatially or temporally, are not considered.

*Asbestos*

The exposure point concentrations for asbestos were based on the pooled analytical sensitivity of the dataset (USEPA 2003b, NDEP 2009a~~2009b~~). The asbestos data and analytical sensitivities are presented in Attachment C.~~B.~~ Therefore, asbestos exposure point concentrations are determined differently than those for the other COPCs. The pooled analytical sensitivity was calculated as follows:

$$Pooled\ Analytical\ Sensitivity = 1/\left[\sum_i (1/analytical\ sensitivity\ \ for\ trial\ i)\right]$$

Two estimates of the asbestos concentration were evaluated, best estimate and upper bound as defined in the draft methodology (USEPA 2003b). The best estimate concentration is similar to a central tendency estimate, while the upper bound concentration is comparable to a reasonable maximum exposure estimate. The pooled analytical sensitivity is multiplied by the number of chrysotile or amphibole structures to estimate concentration:

$$\text{Estimated Bulk Concentration } (10^6 \text{ s/gPM10}) = \text{Long fiber count} \times \text{Pooled analytical sensitivity}$$

For the best estimate, the number of fibers measured across all samples is incorporated into the calculation above. The upper bound of the asbestos concentration was also evaluated. It is

[12] Post-scrape analyses associated with follow-up rounds of remediation focused on the analytes triggering that additional remediation (i.e., dioxins/furans), and did not include the full suite analyses of the original analytical program. Therefore, analytical results from the original sampling dataset were retained for all analytes except those that were re-analyzed after additional scraping.

calculated as the 95 percent UCL of the Poisson distribution where the mean equals the number of structures detected. In EXCEL, the following equation may be employed to calculate this value:

95% UCL of Poisson Distribution ($10^6$ s/gPM10) = CHIINV(1-upper confidence percentile, 2 × (Long fiber count + 1))/2

This value is then multiplied by the pooled analytical sensitivity to estimate the upper bound concentration. The intent of the risk assessment methodology was to predict the risk associated with airborne asbestos.

In order to quantify the airborne asbestos concentration, the estimated dust levels or particulate emission factors (PEFs) were used:

$$\text{Estimated Airborne Concentration } (\text{s/cm}^3) = \text{Estimated bulk concentration } (10^6 \text{ s/gPM10}) \times \text{Estimated dust level } (\text{ug/cm}^3)$$

See NDEP's *Technical Guidance for the Calculation of Asbestos-Related Risk in Soils* (2009a~~2009b~~) for further explanation on asbestos risk calculations and estimates.

The USEPA guidance for dust generated by construction activities (USEPA 2002b; from NDEP 2009a~~2009b~~) was used for assessing short-term construction worker exposures:

$$PEF = \frac{1}{\left(\left(\frac{1}{PEF_{sc}}\right) + \left(\frac{1}{PEF_{sc\_road}}\right)\right)}$$

where:

$PEF_{sc}$ = Subchronic particulate emission factor for construction activities ($m^3$/kg)
$PEF_{sc\_road}$ = Subchronic particulate emission factor for unpaved road traffic ($m^3$/kg)

The construction dust model and all relevant equations and parameters utilized to generate the construction worker PEF from this guidance are provided in Table 5.

## 6.3 Risk Assessment Methodology

The method used in this screening-level health risk assessment consists of a simple comparison of maximum detected concentrations to NDEP outdoor commercial/industrial worker BCLs. Several chemicals have both cancer and non-cancer toxicity criteria. For these chemicals

NDEP calculates BCLs for both cancer and non-cancer endpoints. These values are included in the calculation spreadsheet tables, and are both used in the screening-level risk assessment calculations.

## 6.4 Methods for Assessing Non-Cancer Health Effects

In this assessment, adverse non-cancer health effects were characterized by comparing the maximum measured soil concentrations with an exposure level at which no adverse health effects are expected to occur for a long period of exposure (*i.e.*, NDEP's BCLs). Maximum measured soil concentrations and BCLs are compared by dividing the maximum measured soil concentration by the BCL, as shown below:

$$Hazard\ Quotient = \frac{Maximum\ Measured\ Soil\ Concentration}{Outdoor\ Worker\ BCL}$$

If a person's representative exposure concentration is less than the BCL (i.e., if the hazard quotient is less than one), the chemical is considered unlikely to pose a significant non-cancer health hazard to individuals under the given exposure conditions assumed in the exposure parameters assumed in deriving the applicable BCL.

In accordance with standard risk assessment protocol, the hazard quotients for multiple chemicals are summed to determine whether the cumulative effect poses a potential health concern. The sum of the hazard quotients is known as a hazard index (HI).

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

An HI less than 1.0 indicates the exposure is unlikely to be associated with a potential health concern.

## 6.5 Methods for Assessing Cancer Risks

Carcinogenic risks are estimated as the incremental probability of an individual developing cancer over a lifetime as a result of a chemical exposure. When utilizing BCLs, carcinogenic risks are evaluated much in the same manner as hazard quotients.

$$Cancer\ Risk = \frac{Maximum\ Measured\ Soil\ Concentration}{Outdoor\ Worker\ BCL} \times 10^{-6}$$

In this fashion the BCL converts a measured concentration to incremental risk of an individual developing cancer. Because cancer risks are averaged over a person's lifetime, longer term

exposure to a carcinogen will result in higher risks than shorter term exposure to the same carcinogen, if all other exposure assumptions are constant.

It is assumed that cancer risks from various exposure routes are additive. Thus, the result of the assessment is a high-end estimate of the total carcinogenic risk.

$$Total\ Carcinogenic\ Risk = \sum Risk_{individual\ \ chemicals}$$

Upper-bound carcinogenic risk estimates were compared to the USEPA acceptable risk range of 1 in 10,000 ($10^{-4}$) and 1 in 1 million ($10^{-6}$) and NDEP's acceptable level of $10^{-6}$. If the estimated risk falls within or below this risk range, the chemical is considered unlikely to pose an unacceptable carcinogenic risk to individuals under the given exposure conditions. A risk level of $1 \times 10^{-5}$ (1 E-5) represents a probability of one in 100,000 that an individual could develop cancer from exposure to the potential carcinogen under a defined set of exposure assumptions.

## 6.6 Methods for Assessing Asbestos Risks

Asbestos risks were assessed using the spreadsheets developed by NDEP in its *Technical Guidance for the Calculation of Asbestos-Related Risk in Soils* (2009a~~2009b~~). See NDEP's guidance for further explanation on asbestos risk calculations and estimates.

## 6.7 Uncertainty Analysis

Risk estimates are values that have uncertainties associated with them. These uncertainties, which arise at every step of a risk assessment, are evaluated to provide an indication of the uncertainty associated with a risk estimate. Risk assessments are not intended to estimate actual risks to a receptor associated with exposure to chemicals in the environment. In fact, estimating actual risks is impossible because of the variability in the exposed or potentially exposed populations. Therefore, risk assessment is a means of estimating the probability that an adverse health effect (*e.g.*, cancer, impaired reproduction) will occur in a receptor in order to assist in decision making regarding the protection of human health. The multitude of conservative assumptions used in risk assessments guard against underestimation of risks.

Risk estimates are calculated by combining site data, assumptions about individual receptor's exposures to impacted media, and toxicity data. The uncertainties in this screening-level health risk assessment can be grouped into three main categories that correspond to these steps:

- Uncertainties in environmental sampling and analysis

- Uncertainties in assumptions concerning exposure scenarios
- Uncertainties in toxicity data and dose-response extrapolations

Some of the specific uncertainties associated with this screening-level health risk assessment are discussed below.

The screening-level health risk assessment for the Site was based on the sampling results obtained from investigations conducted between 2008 and 2009. Errors in sampling results can arise from the field sampling, laboratory analyses, and data analyses. Errors in laboratory analysis procedures are possible, although the impacts of these sorts of errors on the risk estimates are likely to be low. The environmental sampling at the Site is one source of uncertainty in the evaluation. However, despite the fact that a SAP was not prepared specific for the Site, the number of sampling locations and events is large and widespread, and sampling was performed using approved procedures; therefore, the sampling and analysis data is sufficient to characterize the impacts and the associated potential risks. Through data validation and data usability evaluations it is determined if there were issues with the laboratory analyses which would limit the usability of the data. Qualifiers are applied to the data to provide and indication of uncertainty and bias to the data points. These are discussed in detail in Section 3.

Laboratory reporting limits (PQLs) are standardized for the project; however, the SQLs used may vary from sample to sample. In addition to SQLs, results qualified due to blank contamination may have their reporting limits raised to a specific concentration. In particular, this may affect the metals and their comparability between the Site and background datasets. Three metals, boron, selenium and tin, failed one or more background comparison statistical tests, but were determined to be within background by plots and an examination of the data. Selenium was non-detect at the Site due to qualification of three samples due to blank contamination. Since selenium was 100 percent non-detect it is unlikely to provide a potential for risk underestimation. Reporting limits for boron were raised due to blank contamination in four samples. The maximum detect was below the background maximum detect, but the mean and median at the Site were greater than in background. This is biased by the raised reporting limits due to blank qualifications. Additionally, tin had reporting limits raised in five samples due to blank contamination.

The use of maximum concentrations across the Site causes a form of conservatism in the results. That is, if a similar risk assessment had been performed using the 95 percent UCL, then these screening risk assessments would produce lower risks. The use of maximum concentrations also assumes that individuals will be exposed to a consistent maximum

concentration regardless of where they are on the Site. That is, fluctuations in chemical concentrations, either spatially or temporally, are not considered.

Because of the surface soil remediation for dioxins/furans, the new surface layer of the Site could have different chemical concentrations than those that were measured prior to remediation. Because only dioxins/furans were re-analyzed for in the post-scrape samples, the original measured surface soil data at the Site for all other chemicals was retained for further evaluation. However, because there are no historical uses of the Site, and based on the depth profiles of the chemicals, it is reasonable to assume that the concentration distribution did not change in any important way. It might also be reasonable to assume that concentrations are now lower for some chemicals because of the removal of some soil.

The screening-level health risk assessment evaluated exposures and risks to outdoor commercial/industrial receptors only (with the exception of asbestos). This receptor is considered to have the highest level of exposure at the Site. However, there are several metals, for example, beryllium, cadmium, chromium (VI), and manganese, for which non-cancer exposures may be higher for a construction worker than for an outdoor commercial/industrial receptor (this is generally not the case for cancer risks since these are average over a lifetime, therefore, the much longer outdoor commercial/industrial exposure [25 years versus 1 year] outweighs any other exposure considerations). These risks to construction workers were not quantitatively evaluated in the screening-level health risk assessment (except for asbestos). The highest individual non-cancer HI in the screening-level health risk assessment was 0.13 for manganese (see Section 6.8). Therefore, Site non-cancer risks for a construction worker would need to be over seven times greater than that evaluated in the screening-level health risk assessment. Given the limited exposures expected at the Site (much lower than the one year typically used to evaluate construction workers), the fact that sub-chronic non-cancer toxicity criteria would apply, and that target organs were not accounted for, it is unlikely that the screening-level health risk assessment underestimates Site risks, even for Site construction workers.

Overall, the exposure assumptions and toxicity criteria are considered conservative and the risk estimates calculated in this screening-level health risk assessment are likely to overestimate rather than underestimate potential risks.

## 6.8 Screening-Level Health Risk Assessment Results

This screening-level health risk assessment has evaluated potential risks to human health associated with chemicals detected in soil at the Warm Springs Road ROW, which bisects the

Southern RIBs sub-area within the Eastside property. The calculated theoretical upper-bound ILCRs and non-cancer health effects are presented in Table 1. Asbestos risk calculations are presented in Table 6. All calculation spreadsheets for this screening-level health risk assessment are included on the enclosed CD in Attachment C.B.

The risk estimates are based on reasonable worst-case exposure scenarios, which results in estimates of the potential high-end risks associated with the Site, which are more conservative than a reasonable maximum exposure scenario. The total cumulative non-cancer HI for future commercial/industrial receptors at the Site is 0.34, which is below the target HI of 1.0. The primary contributor to this HI is manganese with an HI of 0.13. Because the total cumulative HI is below 1.0, the potential for adverse health effects is considered unlikely.

The total theoretical upper-bound ILCR for future commercial/industrial receptors at the Site is $3 \times 10^{-7}$. There are no individual chemicals whose theoretical upper-bound ILCR is greater than $10^{-7}$; the highest individual theoretical upper-bound ILCR is $5 \times 10^{-8}$ (formaldehyde). The ILCR is less than the risk goal of $1 \times 10^{-6}$. Because the total theoretical upper-bound ILCR is less than the risk goal, these results indicate that future receptor exposures at the Site should not result in unacceptable carcinogenic risks.

For construction workers, the best estimate and upper bound concentrations of asbestos range from $2 \times 10^{-8}$ to $5 \times 10^{-8}$ for chrysotile fibers, and from zero to $3 \times 10^{-6}$ for amphibole fibers. No long amphibole structures have been detected at the Site. The upper bound estimated risk for death from lung cancer or mesothelioma is associated with the UCL of the Poisson distribution which assumes the mean amphibole concentration is equal to three long amphibole structures per cubic centimeter. However, the high-end risk estimate for deaths from lung cancer or mesothelioma of $3 \times 10^{-6}$ is an overly conservative value for the following reasons:

- It is based on a 95 percent UCL of the Poisson distribution of three long amphibole structures although no long amphibole structures have been detected at the Site following remediation; and

- The values from Tables 8-2 of USEPA (2003b) should only be used for structures longer than 10 µm and thinner than 0.4 µm; and are recommended only for constant lifetime exposures, not short term exposures such as construction activities.

In addition, for dioxins/furans, the USEPA TEQ procedure, developed to describe the cumulative toxicity of these compounds, is used. This procedure involves assigning individual toxicity equivalency factors (TEFs) to the 2,3,7,8 substituted dioxin/furan and PCB congeners. TEFs are estimates of the toxicity of dioxin-like compounds relative to the toxicity of 2,3,7,8-

tetrachlorodibenzo-*p*-dioxin (TCDD), which is assigned a TEF of 1.0. Calculating the TEQ of a mixture involves multiplying the concentration of individual congeners by their respective TEF. One-half the detection limit is used for calculating the TEQ for individual congeners that are non-detect in a particular sample. The sum of the TEQ concentrations for the individual congeners is the TCDD TEQ concentration for the mixture. TEFs from USEPA (2000) are used. The target goal for a non-residential land use is the NDEP worker BCL (NDEP 2010~~2009a~~) of 1,000 ppt. None of the TCDD TEQ results exceed this level.

Thus, the results of the screening-level health risk assessment indicate that exposures to chemicals in soil at the Site should not result in adverse health effects to all future on-site receptors.

## 7.0 Data Quality Assessment

Sample size calculations were conducted for four analytes (arsenic, manganese, TCDD TEQ, and benzo[a]pyrene) for the Site.[13] Arsenic and TCDD TEQ are chemical of primary concern for the overall project, often exceeding comparison levels, while manganese and benzo(a)pyrene contribute the greatest amount to the non-cancer and cancer risk estimates, respectively. The formula used here for calculation of sample size is based on a non-parametric test (the Wilcoxon signed rank test), and on simulation studies performed by Pacific Northwest National Laboratories that formed the basis for an approximate formula that is based on the normal distribution. Essentially, the formula is the one that would be used if a normal-based test were being performed, but an adjustment is made (multiply by 1.16) to account for the intent to perform a non-parametric test. The formula is as follows:

$$n = 1.16\left[\frac{s^2}{\Delta^2}(z_{1-\alpha} + z_{1-\beta(\mu)})^2 + 0.5z_{1-\alpha}^2\right]$$

where,

n = number of samples
$s$ = estimated standard deviation of concentrations/fibers
$\Delta$ width of the gray region (the difference between the threshold value in stated in the hypothesis and the point at which β is specified)

[13] Sample size calculations were not conducted for asbestos. NDEP (2009b) has a worksheet for determining the number of asbestos samples needed to reach prescribed risk target levels. Similar to arsenic, a $10^{-5}$ target cancer risk level may be a more appropriate point of comparison for amphibole long fibers. Given this, and the fact that no amphibole long fibers have been detected at the Site, or in the surrounding Southern RIBs sub-area samples, the number of asbestos samples collected is considered adequate for the Site

| | |
|---|---|
| $\alpha$ | significance level or Type I error tolerance |
| $\beta$ ($\mu$) | Type II error tolerance; and |
| z | quantile from the standard normal distribution |

For each chemical, inputs for the calculations include an estimate of the variance from the measured data, a desired significance level, and desired power of the test that must be specified at a concentration of interest (which determines the tolerable difference from the threshold value). For arsenic, the Site mean concentration exceeds its BCL based on the target cancer risk level of $10^{-6}$. It is not appropriate to apply this calculation where the threshold value is less than the mean concentration. Therefore, an adjustment of the threshold value was used based on a $10^{-5}$ target cancer risk level. The calculations provided here cover a range of Type I and Type II error tolerances, and the point at which the Type II error is specified. Results are presented in Table 7. In Table 7, various combinations of input values are used, including: values of $\alpha$ of 5%, 10% and 15%; values of $\beta$ of 15%, 20%, and 25%; and a gray region of width 10%, 20% and 30% of the threshold level. It is clear from Table 7 that the number of samples collected is adequate for the Site.

## 8.0 Summary

Based on the results of the Site investigation, this data review, and the screening-level health risk assessment, exposures to residual levels of chemicals in soil at the Warm Springs Road ROW Site should not result in adverse health effects to all future receptors and groundwater quality. In summary, BRC concludes and hereby requests that the NDEP grant an NFAD for the Site. Note that this request for an NFAD for the Site includes the potential re-alignment of the Warm Springs Road ROW, as discussed in Section 4 and Attachment F, and shown on Figure 2.

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Attachments: Table 1 – Soil Data and Screening-Level Risk Assessment Results Summary
Table 2 – Surface Flux Data and Outdoor Air Evaluation
Table 3 – SPLP Data Summary
Table 4 – Background Comparison Summary
Table 5 – Construction Dust Model
Table 6 – Asbestos Risk Summary
Table 7 – Asbestos Risk Summary
Figure 1 – Warm Springs Road ROW Location
Figure 2 – Soil and Surface Flux Sampling Locations
Figure 3 – Conceptual Site Model Diagram for Potential Human Exposures
Attachment A – NDEP Comments and BRC's Response to Comments and Redline/Strikeout Text
Attachment B – Data Usability Tables (on the enclosed CD in Attachment B)
Attachment C~~B~~ – Warm Springs Road ROW Investigation Data Tables (Database and Electronic Files on CD)
Attachment D – Neptune and Company Data Usability Investigation of TO-15 SIM Data and Review by Steve Hoyt, Environmental Analytical Service
Attachment E~~C~~ – Cumulative Probability Plots and Boxplots
Attachment F – Potential Re-Alignment Data Summary

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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.

September 30, 2010~~May 6, 2010~~

Dr. Ranajit Sahu, C.E.M. (No. EM-1699, Exp. 10/07/2011) Date
BRC Project Manager

ATTACHMENT B

DATA USABILITY TABLES
(on the enclosed CD in Attachment C)

ATTACHMENT C

WARM SPRINGS ROAD ROW INVESTIGATION DATA TABLES
(Database and Electronic Files on CD)

**TABLE C-1**
**ASBESTOS RESULTS AND ANALYTICAL SENSITIVITIES**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 1 of 1)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Analytical Sensitivity ($10^6$ s/gPM$_{10}$) | Concentration Protocol Structures[1] | | Number of Protocol Structures[2] | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Chrysotile | Amphibole | Chrysotile | | Amphibole | |
| | | | | | ($10^6$ s/gPM$_{10}$) | ($10^6$ s/gPM$_{10}$) | Total | Long | Total | Long |
| SRC1-AI16 | 0 | N | 10/3/2008 | 2.981 E+6 | < 8.912 E+6 | < 8.912 E+6 | 0 | 0 | 0 | 0 |
| SRC1-AI18 | 0 | N | 10/2/2008 | 2.960 E+6 | < 8.851 E+6 | < 8.851 E+6 | 0 | 0 | 0 | 0 |
| SRC1-AI19 | 0 | N | 10/2/2008 | 2.986 E+6 | < 8.927 E+6 | < 8.927 E+6 | 0 | 0 | 0 | 0 |
| SRC1-AI19 | 0 | FD | 10/2/2008 | 2.988 E+6 | < 8.934 E+6 | < 8.934 E+6 | 0 | 0 | 0 | 0 |
| SRC1-AJ19 | 0 | N | 10/2/2008 | 2.992 E+6 | < 8.946 E+6 | < 8.946 E+6 | 0 | 0 | 0 | 0 |
| SRC1-AJ20 | 0 | N | 10/2/2008 | 2.976 E+6 | < 8.899 E+6 | < 8.899 E+6 | 0 | 0 | 0 | 0 |
| SRC1-AJ21 | 0 | N | 10/2/2008 | 2.981 E+6 | < 8.912 E+6 | < 8.912 E+6 | 0 | 0 | 0 | 0 |
| SRC1-AK21 | 0 | N | 10/2/2008 | 2.978 E+6 | 2.150 E+7 | < 1.099 E+7 | 9 | 2 | 0 | 0 |
| SRC1-AK21 | 0 | FD | 10/2/2008 | 2.820 E+6 | < 8.432 E+6 | < 8.432 E+6 | 0 | 0 | 0 | 0 |
| SRC1-AK28 | 0 | N | 10/1/2008 | 2.994 E+6 | < 8.953 E+6 | < 8.953 E+6 | 1 | 0 | 0 | 0 |
| SRC1-AL24 | 0 | N | 10/2/2008 | 2.983 E+6 | < 8.919 E+6 | < 8.919 E+6 | 0 | 0 | 0 | 0 |
| SRC1-AL25 | 0 | N | 10/1/2008 | 2.966 E+6 | < 8.869 E+6 | < 8.869 E+6 | 0 | 0 | 0 | 0 |
| SRC1-AL27 | 0 | N | 10/2/2008 | 2.981 E+6 | < 8.912 E+6 | < 8.912 E+6 | 0 | 0 | 0 | 0 |

[1]Fiber dimensions are presented in the respective analytical reports for each sample.

[2]Only long structures present a potential risk and are used for estimating asbestos risks. Total fiber concentrations are presented for informational purposes only.

**TABLE C-2**
**SOIL ALDEHYDES DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Aldehydes | |
|---|---|---|---|---|---|
| | | | | Acetaldehyde | Formaldehyde |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.306 U | < 0.204 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.323 U | 1.08 J |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.312 U | 1.04 J |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.307 U | < 0.205 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.302 U | 2.05 |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.311 U | < 0.207 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.315 U | 1.05 J |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.156 U | 0.315 J+ |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.156 U | 0.234 J+ |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.151 U | < 0.101 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.159 U | < 0.106 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.159 U | < 0.106 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.324 U | < 0.216 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.316 U | < 0.211 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.305 U | < 0.203 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.316 U | < 0.211 U |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.312 U | < 0.208 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.323 U | 1.08 J |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.152 U | 0.503 J+ |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.159 U | 0.354 J+ |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.305 U | < 0.204 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.314 U | < 0.209 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.317 U | < 0.212 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.154 U | 0.247 J |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.159 U | < 0.106 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.174 U | 0.14 J+ |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.164 U | 0.173 J+ |

All units in mg/kg.
-- = no sample data.

**TABLE C-3**
**SOIL DIOXINS/FURANS DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 1 of 2)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Dioxins/Furans | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1,2,3,4,6,7,8-HpCDF | 1,2,3,4,6,7,8-HpCDD | 1,2,3,4,7,8,9-HpCDF | 1,2,3,4,7,8-HxCDF | 1,2,3,4,7,8-HxCDD | 1,2,3,6,7,8-HxCDF | 1,2,3,6,7,8-HxCDD | 1,2,3,7,8,9-HxCDF | 1,2,3,7,8,9-HxCDD |
| SRC1-AI16 | 0 | N | 11/03/2008 | 2.8 J | < 0.68 U | < 1.3 U | < 1.4 U | < 0.34 U | < 0.84 U | < 0.31 U | < 0.25 U | < 0.29 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | 80 | 8.9 | 32 | 38 | < 1 U | 23 | < 2.1 U | 3.1 J | < 1.7 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | 270 | 32 | 160 | 230 | 5.5 J | 120 | 12 | 16 | 11 |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.61 UJ | < 0.19 UJ | < 0.29 UJ | < 0.36 UJ | < 0.13 UJ | < 0.33 UJ | < 0.1 UJ | < 0.18 UJ | < 0.12 UJ |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.81 U | < 0.95 U | < 0.95 U | < 0.64 U | < 0.99 U | < 0.56 U | < 0.87 U | < 0.64 U | < 0.88 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | 23 | < 2.4 U | 12 | 14 | < 0.35 U | 8.7 | < 0.78 U | < 1.3 U | < 0.86 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.16 U | < 0.075 U | < 0.11 U | < 0.061 U | < 0.075 U | < 0.037 U | < 0.059 U | < 0.05 U | < 0.061 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | 4.4 J | < 0.71 UJ | < 2.3 UJ | 2.7 J | < 0.14 U | < 1.9 UJ | < 0.28 U | < 0.92 UJ | < 0.42 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.31 UJ | < 0.14 U | < 0.054 U | < 0.1 UJ | < 0.093 U | < 0.069 U | < 0.072 U | < 0.088 U | < 0.09 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | 17 | 14 | 7.1 | 7.8 | < 0.98 U | 5.2 J | < 1.5 U | < 0.99 U | < 0.94 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.94 U | < 0.39 U | < 0.31 U | < 0.57 U | < 0.077 U | < 0.29 U | < 0.11 U | < 0.21 U | < 0.21 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | 20 J | 4.1 J | 9.2 J | 11 | < 1.2 U | 7.4 | < 1.2 U | < 2.1 U | < 1.1 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.33 U | < 0.37 U | < 0.24 U | < 0.2 U | < 0.3 U | < 0.19 U | < 0.29 U | < 0.21 U | < 0.27 U |
| SRC2-AI19CN | 0 | N | 09/16/2009 | < 5.1 U | < 5.1 U | < 5.1 U | < 5.1 U | < 5.1 U | < 5.1 U | < 5.1 U | < 5.1 U | < 5.1 U |
| SRC2-AI19N | 0 | N | 09/16/2009 | 120 | 11 | 53 | 49 | < 5 U | 38 | 3.5 J | 7.4 | < 5 U |
| SRC2-AI19W | 0 | N | 09/16/2009 | 3.2 J | < 5 U | < 5 U | < 5 U | < 5 U | < 5 U | < 5 U | < 5 U | < 5 U |
| SRC2-AI19W | 0 | FD | 09/16/2009 | 8.2 | < 5 U | 3.3 J | 4.4 J | < 5 U | 2.6 J | < 5 U | < 5 U | < 5 U |
| SRC2-J30 | 0 | N | 09/14/2009 | 13 | < 5 U | 6.8 | 11 | < 5 U | 6.2 | < 5 U | < 5 U | < 5 U |
| SRC2-J31 | 0 | N | 09/14/2009 | 5.1 | < 5 U | < 5 U | 3.6 J | < 5 U | < 5 U | < 5 U | < 5 U | < 5 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 5 U | < 5 U | < 5 U | < 5 U | < 5 U | < 5 U | < 5 U | < 5 U | < 5 U |
| SRC2-J33 | 0 | N | 09/17/2009 | 44 J | 4.8 J | 23 J | 28 J | < 5.3 U | 17 J | < 5.3 UJ | 3.2 J | < 5.3 UJ |
| SRC2-J33 | 0 | FD | 09/17/2009 | 57 J | 5.8 J | 26 J | 32 J | < 5.1 U | 20 J | < 5.1 UJ | 3 J | < 5.1 UJ |

All units in pg/g.

-- = no sample data.

= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.

**TABLE C-3**
**SOIL DIOXINS/FURANS DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 2 of 2)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Dioxins/Furans | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1,2,3,7,8-PeCDF | 1,2,3,7,8-PeCDD | 2,3,4,6,7,8-HxCDF | 2,3,4,7,8-PeCDF | 2,3,7,8-TCDF | 2,3,7,8-TCDD | OCDF | OCDD | TCDD TEQ |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.71 U | < 0.4 U | < 0.25 U | < 0.52 U | 0.58 J | < 0.23 U | 13 J | < 1.7 UJ | 0.86 |
| SRC1-AI18 | 0 | N | 11/03/2008 | 20 | < 1.3 U | 6.8 | 12 | 24 | 0.62 J | 280 | 32 | 20.7 |
| SRC1-AI19 | 0 | N | 10/31/2008 | 160 | 12 | 35 | 86 | 28 | 4.5 | 1000 | 48 | 121 |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.18 UJ | < 0.21 U | < 0.1 UJ | < 0.18 UJ | < 0.36 UJ | < 0.13 UJ | < 1.9 UJ | < 1.2 UJ | 0.31 |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.68 U | < 1.1 U | < 0.62 U | < 0.71 U | < 0.46 U | < 0.6 U | < 1.5 U | < 2.5 U | 1.5 |
| SRC1-AJ20 | 0 | N | 11/05/2008 | 8.9 | < 0.49 U | 2.7 J | 4.7 J | 7.9 | < 0.26 U | 110 J | < 4.6 UJ | 7.5 |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.076 U | < 0.19 U | < 0.042 U | < 0.059 U | < 0.084 U | < 0.054 U | < 0.64 U | < 0.14 U | 0.28 |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 1.8 U | < 0.22 UJ | < 0.91 UJ | < 0.94 U | 3.5 J | < 0.24 U | 31 J | < 1.8 UJ | 1.6 |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.13 U | < 0.13 U | < 0.045 U | < 0.073 U | < 0.13 UJ | < 0.067 U | < 0.85 UJ | < 1 U | 0.28 |
| SRC1-AK28 | 0 | N | 11/14/2008 | 4.5 J | < 1.3 U | < 1.4 U | < 2.6 U | 4.2 | < 0.74 U | 69 | 98 | 4.8 |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.27 U | < 0.1 U | < 0.12 U | < 0.14 U | < 0.36 U | < 0.057 U | < 4.8 U | < 2.6 U | 0.35 |
| SRC1-AL25 | 0 | N | 11/10/2008 | 15 J | < 3.4 UJ | < 2 U | < 13 UJ | 52 | < 1.4 U | 68 J | 28 J | 14.9 |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.34 U | < 0.65 U | < 0.2 U | < 0.34 U | < 0.22 U | < 0.3 U | < 1 U | < 2.1 U | 0.79 |
| SRC2-AI19CN | 0 | N | 09/16/2009 | < 5.1 U | < 5.1 U | < 5.1 U | < 5.1 U | 0.62 J | < 1 U | < 10 U | < 10 U | 6.5 |
| SRC2-AI19N | 0 | N | 09/16/2009 | 36 | 3.1 J | 8.7 | 20 | 32 | 1.3 | 350 | 15 | 33.2 |
| SRC2-AI19W | 0 | N | 09/16/2009 | < 5 U | < 5 U | < 5 U | < 5 U | 1.8 J | < 1 U | 14 J | < 10 U | 6.5 |
| SRC2-AI19W | 0 | FD | 09/16/2009 | 3.2 J | < 5 U | < 5 U | < 5 U | 3.5 J | < 1 U | 27 J | < 10 U | 7 |
| SRC2-J30 | 0 | N | 09/14/2009 | 7.3 | < 5 U | < 5 U | 3.7 J | 5.7 | < 1 U | 46 J | < 10 UJ | 9.4 |
| SRC2-J31 | 0 | N | 09/14/2009 | 2.5 J | < 5 U | < 5 U | < 5 U | 2.8 | < 1 U | 24 | < 10 U | 6.7 |
| SRC2-J32 | 0 | N | 09/14/2009 | < 5 U | < 5 U | < 5 U | < 5 U | 0.68 J | < 1 U | < 10 U | < 10 U | 6.4 |
| SRC2-J33 | 0 | N | 09/17/2009 | 18 J | < 5.3 UJ | 4.2 J | 11 J | 20 J | 0.7 J | 250 J | 8.3 J | 19.2 |
| SRC2-J33 | 0 | FD | 09/17/2009 | 18 J | < 5.1 UJ | 4.7 J | 10 J | 18 J | 0.56 J | 240 J | 11 J | 19 |

All units in pg/g.

-- = no sample data.

= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.

**TABLE C-4**
**SOIL GENERAL CHEMISTRY/IONS DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 1 of 2)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | General Chemistry/Ions | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ammonia | Bromide | Chlorate | Chloride | Cyanide (Total) | Fluoride | Nitrate (as N) |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.8 U | < 0.26 U | < 0.54 U | 80 | 0.26 J | 0.69 J | 6 |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.81 U | 2.6 | < 0.55 U | 250 | 0.19 J | 2.6 | 1.1 |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.81 U | < 0.26 U | < 0.55 U | 2.9 | 0.22 J | 0.82 J | 2.9 |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.81 U | < 0.26 U | < 0.55 U | 10.4 | 0.17 J | 2.7 | 7.5 |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.79 U | < 0.25 U | < 0.54 U | 6.1 | 0.33 J | 0.94 J | 1.3 |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.8 U | 1.3 J | < 0.54 U | 154 | 0.2 J | 1.4 | 13.4 |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.82 U | 1.3 J | < 0.55 U | 346 | 0.28 J | 1.9 | 1.1 |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.79 U | < 0.25 U | < 0.54 U | 2.7 | < 0.08 U | 1.6 | 1.2 |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.81 U | 1.4 J | < 0.55 U | 334 | < 0.082 U | 0.74 J | 1.4 |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.8 U | < 0.26 U | < 0.54 U | 3.2 | 0.18 J | 1.1 | 4.4 |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.82 U | 2.4 J | < 0.55 U | 395 | < 0.083 U | 0.77 J | 2.9 |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.82 U | < 0.26 U | < 0.56 U | 90.9 | < 0.083 U | 1.1 | 2.2 |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.8 U | < 0.26 U | < 0.55 U | 36.8 | < 0.082 U | < 0.1 U | 165 |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.82 U | < 0.26 U | < 0.56 U | 18.7 | < 0.083 U | 2.6 | 0.75 |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.82 U | < 0.26 U | < 0.55 U | 31.1 J | < 0.083 U | < 0.1 UJ | 11.9 J |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.81 U | < 0.26 U | < 0.55 U | 69.8 J | < 0.083 U | 1.2 J | 25.1 J |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.82 U | < 0.26 U | < 0.56 U | 21.9 | < 0.083 U | 4.1 | 2.5 |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.84 U | < 0.27 U | < 0.57 U | 36.9 | < 0.085 U | 4.4 | 8.5 |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.81 U | < 0.26 U | < 0.55 U | 7.3 | 0.23 J | 0.61 J | 3.8 |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.82 U | < 0.26 U | < 0.56 U | 7.4 | 0.2 J | < 0.11 U | 1.4 |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.82 U | 2.3 J | < 0.55 U | 88.1 | < 0.083 U | 2.3 | 14.9 |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.83 U | < 0.27 U | < 0.56 U | 15.5 | < 0.084 U | 2.8 | 5.5 |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.84 U | < 0.27 U | < 0.57 U | 133 | < 0.086 U | 2.5 | 3.4 |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.81 U | < 0.26 U | < 0.55 U | 51.2 | < 0.082 U | 2 | 145 |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.8 U | < 0.26 U | < 0.55 U | 16.1 | < 0.082 U | 1.7 | 0.82 |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.82 U | 1.1 J | < 0.55 U | 4.9 | < 0.083 U | 0.56 J | 9.8 |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.82 U | < 0.26 U | < 0.56 U | 17.1 | < 0.084 U | 1.4 | 2.7 |
| SRC2-J30 | 0 | N | 09/14/2009 | 0.51 | 0.29 J | < 0.48 U | 360 | < 0.11 U | 0.34 J | 62.7 |
| SRC2-J31 | 0 | N | 09/14/2009 | 0.83 | < 0.26 U | < 0.48 U | 48.2 | < 0.11 U | 0.23 J | 34.3 |
| SRC2-J32 | 0 | N | 09/14/2009 | 0.49 J | < 0.26 U | < 0.48 U | 77.6 | < 0.11 U | 0.36 J | 69.2 |
| SRC2-J33 | 0 | N | 09/17/2009 | 1.5 | < 0.28 U | < 0.51 U | 9.8 J | 0.19 J | 1.4 | 3.7 |
| SRC2-J33 | 0 | FD | 09/17/2009 | 1.4 | < 0.26 U | < 0.48 U | 12.6 J | < 0.11 U | 1.5 | 4.3 |

All units in mg/kg.
-- = no sample data.

**TABLE C-4**
**SOIL GENERAL CHEMISTRY/IONS DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 2 of 2)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | General Chemistry/Ions | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Nitrite (as N) | Orthophosphate as P | Perchlorate | Sulfate | Sulfide | Total Kjeldahl Nitrogen (TKN) |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.02 U | < 0.51 U | 0.509 | 510 | < 1.8 U | 72.4 |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.021 U | < 0.52 U | 0.0282 J | 219 | < 1.9 U | 39.9 J |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.021 U | < 5.1 U | 0.0516 | 11.4 | < 1.8 U | 161 |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.021 U | < 0.52 U | 0.154 | 41.6 | < 1.8 U | 145 |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.02 U | < 0.51 U | 0.0525 | 15.6 | < 1.8 U | 176 |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.021 U | < 0.52 U | 0.318 | 2190 | < 1.8 U | 162 |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.021 U | < 0.52 U | < 0.0106 U | 156 | < 1.9 U | 62.8 |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.02 U | 1 J | 0.0848 | 61.5 | < 1.8 U | 91.5 |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.021 U | < 0.52 U | | 203 | < 1.8 U | 38.6 J |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.021 U | < 0.51 U | 0.078 | 23.3 | < 1.8 U | 114 |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.021 U | < 0.53 U | 0.0457 | 148 | < 1.9 U | 31.1 J |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.021 U | < 0.53 U | 3.03 | 86.8 | < 1.9 U | 22.9 J |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.021 U | 11.6 | < 0.0108 U | 129 | < 1.8 U | 241 J+ |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.021 U | < 0.53 U | < 0.0107 U | 50.5 | < 1.9 U | 28.1 J+ |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.021 U | < 0.52 U | 0.294 J | 99.3 | < 1.9 U | 82 J+ |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.021 U | < 0.52 U | 0.658 J | 154 | < 1.9 U | 84.8 J+ |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.021 U | < 0.53 U | < 0.0107 U | 208 | < 1.9 U | 69.5 J+ |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.021 U | < 0.54 U | 0.0258 J | 82.9 | < 1.9 U | 80.2 J+ |
| SRC1-AK28 | 0 | N | 11/14/2008 | 0.16 J | 1.3 J | 0.0741 | 97.7 | < 1.8 U | 255 |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.021 U | < 0.53 U | < 0.0108 U | 27.7 | < 1.9 U | 28.7 J |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.021 U | < 0.52 U | 0.506 | 901 | < 1.9 U | 83.2 J+ |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.021 U | < 0.53 U | 0.176 | 17.1 | < 1.9 U | 50.8 J+ |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.022 U | < 0.54 U | 0.183 | 141 | < 1.9 U | 37.9 J+ |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.021 U | 11.8 | < 0.0104 U | 210 | < 1.8 U | 647 |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.021 U | 2.2 J | < 0.0106 U | 37.8 | < 1.8 U | 104 |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.021 U | 5.9 | < 0.0103 U | 14.8 | < 1.9 U | 68.5 |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.021 U | < 0.53 U | < 0.0106 U | 58.8 | < 1.9 U | 50.5 J |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.034 U | < 0.51 U | 0.183 | 391 | 20.3 | 135 |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.033 U | 5.4 | 0.0249 J | 54.3 | 20.2 | 236 |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.033 U | < 0.5 U | 0.0283 J | 101 | 60.5 | 154 |
| SRC2-J33 | 0 | N | 09/17/2009 | 0.16 J | < 0.54 U | | 23.5 | < 0.9 U | 152 J |
| SRC2-J33 | 0 | FD | 09/17/2009 | 0.15 J | < 0.51 U | | 26.7 | < 0.84 U | 95.3 J |

All units in mg/kg.
-- = no sample data.

**TABLE C-5**
**SOIL METALS DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 1 of 4)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Metals | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Aluminum | Antimony | Arsenic | Barium | Beryllium | Boron | Cadmium | Calcium |
| SRC1-AI16 | 0 | N | 11/03/2008 | 8250 J | < 0.126 UJ | 3 | 219 | 0.55 | < 6.6 U | 0.12 | 18400 |
| SRC1-AI16 | 10 | N | 11/03/2008 | 8990 J | < 0.126 UJ | 4 | 178 | 0.65 | < 6.6 U | 0.12 | 28300 |
| SRC1-AI18 | 0 | N | 11/03/2008 | 12200 J | < 0.126 UJ | 9.5 | 464 | 0.82 | < 6.6 U | 0.34 | 34200 |
| SRC1-AI18 | 11 | N | 11/03/2008 | 8930 J | < 0.126 UJ | 3.9 | 190 | 0.63 | < 6.6 U | < 0.04 U | 22400 |
| SRC1-AI19 | 0 | N | 10/31/2008 | 9830 | < 0.126 UJ | 8.6 | 490 J | 0.71 | < 16.5 U | 0.37 | 22200 |
| SRC1-AI19 | 6 | N | 10/31/2008 | 9970 | < 0.126 UJ | 2.5 | 255 J | 0.61 | 6.8 J | 0.12 | 17900 |
| SRC1-AI19 | 16 | N | 10/31/2008 | 10200 | < 0.126 UJ | 3.9 | 237 J | 0.59 | < 6.6 U | < 0.04 U | 25200 |
| SRC1-AJ19 | 0 | N | 11/14/2008 | 13200 | < 0.315 U | 2.5 J | 262 | 0.81 | 9.9 J | 0.15 J | 17800 |
| SRC1-AJ19 | 11 | N | 11/14/2008 | 12200 | < 0.315 U | 2.9 J | 314 | 0.84 | 9.1 J | 0.15 J | 13800 |
| SRC1-AJ20 | 0 | N | 11/05/2008 | 11800 | < 0.252 UJ | 6 J+ | 358 J+ | 0.74 | < 13.2 U | 0.26 J+ | 26100 |
| SRC1-AJ20 | 11 | N | 11/05/2008 | 10600 | < 0.252 UJ | 3 J+ | 209 J+ | 0.72 | < 13.2 U | < 0.08 U | 12400 |
| SRC1-AJ20 | 21 | N | 11/05/2008 | 9320 | < 0.252 UJ | 3.7 J+ | 185 J+ | 0.65 | < 13.2 U | < 0.08 U | 10900 |
| SRC1-AJ21 | 0 | N | 11/06/2008 | 11000 | < 0.126 UJ | 2.4 | 218 J | 0.53 J | < 6.6 UJ | < 0.04 U | 11300 J |
| SRC1-AJ21 | 12 | N | 11/06/2008 | 12100 | < 0.126 UJ | 3.1 | 269 J | 0.6 | < 6.6 U | < 0.04 U | 41500 J |
| SRC1-AK21 | 0 | N | 11/06/2008 | 15600 | < 0.126 UJ | 2.6 | 274 J | 0.59 | < 6.6 U | 0.12 | 19800 J |
| SRC1-AK21 | 0 | FD | 11/06/2008 | 15600 | < 0.126 UJ | 2 J | 233 J | 0.57 | < 6.6 U | 0.13 | 16700 J |
| SRC1-AK21 | 8 | N | 11/06/2008 | 14800 | < 0.126 UJ | 2.6 | 220 J | 0.56 | < 6.6 U | < 0.04 U | 19700 J |
| SRC1-AK21 | 18 | N | 11/06/2008 | 17300 | < 0.126 UJ | 3.9 | 167 J | 0.56 | < 6.6 U | < 0.04 U | 28500 J |
| SRC1-AK28 | 0 | N | 11/14/2008 | 12400 | < 0.315 U | 3.4 J | 270 | 0.77 | 5.8 J | 0.22 J | 28800 |
| SRC1-AK28 | 11 | N | 11/14/2008 | 11600 | < 0.315 U | 2.6 J | 311 | 0.61 | 4.8 J | 0.11 J | 12200 |
| SRC1-AL24 | 0 | N | 11/06/2008 | 9930 | < 0.126 UJ | 6.6 | 239 J | 0.53 | < 6.6 U | < 0.04 U | 32100 J |
| SRC1-AL24 | 8 | N | 11/06/2008 | 13000 | < 0.126 UJ | 3.6 | 221 J | 0.54 | < 6.6 U | < 0.04 U | 18200 J |
| SRC1-AL24 | 18 | N | 11/06/2008 | 18400 | < 0.126 UJ | 4.7 | 254 J | 0.73 J | < 6.6 UJ | < 0.04 U | 20300 J |
| SRC1-AL25 | 0 | N | 11/10/2008 | 8750 | < 0.252 UJ | 4 J | 155 | 0.54 | < 13.2 U | < 0.08 U | 92200 |
| SRC1-AL25 | 11 | N | 11/10/2008 | 12900 | < 0.252 UJ | 6.1 | 165 | 0.65 | < 13.2 U | < 0.08 U | 60400 |
| SRC1-AL27 | 0 | N | 11/11/2008 | 12500 | < 0.252 UJ | 2.3 J | 261 J | 0.69 | < 13.2 U | < 0.08 U | 15400 |
| SRC1-AL27 | 11 | N | 11/11/2008 | 13500 | < 0.252 UJ | 5.8 | 166 J | 0.71 | < 13.2 U | < 0.08 U | 40300 |
| SRC2-J30 | 0 | N | 09/14/2009 | 12500 | < 0.225 UJ | 4.3 J | 361 J+ | 0.71 | < 2.99 UJ | < 0.04 U | 21400 J |
| SRC2-J31 | 0 | N | 09/14/2009 | 9850 | < 0.225 UJ | 3.4 J | 232 J+ | 0.65 | < 2.99 U | < 0.04 U | 14300 J |
| SRC2-J32 | 0 | N | 09/14/2009 | 11900 | < 0.225 UJ | 3.3 J | 269 J+ | 0.77 | < 2.99 UJ | < 0.04 U | 12200 J |
| SRC2-J33 | 0 | N | 09/17/2009 | 13200 | < 0.225 U | 6.7 | 304 | 0.62 | < 2.99 UJ | < 0.04 U | 27100 |
| SRC2-J33 | 0 | FD | 09/17/2009 | 12300 | < 0.225 U | 5.8 | 269 | 0.68 | < 2.99 UJ | < 0.04 U | 21100 |

All units in mg/kg.
-- = no sample data.

**TABLE C-5**
**SOIL METALS DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Metals | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Chromium (Total) | Chromium (VI) | Cobalt | Copper | Iron | Lead | Lithium | Magnesium |
| SRC1-AI16 | 0 | N | 11/03/2008 | 9.7 | 0.25 J | 8.9 | 19.1 J- | 15400 J | 12.1 | 11.4 | 9480 J |
| SRC1-AI16 | 10 | N | 11/03/2008 | 9.7 | < 0.1 U | 7.9 | 16.6 J- | 14800 J | 8.3 | 15.3 | 10600 J |
| SRC1-AI18 | 0 | N | 11/03/2008 | 13.3 | 0.58 | 8.7 | 22.7 J- | 15400 J | 79.3 | 13.2 | 13000 J |
| SRC1-AI18 | 11 | N | 11/03/2008 | 11.7 | 0.31 J | 8.2 | 18.7 J- | 14800 J | 8.3 | 14.7 | 9590 J |
| SRC1-AI19 | 0 | N | 10/31/2008 | 19 | 0.13 J | 14.4 | 24.5 | 17900 | 52.6 | 8.8 | 9990 |
| SRC1-AI19 | 6 | N | 10/31/2008 | 12.4 | 0.18 J | 9.7 | 16.7 | 18000 | 11.1 | 9.2 | 8250 |
| SRC1-AI19 | 16 | N | 10/31/2008 | 12.4 | 0.13 J | 10.3 | 17.6 | 18400 | 9.2 | 13.5 | 9970 |
| SRC1-AJ19 | 0 | N | 11/14/2008 | 19 | 0.32 J- | 11.9 | 22.3 | 23700 | 12 | 13.8 | 9930 |
| SRC1-AJ19 | 11 | N | 11/14/2008 | 16.8 | 0.16 J- | 12.5 | 22.7 | 23400 | 11.3 | 17 | 10600 |
| SRC1-AJ20 | 0 | N | 11/05/2008 | 16.7 | 0.13 J | 10.1 | 21.2 | 18700 | 26.9 | 13.1 | 11300 |
| SRC1-AJ20 | 11 | N | 11/05/2008 | 9.2 | < 0.11 U | 8.9 | 17.4 | 15900 | 8.9 | 14.1 | 9430 |
| SRC1-AJ20 | 21 | N | 11/05/2008 | 9.6 | < 0.11 U | 10.3 | 18 | 18300 | 10.6 | 10.9 | 9080 |
| SRC1-AJ21 | 0 | N | 11/06/2008 | 8.6 J | < 0.1 U | 8.7 J | 17 J | 16600 J | 7.7 | 11.8 J | 8760 J |
| SRC1-AJ21 | 12 | N | 11/06/2008 | 12.2 | < 0.11 U | 9 | 16.9 J- | 17200 J | 8.6 | 9.9 | 9240 J |
| SRC1-AK21 | 0 | N | 11/06/2008 | 12.9 | 0.23 J | 9.4 | 16.7 J- | 18200 J | 9.9 | 9 | 8900 J |
| SRC1-AK21 | 0 | FD | 11/06/2008 | 11.2 | < 0.1 U | 10 | 18.7 J- | 18200 J | 8.7 | 8.5 | 9520 J |
| SRC1-AK21 | 8 | N | 11/06/2008 | 12.2 | < 0.11 U | 8.9 | 16.8 J- | 17500 J | 8.2 | 12.1 | 9250 J |
| SRC1-AK21 | 18 | N | 11/06/2008 | 11.2 | < 0.11 U | 8.9 | 16.3 J- | 16900 J | 7.8 | 15.9 | 10200 J |
| SRC1-AK28 | 0 | N | 11/14/2008 | 19.7 | 0.27 J- | 11.9 | 23.5 | 23000 | 18.9 | 12.1 | 12100 |
| SRC1-AK28 | 11 | N | 11/14/2008 | 13.1 | 0.11 J- | 9.6 | 18.3 | 17100 | 11.1 | 12.7 | 8760 |
| SRC1-AL24 | 0 | N | 11/06/2008 | 9.1 | 0.23 J | 5.7 | 13 J- | 11100 J | 5.9 | 13.3 | 5530 J |
| SRC1-AL24 | 8 | N | 11/06/2008 | 11.6 | 0.17 J | 9.2 | 15.7 J- | 16800 J | 8.5 | 11.2 | 9030 J |
| SRC1-AL24 | 18 | N | 11/06/2008 | 11.2 J | 0.29 J | 10.5 J | 18.3 J | 19400 J | 9.2 | 13.9 J | 10800 J |
| SRC1-AL25 | 0 | N | 11/10/2008 | 14.8 | < 0.1 U | 10.2 | 16.9 | 17300 | 6.3 | 10.7 | 10900 |
| SRC1-AL25 | 11 | N | 11/10/2008 | 16.2 | 0.12 J | 8.6 | 17.9 | 18500 | 8.2 | 21 | 15400 |
| SRC1-AL27 | 0 | N | 11/11/2008 | 13.2 | 0.19 J | 12.1 | 22.4 | 21700 | 11.1 | 10.7 | 10000 |
| SRC1-AL27 | 11 | N | 11/11/2008 | 14.2 | < 0.11 U | 10.9 | 14.7 | 19200 | 9.3 | 17.2 | 11700 |
| SRC2-J30 | 0 | N | 09/14/2009 | 9.8 | < 0.1 U | 10.4 J | 21.3 | 15500 J | 14.6 | 11.7 | 10800 |
| SRC2-J31 | 0 | N | 09/14/2009 | 7.9 | < 0.1 U | 9.7 J | 20.2 | 14900 J | 12.1 | 9.4 | 9480 |
| SRC2-J32 | 0 | N | 09/14/2009 | 7.7 | < 0.1 U | 9.9 J | 21.7 | 17100 J | 11.1 | 13.2 | 9720 |
| SRC2-J33 | 0 | N | 09/17/2009 | 14.2 | < 0.11 U | 10.6 | 23.5 | 19400 | 23.1 | 10.8 | 11300 |
| SRC2-J33 | 0 | FD | 09/17/2009 | 13.8 | < 0.1 U | 11.1 | 24.1 | 19000 | 19.3 | 10.7 | 11400 |

All units in mg/kg.
-- = no sample data.

**TABLE C-5**
**SOIL METALS DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 3 of 4)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Metals | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Manganese | Mercury | Molybdenum | Nickel | Potassium | Selenium | Silver | Sodium |
| SRC1-AI16 | 0 | N | 11/03/2008 | 845 | 0.0121 J | 1.2 | 16.3 | 1960 J | < 24 U | 0.12 J | 692 |
| SRC1-AI16 | 10 | N | 11/03/2008 | 362 | 0.0126 J | 0.47 J | 15.4 | 1350 J | < 24 U | 0.13 J | 785 |
| SRC1-AI18 | 0 | N | 11/03/2008 | 1100 | 0.0438 | 2.3 | 18.6 | 2720 J | < 24 U | 0.28 J | 452 |
| SRC1-AI18 | 11 | N | 11/03/2008 | 376 | < 0.0115 U | 0.91 J | 16 | 1200 J | < 24 U | 0.13 J | 537 |
| SRC1-AI19 | 0 | N | 10/31/2008 | 1800 | < 0.0115 U | 2.1 | 18.7 | 1780 | < 24 U | < 0.044 UJ | 332 |
| SRC1-AI19 | 6 | N | 10/31/2008 | 526 | < 0.0115 U | 0.48 J | 15.4 | 1850 | < 24 U | < 0.044 UJ | 765 |
| SRC1-AI19 | 16 | N | 10/31/2008 | 429 | < 0.0115 U | 0.53 J | 16.2 | 1360 | < 24 U | < 0.044 UJ | 843 |
| SRC1-AJ19 | 0 | N | 11/14/2008 | 595 | -- | 0.66 J | 21 | 2520 | < 0.4 U | 0.21 J | 983 |
| SRC1-AJ19 | 11 | N | 11/14/2008 | 586 | -- | 0.51 J | 20.7 | 1400 | < 0.4 U | 0.25 J | 1040 |
| SRC1-AJ20 | 0 | N | 11/05/2008 | 865 | < 0.0115 U | < 0.376 U | 17.6 | 2250 | < 0.32 U | < 0.088 UJ | 608 |
| SRC1-AJ20 | 11 | N | 11/05/2008 | 372 | < 0.0115 U | < 0.376 U | 15.4 | 1570 | < 0.32 U | < 0.088 UJ | 868 |
| SRC1-AJ20 | 21 | N | 11/05/2008 | 483 | < 0.0115 U | < 0.376 U | 15.7 | 999 | < 0.32 U | < 0.088 UJ | 845 |
| SRC1-AJ21 | 0 | N | 11/06/2008 | 419 J | 0.0164 J | 0.29 J+ | 12.4 J | 924 J | < 0.16 U | 0.1 J | 630 J |
| SRC1-AJ21 | 12 | N | 11/06/2008 | 424 J | < 0.0115 U | 0.35 J+ | 14.6 | 1960 J | < 0.16 U | 0.19 J | 514 J- |
| SRC1-AK21 | 0 | N | 11/06/2008 | 524 J | < 0.0115 U | 0.39 J+ | 16 | 2220 J | < 0.16 U | 0.14 J | 659 J- |
| SRC1-AK21 | 0 | FD | 11/06/2008 | 521 J | 0.0246 J | 0.4 J+ | 15.2 | 1840 J | < 0.16 U | 0.13 J | 519 J- |
| SRC1-AK21 | 8 | N | 11/06/2008 | 445 J | 0.0197 J | 0.48 J+ | 15.3 | 1490 J | < 0.16 U | 0.14 J | 752 J- |
| SRC1-AK21 | 18 | N | 11/06/2008 | 421 J | < 0.0115 U | 0.37 J+ | 14.4 | 1280 J | < 0.16 U | 0.13 J | 699 J- |
| SRC1-AK28 | 0 | N | 11/14/2008 | 643 | -- | 0.69 J | 22 | 2060 | < 0.4 U | 0.21 J | 462 |
| SRC1-AK28 | 11 | N | 11/14/2008 | 609 | -- | 0.41 J | 16.5 | 863 | < 0.4 U | 0.076 J | 1140 |
| SRC1-AL24 | 0 | N | 11/06/2008 | 240 J | 0.0271 J | 0.49 J+ | 11.7 | 1520 J | < 0.16 U | 0.2 J | 449 J- |
| SRC1-AL24 | 8 | N | 11/06/2008 | 441 J | < 0.0115 U | 0.36 J+ | 14.5 | 1450 J | < 0.16 U | 0.14 J | 684 J- |
| SRC1-AL24 | 18 | N | 11/06/2008 | 469 J | < 0.0115 U | 0.34 J+ | 17.6 J | 1220 J | < 0.16 U | 0.13 J | 894 J |
| SRC1-AL25 | 0 | N | 11/10/2008 | 390 | < 0.0115 U | < 0.376 U | 30.3 | 1480 | < 0.32 U | < 0.088 UJ | 423 |
| SRC1-AL25 | 11 | N | 11/10/2008 | 376 | < 0.0115 U | < 0.376 U | 17.5 | 1780 | < 0.32 U | < 0.088 UJ | 602 |
| SRC1-AL27 | 0 | N | 11/11/2008 | 624 | < 0.0115 U | < 0.376 U | 17.7 | 2250 | < 0.32 U | < 0.088 UJ | 521 |
| SRC1-AL27 | 11 | N | 11/11/2008 | 476 | < 0.0115 U | 0.5 J | 15.2 | 2180 | < 0.32 U | < 0.088 UJ | 507 |
| SRC2-J30 | 0 | N | 09/14/2009 | 546 J | < 0.005 U | < 0.2 U | 16.6 | 2800 | < 0.225 U | 0.18 J | 1020 |
| SRC2-J31 | 0 | N | 09/14/2009 | 387 J | 0.011 J | < 0.2 U | 17.3 | 2090 | < 0.225 U | 0.2 J | 608 |
| SRC2-J32 | 0 | N | 09/14/2009 | 504 J | < 0.005 U | < 0.2 U | 15.8 | 2540 | < 0.225 U | 0.21 J | 605 |
| SRC2-J33 | 0 | N | 09/17/2009 | 848 | < 0.005 U | < 0.2 U | 17.4 | 2320 | < 0.225 U | 0.16 J | 659 |
| SRC2-J33 | 0 | FD | 09/17/2009 | 802 | < 0.005 U | < 0.2 U | 17.8 | 2160 | < 0.225 U | 0.14 J | 674 |

All units in mg/kg.
-- = no sample data.

**TABLE C-5**
**SOIL METALS DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 4 of 4)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Metals | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Strontium | Thallium | Tin | Titanium | Tungsten | Uranium | Vanadium | Zinc |
| SRC1-AI16 | 0 | N | 11/03/2008 | 210 J | < 0.3 U | 0.46 | 597 J | 0.56 J | 1 | 44.5 | 38.2 |
| SRC1-AI16 | 10 | N | 11/03/2008 | 335 J | 0.32 J | 0.45 | 569 J | 0.75 J | 1.6 | 38.6 | 36.1 |
| SRC1-AI18 | 0 | N | 11/03/2008 | 370 J | 0.96 | 0.97 | 568 J | 3.8 | 0.96 | 40 | 67.2 |
| SRC1-AI18 | 11 | N | 11/03/2008 | 354 J | < 0.3 U | 0.42 | 587 J | < 0.5 U | 1.5 | 37.9 | 34.4 |
| SRC1-AI19 | 0 | N | 10/31/2008 | 267 J+ | 0.86 | 1.3 | 882 | 4 | 1.1 | 63.3 | 61.7 J- |
| SRC1-AI19 | 6 | N | 10/31/2008 | 221 J+ | < 0.3 U | 0.48 | 807 | < 0.5 U | 1 | 49.1 | 45 J- |
| SRC1-AI19 | 16 | N | 10/31/2008 | 370 J+ | < 0.3 U | 0.53 | 808 | < 0.5 U | 1.8 | 50 | 39.4 J- |
| SRC1-AJ19 | 0 | N | 11/14/2008 | 332 | 0.28 J | 0.72 J | 1050 | 0.25 J | 1.1 | 59.2 | 56.3 |
| SRC1-AJ19 | 11 | N | 11/14/2008 | 332 | 0.59 J | 0.9 J | 1270 | 0.33 J | 1.5 | 71.4 | 50.4 |
| SRC1-AJ20 | 0 | N | 11/05/2008 | 379 | < 0.6 U | < 0.6 U | 744 | 2.1 J- | 1.1 | 53.5 J- | 106 |
| SRC1-AJ20 | 11 | N | 11/05/2008 | 353 | < 0.6 U | < 0.6 U | 573 | < 1 UJ | 1.2 | 42.7 J- | 42.7 |
| SRC1-AJ20 | 21 | N | 11/05/2008 | 276 | < 0.6 U | < 0.6 U | 600 | < 1 UJ | 1.4 | 51 J- | 45.2 |
| SRC1-AJ21 | 0 | N | 11/06/2008 | 235 J | < 0.3 U | < 0.3 U | 585 J | < 0.5 UJ | 0.85 | 46.4 J | 40.1 J |
| SRC1-AJ21 | 12 | N | 11/06/2008 | 443 J | < 0.3 U | < 0.3 U | 664 J | < 0.5 UJ | 1 | 47.4 | 41.1 J- |
| SRC1-AK21 | 0 | N | 11/06/2008 | 310 J | < 0.3 U | 0.42 J+ | 826 J | < 0.5 UJ | 0.76 | 50.8 | 40.8 J- |
| SRC1-AK21 | 0 | FD | 11/06/2008 | 254 J | < 0.3 U | < 0.3 U | 768 J | < 0.5 UJ | 0.7 | 47.2 | 41.9 J- |
| SRC1-AK21 | 8 | N | 11/06/2008 | 316 J | < 0.3 U | < 0.3 U | 826 J | < 0.5 UJ | 0.87 | 49.4 | 38.6 J- |
| SRC1-AK21 | 18 | N | 11/06/2008 | 262 J | < 0.3 U | < 0.3 U | 735 J | < 0.5 UJ | 1.3 | 47.7 | 37.7 J- |
| SRC1-AK28 | 0 | N | 11/14/2008 | 315 | 0.36 J | 1.3 | 1030 | 0.45 J | 1.4 | 68.4 | 64 |
| SRC1-AK28 | 11 | N | 11/14/2008 | 301 | 0.25 J | 0.41 J | 553 | 0.25 J | 1.3 | 45.9 | 50.4 |
| SRC1-AL24 | 0 | N | 11/06/2008 | 213 J | < 0.3 U | < 0.3 U | 703 J | < 0.5 UJ | 0.93 | 34.6 | 25.1 J- |
| SRC1-AL24 | 8 | N | 11/06/2008 | 300 J | < 0.3 U | < 0.3 U | 680 J | < 0.5 UJ | 0.73 | 49.5 | 39 J- |
| SRC1-AL24 | 18 | N | 11/06/2008 | 287 J | < 0.3 U | 0.45 J+ | 807 J | < 0.5 UJ | 1.3 | 52.9 J | 41.6 J |
| SRC1-AL25 | 0 | N | 11/10/2008 | 342 | < 0.6 U | < 0.6 U | 559 | < 1 UJ | 1.2 | 47.9 | 50.2 J- |
| SRC1-AL25 | 11 | N | 11/10/2008 | 379 | < 0.6 U | < 0.6 U | 862 | < 1 UJ | 1.9 | 57.5 | 38.6 J- |
| SRC1-AL27 | 0 | N | 11/11/2008 | 353 | < 0.6 U | < 0.6 U | 1010 J | < 1 UJ | 1.1 | 63.2 J- | 61.5 |
| SRC1-AL27 | 11 | N | 11/11/2008 | 391 | < 0.6 U | < 0.6 U | 796 J | < 1 UJ | 1.3 | 56.2 J- | 48.1 |
| SRC2-J30 | 0 | N | 09/14/2009 | 350 J | < 0.105 U | < 0.75 U | 689 | < 0.185 UJ | 0.84 | 45.8 | 48.1 |
| SRC2-J31 | 0 | N | 09/14/2009 | 209 J | < 0.105 U | < 0.75 U | 611 | < 0.185 UJ | 0.78 | 43.1 | 46.3 |
| SRC2-J32 | 0 | N | 09/14/2009 | 242 J | < 0.105 U | < 0.75 U | 706 | < 0.185 UJ | 0.84 | 45.6 | 50.4 |
| SRC2-J33 | 0 | N | 09/17/2009 | 305 | < 0.105 U | < 0.75 U | 842 | < 0.185 U | 1 | 63.7 | 93.8 |
| SRC2-J33 | 0 | FD | 09/17/2009 | 267 | < 0.105 U | < 0.75 U | 868 | < 0.185 U | 1 | 60.6 | 74.4 |

All units in mg/kg.
-- = no sample data.

**TABLE C-6**
**SOIL ORGANOCHLORINE PESTICIDES DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 1 of 3)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Organochlorine Pesticides | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2,4-DDD | 2,4-DDE | 4,4-DDD | 4,4-DDE | 4,4-DDT | Aldrin | alpha-BHC | alpha-Chlordane |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.00031 U | < 0.0002 U | < 0.000091 U, | < 0.0002 U | < 0.00021 UJ | < 0.000097 U | < 0.00029 U | < 0.00021 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.00032 U | < 0.00021 U | < 0.000093 U, | < 0.0002 U | < 0.00021 UJ | < 0.000099 U | < 0.00029 U | < 0.00022 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.0016 U | < 0.001 U | < 0.00046 UJ | 0.022 | 0.018 J- | < 0.00049 U | < 0.0015 U | < 0.0011 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.00032 U | < 0.00021 U | < 0.000093 U, | < 0.0002 U | < 0.00021 UJ | < 0.000099 U | < 0.00029 U | < 0.00022 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.00031 U | 0.0071 J+ | < 0.00009 U | 0.025 J+ | 0.034 J+ | < 0.000096 U | < 0.00029 U | < 0.00021 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.00031 U | < 0.00021 U | < 0.000092 U | < 0.0002 U | < 0.00021 U | < 0.000098 U | < 0.00029 U | < 0.00022 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.00032 U | < 0.00021 U | < 0.000093 U | < 0.0002 U | < 0.00021 U | < 0.000099 U | < 0.0003 U | < 0.00022 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.00031 U | < 0.0002 U | < 0.00009 U | < 0.0002 U | < 0.00021 U | < 0.000097 U | < 0.00029 U | < 0.00021 U |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.00032 U | < 0.00021 U | < 0.000093 U | < 0.0002 U | < 0.00021 U | < 0.000099 U | < 0.00029 U | < 0.00022 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.00031 U | < 0.00021 U | < 0.000091 U | 0.0028 | < 0.00021 U | < 0.000097 U | < 0.00029 U | < 0.00022 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.00032 U | < 0.00021 U | < 0.000094 U | < 0.0002 U | < 0.00021 U | < 0.0001 U | < 0.0003 U | < 0.00022 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.00032 U | < 0.00021 U | < 0.000094 U | < 0.0002 U | < 0.00021 U | < 0.0001 U | < 0.0003 U | < 0.00022 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.00032 U | < 0.00021 U | < 0.000092 U | < 0.0002 U | < 0.00021 U | < 0.000098 U | < 0.00029 U | < 0.00022 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.00032 U | < 0.00021 U | < 0.000094 U | < 0.0002 U | < 0.00021 U | < 0.0001 U | < 0.0003 U | < 0.00022 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.00032 U | < 0.00021 U | < 0.000093 U | < 0.0002 U | < 0.00021 U | < 0.000099 U | < 0.0003 U | < 0.00022 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.00032 U | < 0.00021 U | < 0.000093 U | < 0.0002 U | < 0.00021 U | < 0.000099 U | < 0.00029 U | < 0.00022 U |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.00032 U | < 0.00021 U | < 0.000094 U | < 0.0002 U | < 0.00021 U | < 0.0001 U | < 0.0003 U | < 0.00022 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.00033 U | < 0.00021 U | < 0.000096 U | < 0.00021 U | < 0.00022 U | < 0.0001 U | < 0.0003 U | < 0.00023 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.0032 U | < 0.0021 U | < 0.00093 U | < 0.002 U | < 0.0021 U | < 0.00099 U | < 0.0029 U | < 0.0022 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.00032 U | < 0.00021 U | < 0.000094 U | < 0.0002 U | < 0.00021 U | < 0.0001 U | < 0.0003 U | < 0.00022 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.00032 U | < 0.00021 U | < 0.000093 U | < 0.0002 U | < 0.00021 U | < 0.0001 U | < 0.0003 U | < 0.00022 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.00032 U | < 0.00021 U | < 0.000094 U | < 0.0002 U | < 0.00021 U | < 0.0001 U | < 0.0003 U | < 0.00022 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.00033 U | < 0.00022 U | < 0.000096 U | < 0.00021 U | < 0.00022 U | < 0.0001 U | < 0.00031 U | < 0.00023 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.00032 U | < 0.00021 U | < 0.000093 U, | < 0.0002 U | < 0.00021 UJ | < 0.000099 U | < 0.00029 U | < 0.00022 UJ |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.00031 U | < 0.00021 U | < 0.000092 U, | < 0.0002 U | < 0.00021 UJ | < 0.000098 U | < 0.00029 U | < 0.00022 UJ |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.00032 U | < 0.00021 U | < 0.000093 U | 0.0022 | < 0.00021 U | < 0.0001 U | < 0.0003 U | < 0.00022 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.00032 U | < 0.00021 U | < 0.000094 U | < 0.0002 U | < 0.00021 U | < 0.0001 U | < 0.0003 U | < 0.00022 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.00014 U | < 0.00013 U | < 0.00011 U | 0.002 | < 0.00025 U | < 0.000092 U | < 0.000096 U | < 0.00011 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.00014 U | < 0.00013 U | < 0.00011 U | < 0.00043 U | < 0.00025 U | < 0.000092 U | < 0.000095 U | < 0.00011 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.00014 U | < 0.00013 U | < 0.00011 U | < 0.00043 U | < 0.00025 U | < 0.000092 U | < 0.000095 U | < 0.0001 U |
| SRC2-J33 | 0 | N | 09/17/2009 | < 0.00015 U | 0.0025 | < 0.00012 U | 0.0068 | 0.0046 | < 0.000098 U | < 0.0001 U | < 0.00011 U |
| SRC2-J33 | 0 | FD | 09/17/2009 | < 0.00014 U | 0.0037 | < 0.00011 U | 0.0082 | 0.0058 | < 0.000092 U | < 0.000095 U | < 0.00011 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-6**
**SOIL ORGANOCHLORINE PESTICIDES DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 2 of 3)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Organochlorine Pesticides | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | beta-BHC | Chlordane | delta-BHC | Dieldrin | Endosulfan I | Endosulfan II | Endosulfan sulfate | Endrin |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.00019 U | < 0.0024 U | < 0.00017 U | < 0.000093 U | < 0.00011 U | < 0.000095 U | < 0.00027 UJ | < 0.000085 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.00019 U | < 0.0024 U | < 0.00017 U | < 0.000095 U | < 0.00011 U | < 0.000097 U | < 0.00027 UJ | < 0.000087 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.00096 U | 0.031 J | < 0.00086 U | < 0.00047 U | < 0.00054 U | < 0.00048 U | < 0.0014 UJ | < 0.00043 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.00019 U | < 0.0024 U | < 0.00017 U | < 0.000095 U | < 0.00011 U | < 0.000097 U | < 0.00027 UJ | < 0.000086 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | 0.01 J+ | < 0.0024 U | < 0.00017 U | < 0.000092 U | < 0.00011 U | < 0.000094 U | < 0.00027 U | < 0.000084 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.00019 U | < 0.0024 U | < 0.00017 U | < 0.000094 U | < 0.00011 U | < 0.000096 U | < 0.00027 U | < 0.000086 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.00019 U | < 0.0024 U | < 0.00017 U | < 0.000095 U | < 0.00011 U | < 0.000097 U | < 0.00027 U | < 0.000087 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.00019 U | < 0.0024 U | < 0.00017 U | < 0.000092 U | < 0.00011 U | < 0.000095 U | < 0.00027 U | < 0.000084 U |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.00019 U | < 0.0024 U | < 0.00017 U | < 0.000095 U | < 0.00011 U | < 0.000097 U | < 0.00027 U | < 0.000086 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | 0.003 | < 0.0024 U | < 0.00017 U | < 0.000093 U | < 0.00011 U | < 0.000095 U | < 0.00027 U | < 0.000085 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.0002 U | < 0.0024 U | < 0.00018 U | < 0.000096 U | < 0.00011 U | < 0.000098 U | < 0.00028 U | < 0.000087 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.0002 U | < 0.0025 U | < 0.00018 U | < 0.000096 U | < 0.00011 U | < 0.000098 U | < 0.00028 U | < 0.000088 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.00019 U | < 0.0024 U | < 0.00017 U | < 0.000094 U | < 0.00011 U | < 0.000096 U | < 0.00027 U | < 0.000086 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.0002 U | < 0.0025 U | < 0.00018 U | < 0.000096 U | < 0.00011 U | < 0.000098 U | < 0.00028 U | < 0.000088 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.00019 U | < 0.0024 U | < 0.00017 U | < 0.000095 U | < 0.00011 U | < 0.000097 U | < 0.00027 U | < 0.000087 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.00019 U | < 0.0024 U | < 0.00017 U | < 0.000095 U | < 0.00011 U | < 0.000097 U | < 0.00027 U | < 0.000087 U |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.0002 U | < 0.0025 U | < 0.00018 U | < 0.000096 U | < 0.00011 U | < 0.000098 U | < 0.00028 U | < 0.000087 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.0002 U | < 0.0025 U | < 0.00018 U | < 0.000098 U | < 0.00011 U | < 0.0001 U | < 0.00028 U | < 0.000089 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.0019 U | < 0.024 U | < 0.0017 U | < 0.00095 U | < 0.0011 U | < 0.00097 U | < 0.0027 U | < 0.00087 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.0002 U | < 0.0025 U | < 0.00018 U | < 0.000096 U | < 0.00011 U | < 0.000098 U | < 0.00028 U | < 0.000087 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.0002 U | < 0.0024 U | < 0.00018 U | < 0.000095 U | < 0.00011 U | < 0.000098 U | < 0.00027 U | < 0.000087 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.0002 U | < 0.0025 U | < 0.00018 U | < 0.000097 U | < 0.00011 U | < 0.000099 U | < 0.00028 U | < 0.000088 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.0002 U | < 0.0025 U | < 0.00018 U | < 0.000099 U | < 0.00011 U | < 0.0001 U | < 0.00028 U | < 0.00009 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.00019 U | < 0.0024 U | < 0.00017 U | < 0.000095 U | < 0.00011 U | < 0.000097 UJ | < 0.00027 UJ | < 0.000087 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.00019 U | < 0.0024 U | < 0.00017 U | < 0.000094 U | < 0.00011 U | < 0.000096 UJ | < 0.00027 UJ | < 0.000086 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.0002 U | < 0.0024 U | < 0.00018 U | < 0.000095 U | < 0.00011 U | < 0.000098 U | < 0.00027 U | < 0.000087 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.0002 U | < 0.0025 U | < 0.00018 U | < 0.000096 U | < 0.00011 U | < 0.000098 U | < 0.00028 U | < 0.000088 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.00013 U | < 0.0015 U | < 0.00011 U | < 0.000098 U | < 0.000097 U | < 0.00012 U | < 0.00014 U | < 0.00011 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.00013 U | < 0.0015 U | < 0.00011 U | < 0.000097 U | < 0.000096 U | < 0.00012 U | < 0.00013 U | < 0.00011 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.00013 U | < 0.0015 U | < 0.00011 U | < 0.000097 U | < 0.000096 U | < 0.00011 U | < 0.00013 U | < 0.00011 U |
| SRC2-J33 | 0 | N | 09/17/2009 | < 0.00014 U | < 0.0016 U | < 0.00012 U | < 0.0001 U | < 0.0001 U | < 0.00012 U | < 0.00014 U | < 0.00011 U |
| SRC2-J33 | 0 | FD | 09/17/2009 | < 0.00013 U | < 0.0015 U | < 0.00011 U | < 0.000098 U | < 0.000096 U | < 0.00012 U | < 0.00014 U | < 0.00011 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-6**
**SOIL ORGANOCHLORINE PESTICIDES DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 3 of 3)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Organochlorine Pesticides | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Endrin aldehyde | Endrin ketone | gamma-Chlordane | Heptachlor | Heptachlor epoxide | Lindane | Methoxychlor | Toxaphene |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.00018 UJ | < 0.00017 UJ | < 0.00013 U | < 0.000085 U | < 0.00018 U | < 0.00013 U | < 0.00032 UJ | < 0.0059 UJ |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.00019 UJ | < 0.00017 UJ | < 0.00013 U | < 0.000087 U | < 0.00018 U | < 0.00014 U | < 0.00033 UJ | < 0.0061 UJ |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.00093 UJ | < 0.00084 UJ | < 0.00064 U | < 0.00043 U | < 0.00089 U | < 0.00068 U | < 0.0016 UJ | < 0.03 UJ |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.00019 UJ | < 0.00017 UJ | < 0.00013 U | < 0.000086 U | < 0.00018 U | < 0.00014 U | < 0.00033 UJ | < 0.006 UJ |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.00018 U | < 0.00017 U | < 0.00012 U | < 0.000084 U | < 0.00017 U | < 0.00013 U | < 0.00032 U | < 0.0059 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.00018 U | < 0.00017 U | < 0.00013 U | < 0.000086 U | < 0.00018 U | < 0.00014 U | < 0.00033 U | < 0.006 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.00019 U | < 0.00017 U | < 0.00013 U | < 0.000087 U | < 0.00018 U | < 0.00014 U | < 0.00033 U | < 0.0061 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.00018 U | < 0.00017 U | < 0.00012 U | < 0.000084 U | < 0.00017 U | < 0.00013 U | < 0.00032 U | < 0.0059 U |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.00019 U | < 0.00017 U | < 0.00013 U | < 0.000086 U | < 0.00018 U | < 0.00014 U | < 0.00033 U | < 0.006 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.00018 U | < 0.00017 U | < 0.00013 U | < 0.000085 U | < 0.00018 U | < 0.00013 U | < 0.00032 U | < 0.006 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.00019 U | < 0.00017 U | < 0.00013 U | < 0.000087 U | < 0.00018 U | < 0.00014 U | < 0.00033 U | < 0.0061 UJ |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.00019 U | < 0.00017 U | < 0.00013 U | < 0.000088 U | < 0.00018 U | < 0.00014 U | < 0.00033 U | < 0.0061 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.00018 U | < 0.00017 U | < 0.00013 U | < 0.000086 U | < 0.00018 U | < 0.00014 U | < 0.00033 U | < 0.006 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.00019 U | < 0.00017 U | < 0.00013 U | < 0.000088 U | < 0.00018 U | < 0.00014 U | < 0.00033 U | < 0.0061 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.00019 U | < 0.00017 U | < 0.00013 U | < 0.000087 U | < 0.00018 U | < 0.00014 U | < 0.00033 U | < 0.0061 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.00019 U | < 0.00017 U | < 0.00013 U | < 0.000087 U | < 0.00018 U | < 0.00014 U | < 0.00033 U | < 0.0061 U |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.00019 U | < 0.00017 U | < 0.00013 U | < 0.000087 U | < 0.00018 U | < 0.00014 U | < 0.00033 U | < 0.0061 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.00019 U | < 0.00018 U | < 0.00013 U | < 0.000089 U | < 0.00018 U | < 0.00014 U | < 0.00034 U | < 0.0062 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.0019 U | < 0.0017 U | < 0.0013 U | < 0.00087 U | < 0.0018 U | < 0.0014 U | < 0.0033 U | < 0.06 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.00019 U | < 0.00017 U | < 0.00013 U | < 0.000087 U | < 0.00018 U | < 0.00014 U | < 0.00033 U | < 0.0061 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.00019 U | < 0.00017 U | < 0.00013 U | < 0.000087 U | < 0.00018 U | < 0.00014 U | < 0.00033 U | < 0.0061 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.00019 U | < 0.00017 U | < 0.00013 U | < 0.000088 U | < 0.00018 U | < 0.00014 U | < 0.00033 U | < 0.0062 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.00019 U | < 0.00018 U | < 0.00013 U | < 0.00009 U | < 0.00019 U | < 0.00014 U | < 0.00034 U | < 0.0063 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.00019 UJ | < 0.00017 UJ | < 0.00013 U | < 0.000087 UJ | < 0.00018 U | < 0.00014 U | < 0.00033 UJ | < 0.006 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.00018 UJ | < 0.00017 UJ | < 0.00013 U | < 0.000086 UJ | < 0.00018 U | < 0.00014 U | < 0.00033 UJ | < 0.006 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.00019 U | < 0.00017 U | < 0.00013 U | < 0.000087 U | < 0.00018 U | < 0.00014 U | < 0.00033 U | < 0.0061 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.00019 U | < 0.00017 U | < 0.00013 U | < 0.000088 U | < 0.00018 U | < 0.00014 U | < 0.00033 U | < 0.0061 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.00016 U | < 0.00013 U | < 0.00011 U | < 0.000088 U | < 0.000097 U | < 0.00012 U | < 0.00034 U | < 0.0057 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.00015 U | < 0.00013 U | < 0.00011 U | < 0.000088 U | < 0.000096 U | < 0.00012 U | < 0.00034 U | < 0.0057 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.00015 U | < 0.00013 U | < 0.0001 U | < 0.000088 U | < 0.000096 U | < 0.00012 U | < 0.00034 U | < 0.0057 U |
| SRC2-J33 | 0 | N | 09/17/2009 | < 0.00017 U | < 0.00014 U | < 0.00011 U | < 0.000094 U | < 0.0001 U | < 0.00012 U | < 0.00036 U | < 0.0061 U |
| SRC2-J33 | 0 | FD | 09/17/2009 | < 0.00016 U | < 0.00013 U | < 0.00011 U | < 0.000088 U | < 0.000096 U | < 0.00012 U | < 0.00034 U | < 0.0057 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-7**
**SOIL POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Polynuclear Aromatic Hydrocarbons (PAHs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Acenaphthene | Acenaphthylene | Anthracene | Benzo(a)anthracene | Benzo(a)pyrene | Benzo(b)fluoranthene | Benzo(g,h,i)perylene |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.00171 U | < 0.00171 U | < 0.00171 U | < 0.00171 U | < 0.00171 U | < 0.00171 U | < 0.00171 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.0018 U | < 0.0018 U | < 0.0018 U | < 0.0018 U | < 0.0018 U | < 0.0018 U | < 0.0018 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.00182 U | < 0.00182 U | < 0.00182 U | 0.0119 | 0.0144 J | 0.0344 J | 0.0723 |
| SRC1-AI18 | 11 | N | 11/03/2008 | 0.0038 J | < 0.00176 U | 0.00496 J | 0.0162 | 0.0121 J | 0.0173 J | 0.0681 |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.00169 U | < 0.00169 U | < 0.00169 U | 0.00232 J | 0.0037 J | 0.00703 | 0.00383 J |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.00173 U | < 0.00173 U | < 0.00173 U | < 0.00173 U | < 0.00173 U | < 0.00173 U | < 0.00173 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.00176 U | < 0.00176 U | < 0.00176 U | 0.00206 J | < 0.00176 U | < 0.00176 U | < 0.00176 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.00171 U | < 0.00171 U | < 0.00171 U | < 0.00171 U | < 0.00171 U | < 0.00171 U | < 0.00171 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.00171 U | 0.00315 J | < 0.00171 U | 0.0115 | 0.0128 | 0.0576 | 0.0772 |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.00179 U | < 0.00179 U | < 0.00179 U | < 0.00179 U | < 0.00179 U | < 0.00179 U | < 0.00179 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.00181 U | < 0.00181 U | < 0.00181 U | < 0.00181 U | < 0.00181 U | < 0.00181 U | < 0.00181 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.00174 U | < 0.00174 U | 0.00375 J | < 0.00174 U | 0.0078 | 0.00974 J | 0.011 J |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.00175 U | < 0.00175 U | < 0.00175 U | < 0.00175 U | < 0.00175 U | 0.00196 J | 0.00248 J |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.0018 U | < 0.0018 U | < 0.0018 U | < 0.0018 U | < 0.0018 U | < 0.0018 U | < 0.0018 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.00175 U | < 0.00175 U | < 0.00175 U | < 0.00175 U | 0.00176 J | 0.00311 J | < 0.00175 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.00174 U | < 0.00174 U | < 0.00174 U | < 0.00174 U | < 0.00174 U | < 0.00174 U | < 0.00174 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.00176 U | < 0.00176 U | < 0.00176 U | < 0.00176 U | < 0.00176 U | < 0.00176 U | < 0.00176 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.00171 U | < 0.00171 U | < 0.00171 U | 0.00207 J | < 0.00171 U | < 0.00171 U | < 0.00171 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.00176 U | < 0.00176 U | < 0.00176 U | < 0.00176 U | < 0.00176 U | < 0.00176 U | < 0.00176 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-7**
**SOIL POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 2 of 2)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Polynuclear Aromatic Hydrocarbons (PAHs) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Benzo(k)fluoranthene | Chrysene | Dibenzo(a,h)anthracene | Indeno(1,2,3-cd)pyrene | Phenanthrene | Pyrene |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.00171 U | < 0.00171 U | < 0.00171 U | < 0.00171 U | < 0.00171 U | < 0.00171 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.0018 U | < 0.0018 U | < 0.0018 U | < 0.0018 U | < 0.0018 U | < 0.0018 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | 0.00705 J | 0.0371 | < 0.00182 U | 0.0701 | 0.00542 J | 0.0214 J |
| SRC1-AI18 | 11 | N | 11/03/2008 | 0.00663 J | 0.0394 | < 0.00176 U | 0.0638 | 0.0225 J | 0.0356 |
| SRC1-AI19 | 0 | N | 10/31/2008 | 0.00239 J | 0.00374 J | < 0.00169 U | 0.00284 J | < 0.00169 U | 0.00561 J |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.00173 U | < 0.00173 U | < 0.00173 U | < 0.00173 U | < 0.00173 U | < 0.00173 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.00176 U | < 0.00176 U | < 0.00176 U | < 0.00176 U | < 0.00176 U | < 0.00176 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.00171 U | < 0.00171 U | < 0.00171 U | < 0.00171 U | < 0.00171 U | < 0.00171 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.00171 U | < 0.00171 U | < 0.00171 U | 0.0786 | < 0.00171 U | < 0.00171 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.00179 U | < 0.00179 U | < 0.00179 U | < 0.00179 U | < 0.00179 U | < 0.00179 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.00181 U | < 0.00181 U | < 0.00181 U | < 0.00181 U | < 0.00181 U | < 0.00181 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | 0.00607 J | 0.0123 J | < 0.00174 U | 0.00653 J | 0.0172 J | 0.0244 J |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.00175 U | < 0.00175 U | < 0.00175 U | 0.00183 J | < 0.00175 U | 0.002 J |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.0018 U | < 0.0018 U | < 0.0018 U | < 0.0018 U | < 0.0018 U | < 0.0018 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.00175 U | < 0.00175 U | < 0.00175 U | < 0.00175 U | < 0.00175 U | 0.00298 J |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U | < 0.00178 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.00174 U | < 0.0145 U | < 0.00174 U | < 0.00174 U | < 0.00174 U | < 0.00174 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.00176 U | < 0.015 U | < 0.00176 U | < 0.00176 U | < 0.00176 U | < 0.00176 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.00171 U | 0.0196 J | < 0.00171 U | < 0.00171 U | < 0.00171 U | < 0.00171 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.00176 U | 0.019 J | < 0.00176 U | < 0.00176 U | < 0.00176 U | < 0.00176 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U | < 0.00169 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-8**
**SOIL POLYCHLORINATED BIPHENYLS (PCBs) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 1 of 2)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Polychlorinated Biphenyls (PCBs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | PCB 105 (BZ) | PCB 114 (BZ) | PCB 118 (BZ) | PCB 123 (BZ) | PCB 126 (BZ) | PCB 156 (BZ) | PCB 157 (BZ) |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 4.6 U | < 2 U | < 8.7 U | < 2 U | < 2 U | < 2 U | < 2 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | 260 | 2.3 | 430 | < 2.1 U | 13 | 90 | 33 |
| SRC1-AI19 | 0 | N | 10/31/2008 | 500 | 45 | 1000 | < 2 U | 25 | 150 | 35 |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 2 U | < 2 U | 3.3 | < 2 U | < 2 U | < 2 U | < 2 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | 120 | 6.4 | 180 | < 2.1 U | 4.2 | 29 | 7.7 |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 2.1 U | < 2.1 U | < 3.4 U | < 2.1 U | < 2.1 U | < 2.1 U | < 2.1 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | 27 J | 2.9 | 55 J | < 2.1 U | < 2.1 U | 6.8 J | < 2.1 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | 3.4 J | < 2.1 U | < 7.4 UJ | < 2.1 U | < 2.1 U | < 2.1 UJ | < 2.1 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | 210 | 13 | 290 | < 2.1 U | 3.6 | 32 | 7.7 |
| SRC1-AL24 | 0 | N | 11/06/2008 | 4.8 | < 2.1 U | 12 | < 2.1 U | < 2.1 U | < 2.1 U | < 2.1 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | 99 J | 20 J | 200 J | < 2.1 UJ | 6.3 J | 30 | 6.1 |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 2.1 U | < 2.1 U | < 2.1 U | < 2.1 U | < 2.1 U | < 2.1 U | < 2.1 U |
| SRC2-AI19CN | 0 | N | 09/16/2009 | 6.7 | < 2 U | 15 | < 2 U | < 2 U | < 2 U | < 2 U |
| SRC2-AI19N | 0 | N | 09/16/2009 | 190 | 12 | 400 | < 2 U | 6.1 | 50 | 12 |
| SRC2-AI19W | 0 | N | 09/16/2009 | 12 J | < 2 U | 25 J | < 2 U | < 2 U | 2.8 J | < 2 U |
| SRC2-AI19W | 0 | FD | 09/16/2009 | 33 J | < 2 U | 69 J | < 2 U | < 2 U | 7.8 J | 2 |
| SRC2-J30 | 0 | N | 09/14/2009 | 56 | 6.6 | 110 | < 2 U | 3.3 | 18 | 4.2 |
| SRC2-J31 | 0 | N | 09/14/2009 | 26 | 2.5 | 48 | < 2 U | < 2 U | 7.6 | < 2 U |
| SRC2-J32 | 0 | N | 09/14/2009 | 2.3 | < 2 U | 3.9 | < 2 U | < 2 U | < 2 U | < 2 U |
| SRC2-J33 | 0 | N | 09/17/2009 | 180 | 17 | 340 | < 2.2 U | 5.6 | 49 | 12 |
| SRC2-J33 | 0 | FD | 09/17/2009 | 160 | 13 | 290 | < 2 U | 4.1 | 40 | 10 |

All units in pg/g.

-- = no sample data.

= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.

**TABLE C-8**
**SOIL POLYCHLORINATED BIPHENYLS (PCBs) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 2 of 2)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Polychlorinated Biphenyls (PCBs) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | PCB 167 (BZ) | PCB 169 (BZ) | PCB 189 (BZ) | PCB 209 (BZ) | PCB 77 (BZ) | PCB 81 (BZ) |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 2 U | < 2 U | < 2 U | 110 | < 2 U | < 2 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | 55 | 2.8 | 36 | 6600 J | < 2.1 U | < 2.1 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | 62 | 3.9 | 30 | 5400 J | < 2 U | < 2 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 2 U | < 2 U | < 2 U | < 2 U | < 2 U | < 2 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | 11 | < 2.1 U | 4.2 | 1000 | < 2.1 U | < 2.1 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 2.1 U | < 2.1 U | < 2.1 U | < 2.1 U | < 2.1 U | < 2.1 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | 2.2 | < 2.1 U | < 2.1 U | 370 J | < 2.1 U | < 2.1 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 2.1 U | < 2.1 U | < 2.1 U | < 2.1 UJ | < 2.1 U | < 2.1 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | 12 | < 2.1 U | 4.3 | 690 | < 2.1 U | < 2.1 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 2.1 U | < 2.1 U | < 2.1 U | 63 | < 2.1 U | < 2.1 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | 8.7 | < 2.1 U | 4.6 | 1300 J | < 2.1 U | < 2.1 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 2.1 U | < 2.1 U | < 2.1 U | < 2.1 U | < 2.1 U | < 2.1 U |
| SRC2-AI19CN | 0 | N | 09/16/2009 | < 2 U | < 2 U | < 2 U | 48 | < 2 U | < 2 U |
| SRC2-AI19N | 0 | N | 09/16/2009 | 20 | < 2 U | 10 | 2100 J | < 2 U | < 2 U |
| SRC2-AI19W | 0 | N | 09/16/2009 | < 2 U | < 2 U | < 2 U | 98 J | < 2 U | < 2 U |
| SRC2-AI19W | 0 | FD | 09/16/2009 | 3.9 | < 2 U | < 2 U | 240 J | < 2 U | < 2 U |
| SRC2-J30 | 0 | N | 09/14/2009 | 9.4 | < 2 U | 2.9 | 570 | < 2 U | < 2 U |
| SRC2-J31 | 0 | N | 09/14/2009 | 3.3 | < 2 U | < 2 U | 180 | < 2 U | < 2 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 2 U | < 2 U | < 2 U | < 2 U | < 2 U | < 2 U |
| SRC2-J33 | 0 | N | 09/17/2009 | 24 | < 2.2 U | 6.8 | 2100 J | < 2.2 U | < 2.2 U |
| SRC2-J33 | 0 | FD | 09/17/2009 | 20 | < 2 U | 5.6 | 1800 | < 2 U | < 2 U |

All units in pg/g.

-- = no sample data.

= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.

**TABLE C-9**
**SOIL RADIONUCLIDES DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 1 of 1)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Radionuclides | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Radium-226 | Radium-228 | Thorium-228 | Thorium-230 | Thorium-232 | Uranium-233/234 | Uranium-235/236 | Uranium-238 |
| SRC1-AI16 | 0 | N | 11/03/2008 | 1.28 | 1.37 | 1.7 | 1.12 | 1.14 | 0.888 | < 0.0494 U | 1.02 |
| SRC1-AI16 | 10 | N | 11/03/2008 | 1.1 | 1.51 | 2.04 | 1.16 | 1.59 | 1.64 | < 0.195 U | 1.35 |
| SRC1-AI18 | 0 | N | 11/03/2008 | 0.88 | 1.51 | 2.23 | 1.37 | 2.54 | 0.839 | < 0.0823 U | 0.772 |
| SRC1-AI18 | 11 | N | 11/03/2008 | 1.8 | 2.24 | 1.33 | 1.04 | 1.7 | 1.24 | < 0.0172 U | 1.19 |
| SRC1-AI19 | 0 | N | 10/31/2008 | 1.19 | 1.86 | 1.92 | 0.705 | 1.62 J | 0.792 | < 0.0646 U | 1.31 |
| SRC1-AI19 | 6 | N | 10/31/2008 | 1.05 | 1.97 | 1.41 | 0.885 | 2.17 J | 0.663 | < 0.212 U | 0.925 |
| SRC1-AI19 | 16 | N | 10/31/2008 | 0.875 | 2.26 | 2.17 | 1.27 | 2.27 J | 1.54 | 0.246 | 1.09 |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.645 U | 2.68 J | 1.42 | < 1 U | 1.38 | 0.696 | < 0.0386 U | 1.05 |
| SRC1-AJ20 | 0 | N | 11/05/2008 | 1.01 | 1.63 | 1.48 | < 1 U | 1.56 | < 1 U | < -0.0233 U | 0.855 |
| SRC1-AJ20 | 11 | N | 11/05/2008 | 1.12 | 1.78 | 1.51 | 1.52 | 1.18 | 1.25 | < 0.237 U | 1.19 |
| SRC1-AJ20 | 21 | N | 11/05/2008 | 0.834 | 1.76 | 1.98 | < 1 U | 1.02 | 1.67 | < -0.0136 U | 0.939 |
| SRC1-AJ21 | 0 | N | 11/06/2008 | 1.26 | 2.24 | 1.96 | 0.668 | 1.14 | 0.931 | 0.184 | 0.788 |
| SRC1-AJ21 | 12 | N | 11/06/2008 | 1.39 | 1.42 | 1.36 | 1.13 | 0.93 | 1.03 | < 0.0428 U | 1.03 |
| SRC1-AK21 | 0 | N | 11/06/2008 | 1.43 | 2.29 | 1.61 | 0.848 | 1.75 | 0.629 | < -0.0355 U | 0.737 |
| SRC1-AK21 | 0 | FD | 11/06/2008 | 0.572 | 1.53 | 1.8 | 0.898 | 1.37 | 1.03 | < 0.0871 U | 0.972 |
| SRC1-AK21 | 8 | N | 11/06/2008 | 1.21 | 1.22 | 1.36 | 0.998 | 0.975 | 1.06 | 0.178 | 0.925 |
| SRC1-AK21 | 18 | N | 11/06/2008 | 0.513 | 1.98 | 1.49 | 1.19 | 1.34 | 1.5 | < 0.133 U | 1.34 |
| SRC1-AK28 | 0 | N | 11/14/2008 | 0.808 | 2.02 J | 1.3 | < 1 U | 0.893 | 0.82 | < 0.0221 U | 0.534 |
| SRC1-AK28 | 11 | N | 11/14/2008 | 1.05 | 1.3 J | 1.8 | 1.74 | 1.36 | 1.07 | < 0.0424 U | 0.937 |
| SRC1-AL24 | 0 | N | 11/06/2008 | 1.23 | 1.31 | 1.54 | 1.08 | 1.31 | 1.05 | < 0 U | 0.563 |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.154 U | 1.34 | 1.42 | 0.975 | 1.27 | 0.648 | < -0.0124 U | 1.25 |
| SRC1-AL24 | 18 | N | 11/06/2008 | 1.02 | 1.09 | 1.75 | 0.942 | 1.44 | 1.23 | < -0.19 U | 0.698 |
| SRC1-AL25 | 0 | N | 11/10/2008 | 0.75 | 2.37 | 1.89 | 1.09 | 1.54 | 1.14 | < 0.054 U | 1.09 |
| SRC1-AL25 | 11 | N | 11/10/2008 | 0.78 | 1.3 | 1.63 | 1.1 | 1.33 | 1.11 | < 0.0308 U | 1.07 |
| SRC1-AL27 | 0 | N | 11/11/2008 | 0.745 | 1.8 | 1.67 | 1.08 | 1.14 | 0.82 | < 0.057 U | 1.15 |
| SRC1-AL27 | 11 | N | 11/11/2008 | 0.603 | 2.51 | 1.36 | 1.04 | 1.77 | 1.13 | 0.2 | 0.891 |
| SRC2-J30 | 0 | N | 09/14/2009 | 1.03 | 2.15 | 1.44 | 1.17 | 2.16 | 1.49 | < 0.0897 U | 1.09 |
| SRC2-J31 | 0 | N | 09/14/2009 | 0.669 | 1.38 | 2.07 | 0.853 | 1.77 | 0.873 | < -0.044 U | 0.614 |
| SRC2-J32 | 0 | N | 09/14/2009 | 0.868 | 1.62 | 2.2 | 1.06 | 2.67 | 0.946 | < 0.2 U | 1.29 |
| SRC2-J33 | 0 | N | 09/17/2009 | 0.773 | 2.98 | 1.66 | 0.831 | 1.8 | 0.86 | < 0.0733 U | 0.568 |
| SRC2-J33 | 0 | FD | 09/17/2009 | 0.858 | 2.26 | 1.86 | 1.09 | 1.01 | 0.975 | < -0.0453 U | 0.917 |

All units in pCi/g.
-- = no sample data.

**TABLE C-10**
**SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Semi-Volatile Organic Compounds (SVOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1,2,4,5-Tetrachlorobenzene | 1,2-Diphenylhydrazine | 1,4-Dioxane | 2,2'-Dichlorobenzil | 2,4,5-Trichlorophenol | 2,4,6-Trichlorophenol | 2,4-Dichlorophenol |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.0683 U | < 0.0683 U | < 0.0683 UJ | < 0.113 U | < 0.0683 U | < 0.0683 U | < 0.0683 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.0722 U | < 0.0722 U | < 0.0722 UJ | < 0.119 U | < 0.0722 U | < 0.0722 U | < 0.0722 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.0729 U | < 0.0729 U | < 0.0729 UJ | < 0.12 U | < 0.0729 U | < 0.0729 U | < 0.0729 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.0703 U | < 0.0703 U | < 0.0703 UJ | < 0.116 U | < 0.0703 U | < 0.0703 U | < 0.0703 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.0676 U | < 0.0676 U | < 0.0676 UJ | < 0.112 U | < 0.0676 U | < 0.0676 U | < 0.0676 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.0691 U | < 0.0691 U | < 0.0691 UJ | < 0.114 U | < 0.0691 U | < 0.0691 U | < 0.0691 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.0705 U | < 0.0705 U | < 0.0705 UJ | < 0.116 U | < 0.0705 U | < 0.0705 U | < 0.0705 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.0685 U | < 0.0685 U | < 0.0685 UJ | < 0.113 U | < 0.0685 U | < 0.0685 U | < 0.0685 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.0683 U | < 0.0683 U | < 0.0683 UJ | < 0.0116 U | < 0.0683 U | < 0.0683 U | < 0.0683 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.0711 U | < 0.0711 U | < 0.0711 UJ | < 0.0121 U | < 0.0711 U | < 0.0711 U | < 0.0711 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.0713 U | < 0.0713 U | < 0.0713 UJ | < 0.0121 U | < 0.0713 U | < 0.0713 U | < 0.0713 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.0717 U | < 0.0717 U | < 0.0717 UJ | < 0.118 U | < 0.0717 U | < 0.0717 U | < 0.0717 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.0723 U | < 0.0723 U | < 0.0723 UJ | < 0.119 U | < 0.0723 U | < 0.0723 U | < 0.0723 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.0696 U | < 0.0696 U | < 0.0696 UJ | < 0.115 U | < 0.0696 U | < 0.0696 U | < 0.0696 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.0699 U | < 0.0699 U | < 0.0699 UJ | < 0.115 U | < 0.0699 U | < 0.0699 U | < 0.0699 U |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.0711 U | < 0.0711 U | < 0.0711 UJ | < 0.117 U | < 0.0711 U | < 0.0711 U | < 0.0711 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.0719 U | < 0.0719 U | < 0.0719 UJ | < 0.119 U | < 0.0719 U | < 0.0719 U | < 0.0719 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.0698 U | < 0.0698 U | < 0.0698 UJ | < 0.115 U | < 0.0698 U | < 0.0698 U | < 0.0698 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.0713 U | < 0.0713 U | < 0.0713 UJ | < 0.118 U | < 0.0713 U | < 0.0713 U | < 0.0713 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.0711 U | < 0.0711 U | < 0.0711 UJ | < 0.117 U | < 0.0711 U | < 0.0711 U | < 0.0711 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.0714 U | < 0.0714 U | < 0.0714 UJ | < 0.118 U | < 0.0714 U | < 0.0714 U | < 0.0714 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.0714 U | < 0.0714 U | < 0.0714 UJ | < 0.118 U | < 0.0714 U | < 0.0714 U | < 0.0714 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.0696 U | < 0.0696 U | < 0.0696 U | < 0.115 U | < 0.0696 U | < 0.0696 U | < 0.0696 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.0704 U | < 0.0704 U | < 0.0704 U | < 0.116 U | < 0.0704 U | < 0.0704 U | < 0.0704 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.0683 U | < 0.0683 U | < 0.0683 UJ | < 0.113 U | < 0.0683 U | < 0.0683 U | < 0.0683 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.0706 U | < 0.0706 U | < 0.0706 UJ | < 0.116 U | < 0.0706 U | < 0.0706 U | < 0.0706 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.112 U | < 0.0676 U | < 0.0676 U | < 0.0676 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.112 U | < 0.0676 U | < 0.0676 U | < 0.0676 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.0677 U | < 0.0677 U | < 0.0677 U | < 0.112 U | < 0.0677 U | < 0.0677 U | < 0.0677 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-10**
**SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Semi-Volatile Organic Compounds (SVOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2,4-Dimethylphenol | 2,4-Dinitrophenol | 2,4-Dinitrotoluene | 2,6-Dinitrotoluene | 2-Chloronaphthalene | 2-Chlorophenol | 2-Methylnaphthalene |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.0683 U | < 0.13 U | < 0.0341 U | < 0.0341 U | < 0.012 U | < 0.0683 U | < 0.00683 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.0722 U | < 0.137 U | < 0.0361 U | < 0.0361 U | < 0.0126 U | < 0.0722 U | < 0.00722 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.0729 U | < 0.138 U | < 0.0364 U | < 0.0364 U | < 0.0128 U | < 0.0729 U | < 0.00729 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.0703 U | < 0.134 U | < 0.0351 U | < 0.0351 U | < 0.0123 U | < 0.0703 U | 0.0142 J |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.0676 U | < 0.129 U | < 0.0338 U | < 0.0338 U | < 0.0118 U | < 0.0676 U | < 0.00676 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.0691 U | < 0.131 U | < 0.0345 U | < 0.0345 U | < 0.0121 U | < 0.0691 U | < 0.00691 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.0705 U | < 0.134 U | < 0.0352 U | < 0.0352 U | < 0.0123 U | < 0.0705 U | < 0.00705 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.0685 U | < 0.13 U | < 0.0342 U | < 0.0342 U | < 0.012 U | < 0.0685 U | < 0.00685 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.0683 U | < 0.13 U | < 0.0342 U | < 0.0342 U | < 0.012 U | < 0.0683 U | < 0.00683 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.0711 U | < 0.135 U | < 0.0356 U | < 0.0356 U | < 0.0124 U | < 0.0711 U | < 0.00711 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.0713 U | < 0.135 U | < 0.0357 U | < 0.0357 U | < 0.0125 U | < 0.0713 U | < 0.00713 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.0717 U | < 0.136 U | < 0.0359 U | < 0.0359 U | < 0.0126 U | < 0.0717 U | < 0.00717 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.0723 U | < 0.137 U | < 0.0361 U | < 0.0361 U | < 0.0127 U | < 0.0723 U | < 0.00723 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.0696 U | < 0.132 U | < 0.0348 U | < 0.0348 U | < 0.0122 U | < 0.0696 U | < 0.00696 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.0699 U | < 0.133 U | < 0.035 U | < 0.035 U | < 0.0122 U | < 0.0699 U | < 0.00699 U |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.0711 U | < 0.135 U | < 0.0355 U | < 0.0355 U | < 0.0124 U | < 0.0711 U | < 0.00711 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.0719 U | < 0.137 U | < 0.036 U | < 0.036 U | < 0.0126 U | < 0.0719 U | < 0.00719 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.0698 U | < 0.133 U | < 0.0349 U | < 0.0349 U | < 0.0122 U | < 0.0698 U | < 0.00698 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.0713 U | < 0.136 U | < 0.0357 U | < 0.0357 U | < 0.0125 U | < 0.0713 U | < 0.00713 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.0711 U | < 0.135 U | < 0.0355 U | < 0.0355 U | < 0.0124 U | < 0.0711 U | < 0.00711 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.0714 U | < 0.136 U | < 0.0357 U | < 0.0357 U | < 0.0125 U | < 0.0714 U | < 0.00714 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.0714 U | < 0.136 U | < 0.0357 U | < 0.0357 U | < 0.0125 U | < 0.0714 U | < 0.00714 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.0696 U | < 0.132 U | < 0.0348 U | < 0.0348 U | < 0.0122 U | < 0.0696 U | < 0.00696 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.0704 U | < 0.134 U | < 0.0352 U | < 0.0352 U | < 0.0123 U | < 0.0704 U | < 0.00704 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.0683 U | < 0.13 U | < 0.0341 U | < 0.0341 U | < 0.012 U | < 0.0683 U | < 0.00683 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.0706 U | < 0.134 U | < 0.0353 U | < 0.0353 U | < 0.0123 U | < 0.0706 U | < 0.00706 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.0676 U | < 0.129 U | < 0.0338 U | < 0.0338 U | < 0.0118 U | < 0.0676 U | < 0.00676 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.0676 U | < 0.128 U | < 0.0338 U | < 0.0338 U | < 0.0118 U | < 0.0676 U | < 0.00676 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.0677 U | < 0.129 U | < 0.0339 U | < 0.0339 U | < 0.0119 U | < 0.0677 U | < 0.00677 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-10**
**SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 3 of 10)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Semi-Volatile Organic Compounds (SVOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2-Nitroaniline | 2-Nitrophenol | 3,3-Dichlorobenzidine | 3-Nitroaniline | 4-Bromophenyl phenyl ether | 4-Chloro-3-methylphenol | 4-Chlorophenyl phenyl ether |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.0683 U | < 0.0341 U | < 0.102 U | < 0.0683 U | < 0.0341 U | < 0.0341 U | < 0.0341 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.0722 U | < 0.0361 U | < 0.108 U | < 0.0722 U | < 0.0361 U | < 0.0361 U | < 0.0361 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.0729 U | < 0.0364 U | < 0.109 U | < 0.0729 U | < 0.0364 U | < 0.0364 U | < 0.0364 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.0703 U | < 0.0351 U | < 0.105 U | < 0.0703 U | < 0.0351 U | < 0.0351 U | < 0.0351 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.0676 U | < 0.0338 U | < 0.101 U | < 0.0676 U | < 0.0338 U | < 0.0338 U | < 0.0338 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.0691 U | < 0.0345 U | < 0.104 U | < 0.0691 U | < 0.0345 U | < 0.0345 U | < 0.0345 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.0705 U | < 0.0352 U | < 0.106 U | < 0.0705 U | < 0.0352 U | < 0.0352 U | < 0.0352 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.0685 U | < 0.0342 U | < 0.103 U | < 0.0685 UJ | < 0.0342 U | < 0.0342 U | < 0.0342 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.0683 U | < 0.0342 U | < 0.103 U | < 0.0683 UJ | < 0.0342 U | < 0.0342 U | < 0.0342 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.0711 U | < 0.0356 U | < 0.107 U | < 0.0711 UJ | < 0.0356 U | < 0.0356 U | < 0.0356 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.0713 U | < 0.0357 U | < 0.107 U | < 0.0713 UJ | < 0.0357 U | < 0.0357 U | < 0.0357 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.0717 U | < 0.0359 U | < 0.108 U | < 0.0717 UJ | < 0.0359 U | < 0.0359 U | < 0.0359 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.0723 U | < 0.0361 U | < 0.108 U | < 0.0723 UJ | < 0.0361 U | < 0.0361 U | < 0.0361 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.0696 U | < 0.0348 U | < 0.104 U | < 0.0696 UJ | < 0.0348 U | < 0.0348 U | < 0.0348 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.0699 U | < 0.035 U | < 0.105 U | < 0.0699 UJ | < 0.035 U | < 0.035 U | < 0.035 U |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.0711 U | < 0.0355 U | < 0.107 U | < 0.0711 UJ | < 0.0355 U | < 0.0355 U | < 0.0355 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.0719 U | < 0.036 U | < 0.108 U | < 0.0719 UJ | < 0.036 U | < 0.036 U | < 0.036 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.0698 U | < 0.0349 U | < 0.105 U | < 0.0698 UJ | < 0.0349 U | < 0.0349 U | < 0.0349 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.0713 U | < 0.0357 U | < 0.107 U | < 0.0713 UJ | < 0.0357 U | < 0.0357 U | < 0.0357 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.0711 U | < 0.0355 U | < 0.107 U | < 0.0711 UJ | < 0.0355 U | < 0.0355 U | < 0.0355 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.0714 U | < 0.0357 U | < 0.107 U | < 0.0714 UJ | < 0.0357 U | < 0.0357 U | < 0.0357 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.0714 U | < 0.0357 U | < 0.107 U | < 0.0714 UJ | < 0.0357 U | < 0.0357 U | < 0.0357 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.0696 U | < 0.0348 U | < 0.104 U | < 0.0696 U | < 0.0348 U | < 0.0348 U | < 0.0348 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.0704 U | < 0.0352 U | < 0.106 U | < 0.0704 U | < 0.0352 U | < 0.0352 U | < 0.0352 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.0683 U | < 0.0341 U | < 0.102 U | < 0.0683 U | < 0.0341 U | < 0.0341 U | < 0.0341 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.0706 U | < 0.0353 U | < 0.106 U | < 0.0706 UJ | < 0.0353 U | < 0.0353 U | < 0.0353 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.0676 U | < 0.0338 U | < 0.101 U | < 0.0676 U | < 0.0338 U | < 0.0338 U | < 0.0338 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.0676 U | < 0.0338 U | < 0.101 U | < 0.0676 U | < 0.0338 U | < 0.0338 U | < 0.0338 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.0677 U | < 0.0339 U | < 0.102 U | < 0.0677 U | < 0.0339 U | < 0.0339 U | < 0.0339 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-10**
**SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Semi-Volatile Organic Compounds (SVOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4-Chlorothioanisole | 4-Nitroaniline | 4-Nitrophenol | Acetophenone | Aniline | Benzenethiol | Benzoic acid |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.113 U | < 0.0683 U | < 0.0683 U | < 0.0341 U | < 0.12 U | < 0.113 U | < 0.171 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.119 U | < 0.0722 U | < 0.0722 U | < 0.0361 U | < 0.126 U | < 0.119 U | < 0.18 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.12 U | < 0.0729 U | < 0.0729 U | 0.0453 J | < 0.128 U | < 0.12 U | < 0.182 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.116 U | < 0.0703 U | < 0.0703 U | < 0.0351 U | < 0.123 U | < 0.116 U | < 0.176 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.112 U | < 0.0676 UJ | < 0.0676 U | < 0.0338 U | < 0.118 U | < 0.112 U | < 0.169 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.114 U | < 0.0691 UJ | < 0.0691 U | < 0.0345 U | < 0.121 U | < 0.114 U | < 0.173 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.116 U | < 0.0705 UJ | < 0.0705 U | < 0.0352 U | < 0.123 U | < 0.116 U | < 0.176 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.113 U | < 0.0685 UJ | < 0.0685 U | < 0.0342 U | < 0.12 U | < 0.113 U | < 0.171 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.0396 U | < 0.0683 U | < 0.0683 U | < 0.0342 UJ | < 0.12 U | < 0.226 U | < 0.171 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.0412 U | < 0.0711 U | < 0.0711 U | < 0.0356 UJ | < 0.124 U | < 0.235 U | < 0.178 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.0414 U | < 0.0713 U | < 0.0713 U | < 0.0357 UJ | < 0.125 U | < 0.235 U | < 0.178 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.118 U | < 0.0717 UJ | < 0.0717 UJ | < 0.0359 U | < 0.126 U | < 0.118 U | < 0.179 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.119 U | < 0.0723 UJ | < 0.0723 UJ | < 0.0361 U | < 0.127 U | < 0.119 U | < 0.181 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.115 U | < 0.0696 UJ | < 0.0696 UJ | < 0.0348 U | < 0.122 U | < 0.115 U | < 0.174 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.115 U | < 0.0699 UJ | < 0.0699 UJ | < 0.035 U | < 0.122 U | < 0.115 U | < 0.175 U |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.117 U | < 0.0711 UJ | < 0.0711 UJ | < 0.0355 U | < 0.124 U | < 0.117 U | < 0.178 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.119 U | < 0.0719 UJ | < 0.0719 UJ | < 0.036 U | < 0.126 U | < 0.119 U | < 0.18 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.115 U | < 0.0698 UJ | < 0.0698 U | < 0.0349 U | < 0.122 U | < 0.115 U | < 0.175 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.118 U | < 0.0713 UJ | < 0.0713 U | < 0.0357 U | < 0.125 U | < 0.118 U | < 0.178 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.117 U | < 0.0711 UJ | < 0.0711 UJ | < 0.0355 U | < 0.124 U | < 0.117 U | < 0.178 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.118 U | < 0.0714 UJ | < 0.0714 UJ | < 0.0357 U | < 0.125 U | < 0.118 U | < 0.178 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.118 U | < 0.0714 UJ | < 0.0714 UJ | < 0.0357 U | < 0.125 U | < 0.118 U | < 0.178 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.115 U | < 0.0696 U | < 0.0696 U | < 0.0348 U | < 0.122 U | < 0.115 U | < 0.174 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.116 U | < 0.0704 U | < 0.0704 U | < 0.0352 U | < 0.123 U | < 0.116 U | < 0.176 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.113 U | < 0.0683 UJ | < 0.0683 U | < 0.0341 U | < 0.12 U | < 0.113 U | < 0.171 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.116 U | < 0.0706 UJ | < 0.0706 U | < 0.0353 U | < 0.123 U | < 0.116 U | < 0.176 UJ |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.112 U | < 0.0676 U | < 0.0676 U | < 0.0338 U | < 0.118 U | < 0.112 U | < 0.169 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.112 U | < 0.0676 U | < 0.0676 U | < 0.0338 U | < 0.118 U | < 0.112 U | < 0.169 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.112 U | < 0.0677 U | < 0.0677 U | < 0.0339 U | < 0.119 U | < 0.112 U | < 0.169 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-10**
**SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 5 of 10)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Semi-Volatile Organic Compounds (SVOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Benzyl alcohol | bis(2-Chloroethoxy)methane | bis(2-Chloroethyl) ether | bis(2-Chloroisopropyl) ether | bis(2-Ethylhexyl) phthalate | bis(p-Chlorophenyl) sulfone | bis(p-Chlorophenyl)disulfide |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.102 U | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.113 U | < 0.113 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.108 U | < 0.0722 U | < 0.0722 U | < 0.0722 U | < 0.0722 U | < 0.119 U | < 0.119 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.109 U | < 0.0729 U | < 0.0729 U | < 0.0729 U | < 0.0729 U | < 0.12 U | < 0.12 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.105 U | < 0.0703 U | < 0.0703 U | < 0.0703 U | 0.0877 J | < 0.116 U | < 0.116 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.101 U | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.112 U | < 0.112 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.104 U | < 0.0691 U | < 0.0691 U | < 0.0691 U | < 0.0691 U | < 0.114 U | < 0.114 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.106 U | < 0.0705 U | < 0.0705 U | < 0.0705 U | < 0.0705 U | < 0.116 U | < 0.116 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.103 U | < 0.0685 U | < 0.0685 U | < 0.0685 U | < 0.0685 U | < 0.113 U | < 0.113 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.103 U | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.00786 U | < 0.0294 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.107 U | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.00818 U | < 0.0306 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.107 U | < 0.0713 U | < 0.0713 U | < 0.0713 U | < 0.0713 U | < 0.0082 U | < 0.0307 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.108 U | < 0.0717 U | < 0.0717 U | < 0.0717 U | < 0.0717 U | < 0.118 U | < 0.118 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.108 U | < 0.0723 U | < 0.0723 U | < 0.0723 U | < 0.0723 U | < 0.119 U | < 0.119 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.104 U | < 0.0696 U | < 0.0696 U | < 0.0696 U | < 0.0696 U | < 0.115 U | < 0.115 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.105 U | < 0.0699 U | < 0.0699 U | < 0.0699 U | < 0.0699 U | < 0.115 U | < 0.115 U |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.107 U | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.117 U | < 0.117 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.108 U | < 0.0719 U | < 0.0719 U | < 0.0719 U | < 0.0719 U | < 0.119 U | < 0.119 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.105 U | < 0.0698 U | < 0.0698 U | < 0.0698 U | < 0.0698 U | < 0.115 U | < 0.115 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.107 U | < 0.0713 U | < 0.0713 U | < 0.0713 U | < 0.0713 U | < 0.118 U | < 0.118 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.107 U | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.117 U | < 0.117 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.107 U | < 0.0714 U | < 0.0714 U | < 0.0714 U | < 0.0714 U | < 0.118 U | < 0.118 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.107 U | < 0.0714 U | < 0.0714 U | < 0.0714 U | < 0.0714 U | < 0.118 U | < 0.118 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.104 U | < 0.0696 U | < 0.0696 U | < 0.0696 U | < 0.0696 U | < 0.115 U | < 0.115 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.106 U | < 0.0704 U | < 0.0704 U | < 0.0704 U | < 0.0704 U | < 0.116 U | < 0.116 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.102 U | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.113 U | < 0.113 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.106 U | < 0.0706 U | < 0.0706 U | < 0.0706 U | < 0.0706 U | < 0.116 U | < 0.116 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.101 UJ | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.112 U | < 0.112 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.101 UJ | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.112 U | < 0.112 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.102 UJ | < 0.0677 U | < 0.0677 U | < 0.0677 U | < 0.0677 U | < 0.112 U | < 0.112 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-10**
**SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Semi-Volatile Organic Compounds (SVOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Butylbenzyl phthalate | Carbazole | Dibenzofuran | Dichloromethyl ether | Diethyl phthalate | Dimethyl phthalate | Di-n-butyl phthalate |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.0683 U | < 0.0102 U | < 0.0683 U | < 0.113 U | < 0.0683 U | < 0.0683 U | < 0.0341 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.0722 U | < 0.0108 U | < 0.0722 U | < 0.119 U | < 0.0722 U | < 0.0722 U | < 0.0361 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.0729 U | < 0.0109 U | < 0.0729 U | < 0.12 U | < 0.0729 U | < 0.0729 U | < 0.0364 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.0703 U | < 0.0105 U | < 0.0703 U | < 0.116 U | < 0.0703 U | < 0.0703 U | < 0.0351 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.0676 U | < 0.0101 U | < 0.0676 U | < 0.112 U | < 0.0676 U | < 0.0676 U | < 0.0338 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.0691 U | < 0.0104 U | < 0.0691 U | < 0.114 U | < 0.0691 U | < 0.0691 U | < 0.0345 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.0705 U | < 0.0106 U | < 0.0705 U | < 0.116 U | < 0.0705 U | < 0.0705 U | < 0.0352 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.0685 U | < 0.0103 U | < 0.0685 U | < 0.113 U | < 0.0685 U | < 0.0685 U | < 0.0342 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.0683 U | < 0.0103 U | < 0.0683 U | < 0.113 U | < 0.0683 U | < 0.0683 U | < 0.0342 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.0711 U | < 0.0107 U | < 0.0711 U | < 0.117 U | < 0.0711 U | < 0.0711 U | < 0.0356 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.0713 U | < 0.0107 U | < 0.0713 U | < 0.118 U | < 0.0713 U | < 0.0713 U | < 0.0357 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.0717 U | < 0.0108 U | < 0.0717 U | < 0.118 U | < 0.0717 U | < 0.0717 U | < 0.0359 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.0723 U | < 0.0108 U | < 0.0723 U | < 0.119 U | < 0.0723 U | < 0.0723 U | < 0.0361 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | 0.0722 J | < 0.0104 U | < 0.0696 U | < 0.115 U | < 0.0696 U | < 0.0696 U | < 0.0348 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.0699 U | < 0.0105 U | < 0.0699 U | < 0.115 U | < 0.0699 U | < 0.0699 U | < 0.035 U |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.0711 U | < 0.0107 U | < 0.0711 U | < 0.117 U | < 0.0711 U | < 0.0711 U | < 0.0355 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.0719 U | < 0.0108 U | < 0.0719 U | < 0.119 U | < 0.0719 U | < 0.0719 U | < 0.036 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.0698 U | < 0.0105 U | < 0.0698 U | < 0.115 U | < 0.0698 U | < 0.0698 U | < 0.0349 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.0713 U | < 0.0107 U | < 0.0713 U | < 0.118 U | < 0.0713 U | < 0.0713 U | < 0.0357 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.0711 U | < 0.0107 U | < 0.0711 U | < 0.117 U | < 0.0711 U | < 0.0711 U | < 0.0355 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.0714 U | < 0.0107 U | < 0.0714 U | < 0.118 U | < 0.0714 U | < 0.0714 U | < 0.0357 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.0714 U | < 0.0107 U | < 0.0714 U | < 0.118 U | < 0.0714 U | < 0.0714 U | < 0.0357 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.0696 U | < 0.0104 U | < 0.0696 U | < 0.115 U | < 0.0696 U | < 0.0696 U | < 0.0348 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.0704 U | < 0.0106 U | < 0.0704 U | < 0.116 U | < 0.0704 U | < 0.0704 U | < 0.0352 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.0683 U | < 0.0102 U | < 0.0683 U | < 0.113 U | < 0.0683 U | < 0.0683 U | < 0.0341 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.0706 U | < 0.0106 U | < 0.0706 U | < 0.116 U | < 0.0706 U | < 0.0706 U | < 0.0353 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.0676 U | < 0.0101 U | < 0.0676 U | < 0.112 U | < 0.0676 U | < 0.0676 U | < 0.0338 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.0676 U | < 0.0101 U | < 0.0676 U | < 0.112 U | < 0.0676 U | < 0.0676 U | < 0.0338 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.0677 U | < 0.0102 U | < 0.0677 U | < 0.112 U | < 0.0677 U | < 0.0677 U | < 0.0339 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-10**
**SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Semi-Volatile Organic Compounds (SVOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Di-n-octyl phthalate | Diphenyl disulfide | Diphenyl sulfide | Diphenyl sulfone | Diphenylamine | Fluoranthene | Fluorene |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.0683 U | < 0.113 U | < 0.113 U | < 0.113 U | < 0.0683 U | < 0.0102 U | < 0.0102 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.0722 U | < 0.119 U | < 0.119 U | < 0.119 U | < 0.0722 U | < 0.0108 U | < 0.0108 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.0729 U | < 0.12 U | < 0.12 U | < 0.12 U | < 0.0729 U | 0.0195 J | < 0.0109 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.0703 U | < 0.116 U | < 0.116 U | < 0.116 U | < 0.0703 U | 0.0323 J | < 0.0105 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.0676 U | < 0.112 U | < 0.112 U | < 0.112 U | < 0.0676 U | < 0.0101 U | < 0.0101 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.0691 U | < 0.114 U | < 0.114 U | < 0.114 U | < 0.0691 U | < 0.0104 U | < 0.0104 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.0705 U | < 0.116 U | < 0.116 U | < 0.116 U | < 0.0705 U | < 0.0106 U | < 0.0106 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.0685 U | < 0.113 U | < 0.113 U | < 0.113 U | < 0.0685 U | < 0.0103 U | < 0.0103 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.0683 U | < 0.0277 U | < 0.0287 U | < 0.0181 U | < 0.0683 U | < 0.0103 U | < 0.0103 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.0711 U | < 0.0288 U | < 0.0299 U | < 0.0188 U | < 0.0711 U | < 0.0107 U | < 0.0107 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.0713 U | < 0.0289 U | < 0.03 U | < 0.0189 U | < 0.0713 U | < 0.0107 U | < 0.0107 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.0717 U | < 0.118 U | < 0.118 U | < 0.118 U | < 0.0717 U | < 0.0108 U | < 0.0108 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.0723 U | < 0.119 U | < 0.119 U | < 0.119 U | < 0.0723 U | < 0.0108 U | < 0.0108 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.0696 U | < 0.115 U | < 0.115 U | < 0.115 U | < 0.0696 U | 0.0223 J | < 0.0104 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.0699 U | < 0.115 U | < 0.115 U | < 0.115 U | < 0.0699 U | < 0.0105 U | < 0.0105 U |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.0711 U | < 0.117 U | < 0.117 U | < 0.117 U | < 0.0711 U | < 0.0107 U | < 0.0107 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.0719 U | < 0.119 U | < 0.119 U | < 0.119 U | < 0.0719 U | < 0.0108 U | < 0.0108 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.0698 U | < 0.115 U | < 0.115 U | < 0.115 U | < 0.0698 U | < 0.0105 U | < 0.0105 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.0713 U | < 0.118 U | < 0.118 U | < 0.118 U | < 0.0713 U | < 0.0107 U | < 0.0107 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.0711 U | < 0.117 U | < 0.117 U | < 0.117 U | < 0.0711 U | < 0.0107 U | < 0.0107 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.0714 U | < 0.118 U | < 0.118 U | < 0.118 U | < 0.0714 U | < 0.0107 U | < 0.0107 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.0714 U | < 0.118 U | < 0.118 U | < 0.118 U | < 0.0714 U | < 0.0107 U | < 0.0107 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.0696 U | < 0.115 U | < 0.115 U | < 0.115 U | < 0.0696 U | < 0.0104 U | < 0.0104 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.0704 U | < 0.116 U | < 0.116 U | < 0.116 U | < 0.0704 U | < 0.0106 U | < 0.0106 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.0683 U | < 0.113 U | < 0.113 U | < 0.113 U | < 0.0683 U | < 0.0102 U | < 0.0102 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.0706 U | < 0.116 U | < 0.116 U | < 0.116 U | < 0.0706 U | < 0.0106 U | < 0.0106 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.0676 U | < 0.112 U | < 0.112 U | < 0.112 U | < 0.0676 U | < 0.0101 U | < 0.0101 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.0676 U | < 0.112 U | < 0.112 U | < 0.112 U | < 0.0676 U | < 0.0101 U | < 0.0101 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.0677 U | < 0.112 U | < 0.112 U | < 0.112 U | < 0.0677 U | < 0.0102 U | < 0.0102 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-10**
**SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Semi-Volatile Organic Compounds (SVOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Hexachlorobenzene | Hexachlorobutadiene | Hexachlorocyclopentadiene | Hexachloroethane | Hydroxymethylphthalimide | Isophorone | m,p-Cresols |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.113 U | < 0.0683 U | < 0.137 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.0722 U | < 0.0722 U | < 0.0722 U | < 0.0722 U | < 0.119 U | < 0.0722 U | < 0.144 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.0729 U | < 0.0729 U | < 0.0729 U | < 0.0729 U | < 0.12 U | < 0.0729 U | < 0.146 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.0703 U | < 0.0703 U | < 0.0703 U | < 0.0703 U | < 0.116 U | < 0.0703 U | < 0.141 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.112 U | < 0.0676 U | < 0.135 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.0691 U | < 0.0691 U | < 0.0691 U | < 0.0691 U | < 0.114 U | < 0.0691 U | < 0.138 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.0705 U | < 0.0705 U | < 0.0705 U | < 0.0705 U | < 0.116 U | < 0.0705 U | < 0.141 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.0685 U | < 0.0685 U | < 0.0685 U | < 0.0685 U | < 0.113 U | < 0.0685 U | < 0.137 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.0509 U | < 0.0683 U | < 0.137 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.053 U | < 0.0711 U | < 0.142 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.0713 U | < 0.0713 U | < 0.0713 U | < 0.0713 U | < 0.0531 U | < 0.0713 U | < 0.143 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.0717 U | < 0.0717 U | < 0.0717 U | < 0.0717 U | < 0.118 U | < 0.0717 U | < 0.143 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.0723 U | < 0.0723 U | < 0.0723 U | < 0.0723 U | < 0.119 U | < 0.0723 U | < 0.145 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.0696 U | < 0.0696 U | < 0.0696 U | < 0.0696 U | < 0.115 U | < 0.0696 U | < 0.139 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.0699 U | < 0.0699 U | < 0.0699 U | < 0.0699 U | < 0.115 U | < 0.0699 U | < 0.14 U |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.117 U | < 0.0711 U | < 0.142 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.0719 U | < 0.0719 U | < 0.0719 U | < 0.0719 U | < 0.119 U | < 0.0719 U | < 0.144 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.0698 U | < 0.0698 U | < 0.0698 U | < 0.0698 U | < 0.115 U | < 0.0698 U | < 0.14 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.0713 U | < 0.0713 U | < 0.0713 U | < 0.0713 U | < 0.118 U | < 0.0713 U | < 0.143 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.117 U | < 0.0711 U | < 0.142 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.0714 U | < 0.0714 U | < 0.0714 U | < 0.0714 U | < 0.118 U | < 0.0714 U | < 0.143 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.0714 U | < 0.0714 U | < 0.0714 U | < 0.0714 U | < 0.118 U | < 0.0714 U | < 0.143 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.0696 U | < 0.0696 U | < 0.0696 U | < 0.0696 U | < 0.115 UJ | < 0.0696 U | < 0.139 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.0704 U | < 0.0704 U | < 0.0704 U | < 0.0704 U | < 0.116 UJ | < 0.0704 U | < 0.141 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.113 U | < 0.0683 U | < 0.137 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.0706 U | < 0.0706 U | < 0.0706 UJ | < 0.0706 U | < 0.116 U | < 0.0706 U | < 0.141 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.112 U | < 0.0676 U | < 0.135 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.112 U | < 0.0676 U | < 0.135 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.0677 U | < 0.0677 U | < 0.0677 U | < 0.0677 U | < 0.112 U | < 0.0677 U | < 0.135 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-10**
**SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Semi-Volatile Organic Compounds (SVOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Naphthalene | Nitrobenzene | N-nitrosodi-n-propylamine | o-Cresol | Octachlorostyrene | p-Chloroaniline | p-Chlorobenzenethiol |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.0102 U | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.113 U | < 0.0683 U | < 0.113 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.0108 U | < 0.0722 U | < 0.0722 U | < 0.0722 U | < 0.119 U | < 0.0722 U | < 0.119 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.0109 U | < 0.0729 U | < 0.0729 U | < 0.0729 U | < 0.12 U | < 0.0729 U | < 0.12 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.0105 U | < 0.0703 U | < 0.0703 U | < 0.0703 U | < 0.116 U | < 0.0703 U | < 0.116 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.0101 U | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.112 U | < 0.0676 U | < 0.112 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.0104 U | < 0.0691 U | < 0.0691 U | < 0.0691 U | < 0.114 U | < 0.0691 U | < 0.114 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.0106 U | < 0.0705 U | < 0.0705 U | < 0.0705 U | < 0.116 U | < 0.0705 U | < 0.116 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.0103 U | < 0.0685 U | < 0.0685 U | < 0.0685 U | < 0.113 U | < 0.0685 U | < 0.113 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.0103 U | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.0195 U | < 0.0683 U | < 0.226 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.0107 U | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.0203 U | < 0.0711 U | < 0.235 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.0107 U | < 0.0713 U | < 0.0713 U | < 0.0713 U | < 0.0203 U | < 0.0713 U | < 0.235 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.0108 U | < 0.0717 U | < 0.0717 U | < 0.0717 U | < 0.118 U | < 0.0717 U | < 0.118 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.0108 U | < 0.0723 U | < 0.0723 U | < 0.0723 U | < 0.119 U | < 0.0723 U | < 0.119 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.0104 U | < 0.0696 U | < 0.0696 U | < 0.0696 U | < 0.115 U | < 0.0696 U | < 0.115 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.0105 U | < 0.0699 U | < 0.0699 U | < 0.0699 U | < 0.115 U | < 0.0699 U | < 0.115 U |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.0107 U | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.117 U | < 0.0711 U | < 0.117 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.0108 U | < 0.0719 U | < 0.0719 U | < 0.0719 U | < 0.119 U | < 0.0719 U | < 0.119 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.0105 U | < 0.0698 U | < 0.0698 U | < 0.0698 U | < 0.115 U | < 0.0698 U | < 0.115 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.0107 U | < 0.0713 U | < 0.0713 U | < 0.0713 U | < 0.118 U | < 0.0713 U | < 0.118 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.0107 U | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.117 U | < 0.0711 U | < 0.117 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.0107 U | < 0.0714 U | < 0.0714 U | < 0.0714 U | < 0.118 U | < 0.0714 U | < 0.118 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.0107 U | < 0.0714 U | < 0.0714 U | < 0.0714 U | < 0.118 U | < 0.0714 U | < 0.118 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.0104 U | < 0.0696 U | < 0.0696 U | < 0.0696 U | < 0.115 U | < 0.0696 U | < 0.115 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.0106 U | < 0.0704 U | < 0.0704 U | < 0.0704 U | < 0.116 U | < 0.0704 U | < 0.116 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.0102 U | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.113 U | < 0.0683 U | < 0.113 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.0106 U | < 0.0706 U | < 0.0706 U | < 0.0706 U | < 0.116 U | < 0.0706 U | < 0.116 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.0101 U | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.112 U | < 0.0676 U | < 0.112 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.0101 U | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.112 U | < 0.0676 U | < 0.112 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.0102 U | < 0.0677 U | < 0.0677 U | < 0.0677 U | < 0.112 U | < 0.0677 U | < 0.112 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-10**
**SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Semi-Volatile Organic Compounds (SVOCs) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Pentachlorobenzene | Pentachlorophenol | Phenol | Phthalic acid | Pyridine |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.113 U | < 0.0683 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.0722 U | < 0.0722 U | < 0.0722 U | < 0.119 U | < 0.0722 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.0729 U | < 0.0729 U | < 0.0729 U | < 0.12 U | < 0.0729 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.0703 U | < 0.0703 U | < 0.0703 U | < 0.505 U | < 0.0703 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.112 U | < 0.0676 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.0691 U | < 0.0691 U | < 0.0691 U | < 0.114 U | < 0.0691 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.0705 U | < 0.0705 U | < 0.0705 U | < 0.116 U | < 0.0705 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.0685 U | < 0.0685 U | < 0.0685 U | < 0.113 U | < 0.0685 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.0202 U | < 0.0683 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.021 U | < 0.0711 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.0713 U | < 0.0713 U | < 0.0713 U | < 0.021 U | < 0.0713 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.0717 U | < 0.0717 U | < 0.0717 U | < 0.118 U | < 0.0717 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.0723 U | < 0.0723 U | < 0.0723 U | < 0.119 U | < 0.0723 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.0696 U | < 0.0696 U | < 0.0696 U | < 0.115 U | < 0.0696 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.0699 U | < 0.0699 U | < 0.0699 U | < 0.115 U | < 0.0699 U |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.117 U | < 0.0711 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.0719 U | < 0.0719 U | < 0.0719 U | < 0.119 U | < 0.0719 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.0698 U | < 0.0698 U | < 0.0698 U | < 0.115 U | < 0.0698 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.0713 U | < 0.0713 U | < 0.0713 U | < 0.118 U | < 0.0713 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.0711 U | < 0.0711 U | < 0.0711 U | < 0.117 U | < 0.0711 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.0714 U | < 0.0714 U | < 0.0714 U | < 0.118 U | < 0.0714 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.0714 U | < 0.0714 U | < 0.0714 U | < 0.118 U | < 0.0714 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.0696 U | < 0.0696 U | < 0.0696 U | < 0.115 UJ | < 0.0696 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.0704 U | < 0.0704 U | < 0.0704 U | < 0.116 UJ | < 0.0704 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.0683 U | < 0.0683 U | < 0.0683 U | < 0.113 UJ | < 0.0683 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.0706 U | < 0.0706 U | < 0.0706 U | < 0.116 U | < 0.0706 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.112 UJ | < 0.0676 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.0676 U | < 0.0676 U | < 0.0676 U | < 0.112 UJ | < 0.0676 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.0677 U | < 0.0677 U | < 0.0677 U | < 0.112 UJ | < 0.0677 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-11**
**SOIL VOLATILE ORGANIC COMPOUNDS (VOCS) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Volatile Organic Compounds (VOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1,1,1,2-Tetrachloroethane | 1,1,1-Trichloroethane | 1,1,2,2-Tetrachloroethane | 1,1,2-Trichloroethane | 1,1-Dichloroethane | 1,1-Dichloroethene | 1,1-Dichloropropene |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.00018 U | < 0.00011 U | < 0.00008 U | < 0.000068 U | < 0.000071 U | < 0.00012 U | < 0.000089 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.00019 U | < 0.00011 U | < 0.000082 U | < 0.00007 U | < 0.000073 U | < 0.00013 U | < 0.000091 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.00018 U | < 0.00011 U | < 0.000081 U | < 0.000069 U | < 0.000072 U | < 0.00012 U | < 0.00009 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.00019 U | < 0.00011 U | < 0.000081 UJ | < 0.00007 U | < 0.000073 U | < 0.00012 U | < 0.00009 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.00018 U | < 0.00011 U | < 0.000079 UJ | < 0.000068 U | < 0.000071 U | < 0.00012 U | < 0.000088 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.00018 U | < 0.00011 U | < 0.00008 U | < 0.000069 U | < 0.000072 U | < 0.00012 U | < 0.00009 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.00019 U | < 0.00011 U | < 0.000082 U | < 0.00007 U | < 0.000073 U | < 0.00013 U | < 0.000091 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.00018 U | < 0.00011 U | < 0.000079 U | < 0.000068 U | < 0.000071 U | < 0.00012 U | < 0.000088 U |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.00019 U | < 0.00011 U | < 0.000081 U | < 0.00007 U | < 0.000073 U | < 0.00012 U | < 0.000091 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.00018 U | < 0.00011 U | < 0.00008 UJ | < 0.000069 U | < 0.000072 U | < 0.00012 U | < 0.000089 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.00019 U | < 0.00011 U | < 0.000082 U | < 0.00007 U | < 0.000074 U | < 0.00013 U | < 0.000091 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.00019 U | < 0.00011 U | < 0.000082 U | < 0.000071 U | < 0.000074 U | < 0.00013 U | < 0.000092 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.00018 U | < 0.00011 U | < 0.000081 U | < 0.000069 U | < 0.000072 U | < 0.00012 U | < 0.00009 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.00019 U | < 0.00011 U | < 0.000082 UJ | < 0.000071 U | < 0.000074 U | < 0.00013 U | < 0.000092 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.00019 U | < 0.00011 U | < 0.000082 U | < 0.00007 U | < 0.000073 U | < 0.00013 U | < 0.000091 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.00019 UJ | < 0.00011 UJ | < 0.000082 UJ | < 0.00007 UJ | < 0.000073 UJ | < 0.00013 UJ | < 0.000091 UJ |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.00019 U | < 0.00011 U | < 0.000082 UJ | < 0.000071 U | < 0.000074 U | < 0.00013 U | < 0.000092 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.00019 U | < 0.00011 U | < 0.000084 U | < 0.000072 U | < 0.000075 U | < 0.00013 U | < 0.000094 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.00019 U | < 0.00011 U | < 0.000081 U | < 0.00007 U | < 0.000073 U | < 0.00013 U | < 0.000091 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.00019 U | < 0.00011 U | < 0.000082 U | < 0.000071 U | < 0.000074 U | < 0.00013 U | < 0.000092 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.00019 U | < 0.00011 U | < 0.000082 U | < 0.00007 U | < 0.000073 U | < 0.00013 U | < 0.000091 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.00019 U | < 0.00011 U | < 0.000083 U | < 0.000071 U | < 0.000074 U | < 0.00013 U | < 0.000092 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.00019 U | < 0.00011 U | < 0.000085 U | < 0.000073 U | < 0.000076 U | < 0.00013 U | < 0.000094 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.00019 UJ | < 0.00011 U | < 0.000081 UJ | < 0.00007 UJ | < 0.000073 U | < 0.00013 U | < 0.000091 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.00018 UJ | < 0.00011 U | < 0.000081 UJ | < 0.000069 UJ | < 0.000072 U | < 0.00012 U | < 0.00009 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.00019 U | < 0.00011 U | < 0.000082 U | < 0.00007 U | < 0.000073 U | < 0.00013 U | < 0.000091 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.00019 U | < 0.00011 U | < 0.000082 U | < 0.000071 U | < 0.000074 U | < 0.00013 U | < 0.000092 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.00038 U | < 0.00024 U | < 0.00045 UJ | < 0.00036 U | < 0.00037 U | < 0.00024 U | < 0.00022 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.00038 UJ | < 0.00024 U | < 0.00045 UJ | < 0.00036 UJ | < 0.00037 U | < 0.00024 U | < 0.00022 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.00038 U | < 0.00024 U | < 0.00044 UJ | < 0.00036 U | < 0.00037 U | < 0.00024 U | < 0.00022 U |
| SRC2-J33 | 0 | N | 09/17/2009 | < 0.00041 U | < 0.00025 U | < 0.00048 U | < 0.00039 U | < 0.0004 UJ | < 0.00025 U | < 0.00024 U |
| SRC2-J33 | 0 | FD | 09/17/2009 | < 0.00038 U | < 0.00024 U | < 0.00045 U | < 0.00036 U | < 0.00037 U | < 0.00024 UJ | < 0.00022 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-11**
**SOIL VOLATILE ORGANIC COMPOUNDS (VOCS) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Volatile Organic Compounds (VOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1,2,3-Trichlorobenzene | 1,2,3-Trichloropropane | 1,2,4-Trichlorobenzene | 1,2,4-Trimethylbenzene | 1,2-Dichlorobenzene | 1,2-Dichloroethane | 1,2-Dichloroethene |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.0004 U | < 0.00026 U | < 0.00034 U | < 0.00014 U | < 0.00012 U | < 0.000067 U | < 0.00011 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.00041 U | < 0.00026 U | < 0.00035 U | < 0.00014 U | < 0.00013 U | < 0.000069 U | < 0.00011 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.0004 U | < 0.00026 U | < 0.00034 U | < 0.00014 U | < 0.00013 U | < 0.000068 U | < 0.00011 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.0004 UJ | < 0.00026 UJ | < 0.00034 UJ | < 0.00014 UJ | < 0.00013 UJ | < 0.000069 U | < 0.00011 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.00039 UJ | < 0.00025 UJ | < 0.00033 UJ | 0.0051 J | < 0.00012 UJ | < 0.000067 U | < 0.00011 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.0004 U | < 0.00026 U | < 0.00034 U | < 0.00014 U | < 0.00012 U | < 0.000068 U | < 0.00011 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.00041 U | < 0.00026 U | < 0.00035 U | < 0.00014 U | < 0.00013 U | < 0.000069 U | < 0.00011 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.00039 U | < 0.00025 U | < 0.00034 U | < 0.00014 U | < 0.00012 U | < 0.000067 U | < 0.00011 U |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.0004 U | < 0.00026 U | < 0.00034 U | < 0.00014 U | < 0.00013 U | < 0.000069 U | < 0.00011 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.0004 UJ | < 0.00026 UJ | < 0.00034 UJ | < 0.00014 UJ | < 0.00012 UJ | < 0.000068 U | < 0.00011 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.00041 U | < 0.00026 U | < 0.00035 U | < 0.00014 U | < 0.00013 U | < 0.000069 U | < 0.00011 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.00041 U | < 0.00026 U | < 0.00035 U | < 0.00014 U | < 0.00013 U | < 0.00007 U | < 0.00011 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.0004 U | < 0.00026 U | < 0.00034 U | < 0.00014 U | < 0.00012 U | < 0.000068 U | < 0.00011 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.00041 UJ | < 0.00026 UJ | < 0.00035 UJ | < 0.00014 UJ | < 0.00013 UJ | < 0.00007 U | < 0.00011 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.00041 U | < 0.00026 U | < 0.00035 U | < 0.00014 U | < 0.00013 U | < 0.000069 U | < 0.00011 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.00041 UJ | < 0.00026 UJ | < 0.00035 UJ | < 0.00014 UJ | < 0.00013 UJ | < 0.000069 UJ | < 0.00011 UJ |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.00041 UJ | < 0.00026 UJ | < 0.00035 UJ | < 0.00014 UJ | < 0.00013 UJ | < 0.00007 U | < 0.00011 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.00042 U | < 0.00027 U | < 0.00035 U | < 0.00014 U | < 0.00013 U | < 0.000071 U | < 0.00012 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.0004 U | < 0.00026 U | < 0.00034 U | < 0.00014 U | < 0.00013 U | < 0.000069 U | < 0.00011 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.00041 U | < 0.00026 U | < 0.00035 U | < 0.00014 U | < 0.00014 U | < 0.00007 U | < 0.00011 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.00041 U | < 0.00026 U | < 0.00035 U | < 0.00014 U | < 0.00013 U | < 0.000069 U | < 0.00011 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.00041 U | < 0.00027 U | < 0.00035 U | < 0.00014 U | < 0.00013 U | < 0.00007 U | < 0.00011 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.00042 U | < 0.00027 U | < 0.00036 U | < 0.00014 U | < 0.00013 U | < 0.000072 U | < 0.00012 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.0004 UJ | < 0.00026 UJ | < 0.00034 UJ | < 0.00014 UJ | < 0.00013 UJ | < 0.000069 U | < 0.00011 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.0004 UJ | < 0.00026 UJ | < 0.00034 UJ | < 0.00014 UJ | < 0.00012 UJ | < 0.000068 U | < 0.00011 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.00041 U | < 0.00026 U | < 0.00035 U | < 0.00014 U | < 0.00013 U | < 0.000069 U | < 0.00011 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.00041 U | < 0.00026 U | < 0.00035 U | < 0.00014 U | < 0.00013 U | < 0.00007 U | < 0.00011 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.00046 UJ | < 0.00049 UJ | < 0.00031 UJ | < 0.0004 UJ | < 0.00036 UJ | < 0.00033 U | < 0.00063 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.00046 UJ | < 0.00049 UJ | < 0.00031 UJ | < 0.0004 UJ | < 0.00036 UJ | < 0.00032 U | < 0.00063 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.00045 UJ | < 0.00049 UJ | < 0.00031 UJ | < 0.0004 UJ | < 0.00036 UJ | < 0.00032 U | < 0.00063 U |
| SRC2-J33 | 0 | N | 09/17/2009 | < 0.00049 U | < 0.00052 U | < 0.00033 U | < 0.00043 U | < 0.00038 U | < 0.00035 U | < 0.00067 UJ |
| SRC2-J33 | 0 | FD | 09/17/2009 | < 0.00046 U | < 0.00049 U | < 0.00031 U | < 0.0004 U | < 0.00036 U | < 0.00033 U | < 0.00063 UJ |

All units in mg/kg.
-- = no sample data.

**TABLE C-11**
**SOIL VOLATILE ORGANIC COMPOUNDS (VOCS) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 3 of 12)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Volatile Organic Compounds (VOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1,2-Dichloropropane | 1,3,5-Trichlorobenzene | 1,3,5-Trimethylbenzene | 1,3-Dichlorobenzene | 1,3-Dichloropropane | 1,4-Dichlorobenzene | 2,2,3-Trimethylbutane |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.00011 U | < 0.00038 U | < 0.000099 U | < 0.00013 U | < 0.000052 U | < 0.00014 U | < 0.00021 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.00012 U | < 0.00039 U | < 0.0001 U | < 0.00014 U | < 0.000053 U | < 0.00014 U | < 0.00022 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.00011 U | < 0.00038 U | < 0.0001 U | < 0.00014 U | < 0.000053 U | < 0.00014 U | < 0.00022 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.00011 U | < 0.00038 UJ | < 0.0001 UJ | < 0.00014 UJ | < 0.000053 U | < 0.00014 UJ | < 0.00022 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.00011 U | < 0.00037 UJ | 0.00021 J | < 0.00013 UJ | < 0.000052 U | < 0.00014 UJ | < 0.00021 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.00011 U | < 0.00038 U | < 0.0001 U | < 0.00014 U | < 0.000053 U | < 0.00014 U | < 0.00022 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.00012 U | < 0.00039 U | < 0.0001 U | < 0.00014 U | < 0.000053 U | < 0.00014 U | < 0.00022 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.00011 U | < 0.00038 U | < 0.000099 U | < 0.00013 U | < 0.000052 U | < 0.00014 U | < 0.00021 U |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.00011 U | < 0.00039 U | < 0.0001 U | < 0.00014 U | < 0.000053 U | < 0.00014 U | < 0.00022 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.00011 U | < 0.00038 UJ | < 0.0001 UJ | < 0.00013 UJ | < 0.000052 U | < 0.00014 UJ | < 0.00022 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.00012 U | < 0.00039 U | < 0.0001 U | < 0.00014 U | < 0.000054 U | < 0.00014 U | < 0.00022 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.00012 U | < 0.00039 U | < 0.0001 U | < 0.00014 U | < 0.000054 U | < 0.00014 U | < 0.00022 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.00011 U | < 0.00038 U | < 0.0001 U | < 0.00014 U | < 0.000053 U | < 0.00014 U | < 0.00022 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.00012 U | < 0.00039 UJ | < 0.0001 UJ | < 0.00014 UJ | < 0.000054 U | < 0.00014 UJ | < 0.00022 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.00012 U | < 0.00039 U | < 0.0001 U | < 0.00014 U | < 0.000053 U | < 0.00014 U | < 0.00022 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.00012 UJ | < 0.00039 UJ | < 0.0001 UJ | < 0.00014 UJ | < 0.000053 UJ | < 0.00014 UJ | < 0.00022 UJ |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.00012 U | < 0.00039 UJ | < 0.0001 UJ | < 0.00014 UJ | < 0.000054 U | < 0.00014 UJ | < 0.00022 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.00012 U | < 0.0004 U | < 0.0001 U | < 0.00014 U | < 0.000055 U | < 0.00015 U | < 0.00023 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.00011 U | < 0.00039 U | < 0.0001 U | < 0.00014 U | < 0.000053 U | < 0.00014 U | < 0.00022 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.00012 U | < 0.00039 U | < 0.0001 U | < 0.00014 U | < 0.000054 U | < 0.00014 U | < 0.00022 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.00012 U | < 0.00039 U | < 0.0001 U | < 0.00014 U | < 0.000054 U | < 0.00014 U | < 0.00022 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.00012 U | < 0.00039 U | < 0.0001 U | < 0.00014 U | < 0.000054 U | < 0.00014 U | < 0.00022 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.00012 U | < 0.0004 U | < 0.00011 U | < 0.00014 U | < 0.000055 U | < 0.00015 U | < 0.00023 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.00011 U | < 0.00039 UJ | < 0.0001 UJ | < 0.00014 UJ | < 0.000053 UJ | < 0.00014 UJ | < 0.00022 UJ |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.00011 U | < 0.00038 UJ | < 0.0001 UJ | < 0.00014 UJ | < 0.000053 UJ | < 0.00014 UJ | < 0.00022 UJ |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.00012 U | < 0.00039 U | < 0.0001 U | < 0.00014 U | < 0.000053 U | < 0.00014 U | < 0.00022 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.00012 U | < 0.00039 U | < 0.0001 U | < 0.00014 U | < 0.000054 U | < 0.00014 U | < 0.00022 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.00038 U | < 0.00052 UJ | < 0.00025 UJ | < 0.00044 UJ | < 0.00042 U | < 0.00031 UJ | < 0.00053 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.00037 U | < 0.00051 UJ | < 0.00025 UJ | < 0.00044 UJ | < 0.00042 UJ | < 0.00031 UJ | < 0.00053 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.00037 U | < 0.00051 UJ | < 0.00025 UJ | < 0.00044 UJ | < 0.00041 U | < 0.00031 UJ | < 0.00053 U |
| SRC2-J33 | 0 | N | 09/17/2009 | < 0.0004 UJ | < 0.00055 U | < 0.00027 U | < 0.00047 U | < 0.00044 U | < 0.00033 U | < 0.00057 U |
| SRC2-J33 | 0 | FD | 09/17/2009 | < 0.00037 UJ | < 0.00051 U | < 0.00025 U | < 0.00044 U | < 0.00042 U | < 0.00031 U | < 0.00053 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-11**
**SOIL VOLATILE ORGANIC COMPOUNDS (VOCS) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Volatile Organic Compounds (VOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2,2-Dichloropropane | 2,2-Dimethylpentane | 2,3-Dimethylpentane | 2,4-Dimethylpentane | 2-Chlorotoluene | 2-Hexanone | 2-Methylhexane |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.00024 U | < 0.00028 U | < 0.00023 U | < 0.0002 U | < 0.00025 U | < 0.00024 U | < 0.00021 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.00024 U | < 0.00029 U | < 0.00023 U | < 0.0002 U | < 0.00026 U | < 0.00025 U | < 0.00021 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.00024 U | < 0.00028 U | < 0.00023 U | < 0.0002 U | < 0.00026 U | < 0.00025 U | < 0.00021 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.00024 U | < 0.00029 U | < 0.00023 U | < 0.0002 U | < 0.00026 UJ | < 0.00025 U | < 0.00021 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.00024 U | < 0.00028 U | < 0.00023 U | < 0.0002 U | < 0.00025 UJ | < 0.00024 U | < 0.00021 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.00024 U | < 0.00028 U | < 0.00023 U | < 0.0002 U | < 0.00025 U | < 0.00024 U | < 0.00021 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.00024 U | < 0.00029 U | < 0.00023 U | < 0.0002 U | < 0.00026 U | < 0.00025 U | < 0.00021 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.00024 U | < 0.00028 U | < 0.00023 U | < 0.0002 U | < 0.00025 U | < 0.00024 U | < 0.00021 U |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.00024 U | < 0.00029 U | < 0.00023 U | < 0.0002 U | < 0.00026 U | < 0.00025 U | < 0.00021 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.00024 U | < 0.00028 U | < 0.00023 U | < 0.0002 U | < 0.00025 UJ | < 0.00024 U | < 0.00021 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.00024 U | < 0.00029 U | < 0.00024 U | < 0.0002 U | < 0.00026 U | < 0.00025 U | < 0.00021 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.00024 U | < 0.00029 U | < 0.00024 U | < 0.0002 U | < 0.00026 U | < 0.00025 U | < 0.00021 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.00024 U | < 0.00028 U | < 0.00023 U | < 0.0002 U | < 0.00026 U | < 0.00024 U | < 0.00021 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.00025 U | < 0.00029 U | < 0.00024 U | < 0.0002 U | < 0.00026 UJ | < 0.00025 U | < 0.00021 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.00024 U | < 0.00029 U | < 0.00023 U | < 0.0002 U | < 0.00026 U | < 0.00025 U | < 0.00021 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.00024 UJ | < 0.00029 UJ | < 0.00023 UJ | < 0.0002 UJ | < 0.00026 UJ | < 0.00025 UJ | < 0.00021 UJ |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.00024 U | < 0.00029 U | < 0.00024 U | < 0.0002 U | < 0.00026 UJ | < 0.00025 U | < 0.00021 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.00025 U | < 0.0003 U | < 0.00024 U | < 0.00021 U | < 0.00027 U | < 0.00025 U | < 0.00022 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.00024 U | < 0.00029 U | < 0.00023 U | < 0.0002 U | < 0.00026 U | < 0.00025 U | < 0.00021 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.00024 U | < 0.00029 U | < 0.00024 U | < 0.0002 U | < 0.00026 U | < 0.00025 U | < 0.00021 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.00024 U | < 0.00029 U | < 0.00024 U | < 0.0002 U | < 0.00026 U | < 0.00025 U | < 0.00021 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.00025 U | < 0.00029 U | < 0.00024 U | < 0.0002 U | < 0.00026 U | < 0.00025 U | < 0.00022 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.00025 U | < 0.0003 U | < 0.00024 U | < 0.00021 U | < 0.00027 U | < 0.00026 U | < 0.00022 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.00024 U | < 0.00029 U | < 0.00023 U | < 0.0002 U | < 0.00026 UJ | < 0.00025 UJ | < 0.00021 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.00024 U | < 0.00028 U | < 0.00023 U | < 0.0002 U | < 0.00026 UJ | < 0.00024 UJ | < 0.00021 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.00024 U | < 0.00029 U | < 0.00023 U | < 0.0002 U | < 0.00026 U | < 0.00025 U | < 0.00021 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.00025 U | < 0.00029 U | < 0.00024 U | < 0.0002 U | < 0.00026 U | < 0.00025 U | < 0.00021 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.00031 U | < 0.00053 U | < 0.00044 U | < 0.00049 U | < 0.00034 UJ | < 0.00028 U | < 0.00051 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.00031 U | < 0.00053 U | < 0.00044 U | < 0.00049 U | < 0.00034 UJ | < 0.00028 UJ | < 0.00051 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.00031 U | < 0.00053 U | < 0.00044 U | < 0.00049 U | < 0.00034 UJ | < 0.00028 U | < 0.00051 U |
| SRC2-J33 | 0 | N | 09/17/2009 | < 0.00033 U | < 0.00057 U | < 0.00047 U | < 0.00052 U | < 0.00036 U | < 0.0003 U | < 0.00054 U |
| SRC2-J33 | 0 | FD | 09/17/2009 | < 0.00031 U | < 0.00053 U | < 0.00044 U | < 0.00049 U | < 0.00034 U | < 0.00028 U | < 0.00051 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-11**
**SOIL VOLATILE ORGANIC COMPOUNDS (VOCS) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 5 of 12)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Volatile Organic Compounds (VOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2-Nitropropane | 3,3-Dimethylpentane | 3-Ethylpentane | 3-Methylhexane | 4-Chlorotoluene | 4-Methyl-2-pentanone (MIBK) | Acetone |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.00061 U | < 0.00021 U | < 0.00021 U | < 0.00014 U | < 0.00017 U | < 0.00029 U | 0.02 J |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.00063 U | < 0.00021 U | < 0.00022 U | < 0.00015 U | < 0.00018 U | < 0.0003 U | 0.026 |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.00062 U | < 0.00021 U | < 0.00022 U | < 0.00014 U | < 0.00018 U | < 0.0003 U | < 0.0018 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.00063 U | < 0.00021 U | < 0.00022 U | < 0.00015 U | < 0.00018 UJ | < 0.0003 U | 0.026 |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.00061 U | < 0.00021 U | < 0.00021 U | < 0.00014 U | < 0.00017 UJ | < 0.00029 U | 0.055 |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.00062 U | < 0.00021 U | < 0.00022 U | < 0.00014 U | < 0.00018 U | < 0.0003 U | 0.0071 J |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.00063 U | < 0.00021 U | < 0.00022 U | < 0.00015 U | < 0.00018 U | < 0.0003 U | < 0.0018 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.00061 U | < 0.00021 U | < 0.00021 U | < 0.00014 U | < 0.00017 U | < 0.00029 U | < 0.0017 U |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.00063 U | < 0.00021 U | < 0.00022 U | < 0.00015 U | < 0.00018 U | < 0.0003 U | < 0.0018 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.00062 U | < 0.00021 U | < 0.00022 U | < 0.00014 U | < 0.00018 UJ | < 0.0003 U | 0.018 J |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.00063 U | < 0.00021 U | < 0.00022 U | < 0.00015 U | < 0.00018 U | < 0.0003 U | 0.0083 J |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.00064 U | < 0.00021 U | < 0.00022 U | < 0.00015 U | < 0.00018 U | < 0.0003 U | 0.0073 J |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.00062 U | < 0.00021 U | < 0.00022 U | < 0.00014 U | < 0.00018 U | < 0.0003 U | 0.0028 J |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.00064 U | < 0.00021 U | < 0.00022 U | < 0.00015 U | < 0.00018 UJ | < 0.0003 U | < 0.0018 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.00063 U | < 0.00021 U | < 0.00022 U | < 0.00015 U | < 0.00018 U | < 0.0003 U | < 0.0018 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.00063 UJ | < 0.00021 UJ | < 0.00022 UJ | < 0.00015 UJ | < 0.00018 UJ | < 0.0003 UJ | 0.013 J |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.00063 U | < 0.00021 U | < 0.00022 U | < 0.00015 U | < 0.00018 UJ | < 0.0003 U | 0.012 J |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.00065 U | < 0.00022 U | < 0.00023 U | < 0.00015 U | < 0.00018 U | < 0.00031 U | 0.0084 J |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.00063 U | < 0.00021 U | < 0.00022 U | < 0.00015 U | < 0.00018 U | < 0.0003 U | < 0.0018 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.00063 U | < 0.00021 U | < 0.00022 U | < 0.00015 U | < 0.00018 U | < 0.0003 U | < 0.0018 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.00063 U | < 0.00021 U | < 0.00022 U | < 0.00015 U | < 0.00018 U | < 0.0003 U | 0.0057 J |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.00064 U | < 0.00022 U | < 0.00022 U | < 0.00015 U | < 0.00018 U | < 0.00031 U | < 0.0018 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.00065 U | < 0.00022 U | < 0.00023 U | < 0.00015 U | < 0.00019 U | < 0.00031 U | < 0.0018 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.00063 UJ | < 0.00021 U | < 0.00022 U | < 0.00015 UJ | < 0.00018 UJ | < 0.0003 UJ | 0.021 J+ |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.00062 UJ | < 0.00021 U | < 0.00022 U | < 0.00014 UJ | < 0.00018 UJ | < 0.0003 UJ | 0.021 J+ |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.00063 U | < 0.00021 U | < 0.00022 U | < 0.00015 U | < 0.00018 U | < 0.0003 U | < 0.0018 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.00064 U | < 0.00021 U | < 0.00022 U | < 0.00015 U | < 0.00018 U | < 0.0003 U | < 0.0018 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.00032 U | < 0.00048 U | < 0.00045 U | < 0.00047 U | < 0.00025 UJ | < 0.00031 U | < 0.0066 UJ |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.00032 UJ | < 0.00048 U | < 0.00045 U | < 0.00047 U | < 0.00025 UJ | < 0.00031 UJ | < 0.0065 UJ |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.00032 U | < 0.00048 U | < 0.00045 U | < 0.00047 U | < 0.00025 UJ | < 0.00031 U | < 0.0065 UJ |
| SRC2-J33 | 0 | N | 09/17/2009 | < 0.00034 U | < 0.00051 U | < 0.00048 U | < 0.0005 U | < 0.00027 U | < 0.00033 U | 0.014 J |
| SRC2-J33 | 0 | FD | 09/17/2009 | < 0.00032 U | < 0.00048 U | < 0.00045 U | < 0.00047 U | < 0.00025 U | < 0.00031 U | 0.01 J |

All units in mg/kg.
-- = no sample data.

**TABLE C-11**
**SOIL VOLATILE ORGANIC COMPOUNDS (VOCS) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 6 of 12)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Volatile Organic Compounds (VOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Acetonitrile | Benzene | Bromobenzene | Bromodichloromethane | Bromoform | Bromomethane | Carbon disulfide |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.0055 UJ | < 0.000089 U | < 0.00012 U | < 0.00022 U | < 0.00006 U | < 0.00013 U | < 0.00012 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.0057 UJ | < 0.000091 U | < 0.00013 U | < 0.00022 U | < 0.000062 U | < 0.00014 U | < 0.00013 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.0056 UJ | < 0.00009 U | < 0.00013 U | < 0.00022 U | < 0.000061 U | < 0.00013 U | < 0.00013 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.0056 UJ | < 0.00009 U | < 0.00013 UJ | < 0.00022 U | < 0.000061 U | < 0.00014 U | < 0.00013 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.0055 UJ | < 0.000088 U | < 0.00012 UJ | < 0.00022 U | < 0.00006 U | < 0.00013 U | < 0.00012 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.0056 UJ | < 0.00009 U | < 0.00012 U | < 0.00022 U | < 0.000061 U | < 0.00013 U | < 0.00012 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.0057 UJ | < 0.000091 U | < 0.00013 U | < 0.00022 U | < 0.000062 U | < 0.00014 U | < 0.00013 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.0055 UJ | < 0.000088 U | < 0.00012 U | < 0.00022 U | < 0.00006 U | < 0.00013 U | < 0.00012 U |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.0056 UJ | < 0.000091 U | < 0.00013 U | < 0.00022 U | < 0.000061 U | < 0.00014 U | < 0.00013 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.0056 UJ | < 0.000089 U | < 0.00012 UJ | < 0.00022 U | < 0.000061 U | < 0.00013 U | < 0.00012 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.0057 UJ | < 0.000091 U | < 0.00013 U | < 0.00022 U | < 0.000062 U | < 0.00014 U | < 0.00013 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.0057 UJ | < 0.000092 U | < 0.00013 U | < 0.00022 U | < 0.000062 U | < 0.00014 U | < 0.00013 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.0056 UJ | < 0.00009 U | < 0.00012 U | < 0.00022 U | < 0.000061 U | < 0.00013 U | < 0.00012 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.0057 UJ | < 0.000092 U | < 0.00013 UJ | < 0.00023 U | < 0.000062 U | < 0.00014 U | < 0.00013 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.0057 UJ | < 0.000091 U | < 0.00013 U | < 0.00022 U | < 0.000062 U | < 0.00014 U | < 0.00013 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.0057 UJ | < 0.000091 UJ | < 0.00013 UJ | < 0.00022 UJ | < 0.000062 UJ | < 0.00014 UJ | < 0.00013 UJ |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.0057 UJ | < 0.000092 U | < 0.00013 UJ | < 0.00022 U | < 0.000062 U | < 0.00014 U | < 0.00013 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.0058 UJ | < 0.000094 U | < 0.00013 U | < 0.00023 U | < 0.000063 U | < 0.00014 U | < 0.00013 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.0056 UJ | < 0.000091 U | < 0.00013 U | < 0.00022 U | < 0.000062 U | < 0.00014 U | < 0.00013 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.0057 UJ | < 0.000092 U | < 0.00013 U | < 0.00022 U | < 0.000062 U | < 0.00014 U | < 0.00013 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.0057 UJ | < 0.000091 U | < 0.00013 U | < 0.00022 U | < 0.000062 U | < 0.00014 U | < 0.00013 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.0057 UJ | < 0.000092 U | < 0.00013 U | < 0.00023 U | < 0.000063 U | < 0.00014 U | < 0.00013 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.0059 UJ | < 0.000094 U | < 0.00013 U | < 0.00023 U | < 0.000064 U | < 0.00014 U | < 0.00013 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.0056 UJ | < 0.000091 U | < 0.00013 UJ | < 0.00022 U | < 0.000061 UJ | < 0.00014 U | < 0.00013 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.0056 UJ | < 0.00009 U | < 0.00012 UJ | < 0.00022 U | < 0.000061 UJ | < 0.00013 U | < 0.00012 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.0057 UJ | < 0.000091 U | < 0.00013 U | < 0.00022 U | < 0.000062 U | < 0.00014 U | < 0.00013 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.0057 UJ | < 0.000092 U | < 0.00013 U | < 0.00023 U | < 0.000062 U | < 0.00014 U | < 0.00013 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.0035 UJ | < 0.00033 U | < 0.00038 UJ | < 0.00032 U | < 0.00042 UJ | < 0.0004 U | < 0.00028 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.0035 UJ | < 0.00033 U | < 0.00038 UJ | < 0.00032 U | < 0.00042 UJ | < 0.0004 U | < 0.00028 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.0035 UJ | < 0.00033 U | < 0.00038 UJ | < 0.00032 U | < 0.00041 UJ | < 0.0004 U | < 0.00028 U |
| SRC2-J33 | 0 | N | 09/17/2009 | < 0.0037 UJ | < 0.00035 U | < 0.0004 U | < 0.00034 UJ | < 0.00044 U | < 0.00043 U | < 0.0003 U |
| SRC2-J33 | 0 | FD | 09/17/2009 | < 0.0035 UJ | < 0.00033 U | < 0.00038 U | < 0.00032 UJ | < 0.00042 U | < 0.0004 U | < 0.00028 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-11**
**SOIL VOLATILE ORGANIC COMPOUNDS (VOCS) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Volatile Organic Compounds (VOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Carbon tetrachloride | Chlorobenzene | Chlorobromomethane | Chloroethane | Chloroform | Chloromethane | cis-1,2-Dichloroethene |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.00021 U | < 0.00011 U | < 0.00023 U | < 0.00047 U | < 0.0001 U | < 0.00027 U | < 0.000055 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.00021 U | < 0.00011 U | < 0.00024 U | < 0.00048 U | < 0.0001 U | < 0.00028 U | < 0.000056 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.00021 U | < 0.00011 U | < 0.00023 U | < 0.00048 U | < 0.0001 U | < 0.00028 U | < 0.000056 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.00021 U | < 0.00011 U | < 0.00023 U | < 0.00048 U | < 0.0001 U | < 0.00028 U | < 0.000056 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.00021 U | < 0.00011 U | < 0.00023 U | < 0.00047 U | < 0.0001 U | < 0.00027 U | < 0.000055 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.00021 U | < 0.00011 U | < 0.00023 U | < 0.00048 U | < 0.0001 U | < 0.00028 U | < 0.000056 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.00021 U | < 0.00011 U | < 0.00024 U | < 0.00048 U | < 0.0001 U | < 0.00028 U | < 0.000057 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.00021 U | < 0.00011 U | < 0.00023 U | < 0.00047 U | < 0.0001 U | < 0.00027 U | < 0.000055 U |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.00021 U | < 0.00011 U | < 0.00023 U | < 0.00048 U | < 0.0001 U | < 0.00028 U | < 0.000056 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.00021 U | < 0.00011 U | < 0.00023 U | < 0.00047 U | < 0.0001 U | < 0.00028 U | < 0.000055 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.00022 U | < 0.00011 U | < 0.00024 U | < 0.00048 U | < 0.00011 U | < 0.00028 U | < 0.000057 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.00022 U | < 0.00011 U | < 0.00024 U | < 0.00049 U | < 0.00011 U | < 0.00028 U | < 0.000057 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.00021 U | < 0.00011 U | < 0.00023 U | < 0.00048 U | < 0.0001 U | < 0.00028 U | < 0.000056 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.00022 U | < 0.00011 U | < 0.00024 U | < 0.00049 U | < 0.00011 U | < 0.00028 U | < 0.000057 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.00021 U | < 0.00011 U | < 0.00024 U | < 0.00048 U | < 0.0001 U | < 0.00028 U | < 0.000057 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.00021 UJ | < 0.00011 UJ | < 0.00024 UJ | < 0.00048 UJ | < 0.0001 UJ | < 0.00028 UJ | < 0.000056 UJ |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.00022 U | < 0.00011 U | < 0.00024 U | < 0.00049 U | < 0.00011 U | < 0.00028 U | < 0.000057 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.00022 U | < 0.00012 U | < 0.00024 U | < 0.0005 U | < 0.00011 U | < 0.00029 U | < 0.000058 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.00021 U | < 0.00011 U | < 0.00023 U | < 0.00048 U | < 0.0001 U | < 0.00028 U | < 0.000056 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.00022 U | < 0.00011 U | < 0.00024 U | < 0.00049 U | < 0.00011 U | < 0.00028 U | < 0.000057 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.00022 U | < 0.00011 U | < 0.00024 U | < 0.00048 U | < 0.0001 U | < 0.00028 U | < 0.000057 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.00022 U | < 0.00011 U | < 0.00024 U | < 0.00049 U | < 0.00011 U | < 0.00028 U | < 0.000057 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.00022 U | < 0.00012 U | < 0.00024 U | < 0.0005 U | < 0.00011 U | < 0.00029 U | < 0.000059 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.00021 U | < 0.00011 UJ | < 0.00023 U | < 0.00048 U | < 0.0001 U | < 0.00028 U | < 0.000056 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.00021 U | < 0.00011 UJ | < 0.00023 U | < 0.00048 U | < 0.0001 U | < 0.00028 U | < 0.000056 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.00022 U | < 0.00011 U | < 0.00024 U | < 0.00048 U | < 0.0001 U | < 0.00028 U | < 0.000057 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.00022 U | < 0.00011 U | < 0.00024 U | < 0.00049 U | < 0.00011 U | < 0.00028 U | < 0.000057 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.00031 U | < 0.0003 U | < 0.00044 U | < 0.00031 U | < 0.00036 U | < 0.00028 U | < 0.00034 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.00031 U | < 0.0003 UJ | < 0.00044 U | < 0.00031 U | < 0.00036 U | < 0.00027 U | < 0.00033 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.0003 U | < 0.0003 U | < 0.00044 U | < 0.00031 U | < 0.00036 U | < 0.00027 U | < 0.00033 U |
| SRC2-J33 | 0 | N | 09/17/2009 | < 0.00033 U | < 0.00032 U | < 0.00047 U | < 0.00033 U | < 0.00038 U | < 0.00029 U | < 0.00036 U |
| SRC2-J33 | 0 | FD | 09/17/2009 | < 0.00031 U | < 0.0003 U | < 0.00044 U | < 0.00031 U | < 0.00036 U | < 0.00028 U | < 0.00034 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-11**
**SOIL VOLATILE ORGANIC COMPOUNDS (VOCS) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Volatile Organic Compounds (VOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | cis-1,3-Dichloropropene | Cymene (Isopropyltoluene) | Dibromochloromethane | Dibromochloropropane | Dibromomethane | Dichloromethane | Dimethyldisulfide |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.0001 U | < 0.00013 U | < 0.00012 U | < 0.00022 U | < 0.00017 U | < 0.0082 U | < 0.00018 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.0001 U | < 0.00013 U | < 0.00012 U | < 0.00022 U | < 0.00017 U | < 0.0088 U | < 0.00018 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.0001 U | < 0.00013 U | < 0.00012 U | < 0.00022 U | < 0.00017 U | < 0.009 U | < 0.00018 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.0001 U | < 0.00013 UJ | < 0.00012 U | < 0.00022 UJ | < 0.00017 U | < 0.0098 U | < 0.00018 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.0001 U | < 0.00013 UJ | < 0.00012 U | < 0.00021 UJ | < 0.00017 U | 0.011 | < 0.00018 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.0001 U | < 0.00013 U | < 0.00012 U | < 0.00022 U | < 0.00017 U | 0.0052 | < 0.00018 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.0001 U | < 0.00013 U | < 0.00012 U | < 0.00022 U | < 0.00017 U | 0.0093 | < 0.00018 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.0001 U | < 0.00013 U | < 0.00012 U | < 0.00021 U | < 0.00017 U | < 0.0037 U | < 0.00018 U |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.0001 U | < 0.00013 U | < 0.00012 U | < 0.00022 U | < 0.00017 U | < 0.0036 U | < 0.00018 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.0001 U | < 0.00013 UJ | < 0.00012 U | < 0.00022 UJ | < 0.00017 U | < 0.024 U | < 0.00018 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.00011 U | < 0.00013 U | < 0.00012 U | < 0.00022 U | < 0.00017 U | < 0.015 U | < 0.00018 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.00011 U | < 0.00013 U | < 0.00012 U | < 0.00022 U | < 0.00018 U | < 0.016 U | < 0.00019 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.0001 U | < 0.00013 U | < 0.00012 U | < 0.00022 U | < 0.00017 U | < 0.008 U | < 0.00018 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.00011 U | < 0.00013 UJ | < 0.00012 U | < 0.00022 UJ | < 0.00018 U | < 0.0085 U | < 0.00019 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.0001 U | < 0.00013 U | < 0.00012 U | < 0.00022 U | < 0.00017 U | < 0.0099 U | < 0.00018 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.0001 UJ | < 0.00013 UJ | < 0.00012 UJ | < 0.00022 UJ | < 0.00017 UJ | < 0.0097 UJ | < 0.00018 UJ |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.00011 U | < 0.00013 UJ | < 0.00012 U | < 0.00022 UJ | < 0.00017 U | < 0.0062 U | < 0.00019 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.00011 U | < 0.00013 U | < 0.00013 U | < 0.00023 U | < 0.00018 U | < 0.0078 U | < 0.00019 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.0001 U | < 0.00013 U | < 0.00012 U | < 0.00022 U | < 0.00017 U | < 0.0034 U | < 0.00018 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.00011 U | < 0.00013 U | < 0.00012 U | < 0.00022 U | < 0.00017 U | < 0.0036 U | < 0.00019 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.0001 U | < 0.00013 U | < 0.00012 U | < 0.00022 U | < 0.00017 U | < 0.0074 U | < 0.00018 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.00011 U | < 0.00013 U | < 0.00013 U | < 0.00022 U | < 0.00018 U | < 0.0076 U | < 0.00019 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.00011 U | < 0.00013 U | < 0.00013 U | < 0.00023 U | < 0.00018 U | < 0.0092 U | < 0.00019 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.0001 U | < 0.00013 UJ | < 0.00012 UJ | < 0.00022 UJ | < 0.00017 U | < 0.00072 U | < 0.00018 UJ |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.0001 U | < 0.00013 UJ | < 0.00012 UJ | < 0.00022 UJ | < 0.00017 U | < 0.00071 U | < 0.00018 UJ |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.0001 U | < 0.00013 U | < 0.00012 U | < 0.00022 U | < 0.00017 U | < 0.0063 U | < 0.00018 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.00011 U | < 0.00013 U | < 0.00012 U | < 0.00022 U | < 0.00018 U | < 0.00073 U | < 0.00019 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.00024 U | < 0.00026 UJ | < 0.00029 U | < 0.0006 UJ | < 0.00035 U | < 0.0033 U | < 0.00048 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.00024 U | < 0.00026 UJ | < 0.00029 UJ | < 0.0006 UJ | < 0.00035 U | < 0.013 U | < 0.00048 UJ |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.00023 U | < 0.00026 UJ | < 0.00029 U | < 0.0006 UJ | < 0.00035 U | < 0.0085 U | < 0.00048 U |
| SRC2-J33 | 0 | N | 09/17/2009 | < 0.00025 U | < 0.00028 U | < 0.00031 U | < 0.00064 U | < 0.00037 U | < 0.0025 UJ | < 0.00051 U |
| SRC2-J33 | 0 | FD | 09/17/2009 | < 0.00024 U | < 0.00026 U | < 0.00029 U | < 0.0006 U | < 0.00035 U | < 0.0024 UJ | < 0.00048 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-11**
**SOIL VOLATILE ORGANIC COMPOUNDS (VOCS) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Volatile Organic Compounds (VOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ethanol | Ethylbenzene | Freon-11 (Trichlorofluoromethane) | Freon-113 (1,1,2-Trifluoro-1,2,2-trichloroet | Freon-12 (Dichlorodifluoromethane) | Heptane | Isopropylbenzene |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.048 UJ | < 0.000059 U | < 0.00022 U | < 0.00015 U | < 0.0003 UJ | < 0.00017 U | < 0.00011 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.049 UJ | < 0.000061 U | < 0.00023 U | < 0.00015 U | < 0.0003 UJ | < 0.00017 U | < 0.00011 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.049 UJ | < 0.00006 U | < 0.00023 U | < 0.00015 U | < 0.0003 UJ | < 0.00017 U | < 0.00011 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.049 UJ | < 0.00006 U | < 0.00023 U | < 0.00015 U | < 0.0003 UJ | < 0.00017 U | < 0.00011 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.048 UJ | 0.00027 J | 0.00031 J | < 0.00015 U | < 0.00029 UJ | < 0.00017 U | < 0.0001 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.049 UJ | < 0.00006 U | < 0.00022 U | < 0.00015 U | < 0.0003 UJ | < 0.00017 U | < 0.00011 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.05 UJ | < 0.000061 U | < 0.00023 U | < 0.00015 U | < 0.0003 UJ | < 0.00017 U | < 0.00011 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.048 UJ | < 0.000059 U | < 0.00022 U | < 0.00015 U | < 0.00029 U | < 0.00017 U | < 0.0001 U |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.049 UJ | < 0.00006 U | < 0.00023 U | < 0.00015 U | < 0.0003 U | < 0.00017 U | < 0.00011 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.049 UJ | < 0.00006 U | < 0.00022 U | < 0.00015 U | < 0.0003 UJ | < 0.00017 U | < 0.00011 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.05 UJ | < 0.000061 U | < 0.00023 U | < 0.00015 U | < 0.0003 UJ | < 0.00017 U | < 0.00011 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.05 UJ | < 0.000061 U | < 0.00023 U | < 0.00015 U | < 0.0003 UJ | < 0.00017 U | < 0.00011 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.049 UJ | < 0.00006 U | < 0.00023 U | < 0.00015 U | < 0.0003 UJ | < 0.00017 U | < 0.00011 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.05 UJ | < 0.000061 UJ | < 0.00023 U | < 0.00015 U | < 0.00031 UJ | < 0.00017 U | < 0.00011 UJ |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.05 UJ | < 0.000061 U | < 0.00023 U | < 0.00015 U | < 0.0003 UJ | < 0.00017 U | < 0.00011 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.049 UJ | < 0.000061 UJ | < 0.00023 UJ | < 0.00015 UJ | < 0.0003 UJ | < 0.00017 UJ | < 0.00011 UJ |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.05 UJ | < 0.000061 UJ | < 0.00023 U | < 0.00015 U | < 0.0003 UJ | < 0.00017 U | < 0.00011 UJ |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.051 UJ | < 0.000062 U | < 0.00023 U | < 0.00016 U | < 0.00031 UJ | < 0.00018 U | < 0.00011 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.049 UJ | < 0.00006 U | < 0.00023 U | < 0.00015 U | < 0.0003 U | < 0.00017 U | < 0.00011 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.05 UJ | < 0.000069 U | < 0.00023 U | < 0.00015 U | < 0.0003 U | < 0.00017 U | < 0.00011 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.05 UJ | < 0.000061 U | < 0.00023 U | < 0.00015 U | < 0.0003 UJ | < 0.00017 U | < 0.00011 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.05 UJ | < 0.000062 U | < 0.00023 U | < 0.00015 U | < 0.00031 UJ | < 0.00017 U | < 0.00011 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.051 UJ | < 0.000063 U | < 0.00024 U | < 0.00016 U | < 0.00031 UJ | < 0.00018 U | < 0.00011 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.049 UJ | < 0.00006 UJ | < 0.00023 U | < 0.00015 U | < 0.0003 U | < 0.00017 U | < 0.00011 UJ |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.049 UJ | < 0.00006 UJ | < 0.00023 U | < 0.00015 U | < 0.0003 U | < 0.00017 U | < 0.00011 UJ |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.05 UJ | < 0.000061 U | < 0.00023 U | < 0.00015 U | < 0.0003 U | < 0.00017 U | < 0.00011 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.05 UJ | < 0.000061 U | < 0.00023 U | < 0.00015 U | < 0.00031 U | < 0.00017 U | < 0.00011 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.062 UJ | < 0.00029 U | < 0.00031 U | < 0.00025 U | < 0.00025 U | < 0.00038 U | < 0.00029 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.062 UJ | < 0.00029 UJ | < 0.00031 U | < 0.00025 U | < 0.00025 U | < 0.00038 U | < 0.00029 UJ |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.062 UJ | < 0.00029 U | < 0.00031 U | < 0.00025 U | < 0.00025 U | < 0.00037 U | < 0.00028 U |
| SRC2-J33 | 0 | N | 09/17/2009 | < 0.066 UJ | < 0.00031 U | < 0.00033 U | < 0.00027 UJ | < 0.00027 U | < 0.0004 U | < 0.0003 U |
| SRC2-J33 | 0 | FD | 09/17/2009 | < 0.062 UJ | < 0.00029 U | < 0.00031 U | < 0.00025 UJ | < 0.00025 U | < 0.00038 U | < 0.00029 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-11**
**SOIL VOLATILE ORGANIC COMPOUNDS (VOCS) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 10 of 12)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Volatile Organic Compounds (VOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | m,p-Xylenes | Methyl ethyl ketone | Methyl iodide | MTBE (Methyl tert-butyl ether) | n-Butyl benzene | Nonanal | n-Propylbenzene |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.00017 U | < 0.00089 U | < 0.00013 U | < 0.000091 U | < 0.00018 U | < 0.00048 U | < 0.00011 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.00017 U | < 0.00091 U | < 0.00013 U | < 0.000093 U | < 0.00019 U | < 0.00049 U | < 0.00011 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.00017 U | < 0.0009 U | < 0.00013 U | < 0.000092 U | < 0.00019 U | < 0.00048 U | < 0.00011 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.00017 U | < 0.0009 U | < 0.00013 U | < 0.000093 U | < 0.00019 UJ | < 0.00049 UJ | < 0.00011 UJ |
| SRC1-AI19 | 0 | N | 10/31/2008 | 0.00055 J | < 0.00088 U | < 0.00013 U | < 0.00009 U | < 0.00018 UJ | < 0.00047 UJ | < 0.00011 UJ |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.00017 U | < 0.00089 U | < 0.00013 U | < 0.000092 U | < 0.00019 U | < 0.00048 U | < 0.00011 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.00017 U | < 0.00091 U | < 0.00013 U | < 0.000093 U | < 0.00019 U | < 0.00049 U | < 0.00011 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.00017 U | < 0.00088 U | < 0.00013 U | < 0.00009 U | < 0.00018 U | < 0.00048 U | < 0.00011 U |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.00017 U | < 0.0009 U | < 0.00013 U | < 0.000093 U | < 0.00019 U | < 0.00049 U | < 0.00011 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.00017 U | < 0.00089 U | < 0.00013 U | < 0.000091 U | < 0.00018 UJ | < 0.00048 UJ | < 0.00011 UJ |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.00017 U | < 0.00091 U | < 0.00013 U | < 0.000094 U | < 0.00019 U | < 0.00049 U | < 0.00011 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.00018 U | < 0.00091 U | < 0.00013 U | < 0.000094 U | < 0.00019 U | < 0.00049 U | < 0.00011 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.00017 U | < 0.0009 U | < 0.00013 U | < 0.000092 U | < 0.00019 U | < 0.00048 U | < 0.00011 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.00018 U | < 0.00092 U | < 0.00013 U | < 0.000094 U | < 0.00019 UJ | < 0.00049 UJ | < 0.00012 UJ |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.00017 U | < 0.00091 U | < 0.00013 U | < 0.000093 U | < 0.00019 U | < 0.00049 U | < 0.00011 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.00017 UJ | < 0.00091 UJ | < 0.00013 UJ | < 0.000093 UJ | < 0.00019 UJ | < 0.00049 UJ | < 0.00011 UJ |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.00017 U | < 0.00091 U | < 0.00013 U | < 0.000094 U | < 0.00019 UJ | < 0.00049 UJ | < 0.00011 UJ |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.00018 U | < 0.00093 U | < 0.00013 U | < 0.000096 U | < 0.00019 U | < 0.0005 U | < 0.00012 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.00017 U | < 0.0009 U | < 0.00013 U | < 0.000093 U | < 0.00019 U | < 0.00049 U | < 0.00011 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.00017 U | < 0.00091 U | < 0.00013 U | < 0.000094 U | < 0.00019 U | < 0.00049 U | < 0.00011 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.00017 U | < 0.00091 U | < 0.00013 U | < 0.000093 U | < 0.00019 U | < 0.00049 U | < 0.00011 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.00018 U | < 0.00092 U | < 0.00013 U | < 0.000094 U | < 0.00019 U | < 0.0005 U | < 0.00012 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.00018 U | < 0.00094 U | < 0.00013 U | < 0.000096 U | < 0.0002 U | < 0.00051 U | < 0.00012 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.00017 UJ | < 0.0009 U | < 0.00013 U | < 0.000093 U | < 0.00019 UJ | < 0.00049 UJ | < 0.00011 UJ |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.00017 UJ | < 0.0009 U | < 0.00013 U | < 0.000092 U | < 0.00019 UJ | < 0.00048 UJ | < 0.00011 UJ |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.00017 U | < 0.00091 U | < 0.00013 U | < 0.000093 U | < 0.00019 U | < 0.00049 U | < 0.00011 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.00018 U | < 0.00092 U | < 0.00013 U | < 0.000094 U | < 0.00019 U | < 0.00049 U | < 0.00012 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.00046 U | < 0.00058 UJ | < 0.00039 U | < 0.00047 UJ | < 0.0003 UJ | < 0.00037 UJ | < 0.00028 UJ |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.00046 UJ | < 0.00058 UJ | < 0.00039 U | < 0.00047 UJ | < 0.0003 UJ | < 0.00036 UJ | < 0.00027 UJ |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.00045 U | < 0.00057 UJ | < 0.00039 U | < 0.00047 UJ | < 0.00029 UJ | < 0.00036 UJ | < 0.00027 UJ |
| SRC2-J33 | 0 | N | 09/17/2009 | < 0.00049 U | 0.0045 J | < 0.00041 U | < 0.0005 U | < 0.00032 U | < 0.00039 U | < 0.00029 U |
| SRC2-J33 | 0 | FD | 09/17/2009 | < 0.00046 U | 0.004 J | < 0.00039 U | < 0.00047 U | < 0.0003 U | < 0.00037 U | < 0.00028 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-11**
**SOIL VOLATILE ORGANIC COMPOUNDS (VOCS) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Volatile Organic Compounds (VOCs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | o-Xylene | sec-Butylbenzene | Styrene | tert-Butyl benzene | Tetrachloroethene | Toluene | trans-1,2-Dichloroethene |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.000078 U | < 0.00011 U | < 0.00018 U | < 0.0001 U | < 0.000089 U | < 0.00033 U | < 0.000092 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.000079 U | < 0.00011 U | < 0.00018 U | < 0.0001 U | < 0.000091 U | < 0.00034 U | < 0.000094 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.000079 U | < 0.00011 U | < 0.00018 U | < 0.0001 U | < 0.00009 U | < 0.00033 U | < 0.000093 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.000079 U | < 0.00011 UJ | < 0.00018 U | < 0.0001 UJ | < 0.00009 U | < 0.00033 U | < 0.000094 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | 0.00025 J | < 0.00011 UJ | < 0.00018 U | < 0.0001 UJ | < 0.000088 U | 0.00048 J | < 0.000091 U |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.000078 U | < 0.00011 U | < 0.00018 U | < 0.0001 U | < 0.00009 U | < 0.00033 U | < 0.000093 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.00008 U | < 0.00011 U | < 0.00018 U | < 0.0001 U | < 0.000091 U | < 0.00034 U | < 0.000094 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.000077 U | < 0.00011 U | < 0.00018 U | < 0.0001 U | < 0.000088 U | < 0.00033 U | < 0.000091 U |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.000079 U | < 0.00011 U | < 0.00018 U | < 0.0001 U | < 0.000091 U | < 0.00034 U | < 0.000094 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.000078 U | < 0.00011 UJ | < 0.00018 U | < 0.0001 UJ | < 0.000089 U | < 0.00033 U | < 0.000092 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.00008 U | < 0.00011 U | < 0.00018 U | < 0.00011 U | < 0.000091 U | < 0.00034 U | < 0.000095 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.00008 U | < 0.00011 U | < 0.00018 U | < 0.00011 U | < 0.000092 U | < 0.00034 U | < 0.000095 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.000079 U | < 0.00011 U | < 0.00018 U | < 0.0001 U | < 0.00009 U | < 0.00033 U | < 0.000093 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.00008 U | < 0.00011 UJ | < 0.00018 U | < 0.00011 UJ | < 0.000092 U | < 0.00034 U | < 0.000095 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.00008 U | < 0.00011 U | < 0.00018 U | < 0.0001 U | < 0.000091 U | < 0.00034 U | < 0.000094 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.000079 UJ | < 0.00011 UJ | < 0.00018 UJ | < 0.0001 UJ | < 0.000091 UJ | < 0.00034 UJ | < 0.000094 UJ |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.00008 U | < 0.00011 UJ | < 0.00018 U | < 0.00011 UJ | < 0.000092 U | < 0.00034 U | < 0.000095 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.000082 U | < 0.00011 U | < 0.00019 U | < 0.00011 U | < 0.000094 U | < 0.00035 U | < 0.000097 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.000079 U | < 0.00011 U | < 0.00018 U | < 0.0001 U | < 0.000091 U | < 0.00034 U | < 0.000094 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.00008 U | < 0.00011 U | < 0.00018 U | < 0.00011 U | < 0.000092 U | < 0.00034 U | < 0.000095 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.00008 U | < 0.00011 U | < 0.00018 U | < 0.0001 U | < 0.000091 U | < 0.00034 U | < 0.000094 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.000081 U | < 0.00011 U | < 0.00018 U | < 0.00011 U | < 0.000092 U | < 0.00034 U | < 0.000095 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.000082 U | < 0.00011 U | < 0.00019 U | < 0.00011 U | < 0.000094 U | < 0.00035 U | < 0.000098 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.000079 UJ | < 0.00011 UJ | < 0.00018 UJ | < 0.0001 UJ | < 0.000091 UJ | < 0.00034 UJ | < 0.000094 U |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.000078 UJ | < 0.00011 UJ | < 0.00018 UJ | < 0.0001 UJ | < 0.00009 UJ | < 0.00033 UJ | < 0.000093 U |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.00008 U | < 0.00011 U | < 0.00018 U | < 0.0001 U | < 0.000091 U | < 0.00034 U | < 0.000094 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.00008 U | < 0.00011 U | < 0.00018 U | < 0.00011 U | < 0.000092 U | < 0.00034 U | < 0.000095 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.00024 U | < 0.00033 UJ | < 0.00021 U | < 0.00023 UJ | < 0.00047 U | < 0.00024 U | < 0.00034 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.00024 UJ | < 0.00033 UJ | < 0.00021 UJ | < 0.00023 UJ | < 0.00047 UJ | < 0.00024 UJ | < 0.00034 U |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.00023 U | < 0.00032 UJ | < 0.00021 U | < 0.00023 UJ | < 0.00046 U | < 0.00024 U | < 0.00034 U |
| SRC2-J33 | 0 | N | 09/17/2009 | < 0.00025 U | < 0.00035 U | < 0.00022 U | < 0.00024 U | < 0.0005 U | < 0.00026 U | < 0.00036 UJ |
| SRC2-J33 | 0 | FD | 09/17/2009 | < 0.00024 U | < 0.00033 U | < 0.00021 U | < 0.00023 U | < 0.00047 U | < 0.00024 U | < 0.00034 UJ |

All units in mg/kg.
-- = no sample data.

**TABLE C-11**
**SOIL VOLATILE ORGANIC COMPOUNDS (VOCS) DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 12 of 12)**

| Sample ID | Depth (ft bgs) | Sample Type | Sample Date | Volatile Organic Compounds (VOCs) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | trans-1,3-Dichloropropene | Trichloroethene | Vinyl acetate | Vinyl chloride | Xylenes (total) |
| SRC1-AI16 | 0 | N | 11/03/2008 | < 0.0001 U | < 0.00011 U | < 0.00025 U | < 0.00011 U | < 0.00024 U |
| SRC1-AI16 | 10 | N | 11/03/2008 | < 0.0001 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC1-AI18 | 0 | N | 11/03/2008 | < 0.0001 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC1-AI18 | 11 | N | 11/03/2008 | < 0.0001 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC1-AI19 | 0 | N | 10/31/2008 | < 0.0001 U | < 0.00011 U | < 0.00024 U | < 0.00011 U | 0.00079 J |
| SRC1-AI19 | 6 | N | 10/31/2008 | < 0.0001 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC1-AI19 | 16 | N | 10/31/2008 | < 0.0001 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC1-AJ19 | 0 | N | 11/14/2008 | < 0.0001 U | < 0.00011 U | < 0.00024 U | < 0.00011 U | < 0.00023 U |
| SRC1-AJ19 | 11 | N | 11/14/2008 | < 0.0001 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC1-AJ20 | 0 | N | 11/05/2008 | < 0.0001 U | < 0.00011 U | < 0.00025 U | < 0.00011 U | < 0.00024 U |
| SRC1-AJ20 | 11 | N | 11/05/2008 | < 0.00011 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC1-AJ20 | 21 | N | 11/05/2008 | < 0.00011 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC1-AJ21 | 0 | N | 11/06/2008 | < 0.0001 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC1-AJ21 | 12 | N | 11/06/2008 | < 0.00011 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC1-AK21 | 0 | N | 11/06/2008 | < 0.0001 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC1-AK21 | 0 | FD | 11/06/2008 | < 0.0001 UJ | < 0.00011 UJ | < 0.00025 UJ | < 0.00012 UJ | < 0.00024 UJ |
| SRC1-AK21 | 8 | N | 11/06/2008 | < 0.00011 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC1-AK21 | 18 | N | 11/06/2008 | < 0.00011 U | < 0.00011 U | < 0.00026 U | < 0.00012 U | < 0.00025 U |
| SRC1-AK28 | 0 | N | 11/14/2008 | < 0.0001 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC1-AK28 | 11 | N | 11/14/2008 | < 0.00011 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC1-AL24 | 0 | N | 11/06/2008 | < 0.0001 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC1-AL24 | 8 | N | 11/06/2008 | < 0.00011 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00025 U |
| SRC1-AL24 | 18 | N | 11/06/2008 | < 0.00011 U | < 0.00011 U | < 0.00026 U | < 0.00012 U | < 0.00025 U |
| SRC1-AL25 | 0 | N | 11/10/2008 | < 0.0001 UJ | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 UJ |
| SRC1-AL25 | 11 | N | 11/10/2008 | < 0.0001 UJ | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 UJ |
| SRC1-AL27 | 0 | N | 11/11/2008 | < 0.0001 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC1-AL27 | 11 | N | 11/11/2008 | < 0.00011 U | < 0.00011 U | < 0.00025 U | < 0.00012 U | < 0.00024 U |
| SRC2-J30 | 0 | N | 09/14/2009 | < 0.00018 U | < 0.00027 U | < 0.00039 U | < 0.00033 U | < 0.00065 U |
| SRC2-J31 | 0 | N | 09/14/2009 | < 0.00018 UJ | < 0.00027 U | < 0.00038 U | < 0.00032 U | < 0.00064 UJ |
| SRC2-J32 | 0 | N | 09/14/2009 | < 0.00018 U | < 0.00026 U | < 0.00038 U | < 0.00032 U | < 0.00064 U |
| SRC2-J33 | 0 | N | 09/17/2009 | < 0.00019 U | < 0.00028 U | < 0.00041 UJ | < 0.00035 U | < 0.00069 U |
| SRC2-J33 | 0 | FD | 09/17/2009 | < 0.00018 U | < 0.00027 U | < 0.00038 UJ | < 0.00033 U | < 0.00065 U |

All units in mg/kg.
-- = no sample data.

**TABLE C-12**
**SURFACE FLUX DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 1 of 2)**

| Analytical Method | Analyte | Surface Flux | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | SRC1-AI16 | SRC1-AI18 | SRC1-AI19 | SRC1-AJ20 | SRC1-AJ21 | SRC1-AL24 | SRC1-AL25 |
| | **Sample Date** | 10/24/2008 | 10/24/2008 | 10/24/2008 | 10/24/2008 | 10/24/2008 | 10/25/2008 | 10/25/2008 |
| TO-15 | 1,1,1,2-Tetrachloroethane | < 0.11 U | < 0.11 U | < 0.1 U | < 0.11 U | < 0.087 U | < 0.11 U | < 0.11 U |
| | 1,1,1-Trichloroethane | < 0.096 U | < 0.099 U | < 0.092 U | < 0.1 U | < 0.078 U | < 0.1 U | < 0.1 U |
| | 1,1,2,2-Tetrachloroethane | < 0.24 U | < 0.25 U | < 0.23 U | < 0.13 U | < 0.2 U | < 0.25 U | < 0.13 UJ |
| | 1,1,2-Trichloroethane | < 0.096 U | < 0.099 U | < 0.092 U | < 0.1 U | < 0.078 U | < 0.1 U | < 0.1 U |
| | 1,1-Dichloroethane | < 0.07 U | < 0.073 U | < 0.068 U | < 0.074 U | < 0.058 UJ | < 0.074 U | < 0.074 U |
| | 1,1-Dichloroethene | < 0.069 U | < 0.071 U | < 0.067 U | < 0.072 U | < 0.057 UJ | < 0.072 U | < 0.073 U |
| | 1,1-Dichloropropene | < 0.066 U | < 0.068 U | < 0.063 U | < 0.069 U | < 0.054 U | < 0.069 U | < 0.069 U |
| | 1,2,3-Trichloropropane | < 0.18 U | < 0.18 U | < 0.17 U | < 0.093 U | < 0.15 U | < 0.19 U | < 0.094 U |
| | 1,2,4-Trimethylbenzene | < 0.17 U | < 0.18 U | < 0.16 U | < 0.09 UJ | < 0.14 U | < 0.18 U | < 0.091 UJ |
| | 1,2-Dibromoethane | < 0.14 U | < 0.14 U | < 0.13 U | < 0.14 U | < 0.11 U | < 0.14 U | < 0.15 U |
| | 1,2-Dichlorobenzene | < 0.21 U | < 0.21 U | < 0.2 UJ | < 0.22 U | < 0.17 U | < 0.22 U | < 0.22 U |
| | 1,2-Dichloroethane | < 0.072 U | < 0.074 U | < 0.069 U | < 0.075 U | < 0.059 U | < 0.075 U | < 0.076 U |
| | 1,2-Dichloropropane | < 0.082 U | < 0.085 U | < 0.079 U | < 0.086 U | < 0.067 U | < 0.086 U | < 0.087 U |
| | 1,3,5-Trimethylbenzene | < 0.18 U | < 0.19 U | < 0.17 U | < 0.094 U | < 0.15 U | < 0.19 U | < 0.095 U |
| | 1,3-Dichlorobenzene | < 0.21 U | < 0.22 U | < 0.2 UJ | < 0.22 UJ | < 0.17 U | < 0.22 U | < 0.22 UJ |
| | 1,3-Dichloropropane | < 0.066 U | < 0.068 U | < 0.063 U | < 0.069 U | < 0.054 U | < 0.069 U | < 0.07 U |
| | 1,4-Dichlorobenzene | < 0.21 U | < 0.22 U | < 0.2 UJ | < 0.22 UJ | < 0.17 U | < 0.22 U | < 0.22 UJ |
| | 1,4-Dioxane | < 0.055 UJ | < 0.056 UJ | < 0.052 U | < 0.057 U | < 0.045 UJ | < 0.057 UJ | < 0.058 U |
| | 1-Propanol, 2-methyl- | < 0.13 UJ | < 0.13 UJ | < 0.12 UJ | < 0.13 UJ | < 0.11 UJ | < 0.13 UJ | < 0.14 UJ |
| | 2,2-Dichloropropane | < 0.73 U | < 0.75 U | < 0.7 U | < 0.76 U | < 0.59 U | < 0.76 U | < 0.76 U |
| | 2-Hexanone | < 0.062 UJ | < 0.064 UJ | < 0.06 UJ | < 0.065 UJ | < 0.051 UJ | 0.013 J | < 0.065 UJ |
| | 4-Methyl-2-pentanone (MIBK) | < 0.065 U | < 0.067 U | < 0.062 UJ | < 0.068 UJ | < 0.053 U | < 0.068 U | < 0.068 UJ |
| | Acetone | 1.1 J | 0.5 J | 0.28 J | 0.16 | 0.19 J | 0.38 J | 0.26 J |
| | Acetonitrile | < 0.071 UJ | 0.048 J | 0.051 J | < 0.074 U | < 0.058 U | < 0.074 U | 0.094 J- |
| | Benzene | < 0.057 U | < 0.058 U | 0.061 | 0.038 | < 0.047 U | 0.033 J | < 0.12 U |
| | Benzyl chloride | < 0.16 U | < 0.17 U | < 0.15 UJ | < 0.17 U | < 0.13 U | < 0.17 U | < 0.17 U |
| | Bromodichloromethane | < 0.092 U | < 0.095 U | < 0.089 U | < 0.097 U | < 0.076 U | < 0.097 U | < 0.097 U |
| | Bromoform | < 0.17 UJ | < 0.17 UJ | < 0.16 UJ | < 0.17 U | < 0.14 UJ | < 0.17 UJ | < 0.17 U |
| | Bromomethane | < 0.07 U | < 0.072 U | < 0.067 U | < 0.073 U | < 0.057 U | < 0.073 U | < 0.073 U |
| | Carbon disulfide | < 0.095 U | < 0.098 U | 0.041 | < 0.05 U | < 0.078 U | < 0.1 U | 0.062 |
| | Carbon tetrachloride | < 0.11 U | < 0.11 U | < 0.11 U | < 0.12 U | < 0.09 U | < 0.12 U | < 0.12 U |
| | Chlorobenzene | < 0.081 U | < 0.083 U | < 0.078 U | < 0.085 U | < 0.066 U | < 0.085 U | < 0.085 U |
| | Chlorobromomethane | < 0.078 U | < 0.081 U | < 0.075 U | < 0.082 U | < 0.064 U | < 0.082 U | < 0.083 UJ |
| | Chloroethane | < 0.047 U | < 0.049 U | < 0.045 U | < 0.049 U | < 0.039 U | < 0.049 U | < 0.05 U |
| | Chloroform | 0.018 J | < 0.088 U | < 0.082 U | < 0.09 U | < 0.07 U | < 0.09 U | < 0.09 U |
| | Chloromethane | < 0.036 U | < 0.037 U | 0.02 J | 0.0096 J | < 0.03 U | < 0.038 U | < 0.038 U |
| | cis-1,2-Dichloroethene | < 0.07 U | < 0.073 U | < 0.068 U | < 0.073 U | < 0.058 U | < 0.073 U | < 0.074 U |
| | cis-1,3-Dichloropropene | < 0.083 U | < 0.085 U | < 0.08 U | < 0.087 U | < 0.068 U | < 0.087 U | < 0.087 U |
| | Cymene (Isopropyltoluene) | < 0.17 U | < 0.18 U | < 0.17 UJ | < 0.18 U | < 0.14 U | < 0.18 U | < 0.18 U |
| | Dibromochloromethane | < 0.13 U | < 0.13 U | < 0.13 U | < 0.14 U | < 0.11 U | < 0.14 U | < 0.14 U |
| | Dibromochloropropane | < 0.8 UJ | < 0.82 UJ | R | < 0.84 UJ | < 0.65 UJ | < 0.84 UJ | < 0.84 UJ |
| | Dibromomethane | < 0.11 U | < 0.11 U | < 0.1 U | < 0.11 U | < 0.088 U | < 0.11 U | < 0.11 U |
| | Dichloromethane | 0.017 J | 0.019 J | 0.02 J | < 0.065 U | < 0.051 U | 0.017 J | 0.026 J |
| | Ethanol | < 0.079 UJ | 0.31 J | 0.11 J- | 0.06 J- | < 0.065 UJ | 0.24 J | 0.13 J- |
| | Ethylbenzene | < 0.078 U | < 0.08 U | < 0.075 U | < 0.081 U | < 0.064 U | < 0.081 U | < 0.082 U |
| | Freon-11 | < 0.1 U | < 0.1 U | 0.023 J+ | < 0.11 U | < 0.082 U | < 0.11 U | < 0.11 U |
| | Freon-113 | < 0.13 U | < 0.14 U | < 0.13 U | < 0.14 U | < 0.11 U | < 0.14 U | < 0.14 U |
| | Freon-12 | < 0.09 U | < 0.092 U | 0.032 J | < 0.093 U | < 0.073 U | < 0.093 U | < 0.094 U |

**TABLE C-12**
**SURFACE FLUX DATA**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 2 of 2)**

| Analytical Method | Analyte | Surface Flux | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | SRC1-AI16 | SRC1-AI18 | SRC1-AI19 | SRC1-AJ20 | SRC1-AJ21 | SRC1-AL24 | SRC1-AL25 |
| | **Sample Date** | 10/24/2008 | 10/24/2008 | 10/24/2008 | 10/24/2008 | 10/24/2008 | 10/25/2008 | 10/25/2008 |
| TO-15 | Heptane | 0.013 J | < 0.061 U | < 0.057 U | < 0.062 U | 0.011 J | < 0.062 U | < 0.062 UJ |
| | Hexachlorobutadiene | < 0.38 UJ | < 0.39 UJ | R | < 0.4 UJ | < 0.31 UJ | < 0.4 UJ | < 0.4 UJ |
| | Isopropylbenzene | < 0.16 U | < 0.17 U | < 0.15 U | < 0.084 U | < 0.13 U | < 0.17 U | < 0.085 U |
| | m,p-Xylenes | < 0.15 UJ | < 0.16 UJ | 0.035 J | < 0.16 U | < 0.13 UJ | 0.04 J | 0.037 J |
| | Methyl ethyl ketone | < 0.043 U | < 0.045 U | < 0.042 U | < 0.046 U | < 0.036 U | < 0.046 U | < 0.046 U |
| | Methyl iodide | < 0.21 U | < 0.21 U | < 0.2 U | < 0.21 U | < 0.17 U | < 0.21 U | < 0.22 U |
| | MTBE (Methyl tert-butyl ether) | < 0.048 U | < 0.05 U | < 0.047 U | < 0.051 U | < 0.04 U | < 0.051 U | < 0.051 U |
| | n-Butyl benzene | < 0.17 UJ | < 0.18 UJ | < 0.17 UJ | < 0.18 UJ | < 0.14 UJ | < 0.18 UJ | < 0.18 UJ |
| | n-Propylbenzene | < 0.14 U | < 0.15 U | < 0.13 U | < 0.074 U | < 0.12 U | < 0.15 U | < 0.075 UJ |
| | o-Xylene | < 0.076 UJ | < 0.078 UJ | < 0.073 U | < 0.08 U | < 0.063 UJ | 0.017 J | < 0.08 U |
| | sec-Butylbenzene | < 0.17 U | < 0.18 U | < 0.17 UJ | < 0.18 UJ | < 0.14 U | < 0.18 U | < 0.18 UJ |
| | Styrene | < 0.076 U | < 0.078 U | < 0.073 U | < 0.079 U | < 0.062 U | < 0.079 U | < 0.08 U |
| | tert-Butyl benzene | < 0.17 UJ | < 0.18 UJ | < 0.16 UJ | < 0.089 UJ | < 0.14 UJ | < 0.18 UJ | < 0.09 UJ |
| | Tetrachloroethene | < 0.12 U | < 0.12 UJ | < 0.11 UJ | < 0.12 U | < 0.098 U | 0.034 J | < 0.13 U |
| | Toluene | 0.16 | 0.13 | 0.087 | 0.045 J | 0.027 J | 0.081 | 0.067 |
| | trans-1,2-Dichloroethene | < 0.06 U | < 0.061 U | < 0.057 U | < 0.062 U | < 0.049 U | < 0.062 U | < 0.063 U |
| | trans-1,3-Dichloropropene | < 0.081 U | < 0.084 U | < 0.078 U | < 0.085 U | < 0.067 U | < 0.085 U | < 0.086 U |
| | Trichloroethene | < 0.095 U | < 0.098 U | < 0.092 U | < 0.1 U | < 0.078 U | < 0.1 U | < 0.1 U |
| | Vinyl acetate | < 0.052 U | < 0.054 U | < 0.05 U | < 0.055 U | < 0.043 U | < 0.055 U | 0.025 J- |
| | Vinyl chloride | < 0.046 U | < 0.047 U | < 0.044 U | < 0.048 U | < 0.038 UJ | < 0.048 U | < 0.048 U |
| TO-15 SIM | 1,1,2,2-Tetrachloroethane | < 0.0088 U | < 0.0091 U | < 0.0085 U | < 0.0093 U | < 0.0092 UJ | < 0.0093 U | < 0.0093 UJ |
| | 1,1,2-Trichloroethane | < 0.0014 U | < 0.0015 UJ | < 0.0014 U | < 0.0015 U | 0.002 J | < 0.0015 U | < 0.0077 U |
| | 1,2,3-Trichloropropane | < 0.0062 U | < 0.0064 U | < 0.006 U | < 0.0065 U | 0.011 J- | < 0.0065 U | < 0.0066 UJ |
| | 1,2,4-Trichlorobenzene | < 0.039 UJ | < 0.041 UJ | < 0.038 UJ | < 0.041 UJ | < 0.041 UJ | < 0.041 UJ | < 0.042 UJ |
| | 1,2-Dibromoethane | < 0.0021 U | < 0.0021 UJ | < 0.002 U | < 0.0022 U | 0.0047 J | < 0.0022 U | < 0.011 U |
| | 1,2-Dichlorobenzene | < 0.0078 UJ | < 0.008 UJ | < 0.0075 UJ | < 0.0081 UJ | 0.0058 J- | < 0.0081 UJ | < 0.0082 UJ |
| | 1,2-Dichloroethane | 0.0011 | 0.0016 J | 0.0017 | < 0.0011 U | 0.0018 J | 0.0025 | 0.0011 J- |
| | 1,2-Dichloropropane | < 0.0012 UJ | < 0.0013 UJ | < 0.0012 UJ | < 0.0013 UJ | < 0.0064 U | < 0.0013 U | < 0.0065 U |
| | 1,3-Dichlorobenzene | < 0.0081 UJ | < 0.0083 UJ | < 0.0078 UJ | < 0.0085 UJ | 0.0052 J- | < 0.0085 UJ | < 0.0085 UJ |
| | 1,4-Dichlorobenzene | < 0.0078 UJ | < 0.008 UJ | < 0.0075 UJ | < 0.0081 UJ | 0.0059 J | < 0.0081 UJ | < 0.0082 UJ |
| | Benzene | 0.034 J | 0.033 J | 0.031 J | < 0.00088 UJ | 0.062 | 0.023 J | 0.03 J |
| | Benzyl chloride | < 0.0051 UJ | < 0.0052 UJ | < 0.0049 UJ | < 0.0053 U | 0.0055 J | < 0.0053 UJ | < 0.0053 UJ |
| | Bromodichloromethane | 0.0021 | 0.0027 J | 0.0026 | < 0.0012 U | 0.0013 J | 0.0024 | < 0.0062 U |
| | Carbon tetrachloride | 0.002 | 0.0035 J | 0.0068 | 0.004 | 0.0056 J | 0.01 | 0.0045 J- |
| | Chloroform | 0.013 | 0.014 J | 0.014 | 0.0052 | 0.0038 J | 0.0064 | 0.0063 J- |
| | Dibromochloromethane | < 0.0083 U | < 0.0086 U | < 0.008 U | < 0.0087 U | 0.0018 J | < 0.0087 U | < 0.0088 U |
| | Dibromochloropropane | < 0.027 UJ | < 0.028 UJ | < 0.026 UJ | < 0.028 UJ | < 0.028 UJ | < 0.028 UJ | < 0.028 UJ |
| | Dichloromethane | 0.01 | 0.012 J | 0.012 | 0.0078 | 0.004 J | 0.05 | 0.0059 J- |
| | Hexachlorobutadiene | < 0.014 UJ | < 0.015 UJ | < 0.014 UJ | < 0.015 UJ | 0.0084 J | < 0.015 UJ | < 0.015 UJ |
| | Naphthalene | < 0.014 UJ | < 0.015 UJ | < 0.014 UJ | < 0.015 UJ | 0.33 J | < 0.015 UJ | 0.0039 J |
| | Tetrachloroethene | < 0.0018 UJ | < 0.0018 UJ | < 0.0017 UJ | 0.0064 | 0.01 | 0.0078 J | 0.016 J- |
| | Trichloroethene | < 0.0014 U | < 0.0015 UJ | < 0.0014 U | < 0.0015 UJ | 0.0092 | < 0.0015 UJ | < 0.0076 UJ |
| | Vinyl chloride | < 0.00069 U | < 0.00069 UJ | < 0.00065 U | < 0.00073 U | < 0.0036 U | < 0.00073 U | < 0.0036 U |

All units in $\mu g/m^2,min^{-1}$.
-- = no sample data.

ATTACHMENT D

NEPTUNE AND COMPANY DATA USABILITY INVESTIGATION OF TO-15 SIM DATA AND REVIEW BY STEVE HOYT, ENVIRONMENTAL ANALYTICAL SERVICE

NEPTUNE AND COMPANY, INC.
1505 15th Street
Suite B
Los Alamos NM
Phone 505-662-2121
Fax 505-662-0500

MEMORANDUM

From: David Gratson

To: Brian Rakvica

Date: 18th May 2010

Subject: Data Usability Investigation of TO-15 SIM data collected as part of flux chamber sampling under DVSR 53.

**Background**

As part of the Southern Ribs Sub-Area Soil Investigations (Dataset 53) BRC included flux chamber sampling and analysis using EPA Method TO-15. The flux chamber summa canister samples were analyzed for volatile organics using both full-scan and Single Ion Monitoring (SIM) under Method TO-15. The original Data Validation Summary Report, dated January 2010 included qualifiers for some of the TO-15 SIM results (SDG 208610) due to calibration issues. Section 2.1.7 of the DVSR states "A large number of the sample results for the TO-15 SIM analysis were qualified as estimated (J/UJ) because they were quantitated based on an initial calibration performed after the samples had been analyzed. The laboratory indicated that instrument was drifting for some of the compounds in the initial calibration preceding the analysis of the samples. The laboratory did this rather than analyze the samples outside of holding time." We believe what this means is that the 5-pt ICAL was performed on November 25$^{th}$, after the samples had been analyzed.

Laboratory data validation report file 20190 associated with this DVSR indicated "The associated initial calibration standards were analyzed after the samples." Neptune and Company provided the following comment in our review of this DVSR:

*The reporting of data that were analyzed without an initial calibration that met the method requirements is considered unacceptable by many agencies. For example, the Department of Defense Quality Systems Manual for Environmental Laboratories does not allow results to be qualified due to missed initial calibration. Similarly, the HQ Air Force Center for Environmental Excellence Technical Services Quality Assurance Program, Guidance for Contract Deliverables document indicates sample analysis must first meet the initial calibration, qualification (flagging) of data is not allowed. This issue of not meeting an initial calibration is not discussed in the BRC SOP and qualification of such data (versus re-analysis) is generally not industry standard practice.*

*NDEP proposes that additional details on these QC results and sample data be added as separate subsection and tables to the Deliverable in order to determine whether these data can be used (not rejected). The Deliverable should provide the recovery results both for the calibration performed prior to sample analysis as well as the calibration done after analysis, along with any continuing calibration checks. Also provide a separate table showing the results for all associated samples so that the magnitude of the uncertainty can be assessed.*

The revised DVSR, dated March 2010, provided the following comment in reference to this issue: "*LDC had estimated the data based upon professional judgment. To reduce any uncertainty in the use of this data, the data has been re-evaluated and rejected. LDC has revised the data validation memos and the database has been updated accordingly.*"

Unfortunately, there is very little other data available in this area of the site with the sensitivity (detection and reporting limits) necessary to provide an estimate of human health risk. Therefore, a data usability assessment was conducted to evaluate the uncertainty of the data in question and the limits to use of that data for risk assessment.

**Data Usability Assessment**

The data in question are TO-15 SIM results analyzed over a period from November 20-25, 2010. The Sample Delivery Group (SDG) number associated with these data is 208610. The sample numbers are provided below.

| Field ID | Lab ID | Lab Batch |
|---|---|---|
| SRC1-AK20 | 2 | 112008-MS2 |
| SRC1-AJ20 | 3 | 112008-MS2 |
| SRC1-AK23 | 4 | 112008-MS2 |
| SRC1-AJ23 | 5 | 112008-MS2 |
| SRC1-AJ24 | 6 | 112108-MS2 |
| SRC1-AG-16 | 7 | 112108-MS2 |
| SRC1-AG-17 | 8 | 112108-MS2 |
| SRC1-AG-18 | 9 | 112108-MS2 |
| SRC1-AH-17 | 10 | 112108-MS2 |
| SRC1-AH-18 | 11 | 112108-MS2 |
| SRC1-AH-19 | 12 | 112108-MS2 |
| SRC1-AI-17 | 13 | 112108-MS2 |
| SRC1-J01 | 14 | 112108-MS2 |
| SRC1-AH15 | 15 | 112108-MS2 |
| SRC1-AH16 | 16 | 112108-MS2 |
| SRC1-AI16 | 17 | 112108-MS2 |
| SRC1-AI18 | 18 | 112108-MS2 |
| SRC1-AI19 | 20 | 112108-MS2 |
| SRC1-AI20 | 21 | 112108-MS2 |
| SRC1-J04 | 22 | 112008-MS2 |
| SRC1-AJ27 | 23 | 112208-MS2 |
| SRC1-J12 | 24 | 112208-MS2 |
| SRC1-AJ28 | 25 | 112308-MS2 |
| SRC1-J14 | 26 | 112308-MS2 |
| SRC1-J02 | 27 | 112308-MS2 |
| SRC1-AL28 | 39 | 112308-MS2 |
| SRC1-J11 | 40 | 112408-MS2 |
| SRC1-AM27 | 41 | 112408-MS2 |
| SRC1-J15 | 44 | 112408-MS2 |
| SRC1-J09 | 54 | 112408-MS1 |
| SRC1-AL24 | 65 | 112408-MS2 |
| SRC1-J06 | 67 | 112408-MS2 |
| SRC1-AL26 | 68 | 112408-MS2 |

According to the EAS Laboratory Report (208610 CLP_Group 1) the QC requirements for TO-15 SIM analysis include an Initial Calibration (ICAL) that included 5 points (concentration levels). The EAS Calibration Check Sample (CCS) criteria includes a "5pt points minimum" analysis with RSD criteria that varies with the analyte. A Continuing Calibration Verification(CCV) check also specifies a 5pt point minimum" with the same RSD criteria as used in the Initial Calibration. The EAS page does not actually provide RSD criteria for the Initial Calibration, only for the CCS, it is assumed these are the same. Note that the EPA Method TO-15 guidance also includes both initial and daily calibration criteria but a %D (percent difference) is used to evaluate the daily calibration. This %D evaluates the difference between the Relative Response Factor (RRF) calculated from the initial 5-point calibration (mean RRF ) and the value obtained for each analyte in the daily calibration. TO-15 allows analysis of samples after just the daily calibration, if it meets the QC criteria such that a full 5-point calibration is not required daily. This requirement is also consistent with the EAS QC for TO-15 Full Scan. A full 5-point is only required each day of analysis by EAS when performing TO-15 SIM analyses. It is important to understand that a full 5-point calibration each day of analysis is uncommon for GC/MS methods but is applied here to the SIM analyses.

The LDC Validation Worksheets indicate that ICAL (5-point calibrations) were performed on November 9, 22, and 25, 2010. But none were associated with samples analyzed on November 18-20. The database associated with these samples indicates some samples analyzed on November 21, 22, 23, 24 and 25 might also be affected by the lack of a daily ICAL.

To understand the affect of no ICAL on these results the laboratory reports were reviewed for the RRF values associated with the ICV/CCV and the ICALs over this period.

The average relative response factors, an average of the 5 calibration levels, are shown below for two ICALs performed spanning the period in question. What is important here is the variability between RRFs for each compound over that time period. We have also calculated a %D(RRF) that is shown in this table, using the average RRF from each day. These data show that over a 5-day period each RRF can vary up to 82%, though differences up to 30% are more common. This variation is consistent with the TO-15 QC criteria for allowable variation. The %RSDs of a complete 5-point calibration are within limits up to 30%, though up to two may vary by 40%. Realize that we are not comparing the exact same statistic, %RSD versus %D(RRF) are being evaluated. But both provide an indication of variability and both are relatively similar.

The EAS QC criteria are similar to that stated in the EPA method, with allowance up to 40% RSD for most TO-15 compounds. Naphthalene and hexachlorobenzene are allowed to vary up to 60% RSD.

**Table 1: ICAL 5-point RRFs**

| SIM RFs | 112008-MS2 Avg RRF (5-pt) 20-Nov | 112508-MS1 Ave RRF (5-pt) 25-Nov | Ave RRF | %D(RRF) |
|---|---|---|---|---|
| 1,1,2,2-Tetrachloroethane | 0.479 | 0.433 | 0.456 | 5.0% |
| 1,1,2-Trichloroethane | 0.19 | 0.144 | 0.167 | 13.8% |
| 1,2,3-Trichloropropane | 0.142 | 0.175 | 0.1585 | -10.4% |
| 1,2-Dichlorobenzene | 0.944 | 1.005 | 0.9745 | -3.1% |
| 1,2-Dichloroethane | 0.344 | 0.331 | 0.3375 | 1.9% |
| 1,2-Dichloropropane | 0.116 | 0.098 | 0.107 | 8.4% |
| 1,3-Dichlorobenzene | 0.744 | 0.856 | 0.8 | -7.0% |
| 1,4-Dichlorobenzene | 0.774 | 0.881 | 0.8275 | -6.5% |
| Benzene | 0.339 | 0.328 | 0.3335 | 1.6% |
| Benzyl chloride | 1.3 | 0.697 | 0.9985 | 30.2% |
| Bromodichloromethane | 0.38 | 0.279 | 0.3295 | 15.3% |
| Carbon tetrachloride | 0.219 | 0.185 | 0.202 | 8.4% |
| Chloroform | 0.338 | 0.195 | 0.2665 | 26.8% |
| Dibromochloromethane | 0.077 | 0.366 | 0.2215 | -65.2% |
| Dibromochloropropane | 0.088 | 0.079 | 0.0835 | 5.4% |
| Dichloromethane [Methylene chloride] | 0.093 | 0.066 | 0.0795 | 17.0% |
| Ethane, 1,2-dibromo- | 0.277 | 0.209 | 0.243 | 14.0% |
| Hexachlorobutadiene | 0.932 | 1.1 | 1.016 | -8.3% |
| Naphthalene | 0.384 | 3.939 | 2.1615 | -82.2% |
| Tetrachloroethene | 0.181 | 0.272 | 0.2265 | -20.1% |
| Trichloroethene | 0.163 | 0.24 | 0.2015 | -19.1% |
| Vinyl chloride | 0.072 | 0.049 | 0.0605 | 19.0% |

In order to look at how the RRF values varied for each day, during the period in question, the daily CCV differences were pulled from the LDC data validation sheets. Table 2 shows the results from daily CCVs over the period in questions as well as two (11/18 and 11/19) from analyses before this period. Only those compounds that had a %D of greater than 30% are shown, all other compounds were found to have their RRF within 30% of the associated 5-point average RRF.

**Table 2. Daily Calibration Check (CCV) Percentage Difference of RRFs from ICAL**

| Compounds | 11/18 %D | 11/19 %D | 11/20 %D | 11/21 %D | 11/22 %D | 11/23 %D | 11/24 %D |
|---|---|---|---|---|---|---|---|
| 1,1,2,2-Tetrachloroethane | | | 38.1 | 31.8 | 34.4 | | |
| 1,1,2-Trichloroethane | | | | | | | |
| 1,2,3-Trichloropropane | -34.1 | -35.6 | | | | -31.5 | |
| 1,2,4-Trichlorobenzene | -64.9 | -62.4 | -58.9 | -59.5 | -67.6 | -56.2 | -68.6 |
| 1,2-Dichlorobenzene | -50.7 | -54.1 | -44.1 | -50.2 | -49.9 | -39.5 | -41.4 |
| 1,2-Dichloroethane | -43.2 | -37.9 | | | | | |
| 1,2-Dichloropropane | | | | 36.7 | 53.6 | 30.2 | |
| 1,3-Dichlorobenzene | -39.1 | -47.2 | -32.7 | -40.8 | -40.3 | -31.7 | -32.9 |
| 1,4-Dichlorobenzene | -42.1 | -48.9 | -33.9 | -40.1 | -41.8 | -34.6 | |
| Benzene | | | 38.7 | 44.8 | 55.9 | 43.7 | 88.3 |
| Benzyl chloride | -41.4 | -37.6 | | -30.3 | -39.4 | | -32.6 |
| Bromodichloromethane | | | | | | | |
| Carbon tetrachloride | | | | | | | |
| Chloroform | | | | | | | |
| Dibromochloromethane | | | | | | | |
| Dibromochloropropane | | | | -50 | -61.7 | -47.2 | -48.4 |
| Dichloromethane [Methylene chloride] | | | 30.7 | 39.8 | 63.3 | 37 | |
| Ethane, 1,2-dibromo- | -30.5 | | | | | | |
| Hexachlorobutadiene | -70.4 | -69.3 | -68.2 | -71.3 | -72.2 | -42.3 | -55.1 |
| Naphthalene | -66.5 | -58.2 | -56.6 | | -68.6 | -46.4 | -64.5 |
| Tetrachloroethene | | | | | | | |
| Trichloroethene | | | | | | | |
| Vinyl chloride | | | 33.2 | 42 | 70.2 | 52.6 | |

What the data in Table 2 show is that while a complete 5-point calibration was not performed during each day of analysis, a daily calibration check was completed. These daily calibration checks provide information on the level of uncertainty associated with the sample results over that time period. During this period about half of the compounds have a %D of less than 30% (blank cells) and the other half exceeded this amount. But overall the variation in RRFs was no greater than 88% and nominally 50% for those cases where 30% was exceeded. This provides a boundary on the uncertainty of the results. It also indicates the instrument uncertainty was generally within the normal range. The QC criteria allow variations in RRFs in the same magnitude as we are seeing with these daily CCV results – on days 11/18 and 11/19 for example. Therefore, we have sufficient analytical information from the daily calibration to bound our results and use them with the understanding that the reported result has an uncertainty approximately equal to the %D values above.

To put this in a quantitative perspective, using the greatest %D as an example. If we assume the average RRF for benzene from the associated ICAL is 1.00, the RRF from the CCV on 11/24 would have been equal to 1.88 (X-1 = .88). If we assume that on the day the ICAL was analyzed, an instrument response (area) of 100 would have given a concentration value for benzene equal to 100. Concentration = area/RRF, not including the internal standard area in this calculation. This same instrument response (area) on 11/24 would have given a benzene concentration of 53 (100/1.88), all other conditions being equal – namely the associated internal standard area for those two analyses. A worst case scenario would be to consider some of the flux chamber results low by a factor of 2.

**Conclusions**

Though EAS apparently did not complete a full 5-point calibration each day that the associated samples were analyzed for VOCs using EPA Method TO-15 SIM, there is sufficient information to quantify the results and to bound the uncertainty. The uncertainty of the daily calibrations was not significantly outside the variability seen even with a complete ICAL. The data can be used, with the understanding that the uncertainty associated with the results is comparable to the %D values provided in Table 2.

# Data Usability Investigation of TO-15 SIM Data
# Neptune and Company

**May 20, 2010**

**Review by Steve Hoyt, Environmental Analytical Service**

The QC Criteria Table for TO-15 SIM incorporated into the Report had the cells shifted and should read:

| **Parameter** | **EAS Criteria** |
|---|---|
| Initial Calibration | 5pt points minimum<br>Relative Standard Deviation (RSD)<br>< 30% for TO-14 Compounds<br>< 40% for other compounds<br>1,2,4-Trichlorobenzene, napthalene, and hexachlorobutadiene can be up to 80%<br>4 Compounds can exceed criteria by 10% |
| Calibration Check Sample (CCS) | Every 12 months<br>Same Percent RSD as Initial Calibration |
| Continuing Calibration Verification (CCV) | Same Percent RSD as Initial Calibration |

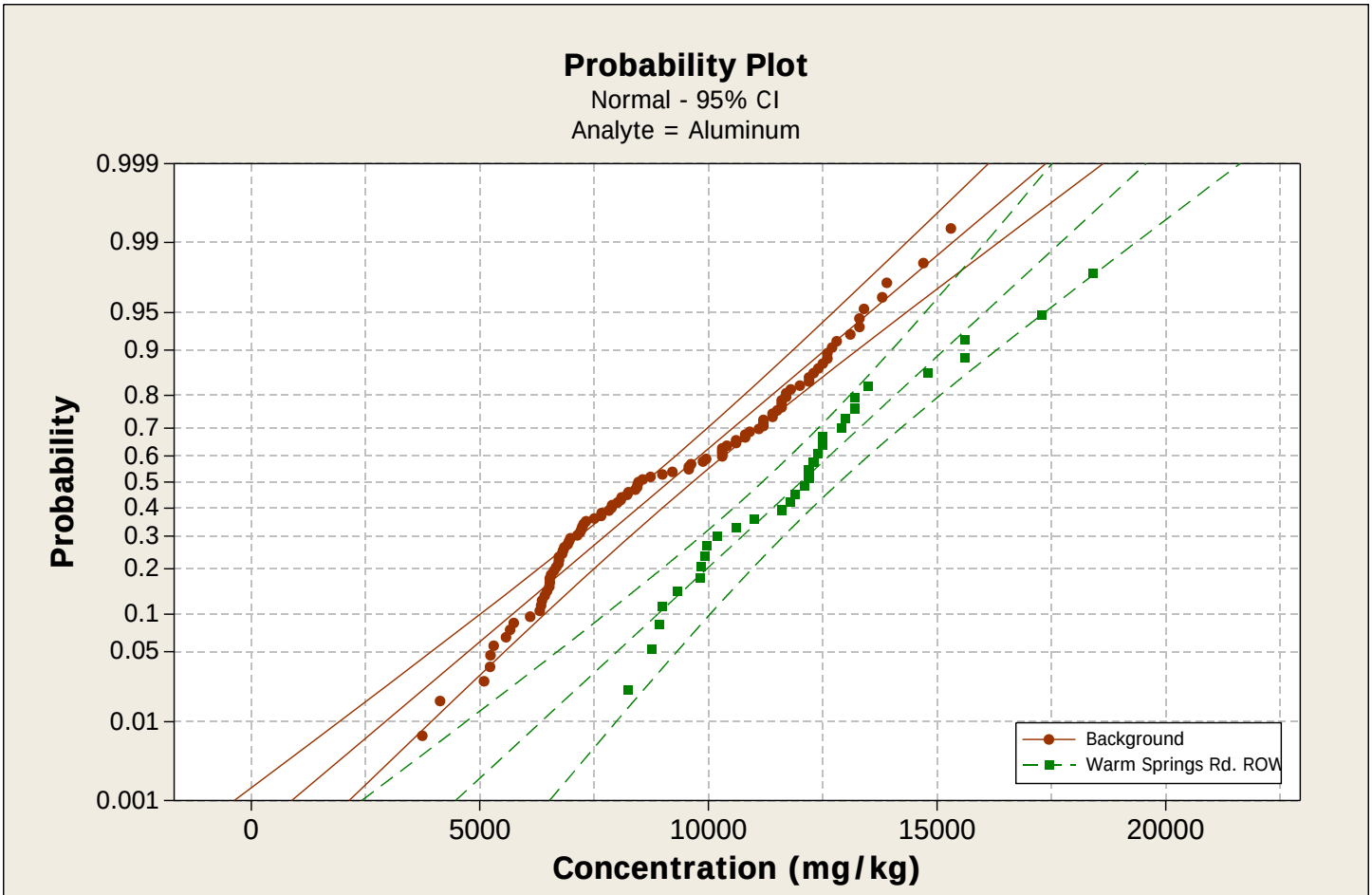
The TO-15 SIM method and target list was used for a series of samples analyzed by EAS during this time period. There was a passing Initial Calibration curve when the series was started, so that the samples were run with an initial calibration. During the analysis of samples, a few of the compounds drifted out of calibration, probably because of the slow accumulation of water vapor in the traps of the concentrator. In order to meet the holding time requirements of the method, EAS continued with the sample analysis. After the sample analysis was complete, a new calibration curve was run. The daily CCV standards were checked against this new curve to verify the calibration.

Subsequent review of the calibration data indicated that the slow accumulation of water vapor on the concentrator traps caused some of the compounds to have RPD's that exceeded the QC Criteria. This could be mostly corrected by calculating the results from an internal standard that was subject to the same effect. By calculating the results from two internal standards (allowed in method), the initial calibration done prior to sample analysis could be used, and most of the continuing calibration verification (CCV) compounds would pass the QC criteria.

Before this project was started, EAS had an initial calibration that met the method requirements, which is our normal procedure. However, due to matrix effects caused by our desire to get the lowest possible detection limits, some of the compounds drifted out of the calibration criteria. It was decided to use a post calibration instead of the initial calibration (which poses no technical problem) in order to report results with the lowest uncertainty. While some of the percent differences, %D, were outside the limits, the data need only be qualified with the appropriate uncertainty.

# ATTACHMENT E

# CUMULATIVE PROBABILITY PLOTS AND BOXPLOTS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Concentration (mg/kg)
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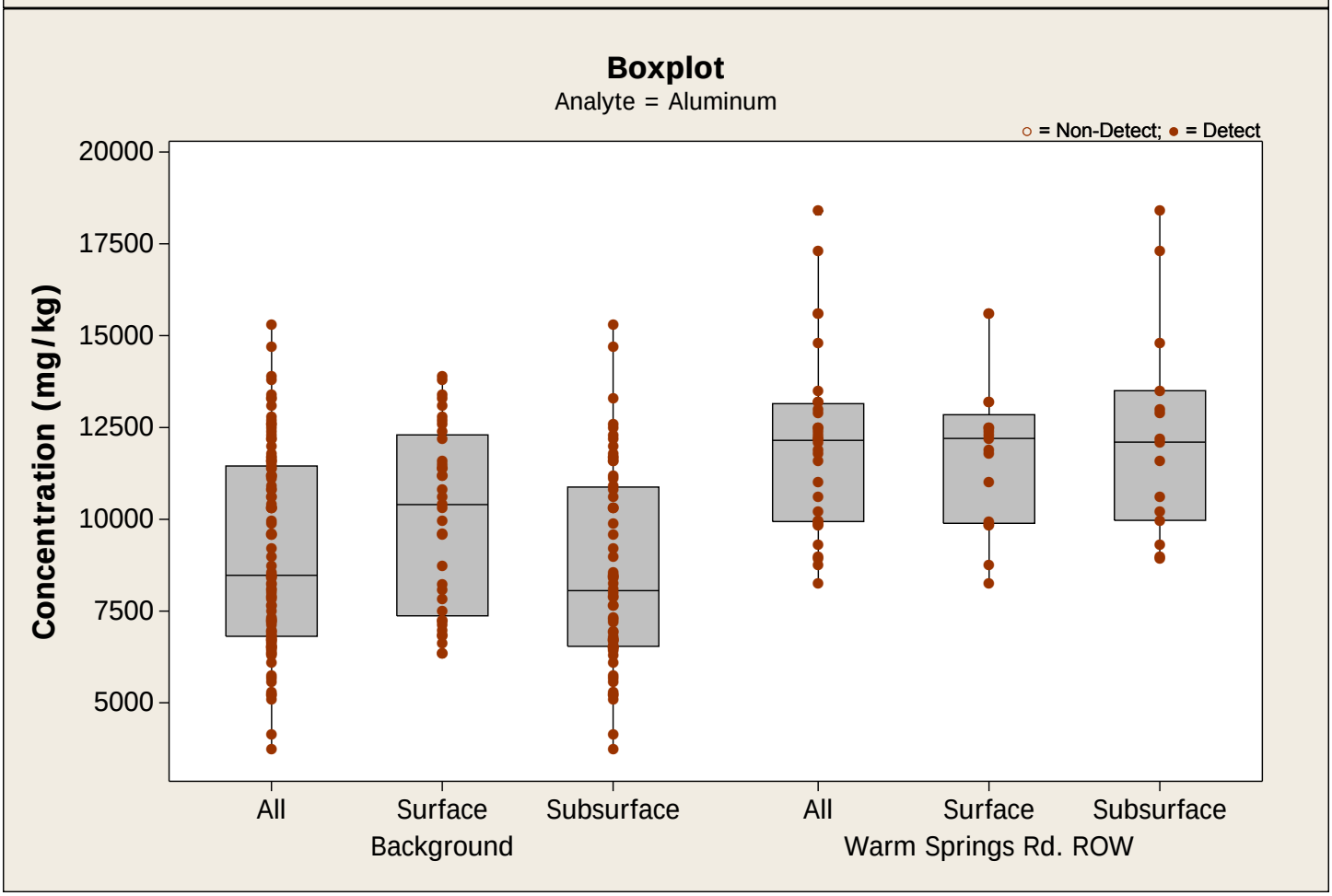
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Subsurface
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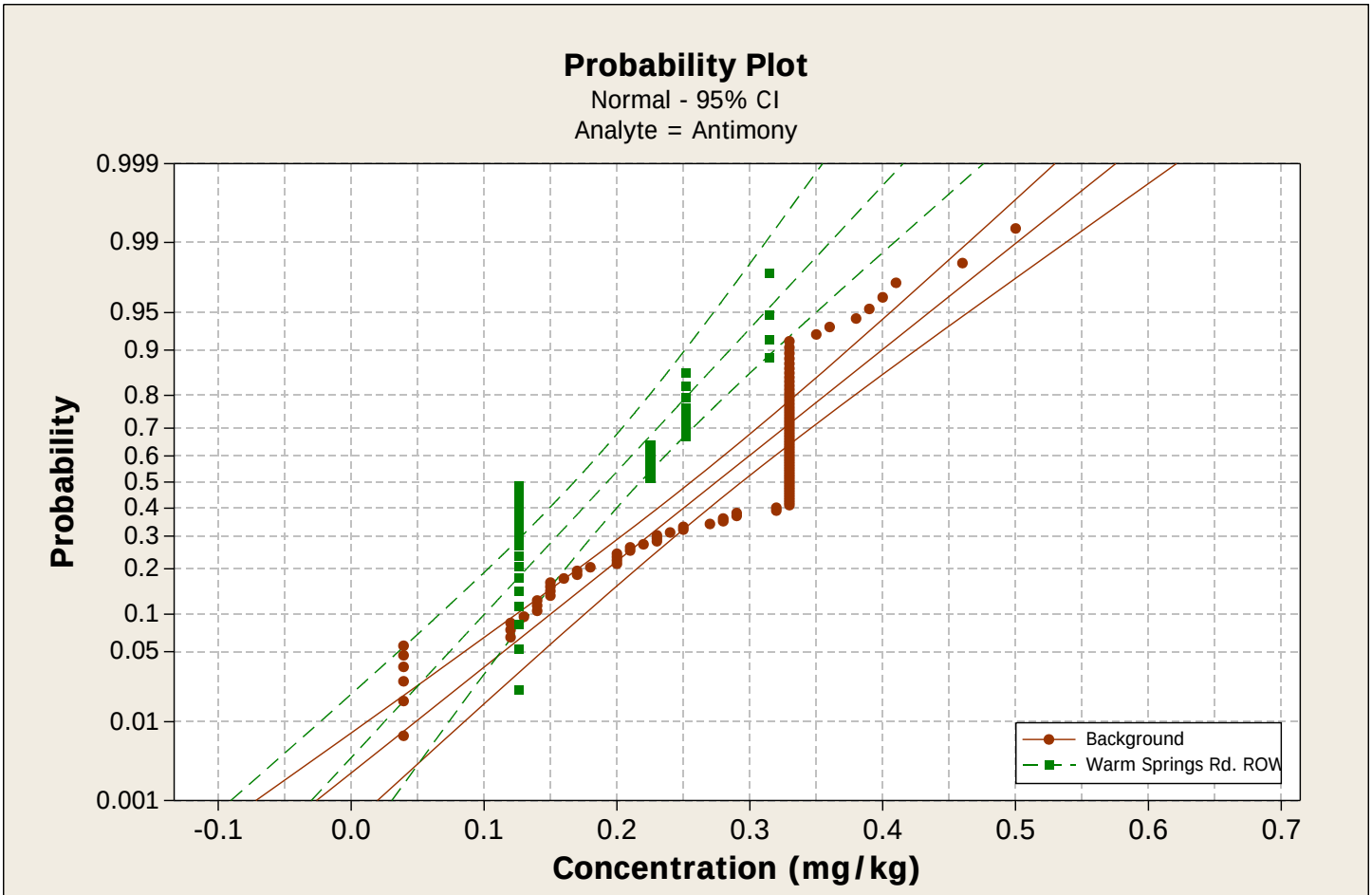
Surface
Subsurface
Warm Springs Rd. ROW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0.3
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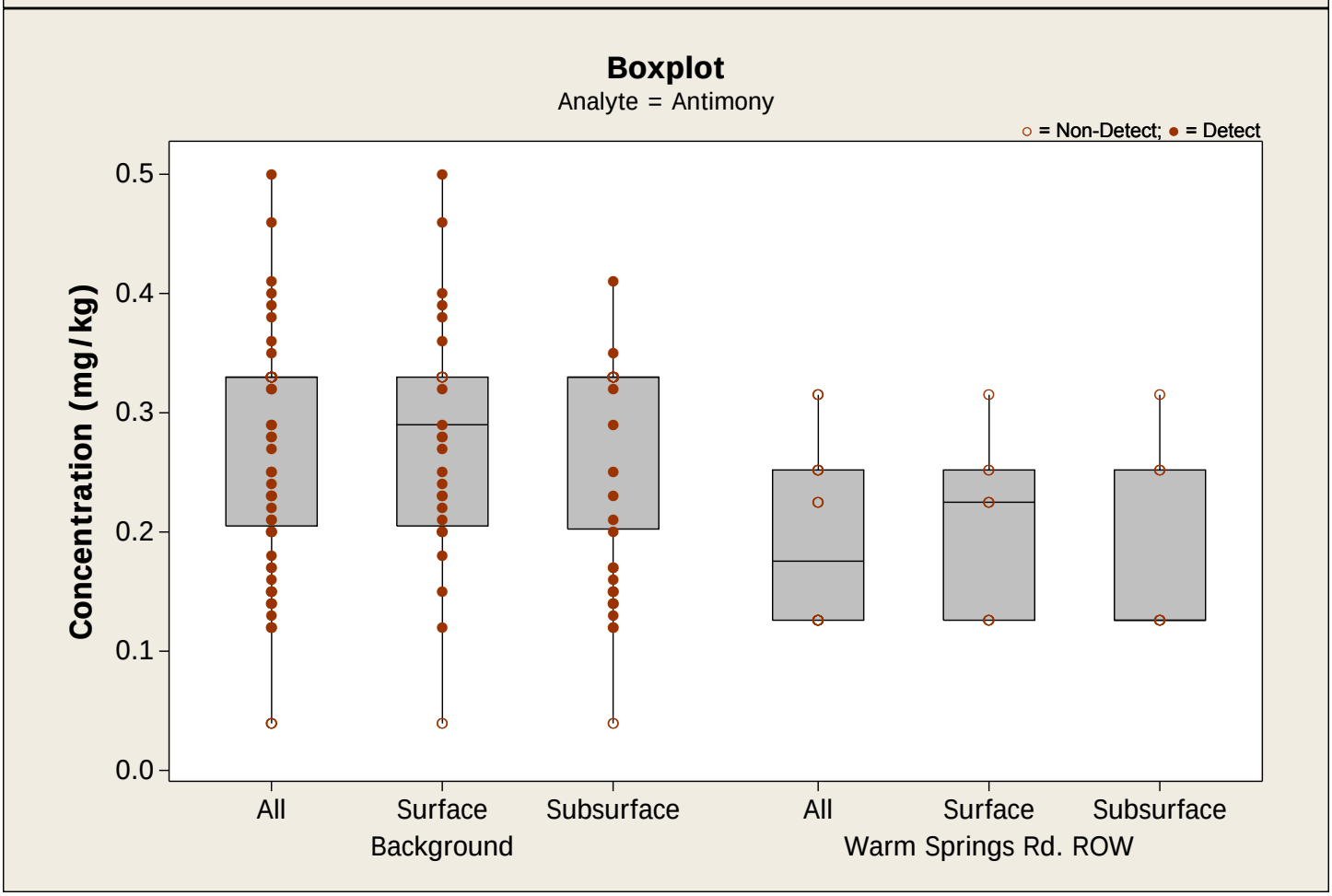
Concentration (mg/kg)
Background
Warm Springs Rd. ROW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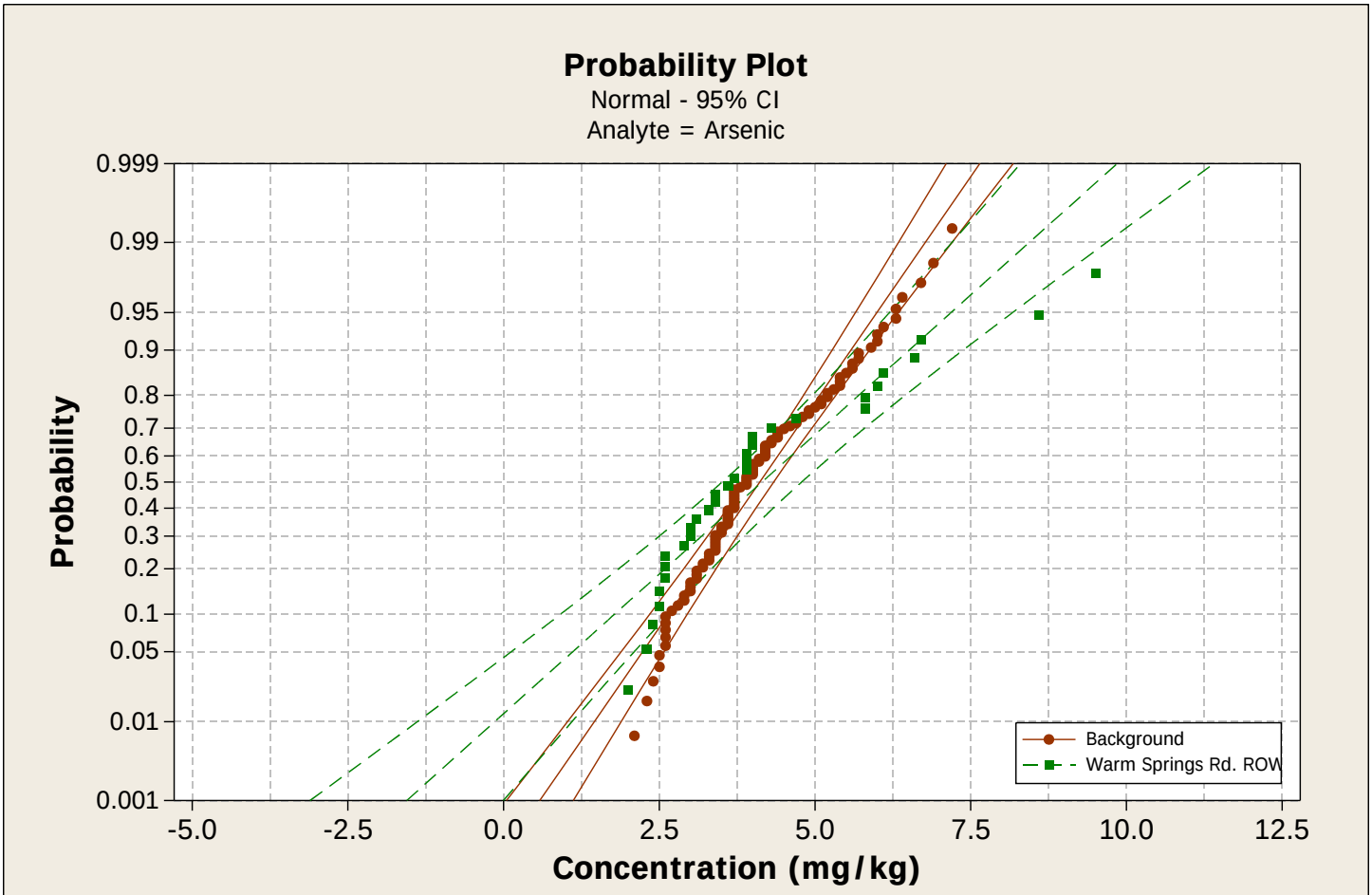
Surface
Subsurface
Warm Springs Rd. ROW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0.4
0.3
0.2
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Concentration (mg/kg)
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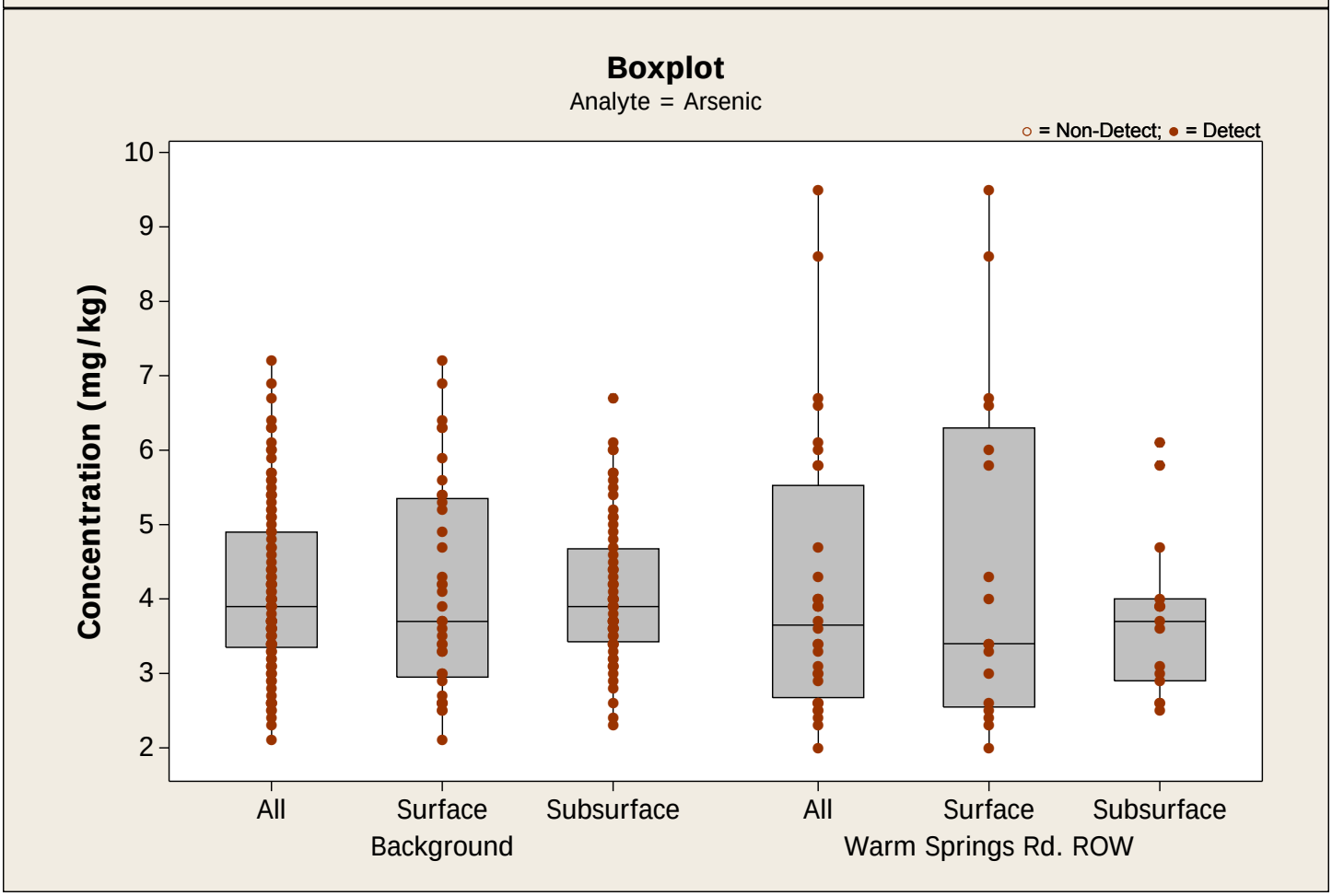
Warm Springs Rd. ROW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Analyte = Arsenic
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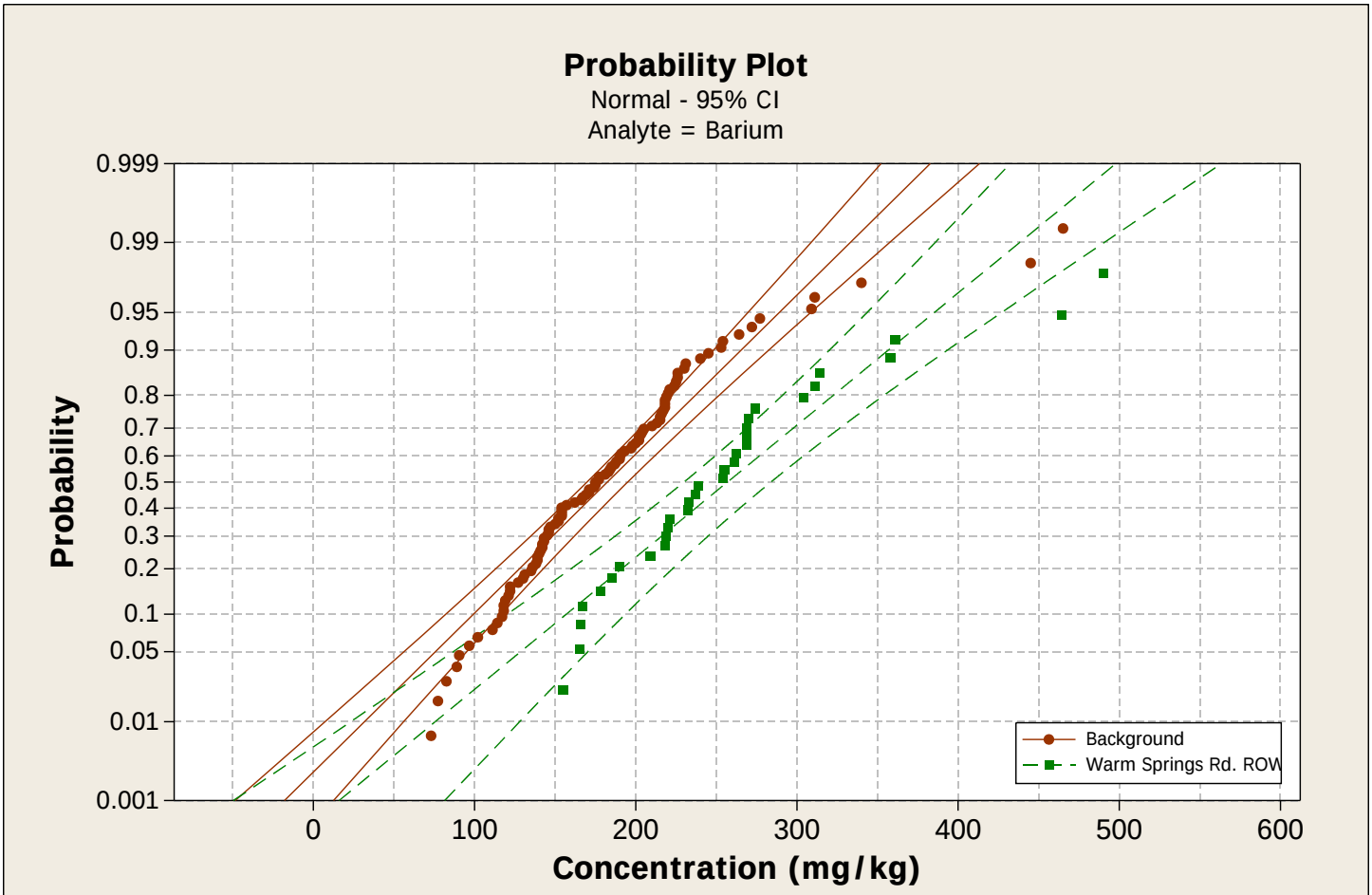
Warm Springs Rd. ROW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0.3
0.2
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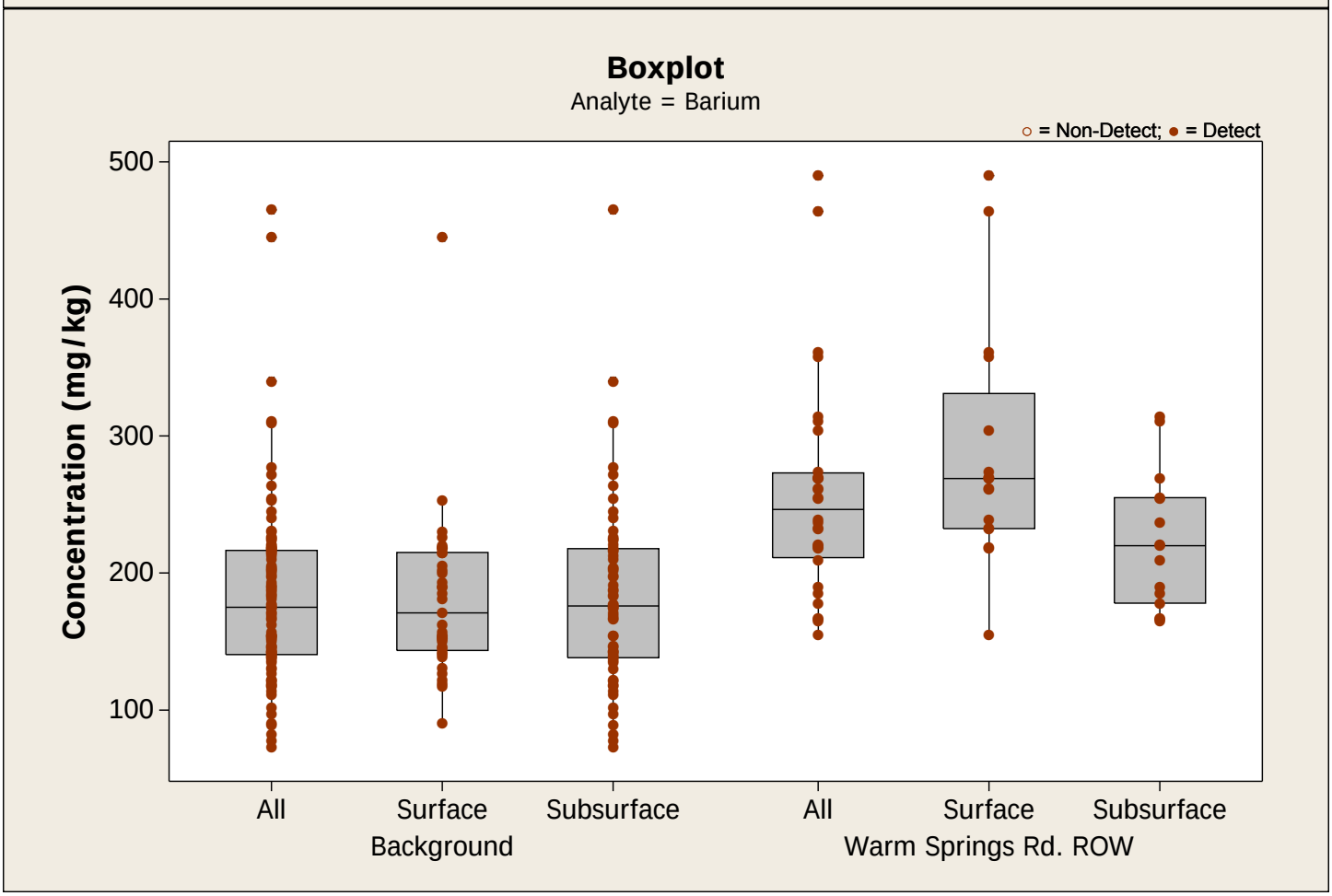
600
Concentration (mg/kg)
Background
Warm Springs Rd. ROW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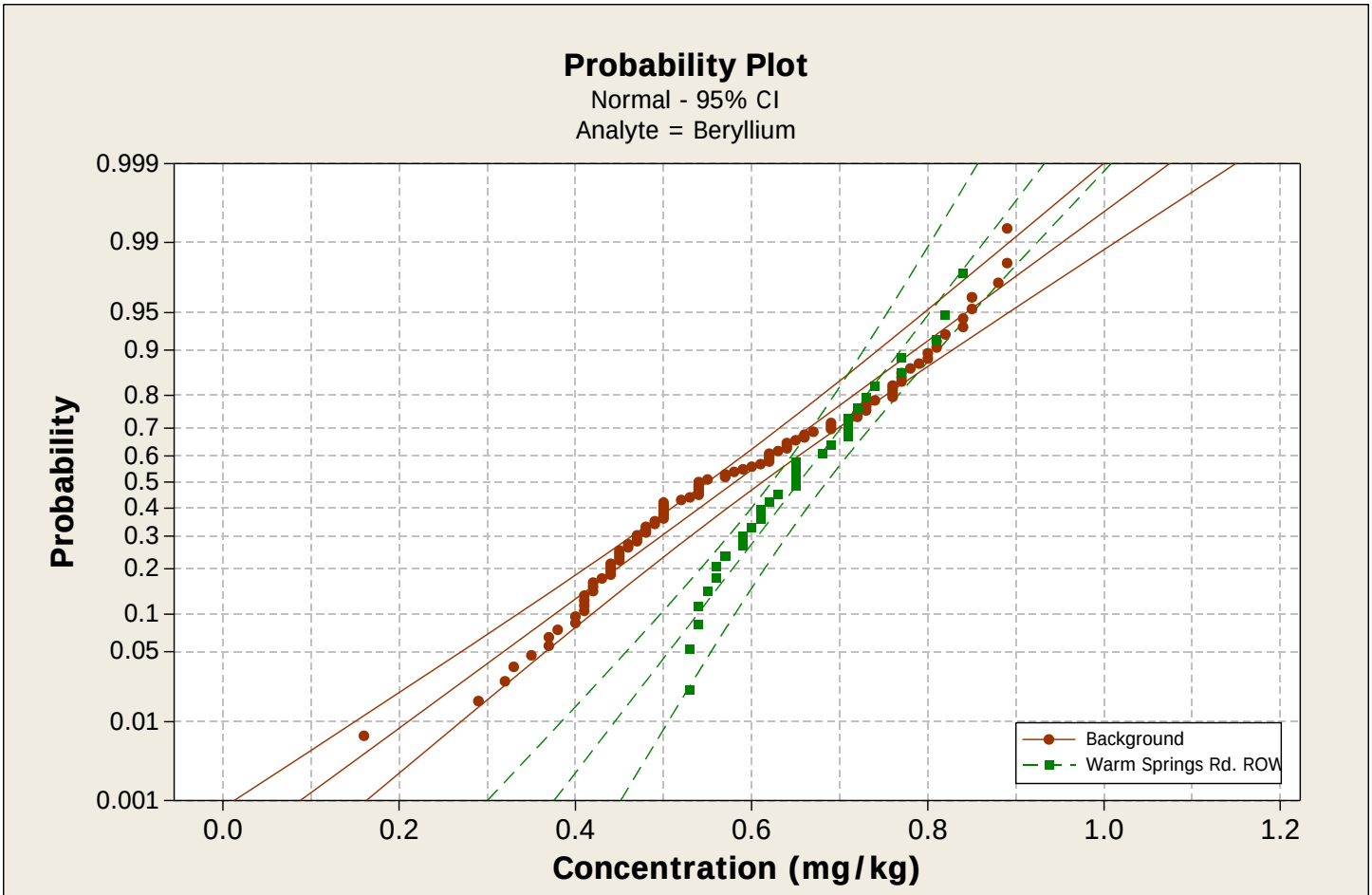
Warm Springs Rd. ROW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Concentration (mg/kg)
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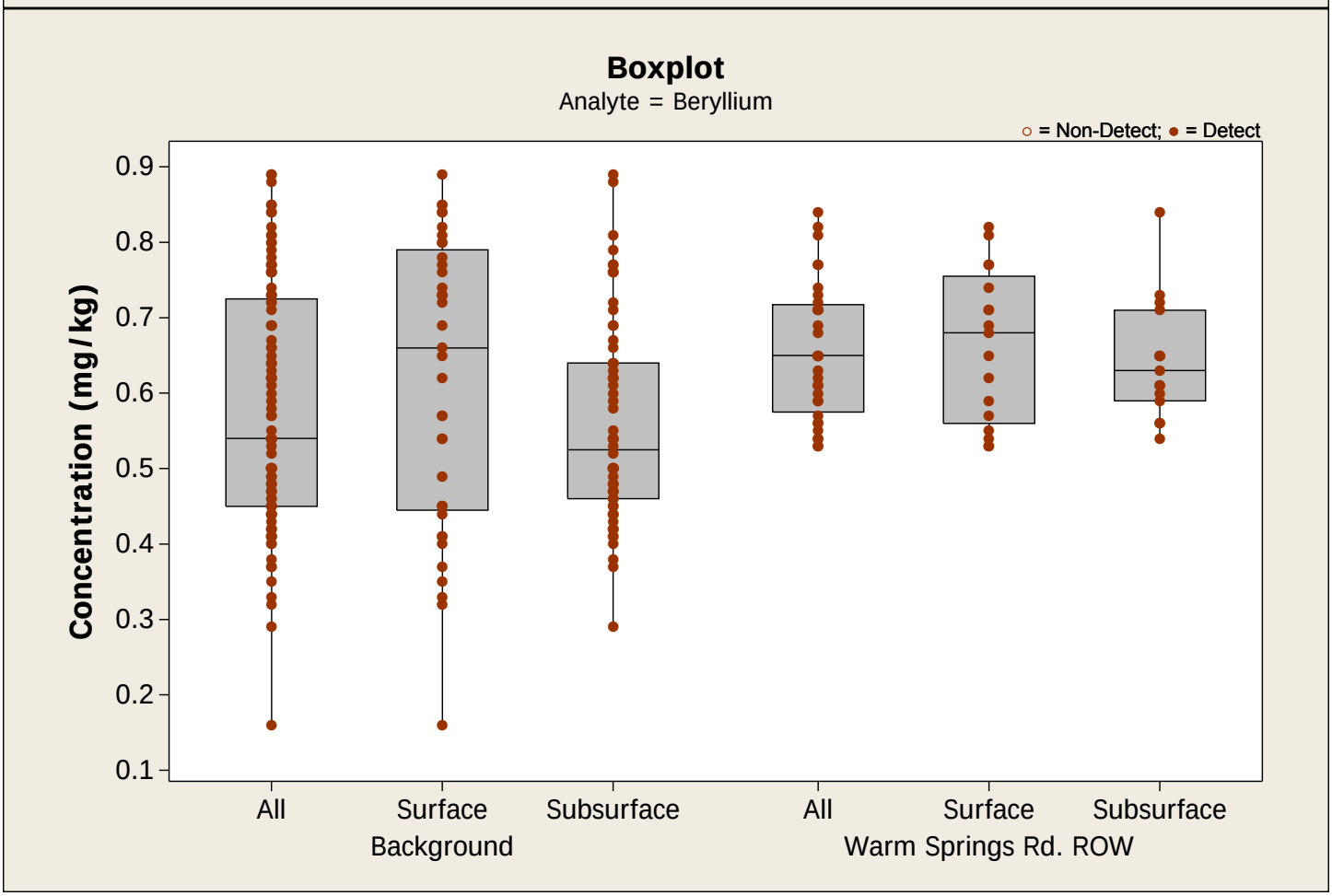
Warm Springs Rd. ROW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All
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Subsurface
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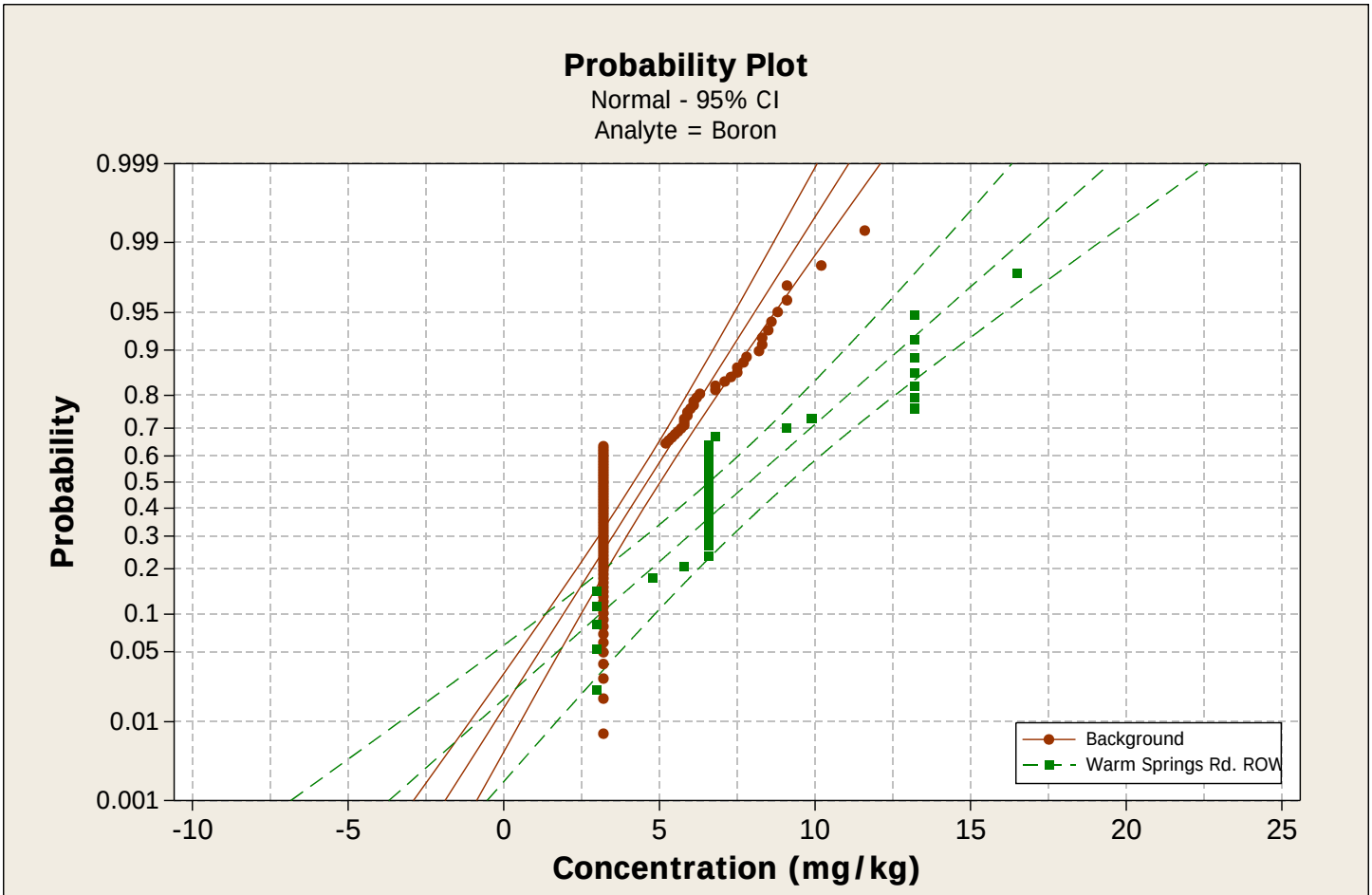
Subsurface
Warm Springs Rd. ROW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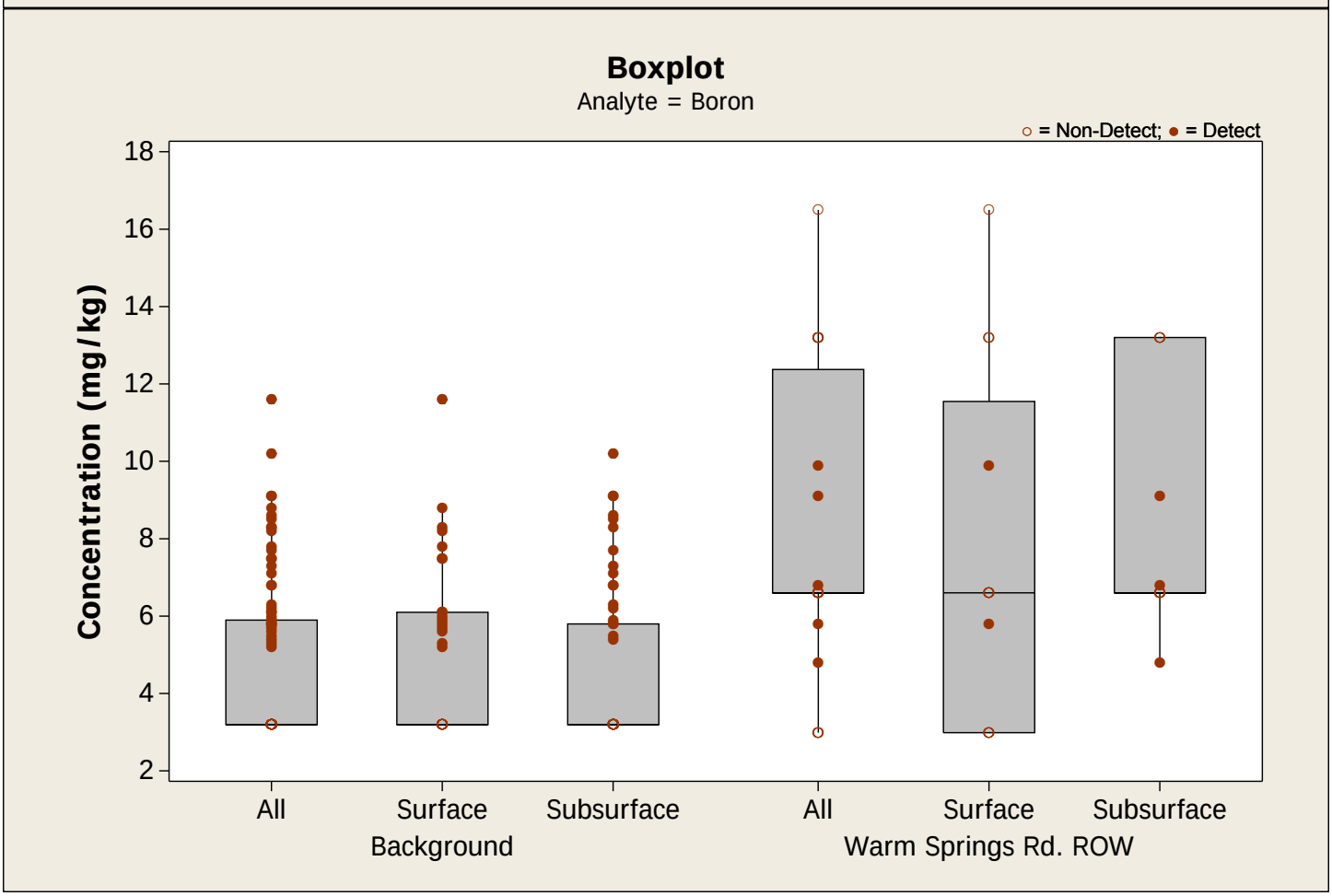
Concentration (mg/kg)
Background
Warm Springs Rd. ROW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Subsurface
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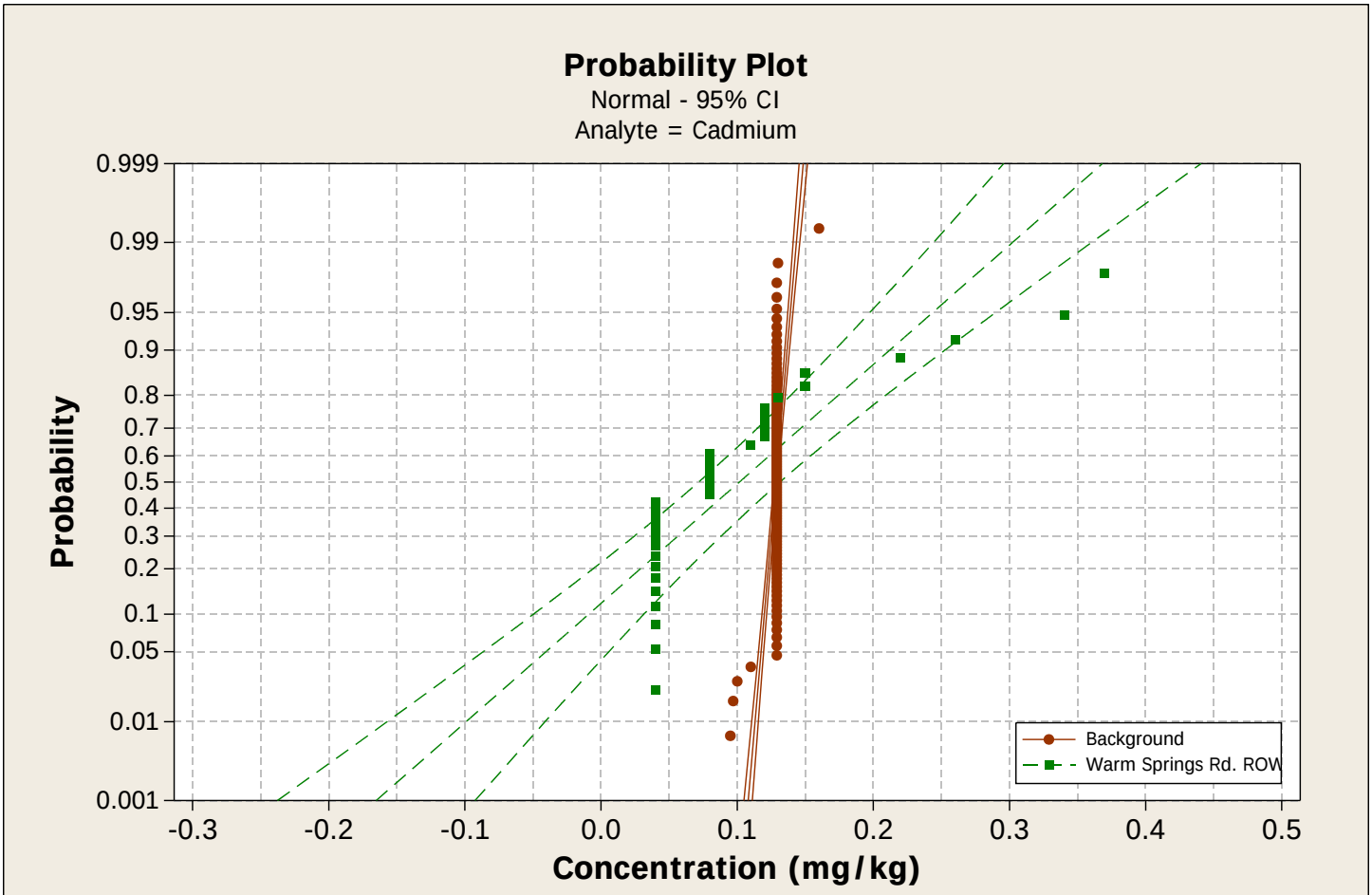
All
Surface
Subsurface
Warm Springs Rd. ROW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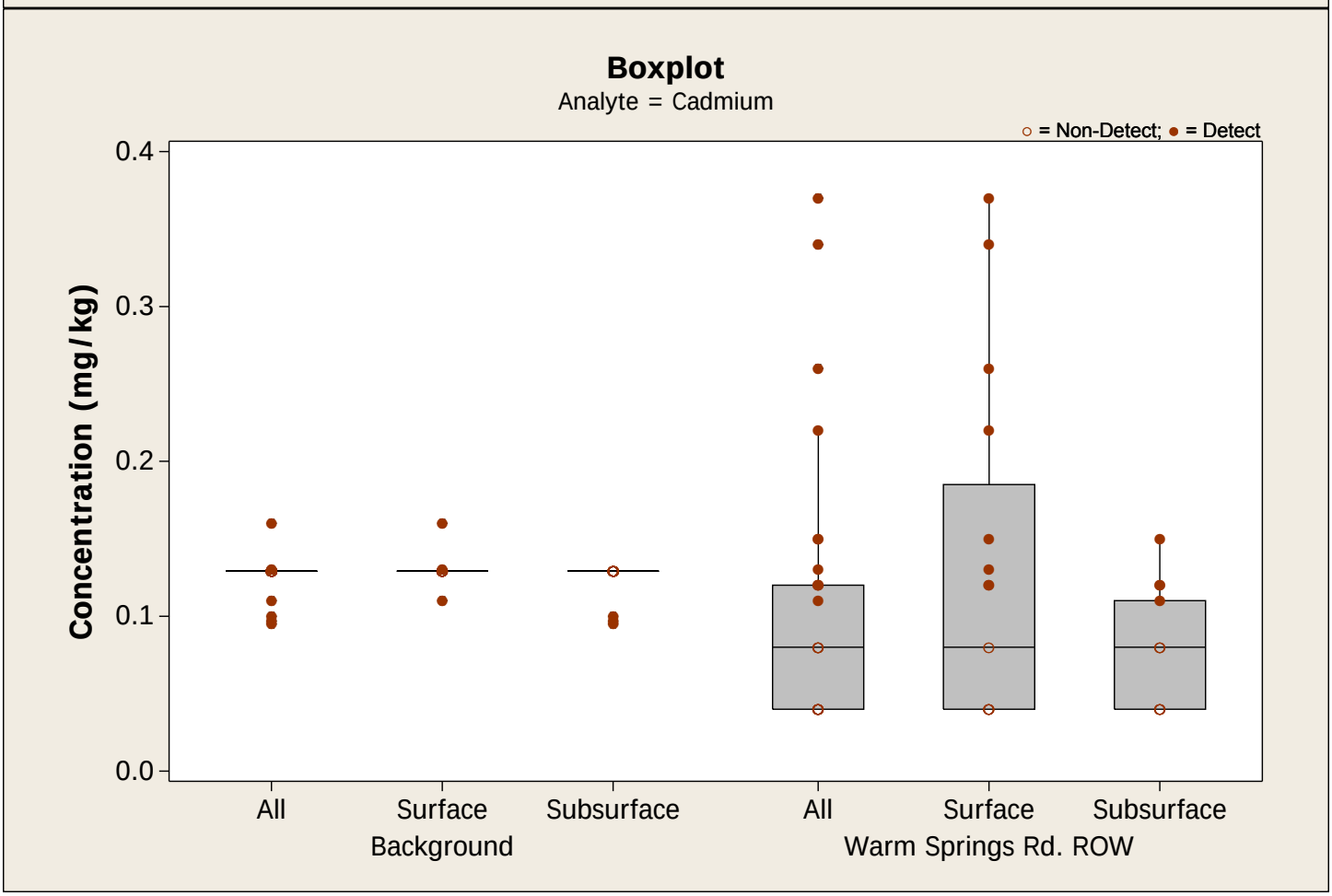
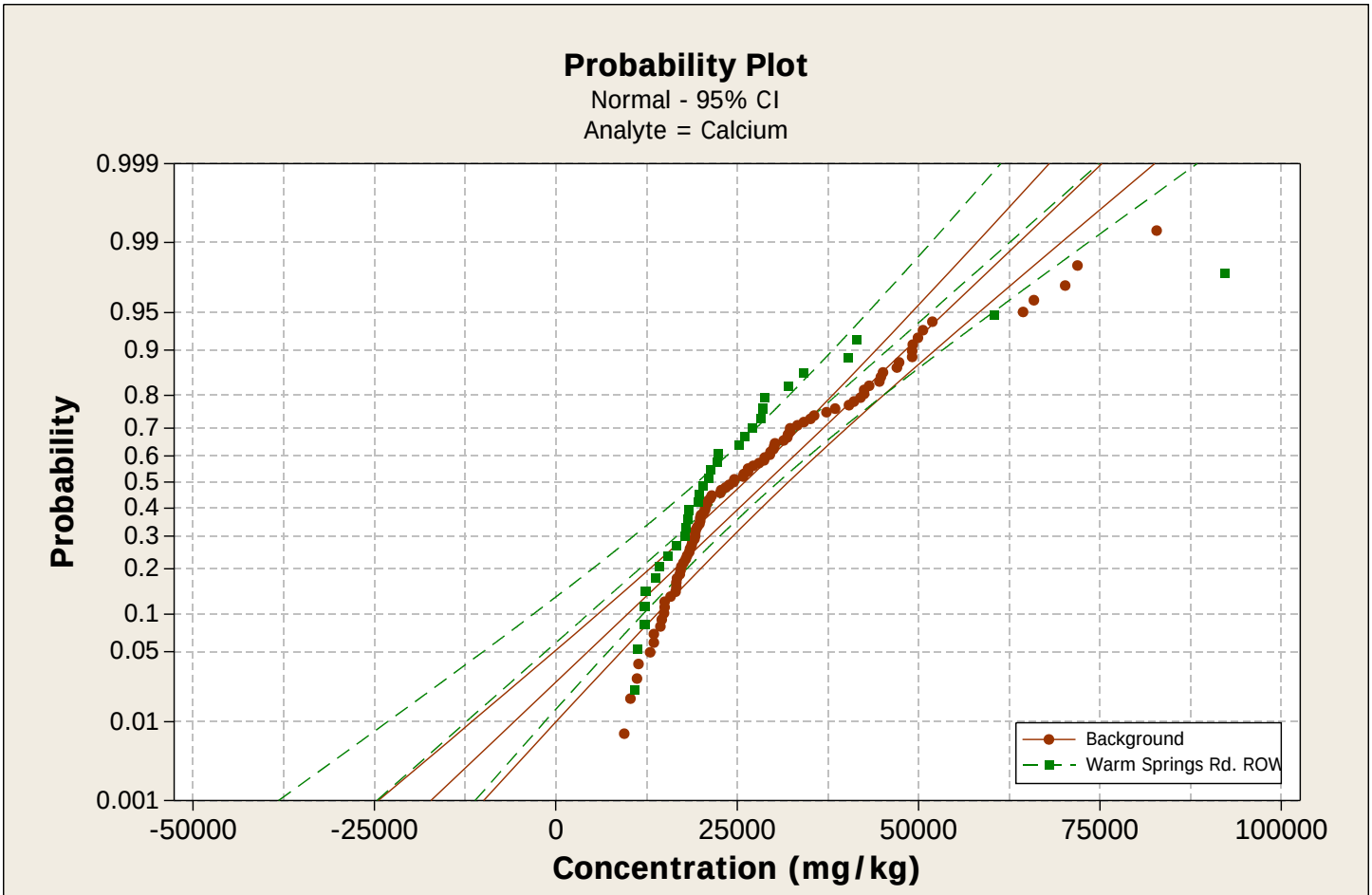
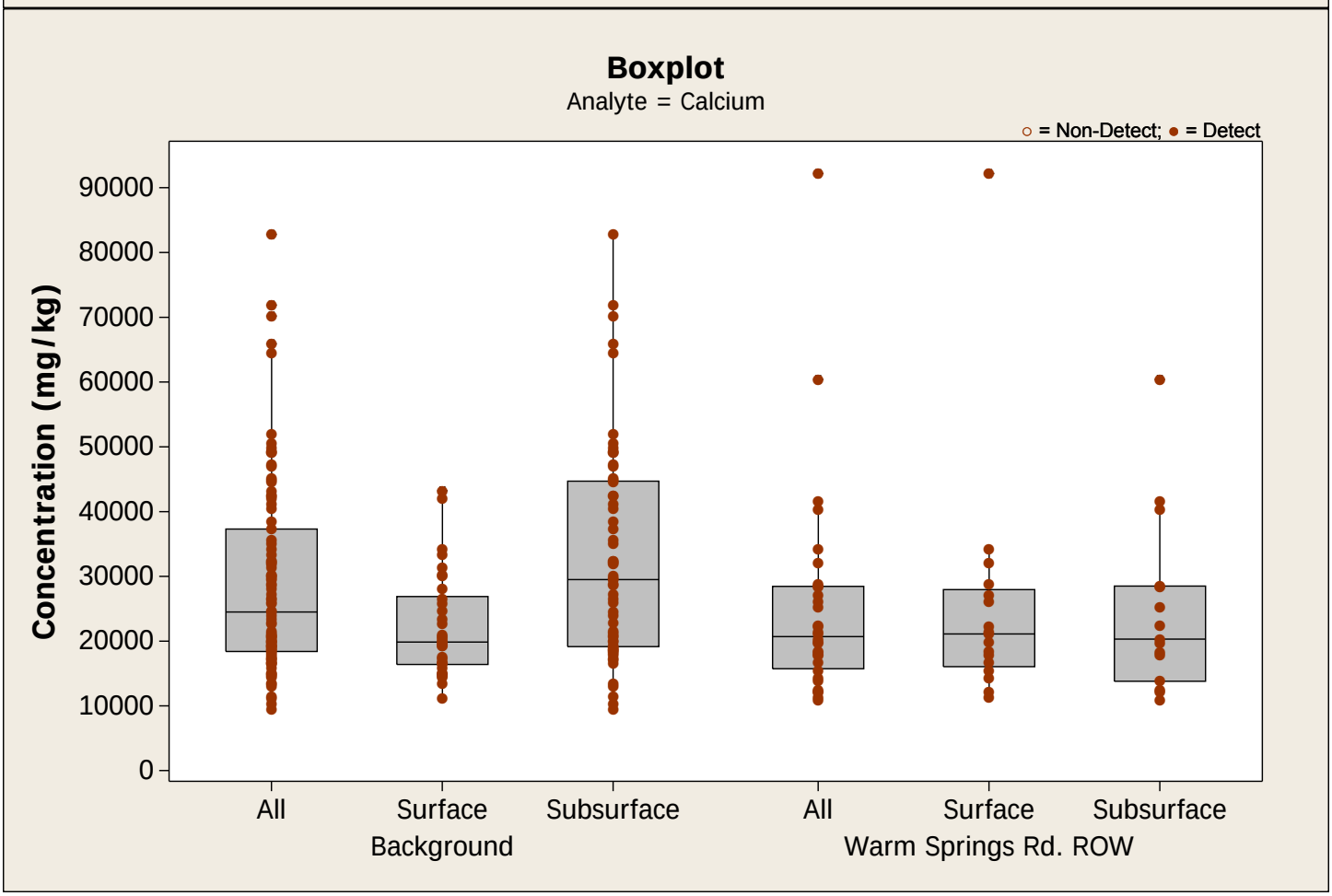
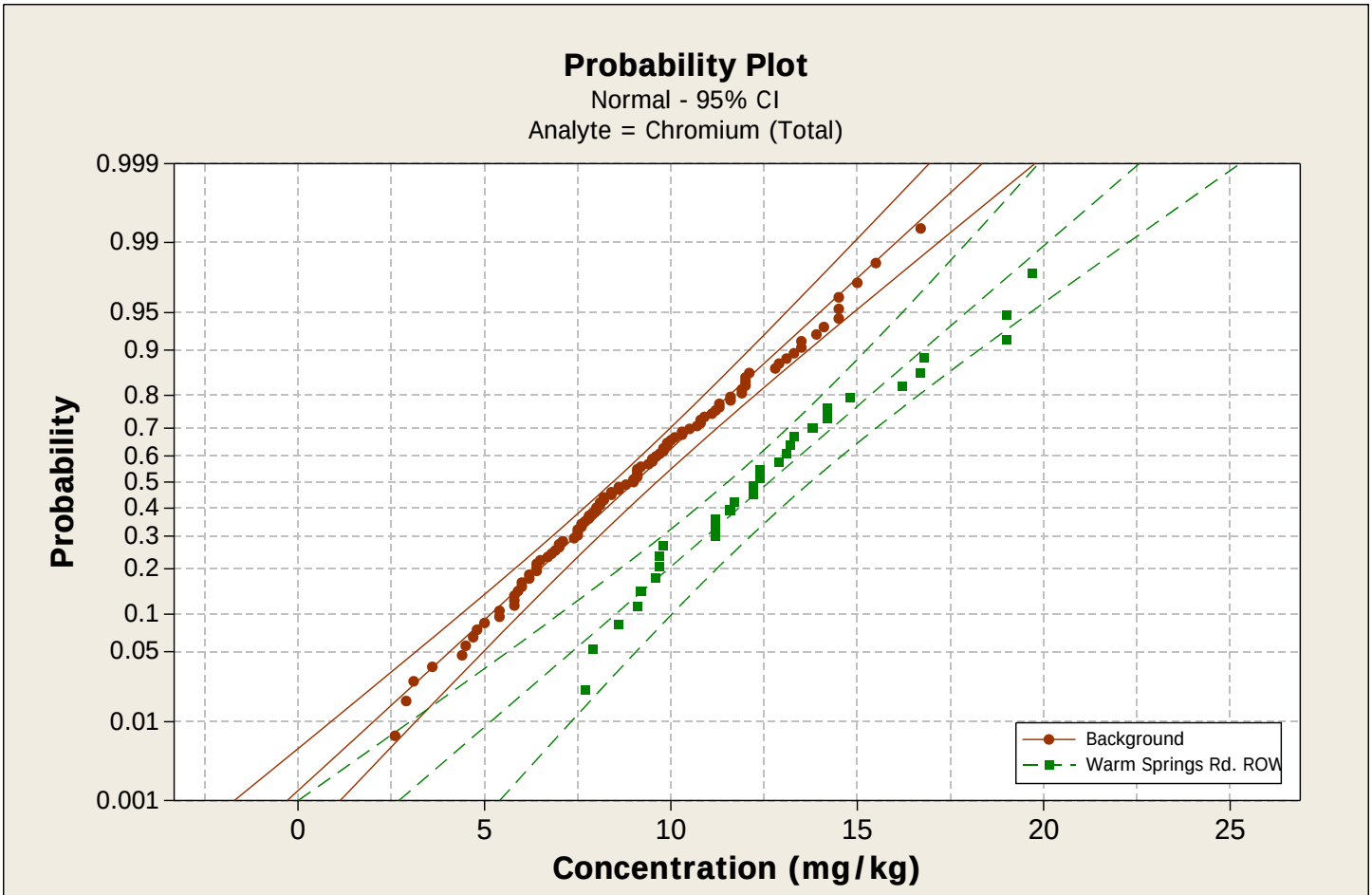
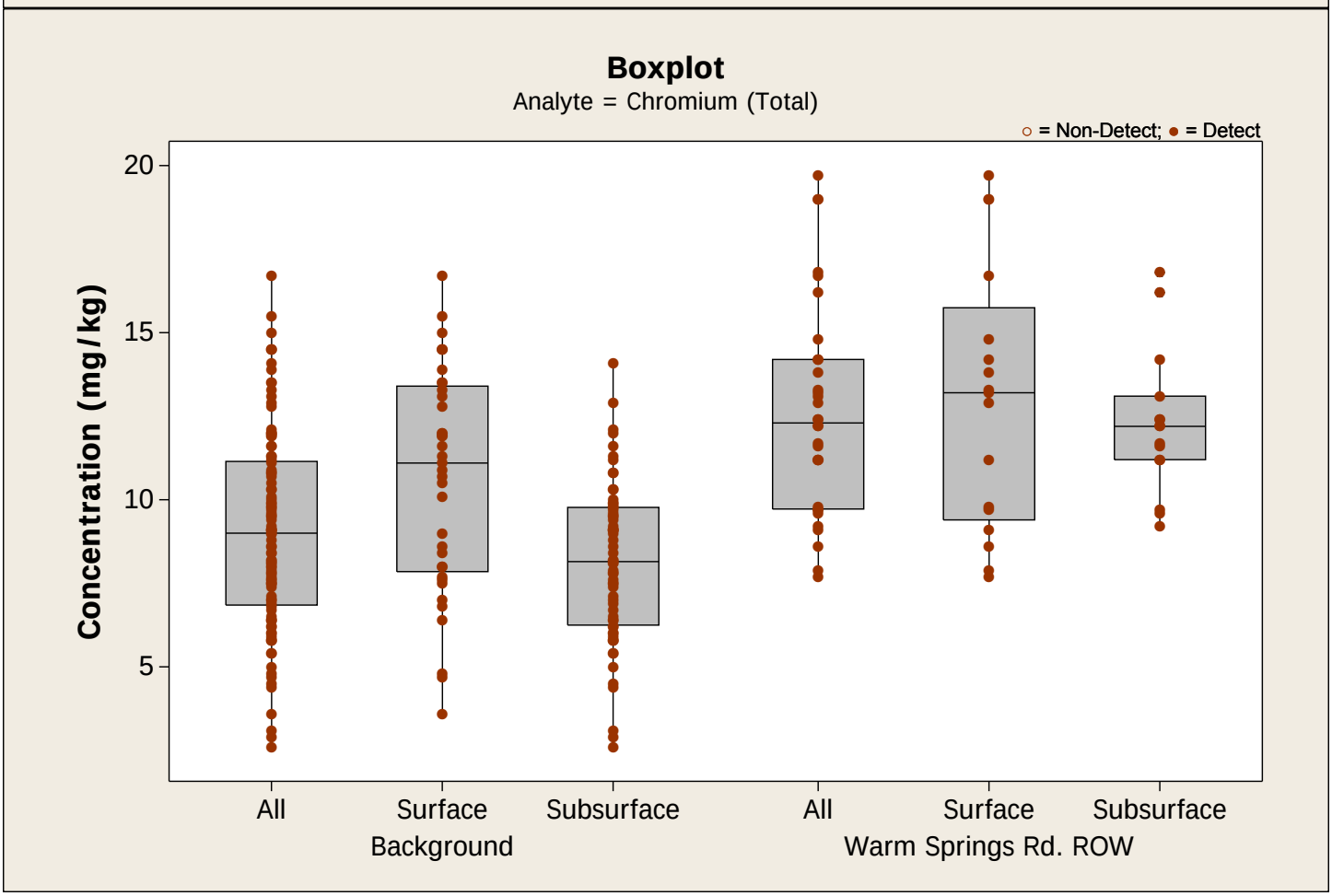
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-0.3
-0.2
-0.1
0.0
0.1
0.2
0.3
0.4
0.5
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

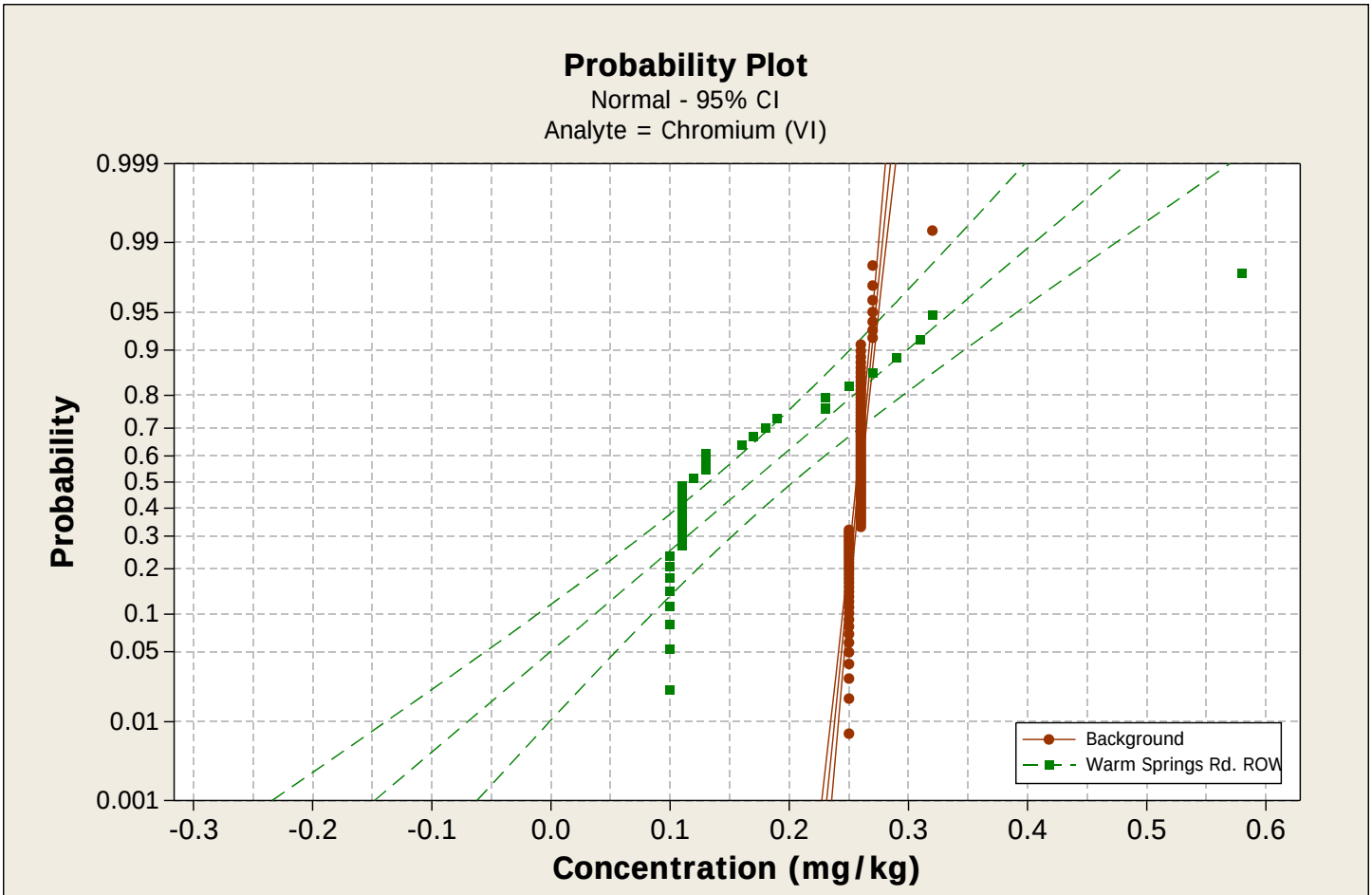

Boxplot
Analyte = Cadmium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
0.4
0.3
0.2
0.1
0.0
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

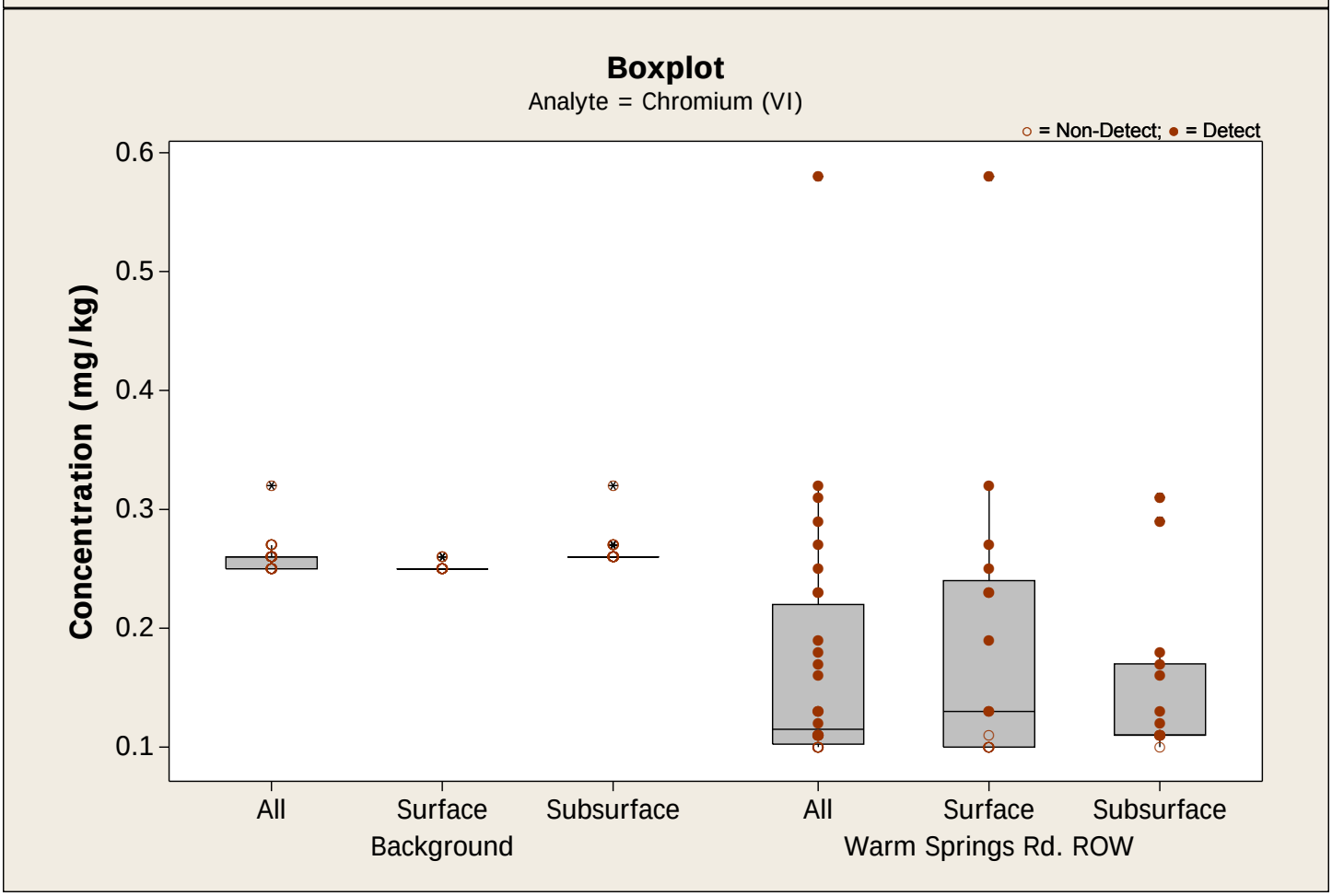

Probability Plot
Normal - 95% CI
Analyte = Calcium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-50000
-25000
0
25000
50000
75000
100000
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

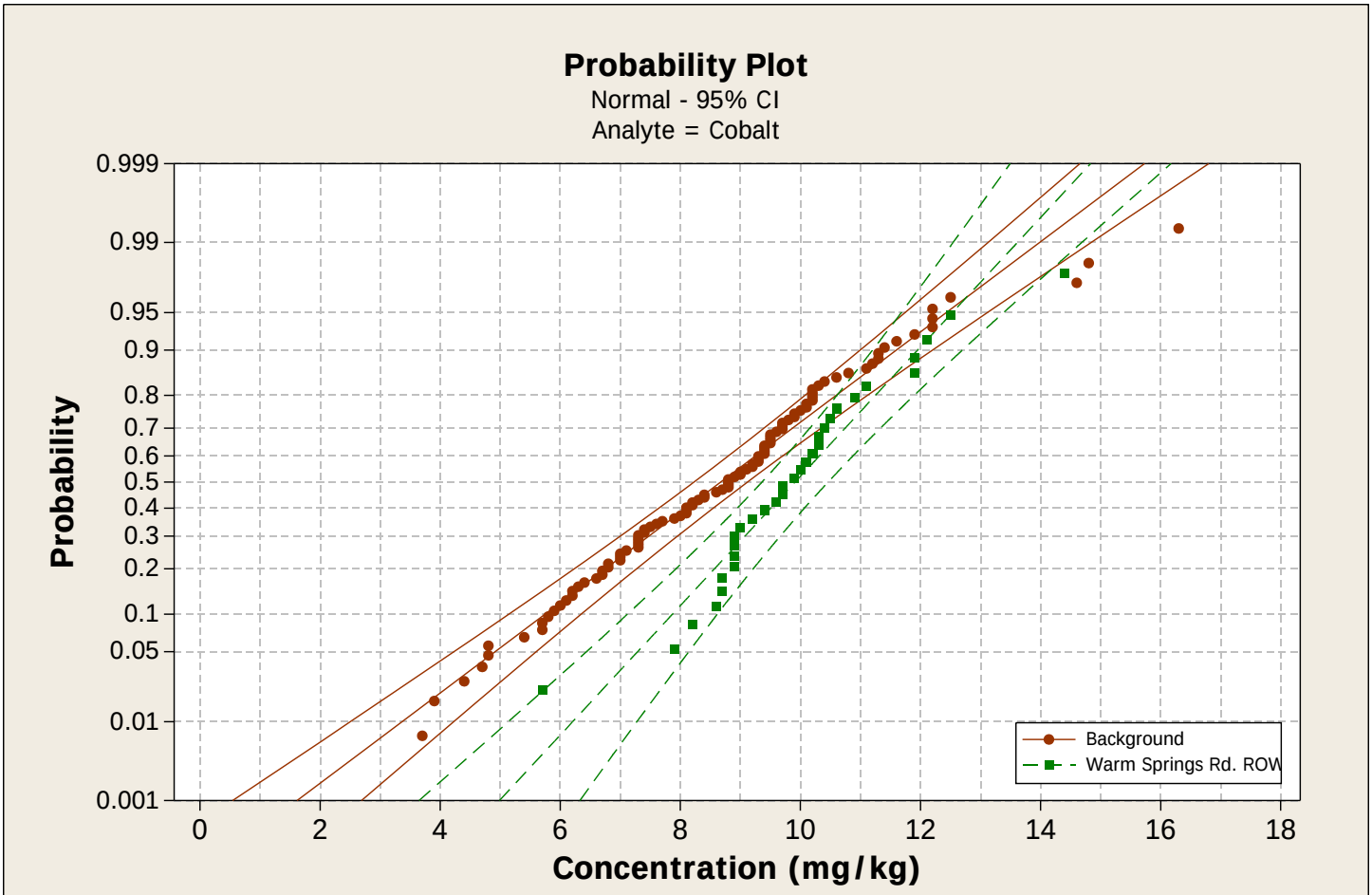

Boxplot
Analyte = Calcium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

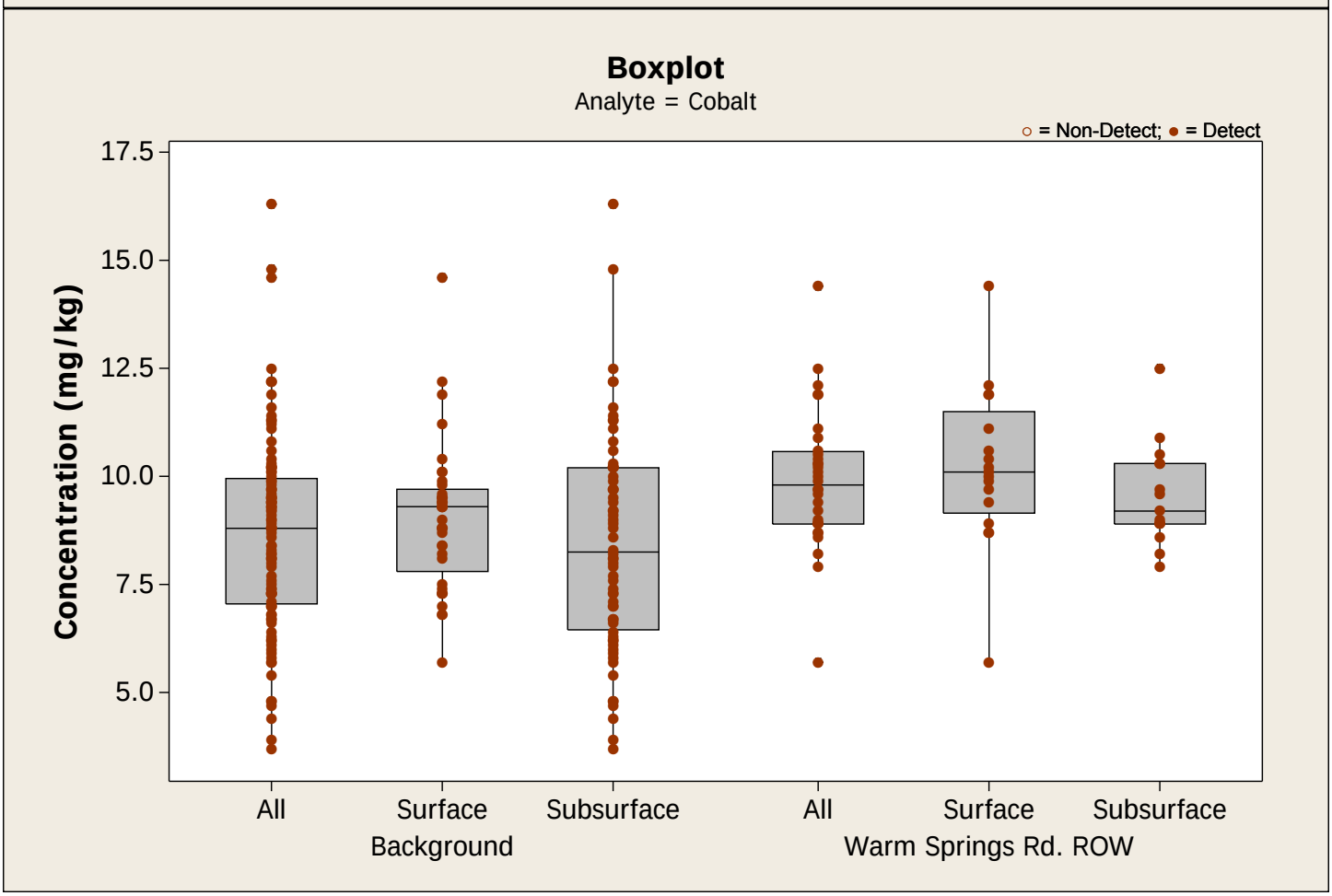

Probability Plot
Normal - 95% CI
Analyte = Chromium (Total)
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
5
10
15
20
25
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

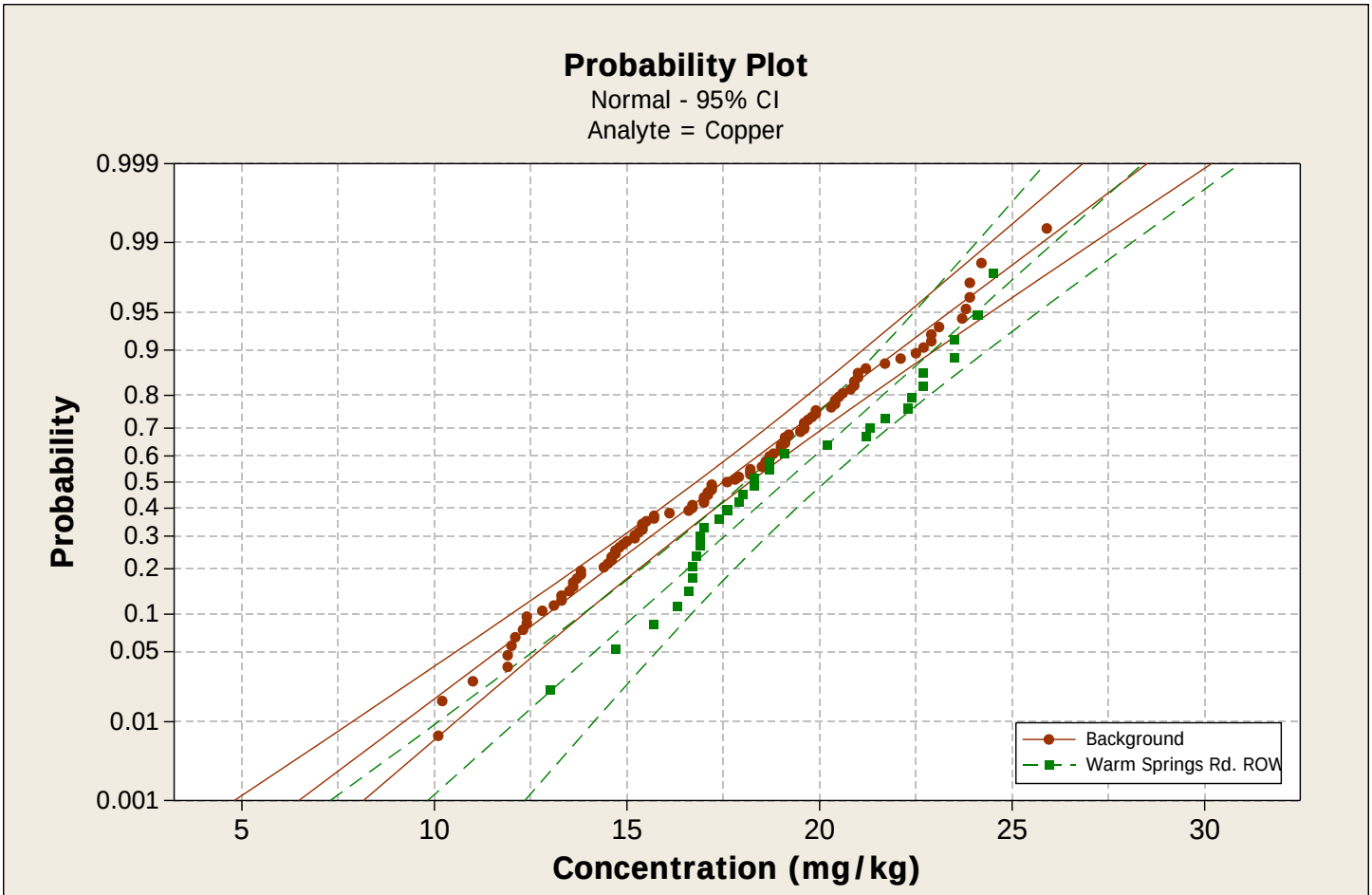

Boxplot
Analyte = Chromium (Total)
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
20
15
10
5
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

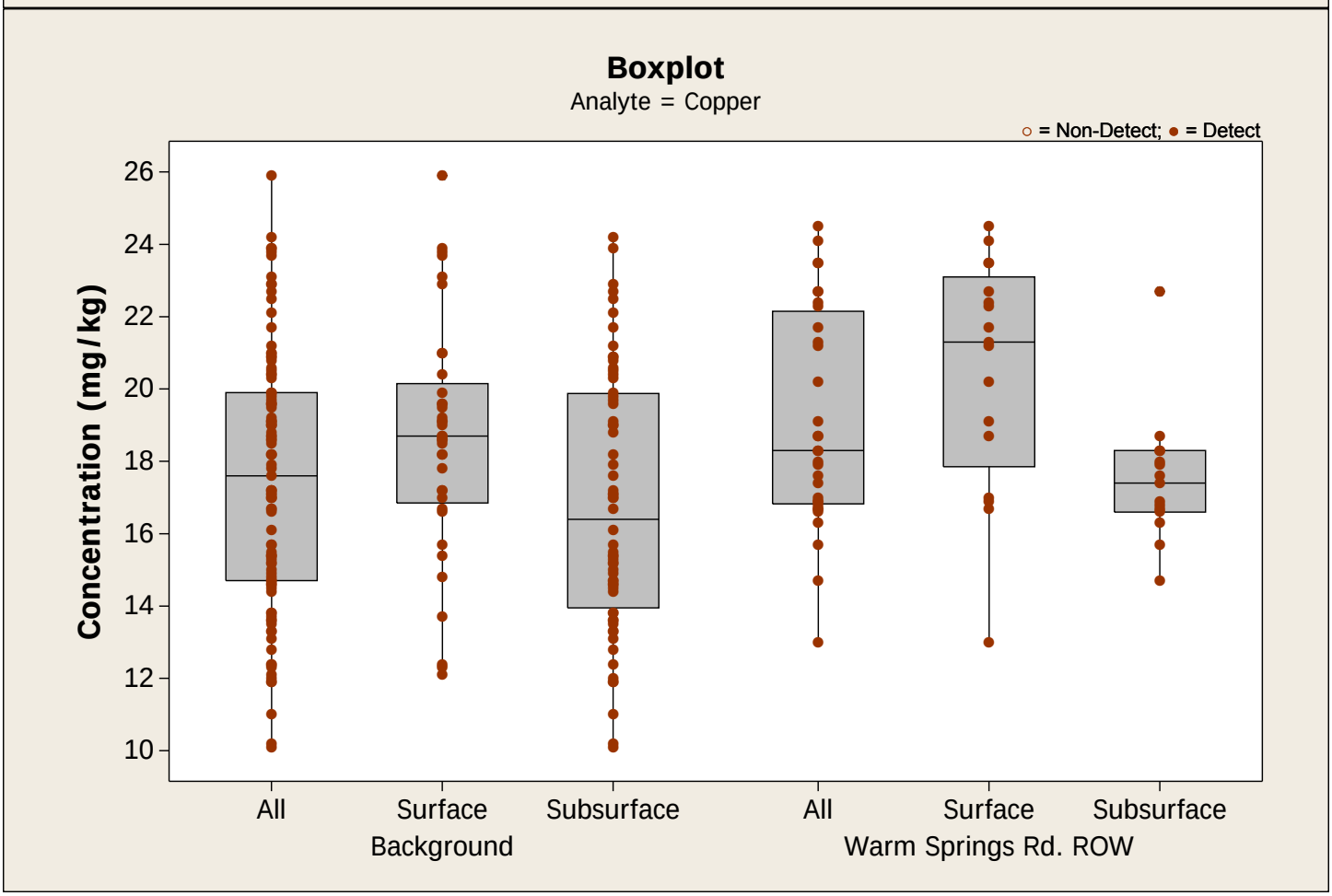

Probability Plot
Normal - 95% CI
Analyte = Chromium (VI)
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-0.3
-0.2
-0.1
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

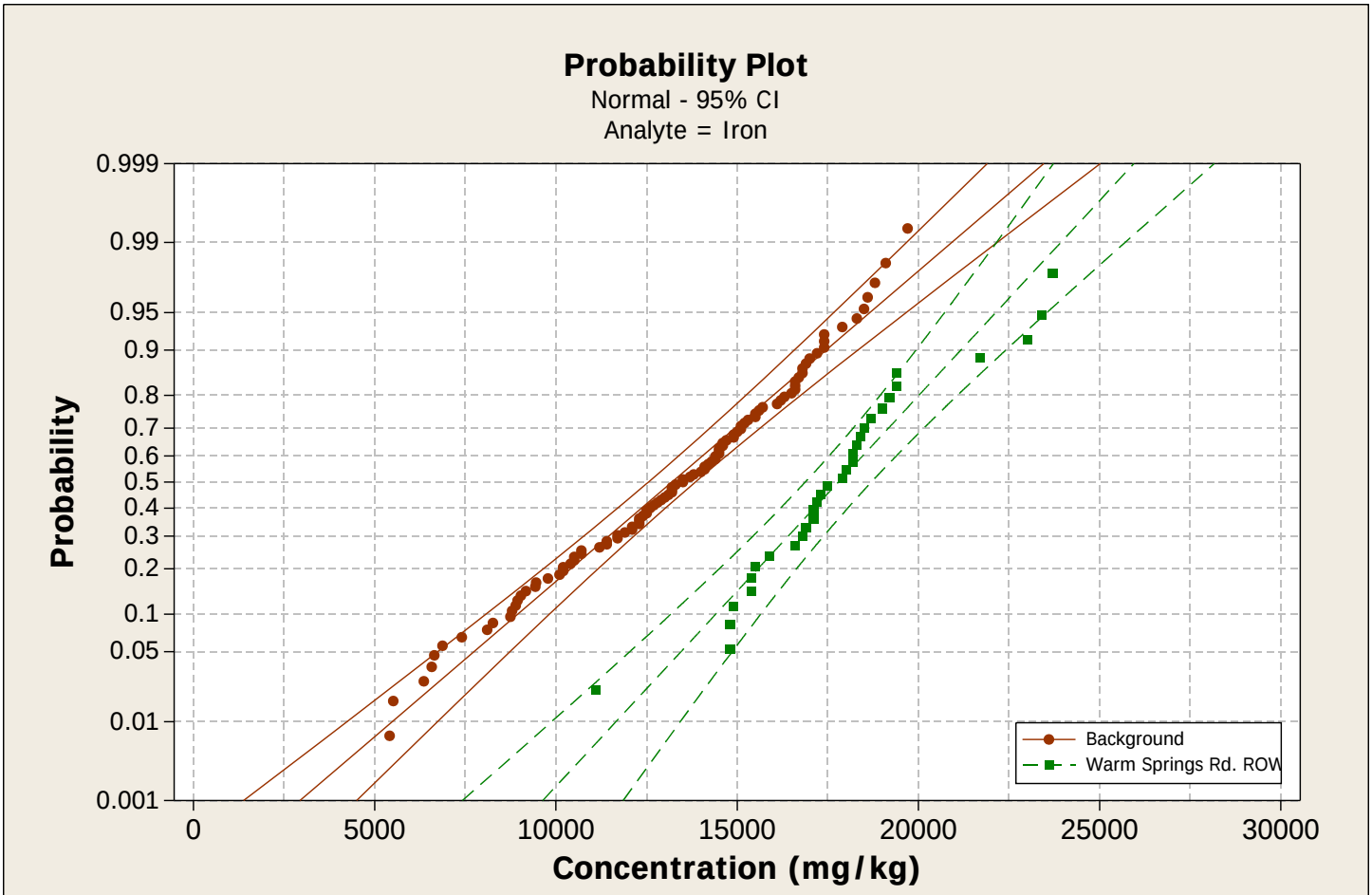

Boxplot
Analyte = Chromium (VI)
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
0.6
0.5
0.4
0.3
0.2
0.1
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

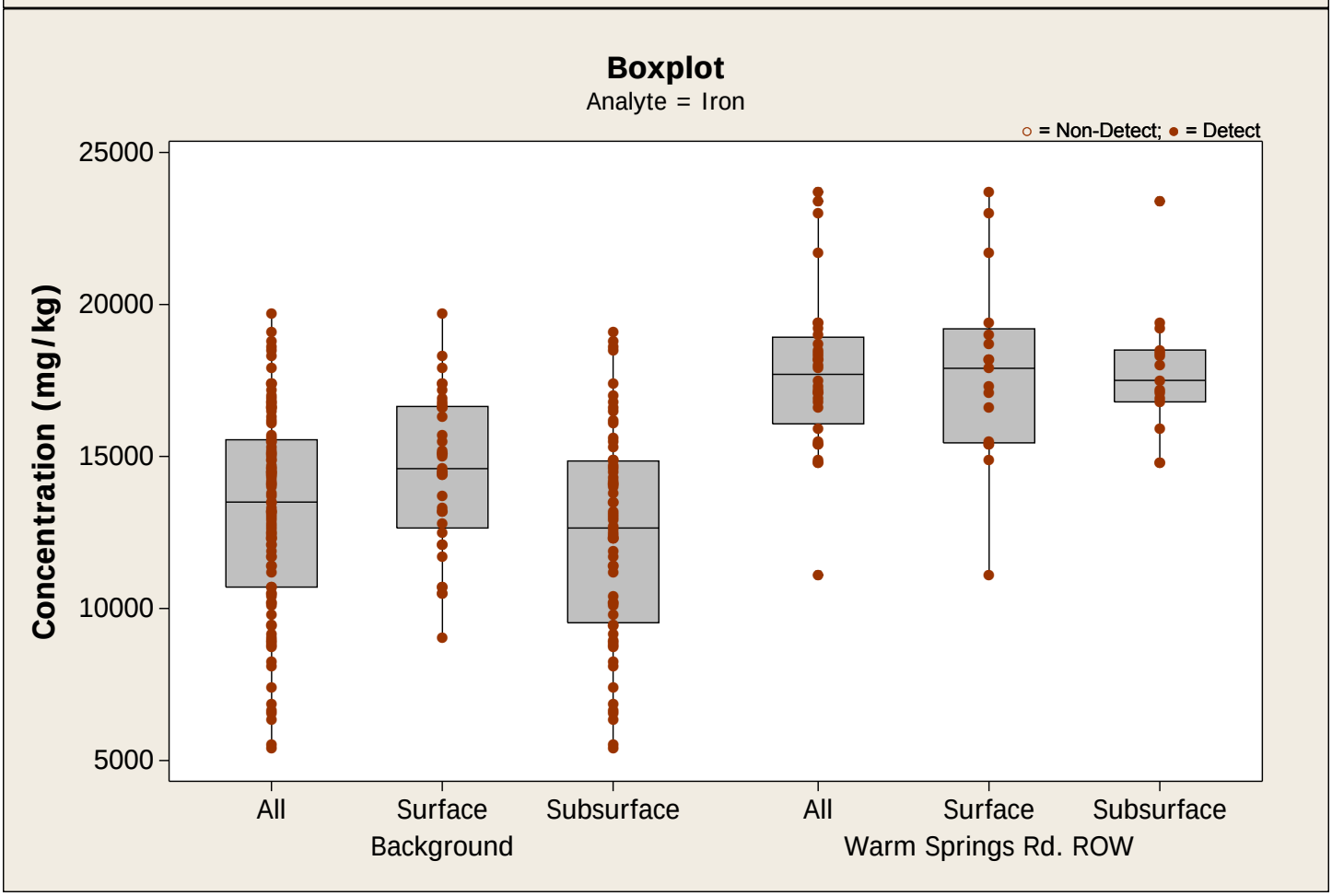

Probability Plot
Normal - 95% CI
Analyte = Cobalt
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
2
4
6
8
10
12
14
16
18
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

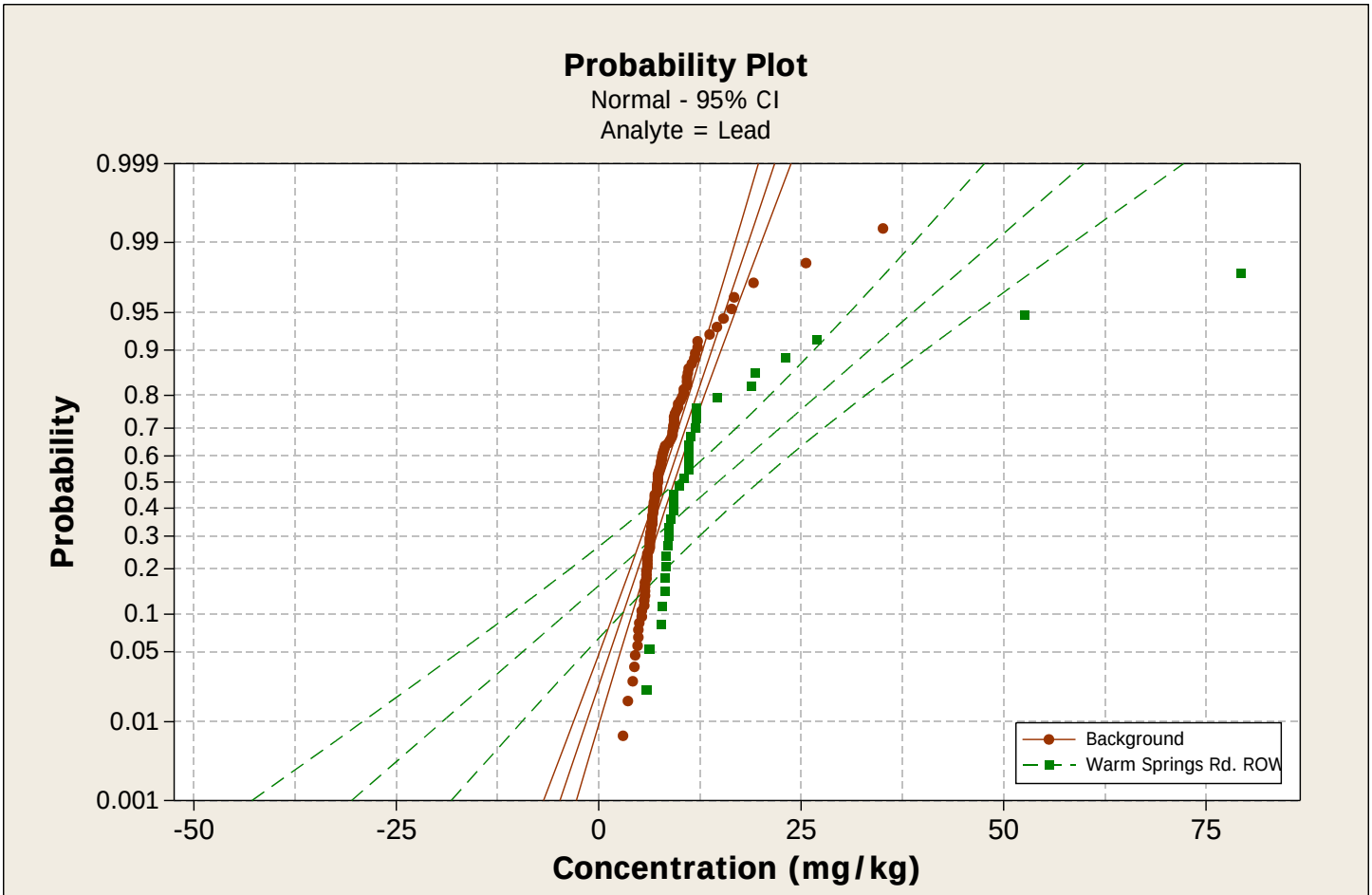

Boxplot
Analyte = Cobalt
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
17.5
15.0
12.5
10.0
7.5
5.0
All
Surface
Subsurface
All
Surface
Subsurface
Background
Warm Springs Rd. ROW

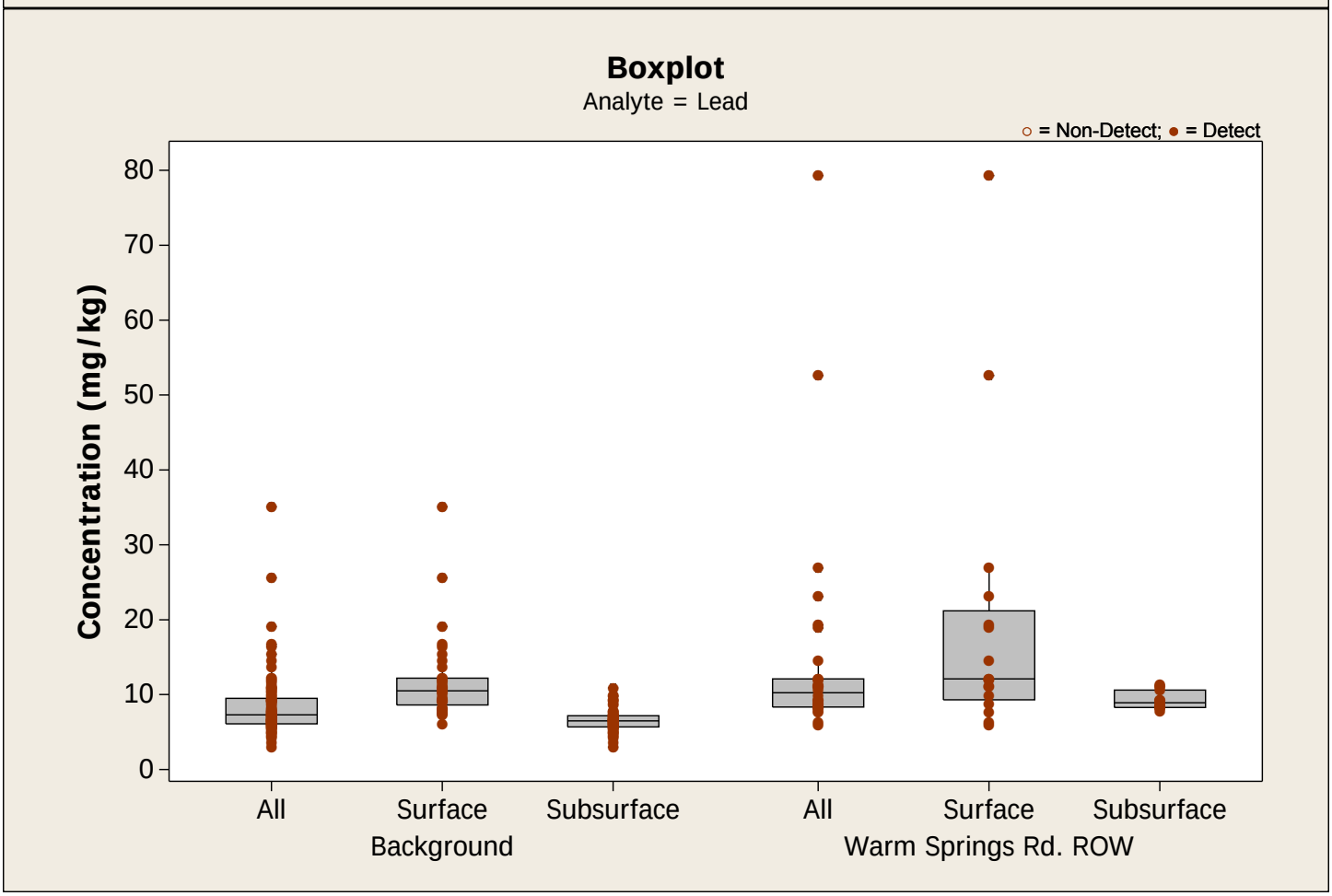

Probability Plot
Normal - 95% CI
Analyte = Copper
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
5
10
15
20
25
30
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

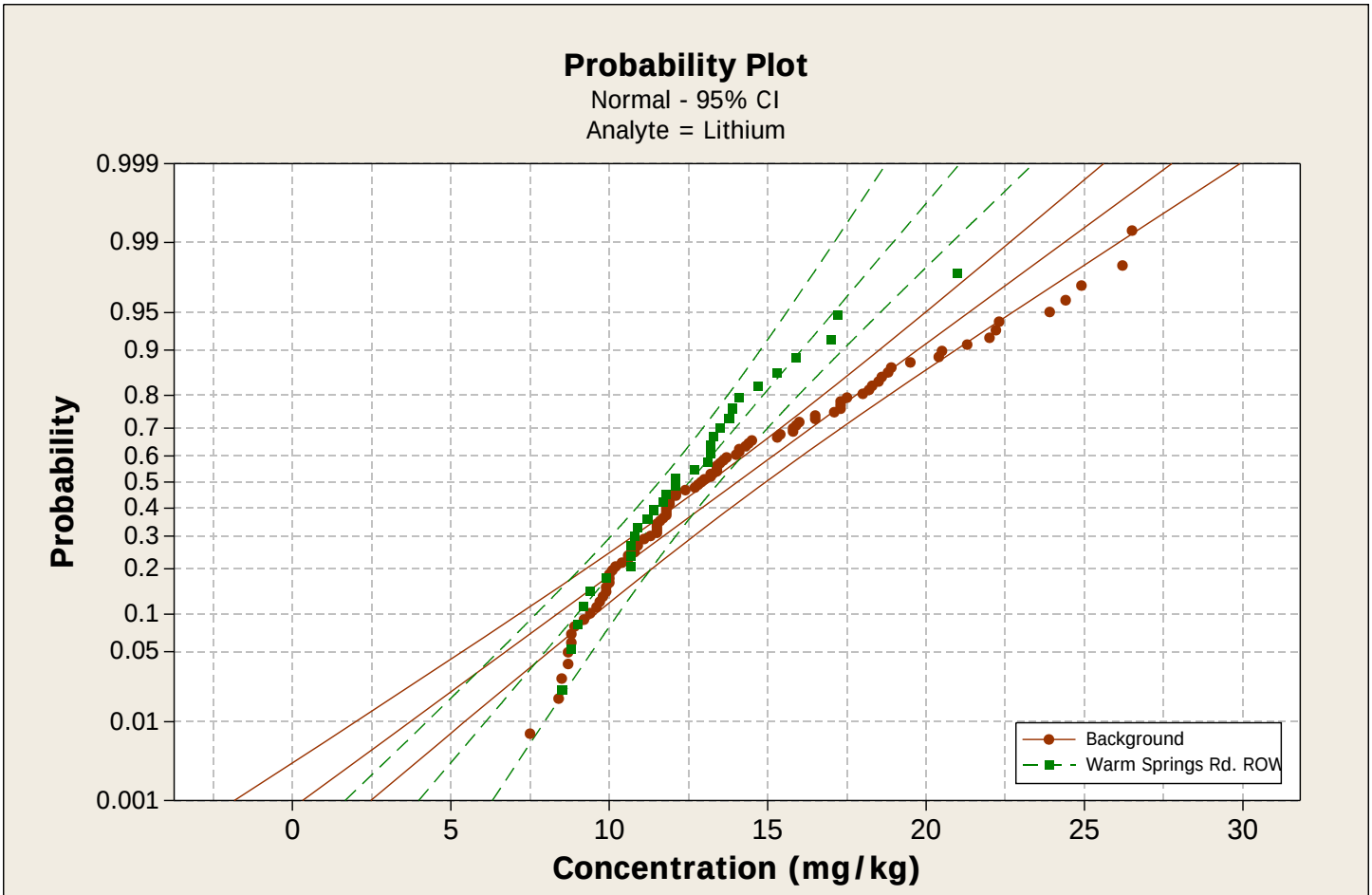

Boxplot
Analyte = Copper
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
26
24
22
20
18
16
14
12
10
All
Surface
Subsurface
All
Surface
Subsurface
Background
Warm Springs Rd. ROW

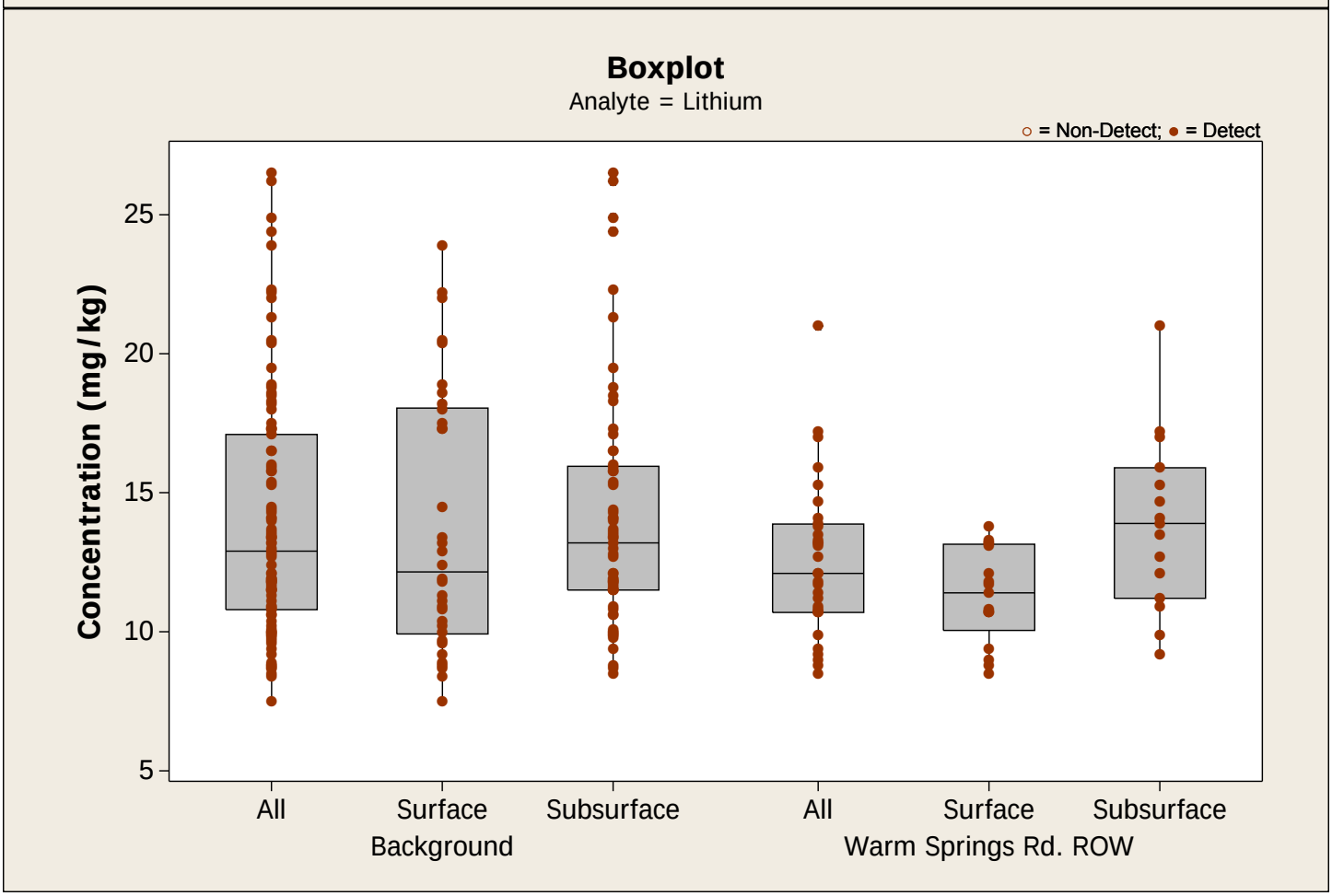

Probability Plot
Normal - 95% CI
Analyte = Iron
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
5000
10000
15000
20000
25000
30000
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

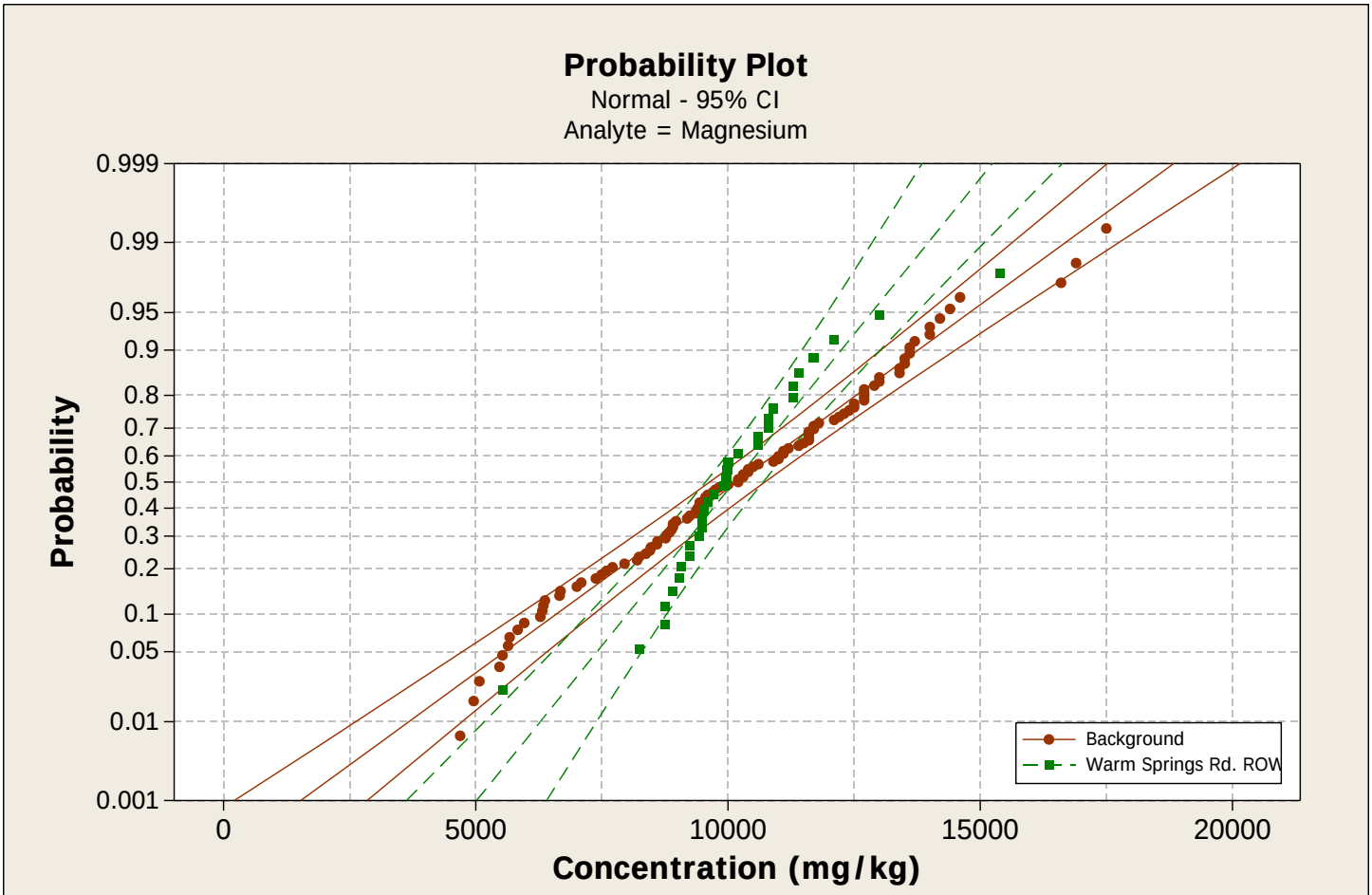

Boxplot
Analyte = Iron
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
25000
20000
15000
10000
5000
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

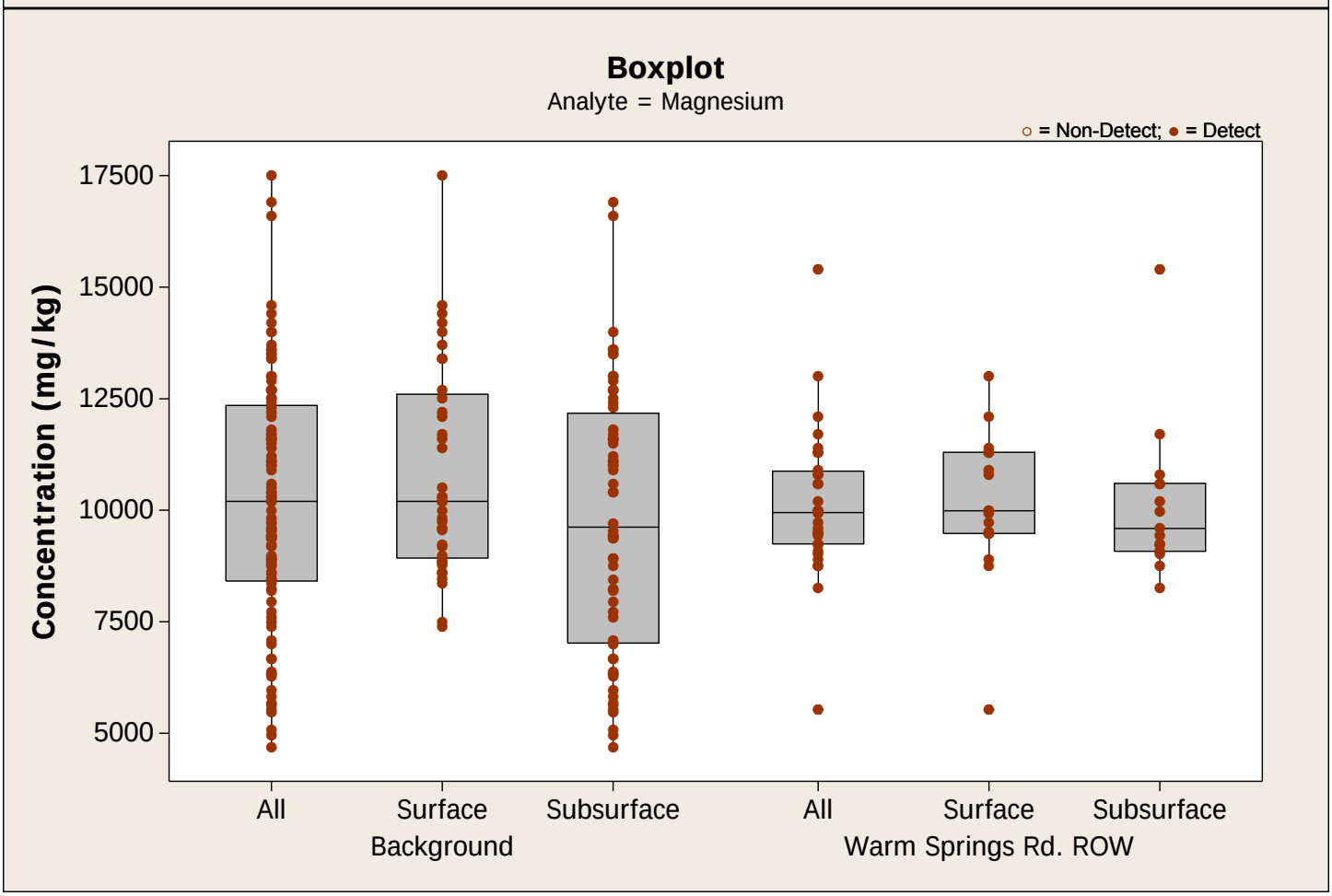

Probability Plot
Normal - 95% CI
Analyte = Lead
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-50
-25
0
25
50
75
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

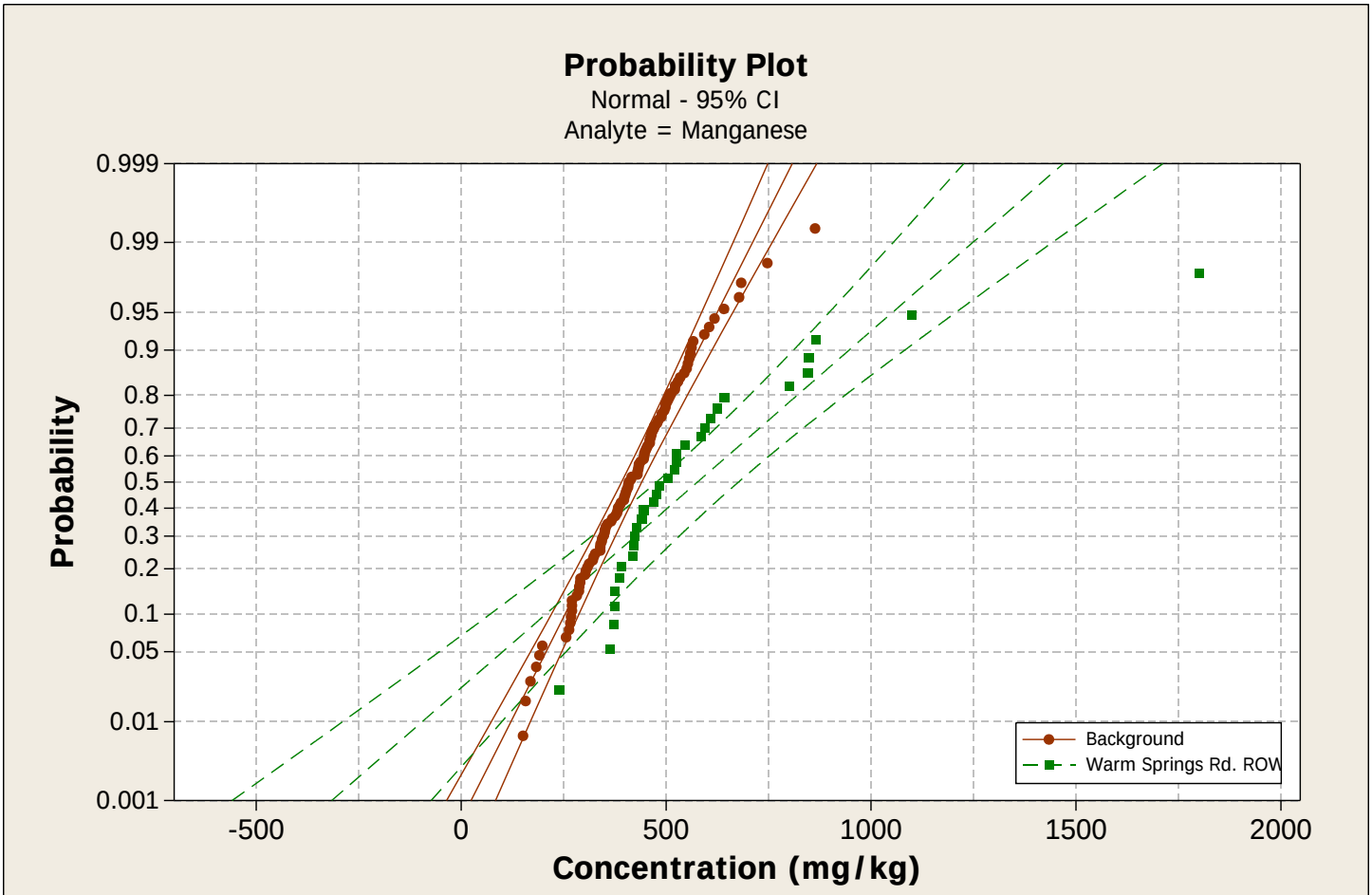

Boxplot
Analyte = Lead
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
80
70
60
50
40
30
20
10
0
All
Surface
Subsurface
All
Surface
Subsurface
Background
Warm Springs Rd. ROW

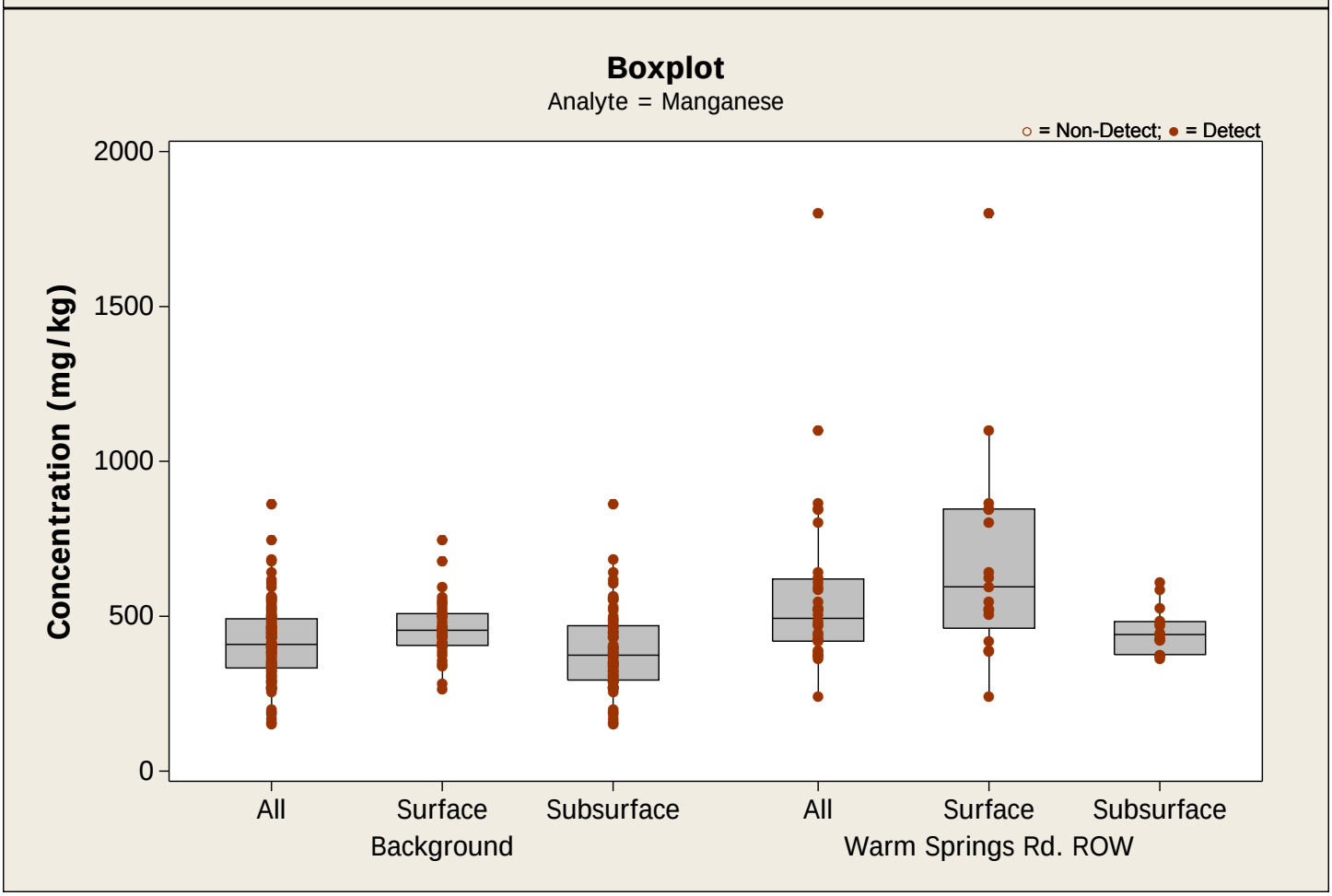

Probability Plot
Normal - 95% CI
Analyte = Lithium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
5
10
15
20
25
30
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

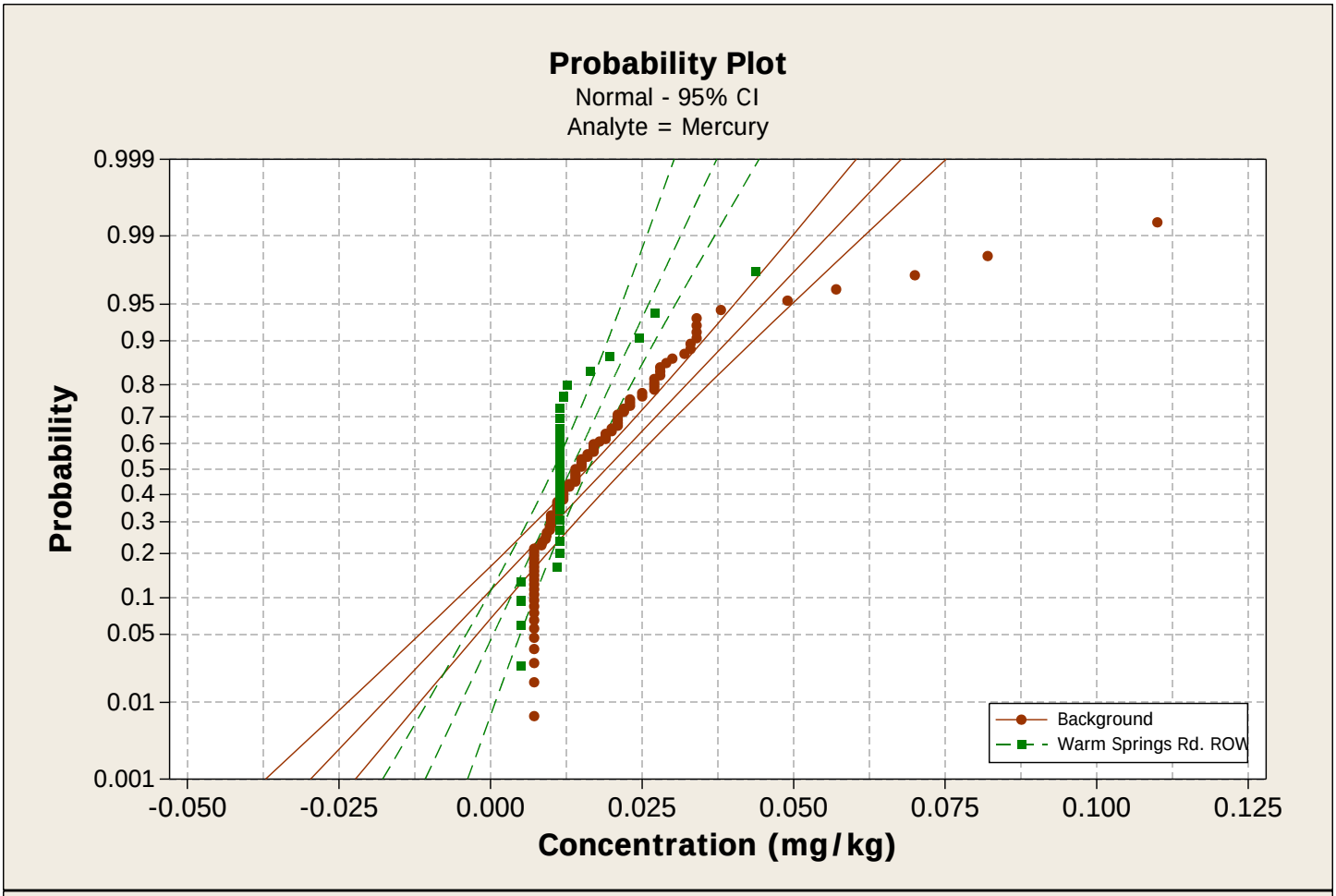

Boxplot
Analyte = Lithium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
25
20
15
10
5
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

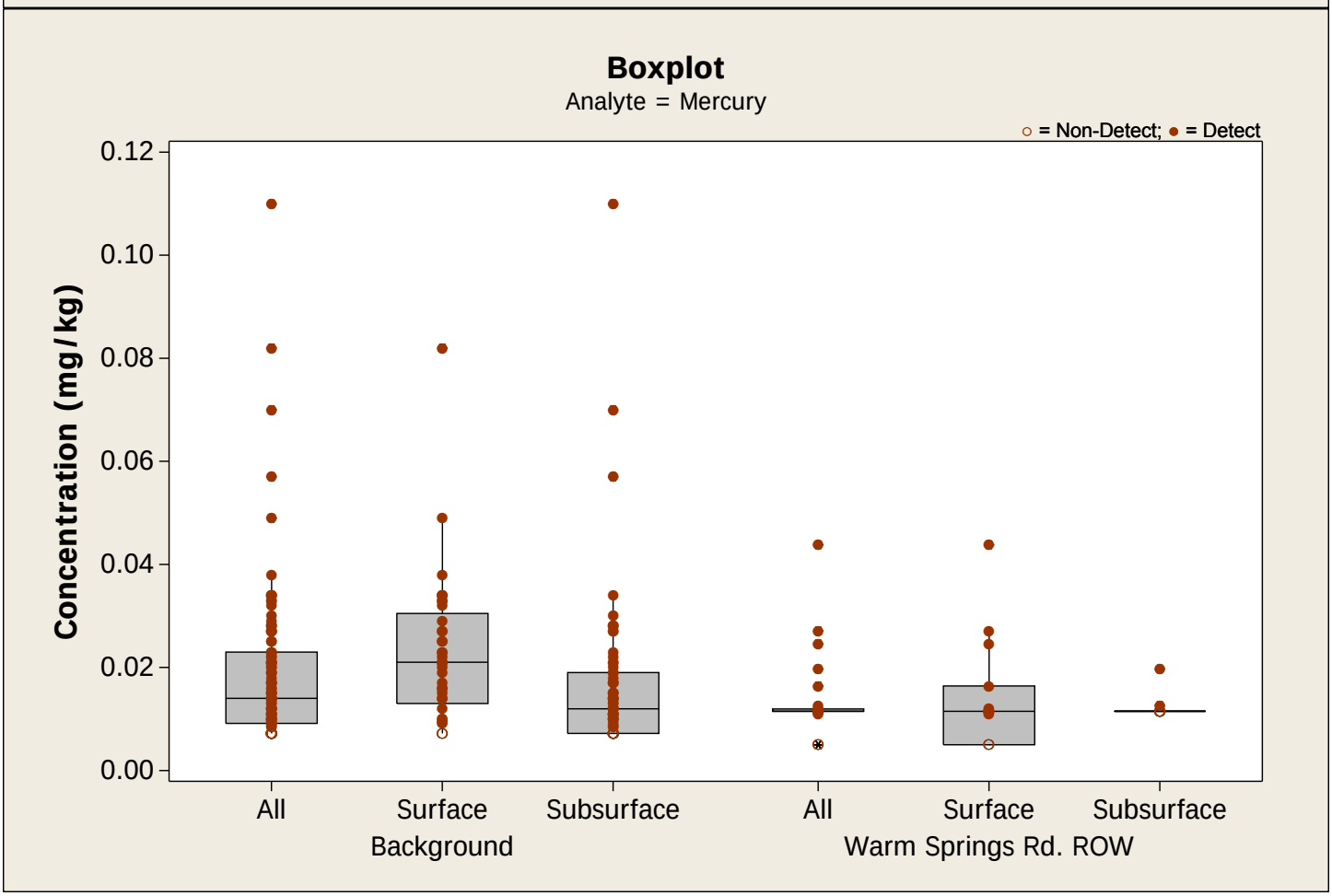

Probability Plot
Normal - 95% CI
Analyte = Magnesium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
5000
10000
15000
20000
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

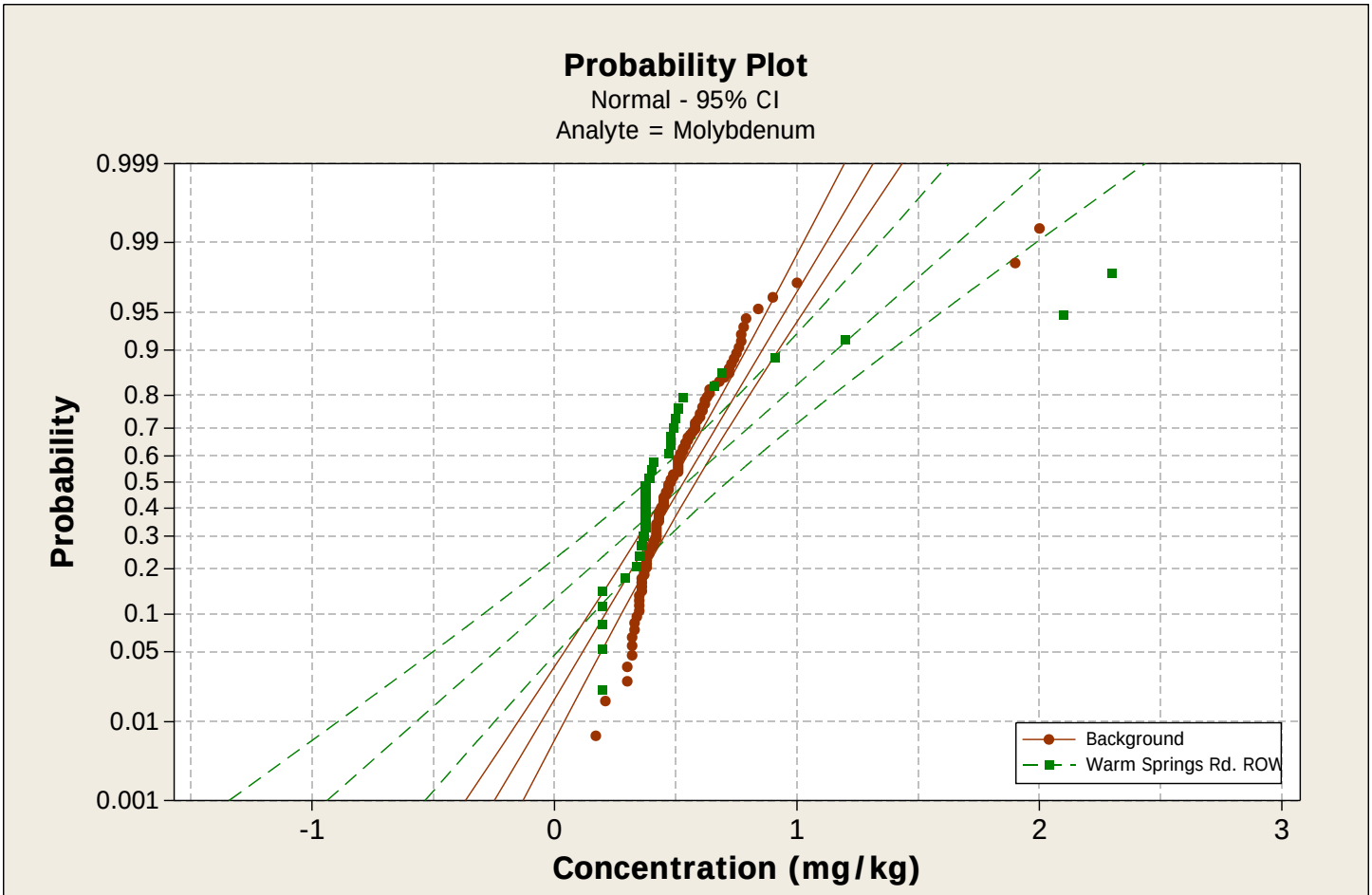

Boxplot
Analyte = Magnesium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
17500
15000
12500
10000
7500
5000
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

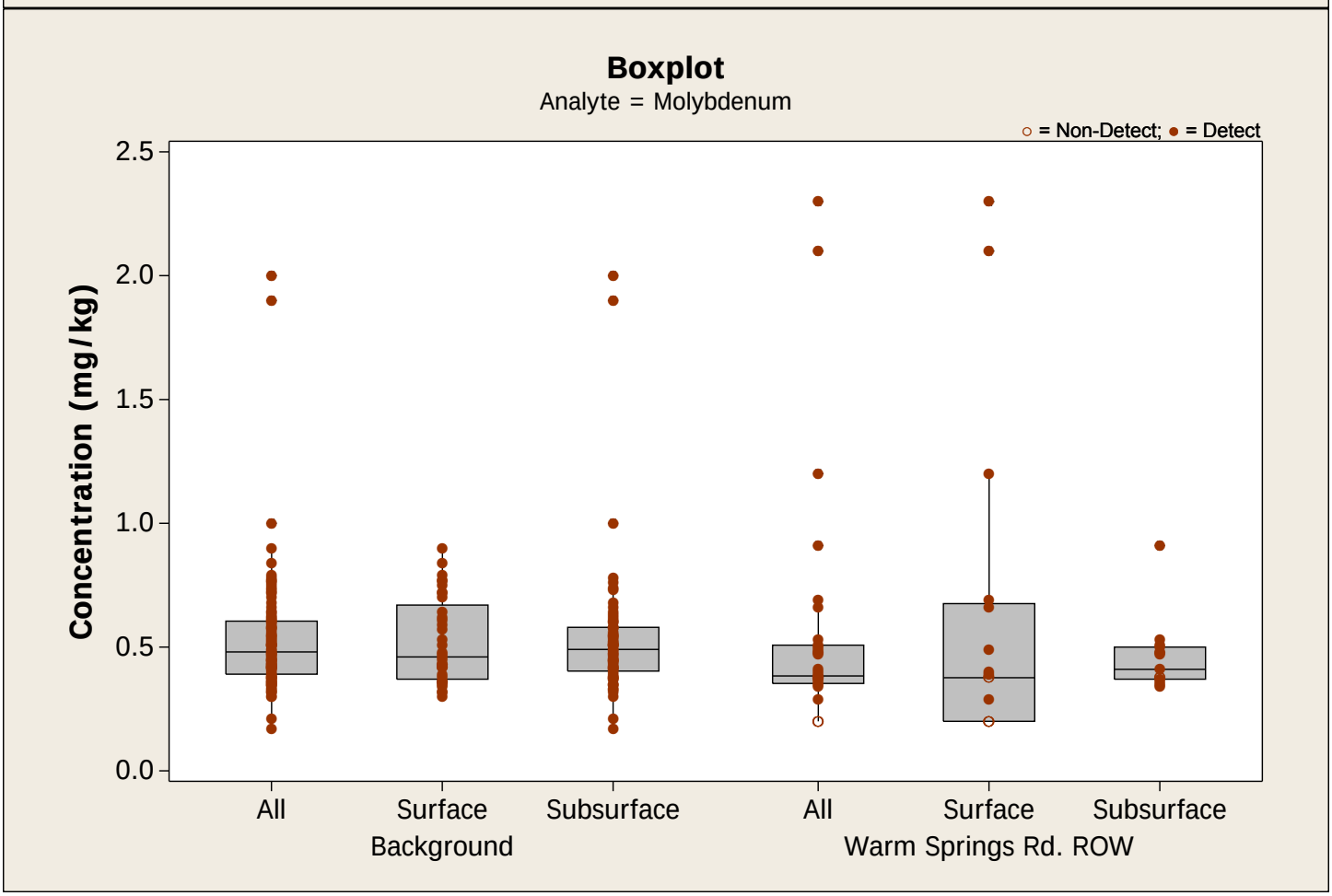

Probability Plot
Normal - 95% CI
Analyte = Manganese
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-500
0
500
1000
1500
2000
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

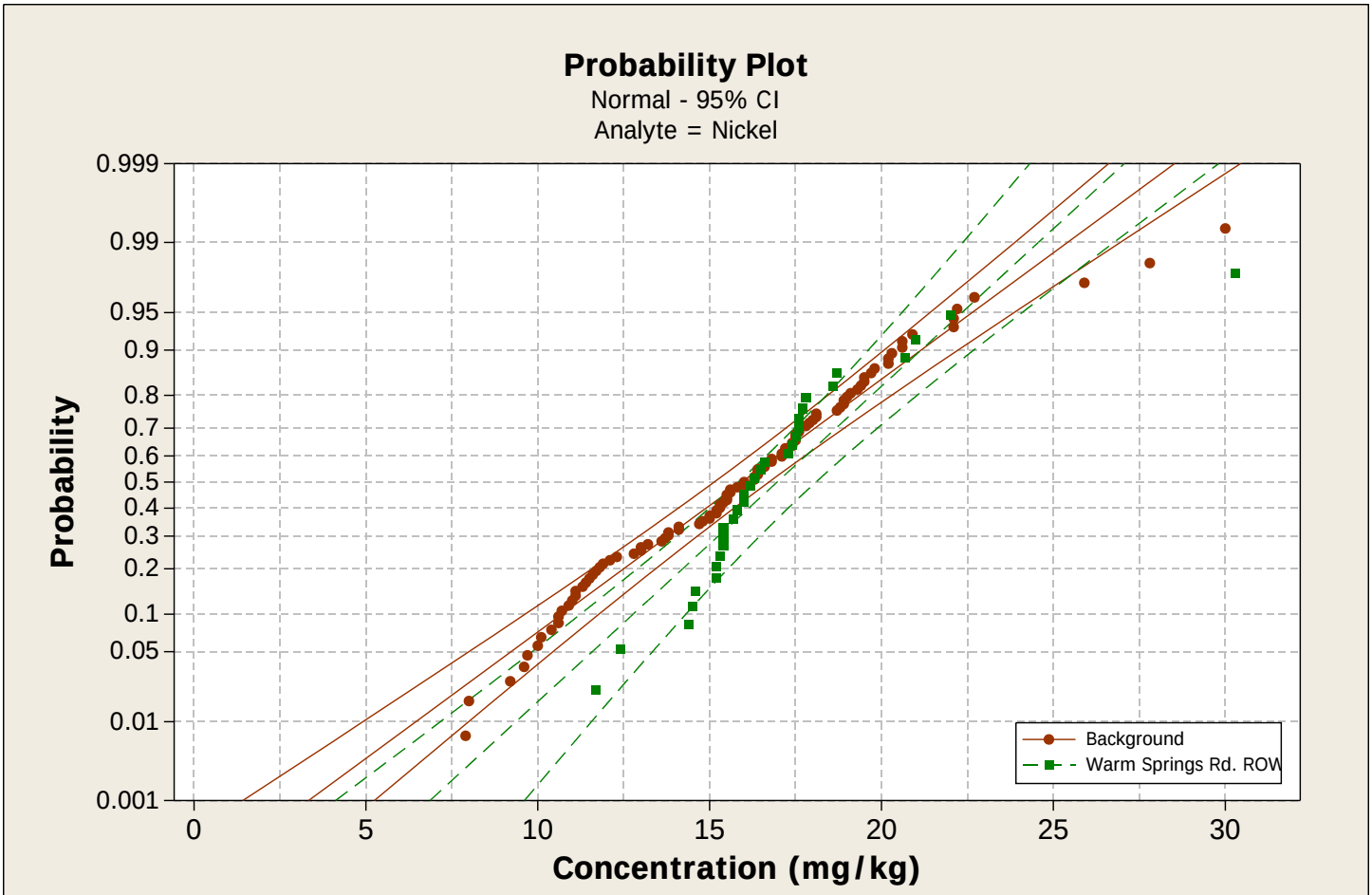

Boxplot
Analyte = Manganese
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
2000
1500
1000
500
0
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

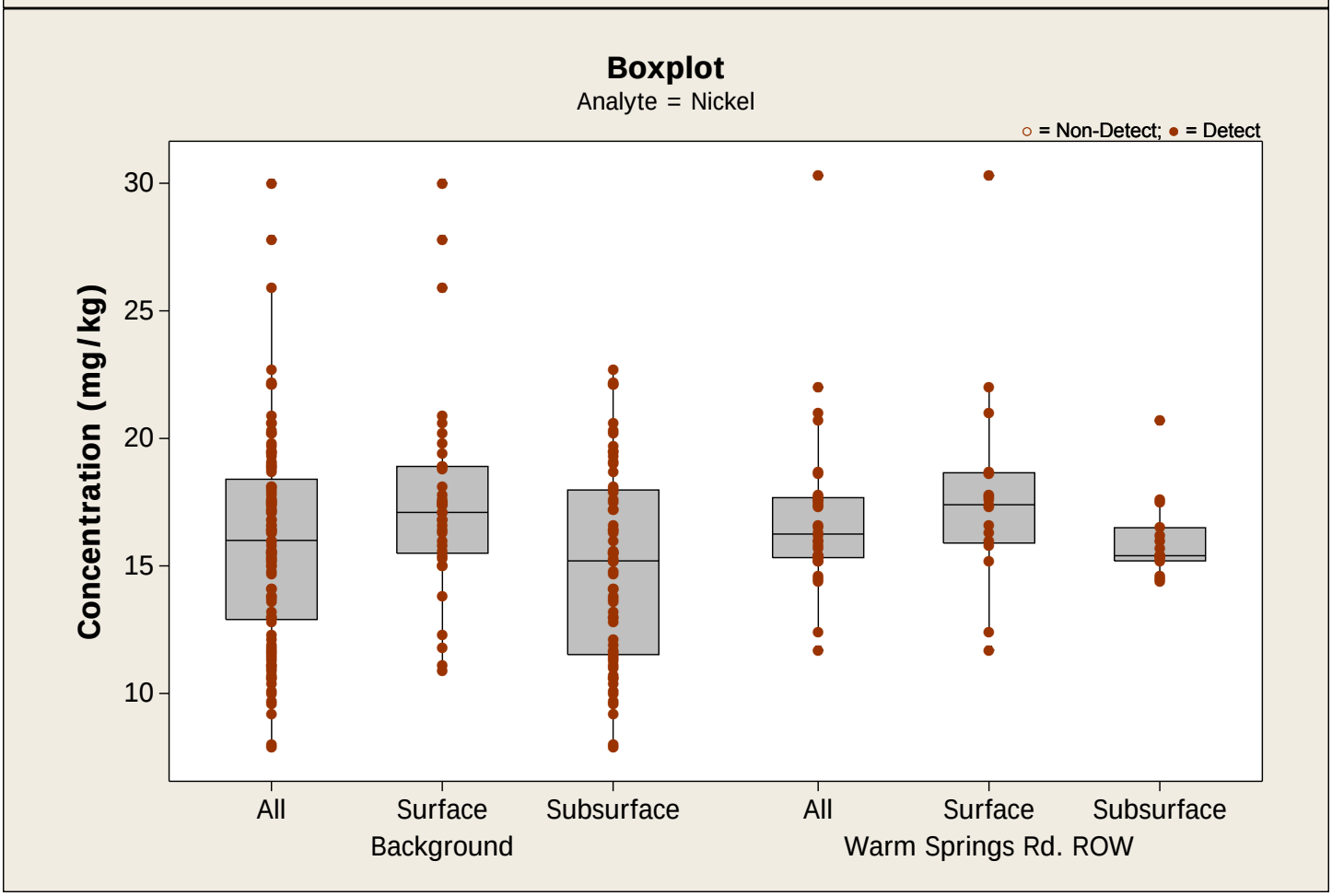

Probability Plot
Normal - 95% CI
Analyte = Mercury
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-0.050
-0.025
0.000
0.025
0.050
0.075
0.100
0.125
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

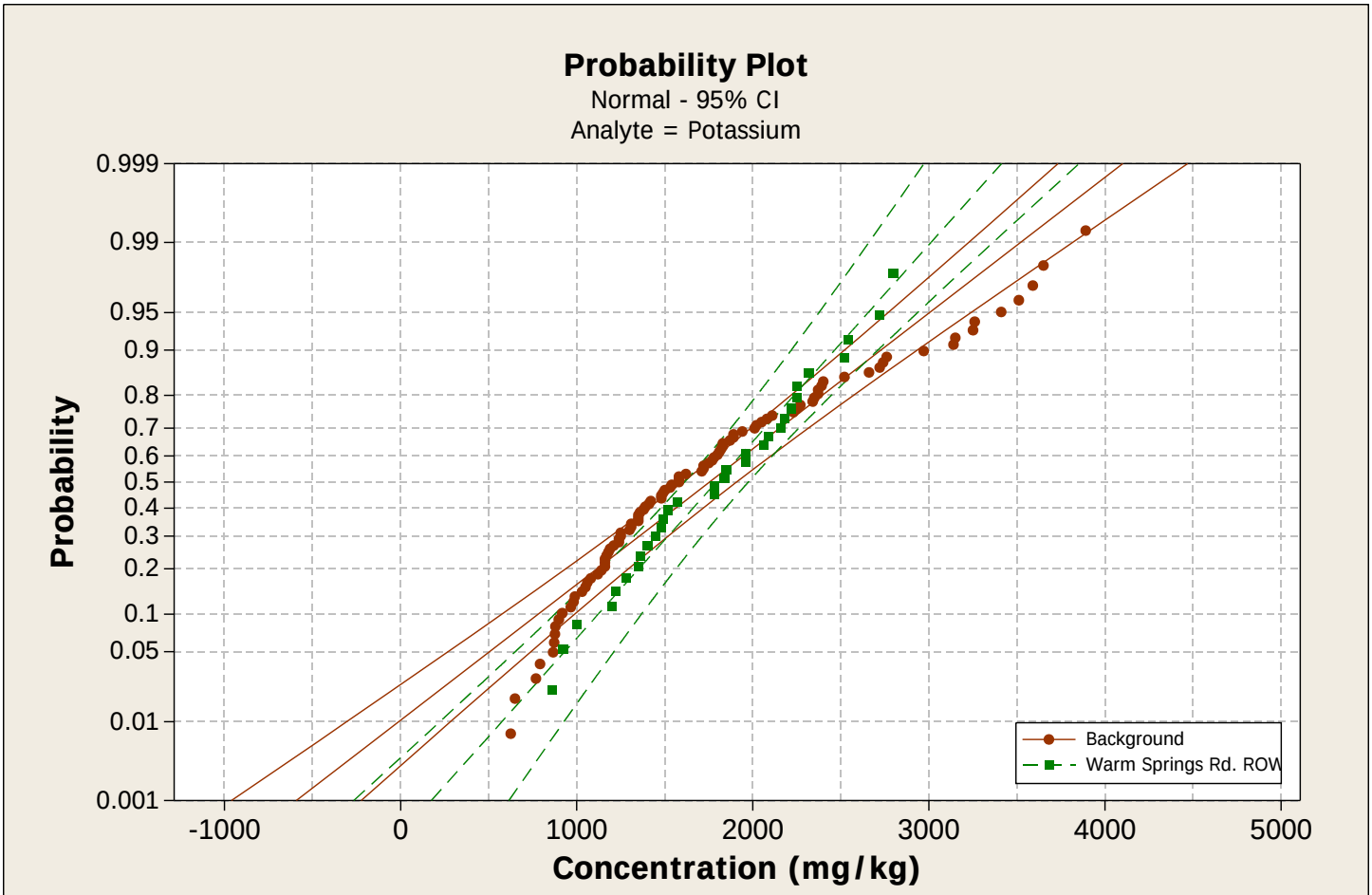

Boxplot
Analyte = Mercury
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
0.12
0.10
0.08
0.06
0.04
0.02
0.00
All
Surface
Subsurface
All
Surface
Subsurface
Background
Warm Springs Rd. ROW

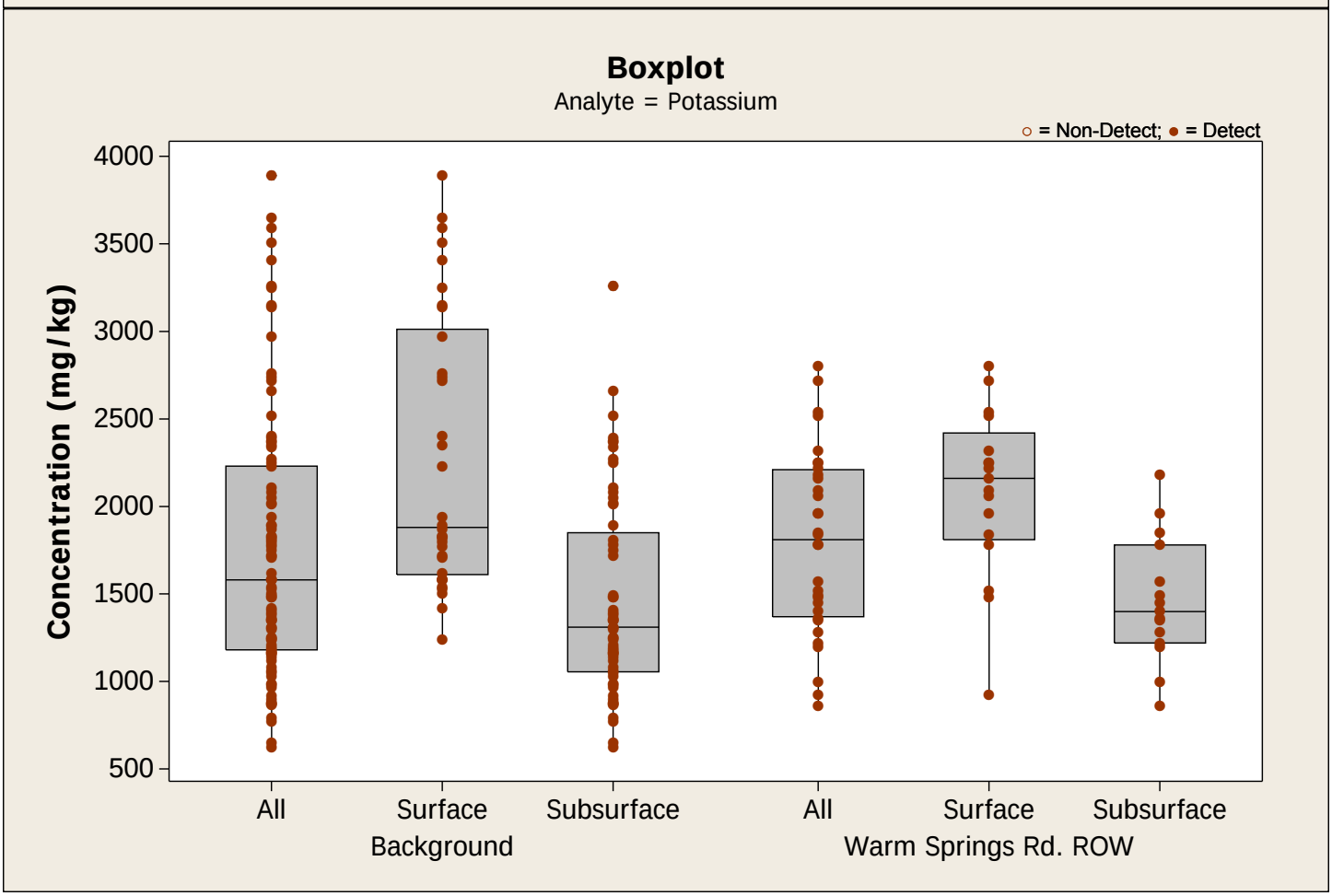

Probability Plot
Normal - 95% CI
Analyte = Molybdenum
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-1
0
1
2
3
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

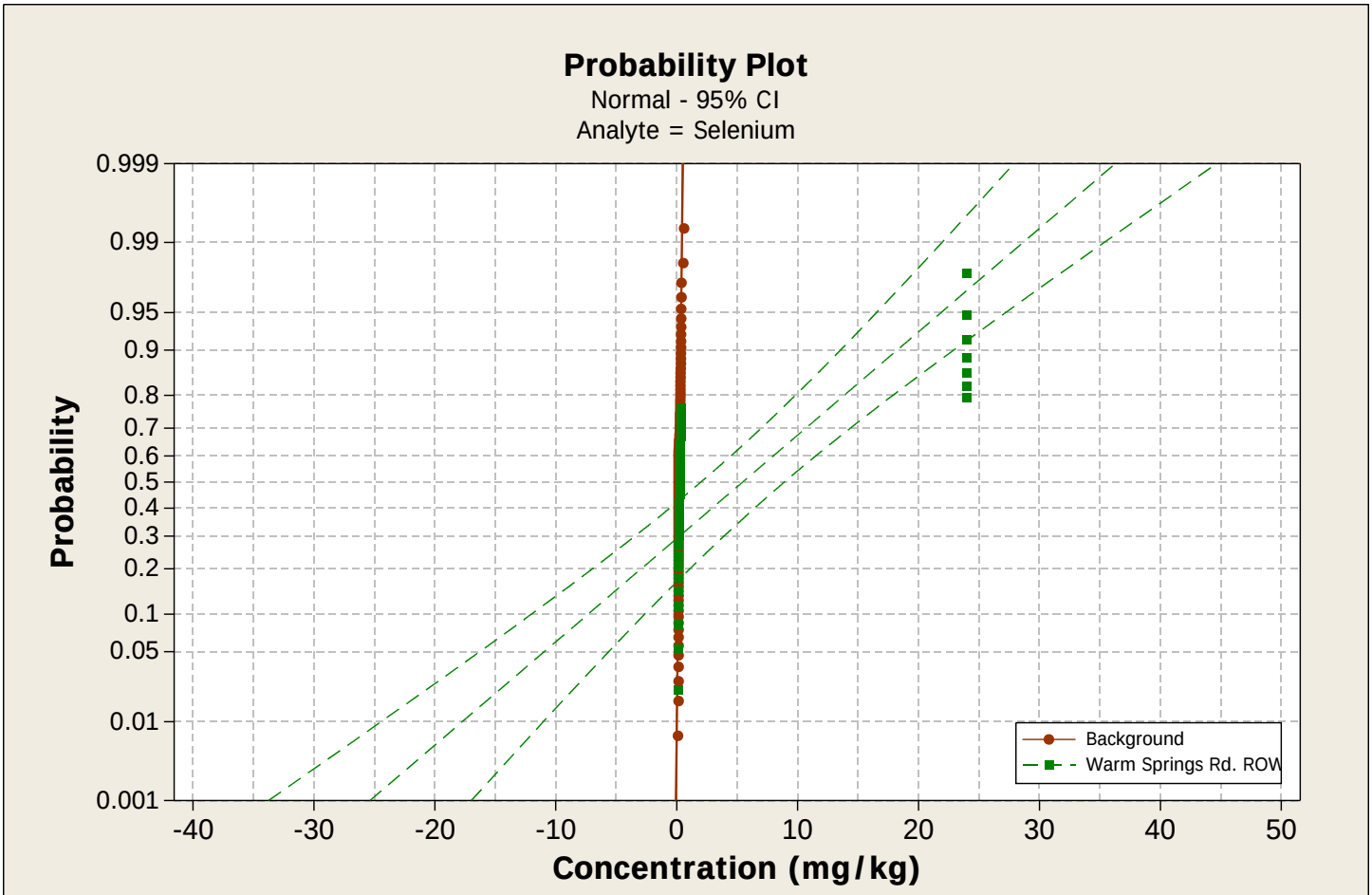

Boxplot
Analyte = Molybdenum
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
2.5
2.0
1.5
1.0
0.5
0.0
All
Surface
Subsurface
All
Surface
Subsurface
Background
Warm Springs Rd. ROW

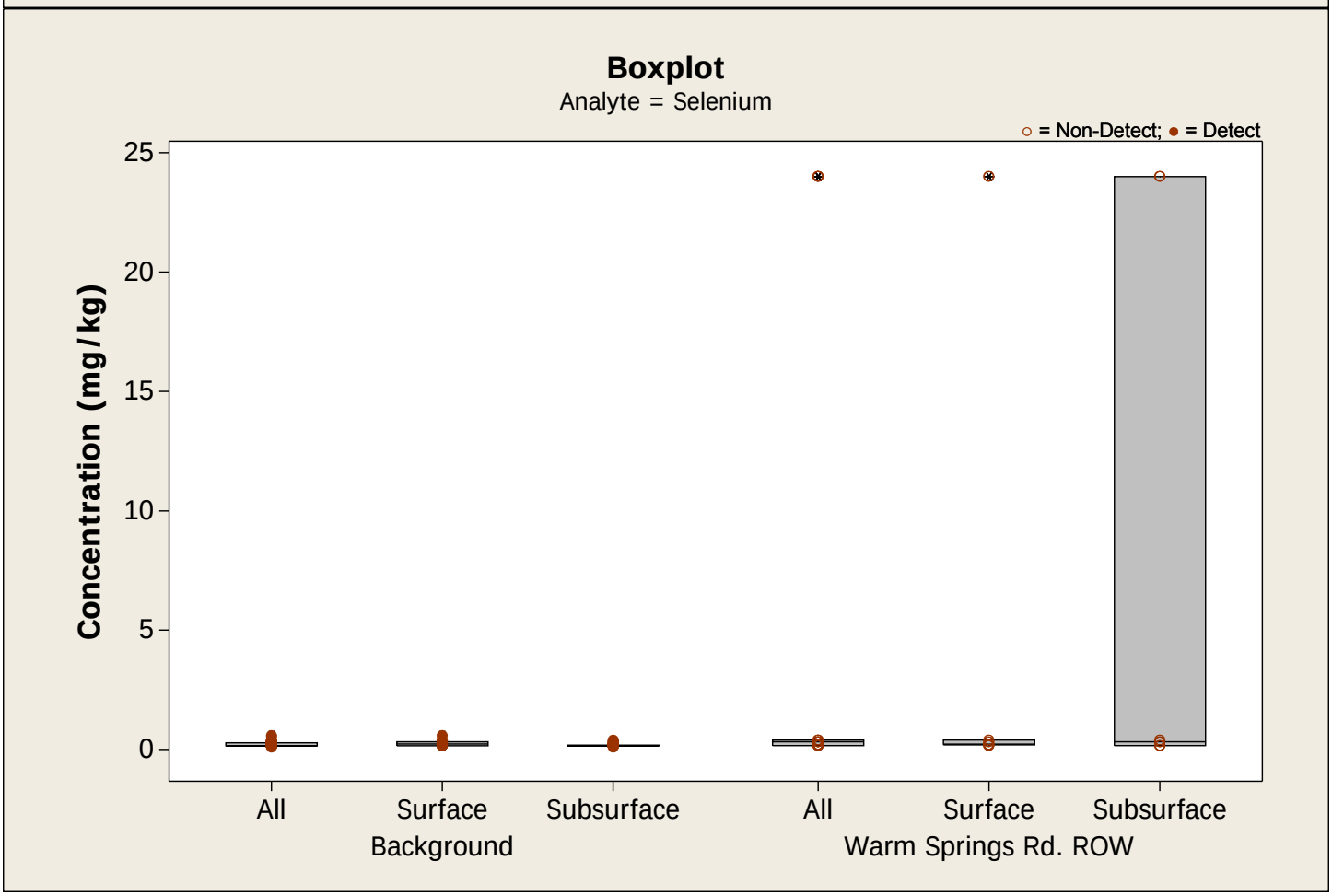

Probability Plot
Normal - 95% CI
Analyte = Nickel
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
5
10
15
20
25
30
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

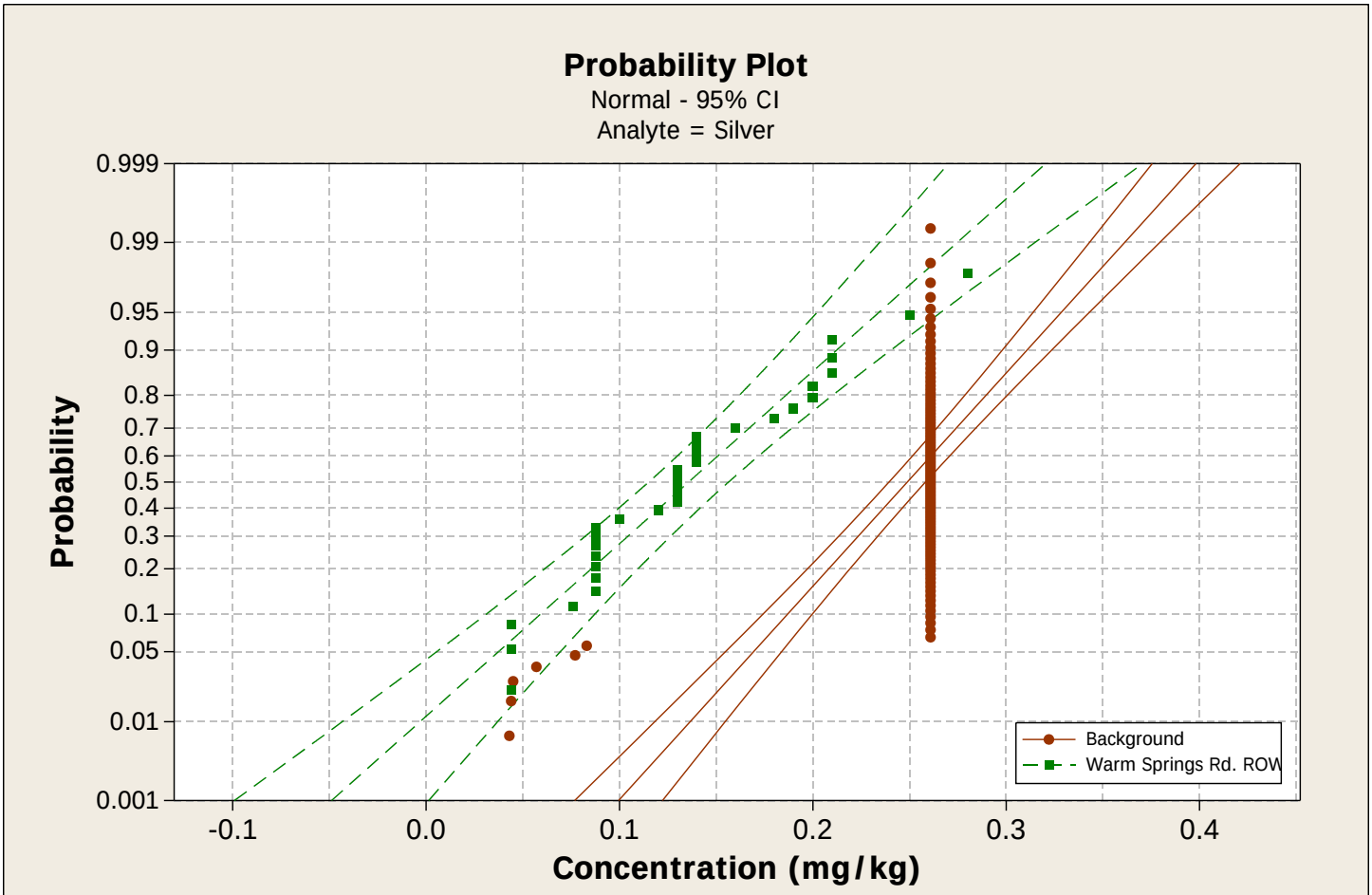

Boxplot
Analyte = Nickel
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
30
25
20
15
10
All
Surface
Subsurface
All
Surface
Subsurface
Background
Warm Springs Rd. ROW

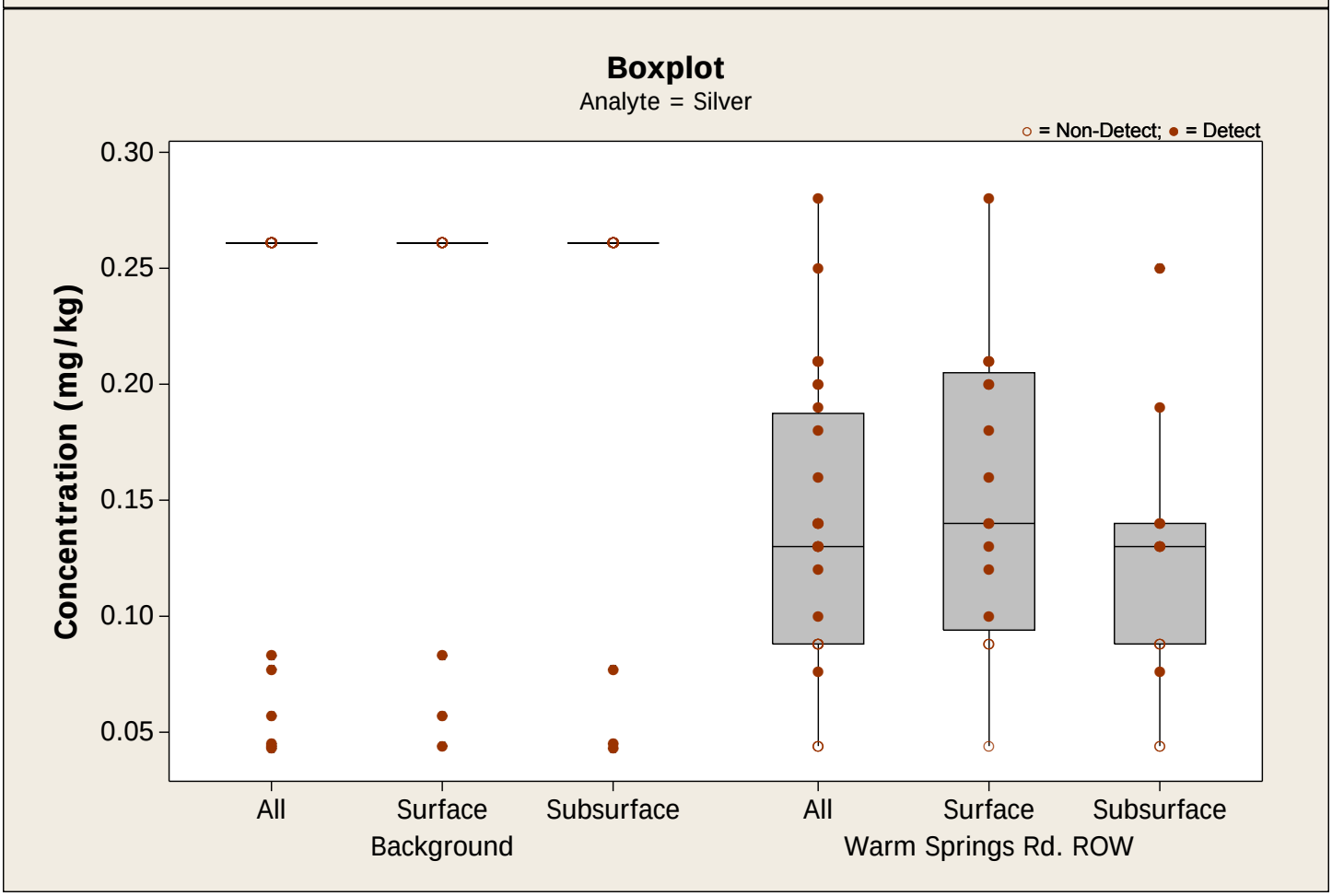

Probability Plot
Normal - 95% CI
Analyte = Potassium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-1000
0
1000
2000
3000
4000
5000
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

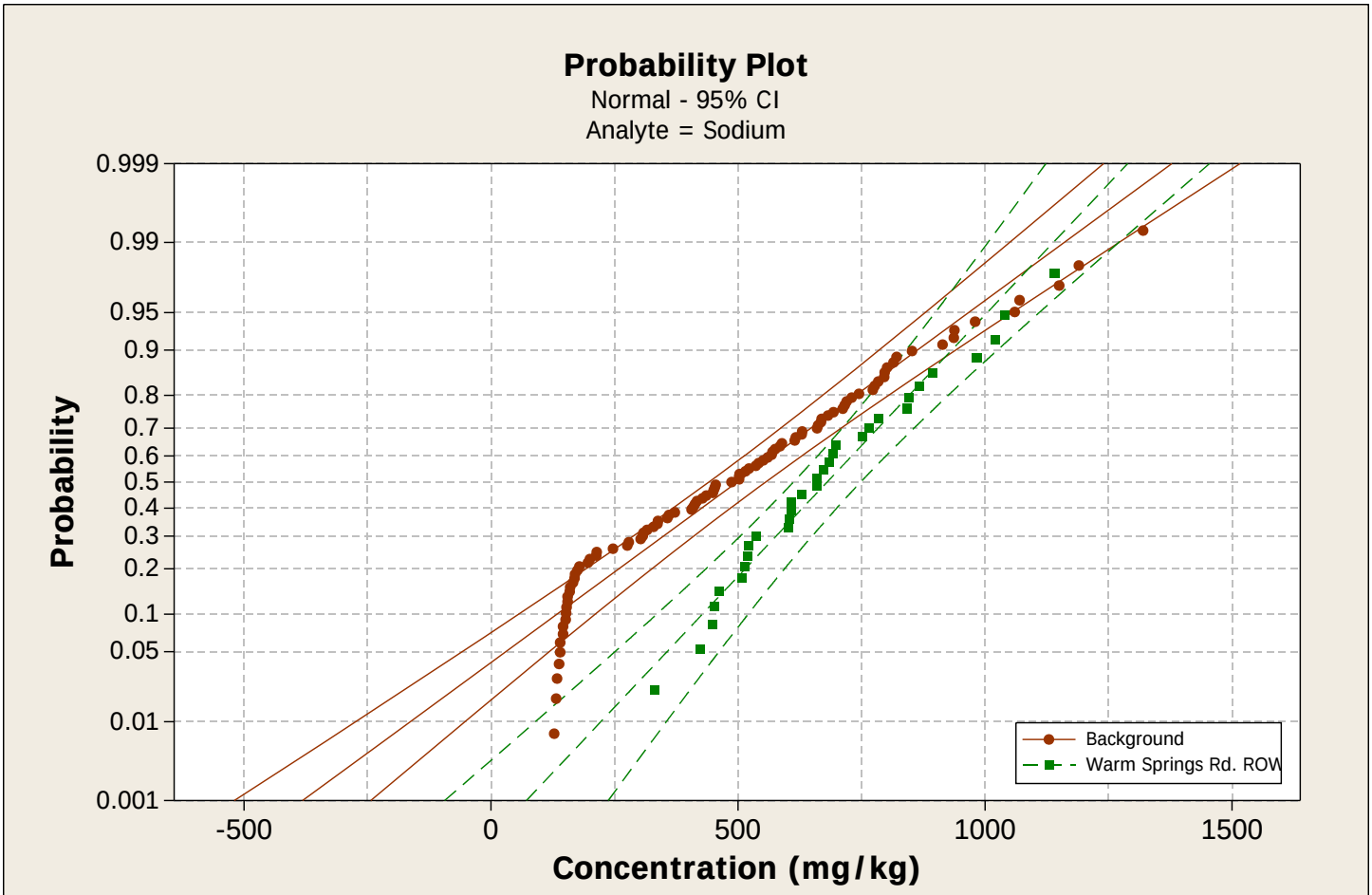

Boxplot
Analyte = Potassium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
4000
3500
3000
2500
2000
1500
1000
500
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

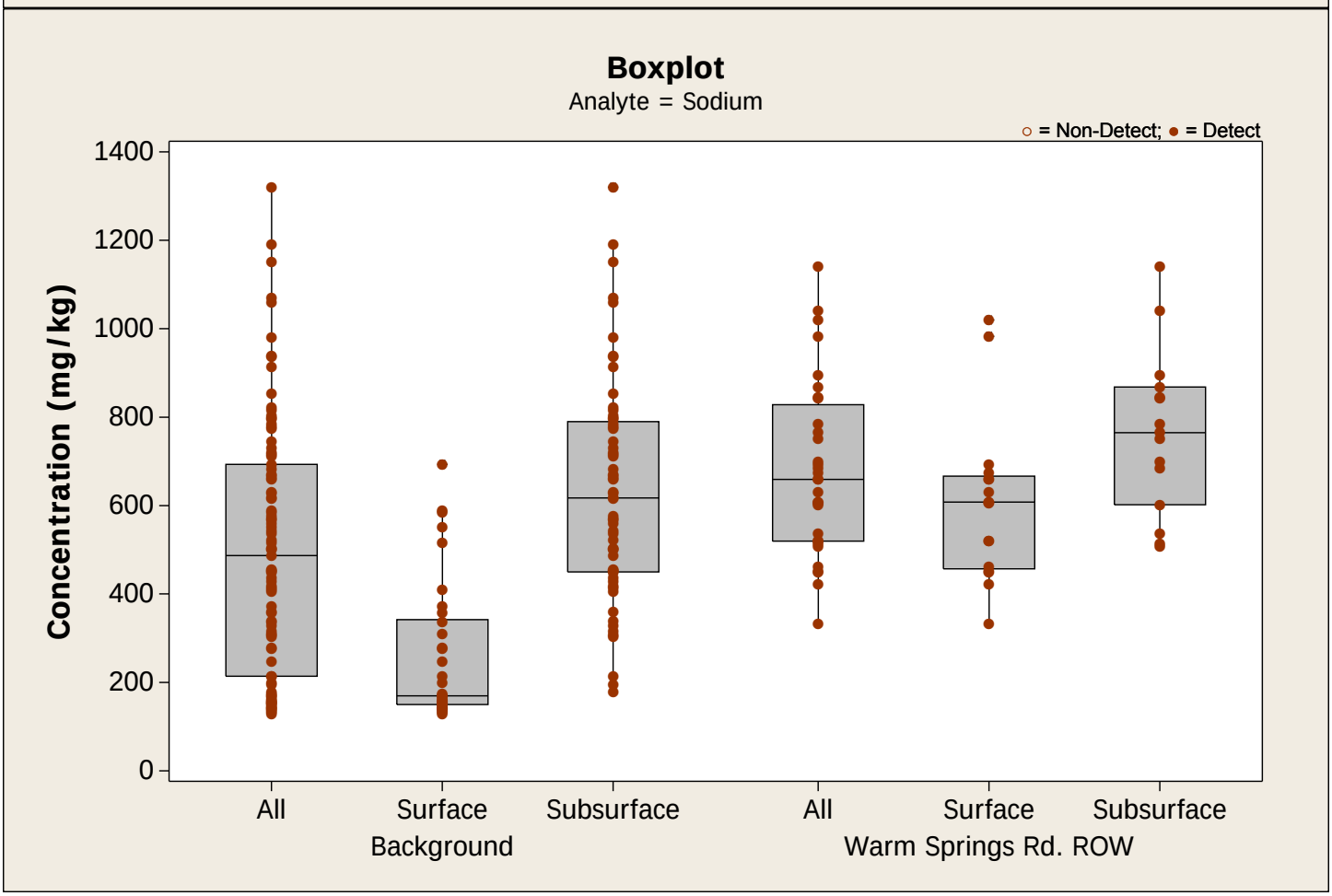

Probability Plot
Normal - 95% CI
Analyte = Selenium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-40
-30
-20
-10
0
10
20
30
40
50
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

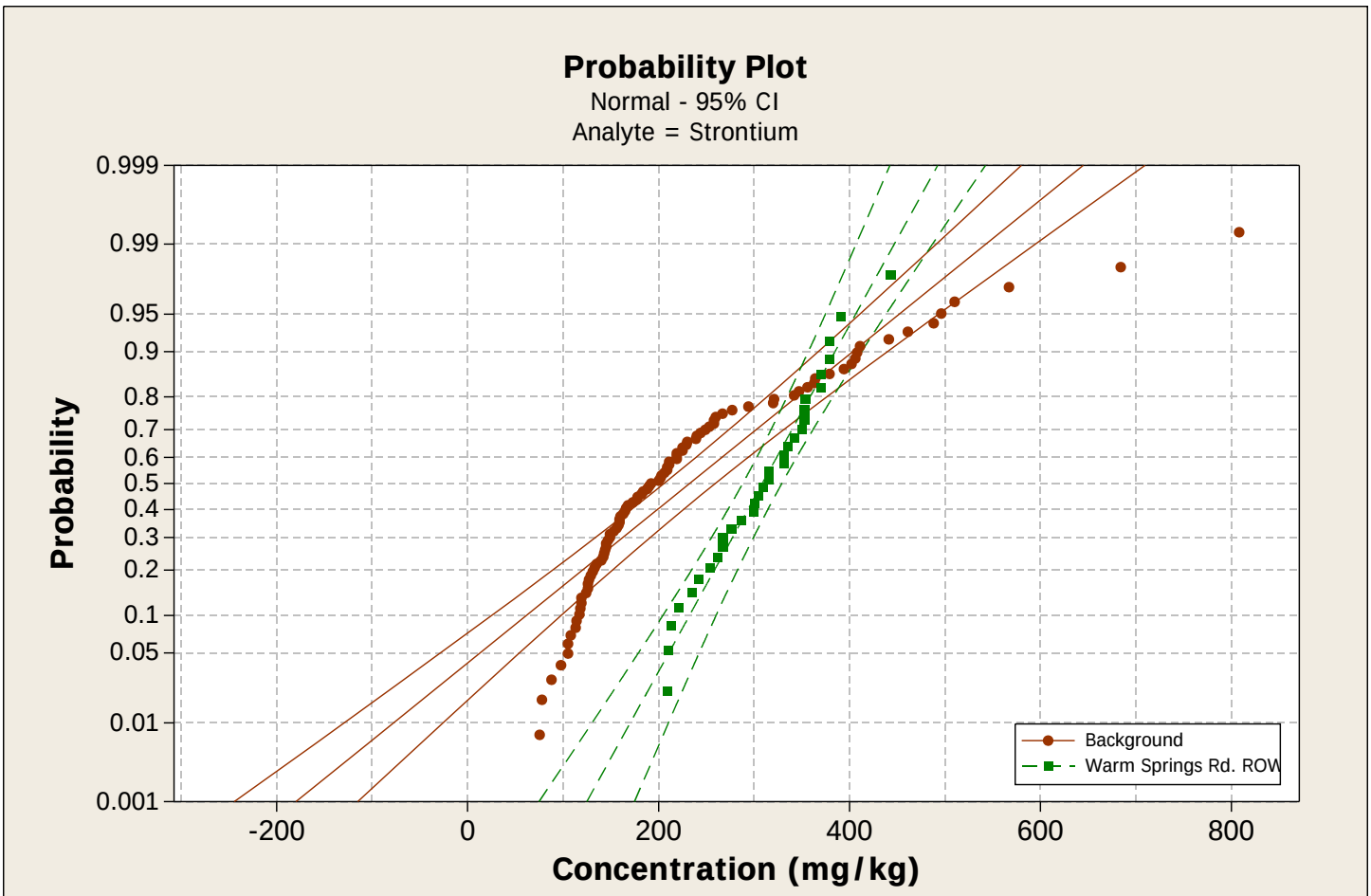

Boxplot
Analyte = Selenium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
25
20
15
10
5
0
All
Surface
Subsurface
All
Surface
Subsurface
Background
Warm Springs Rd. ROW

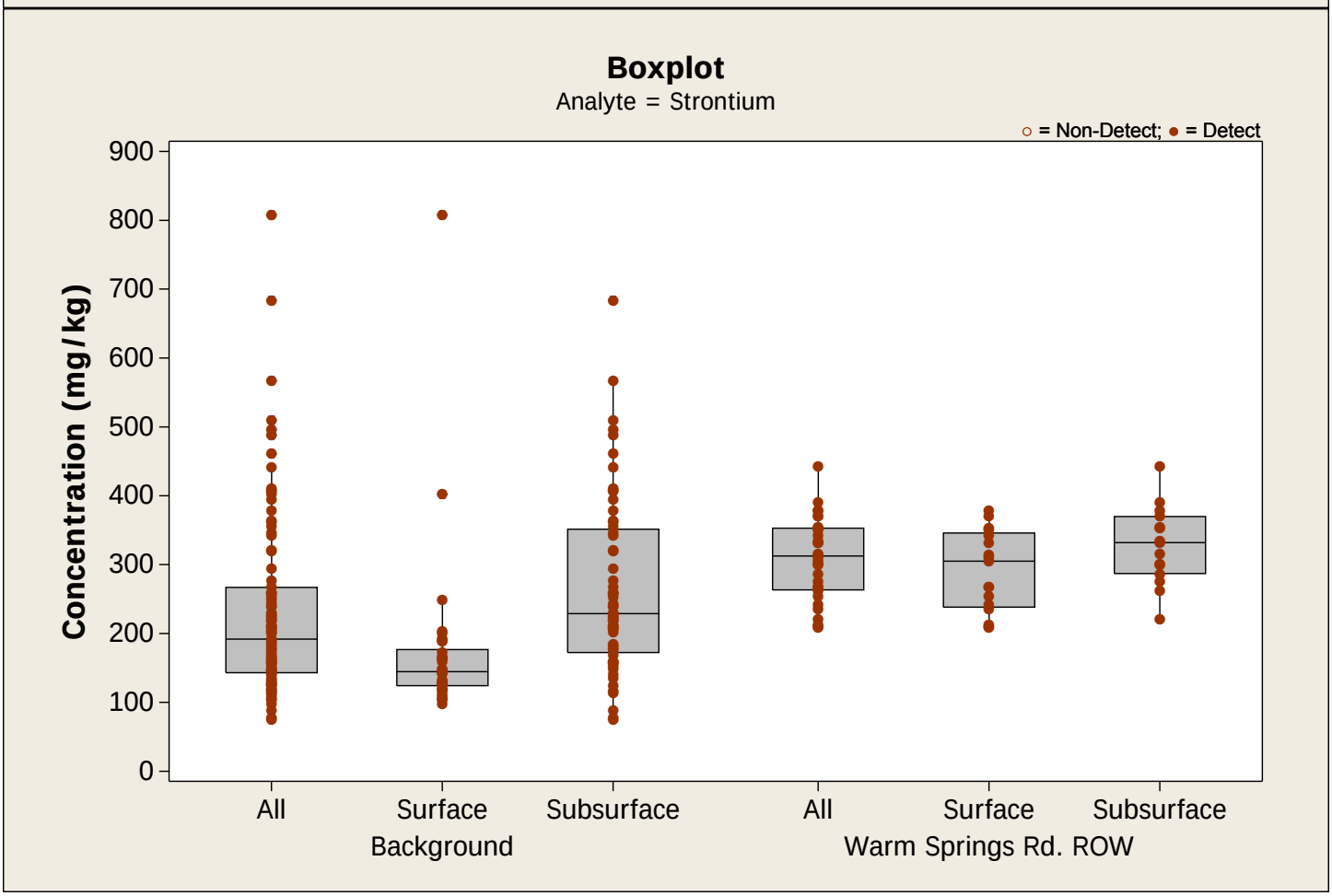

Probability Plot
Normal - 95% CI
Analyte = Silver
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-0.1
0.0
0.1
0.2
0.3
0.4
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

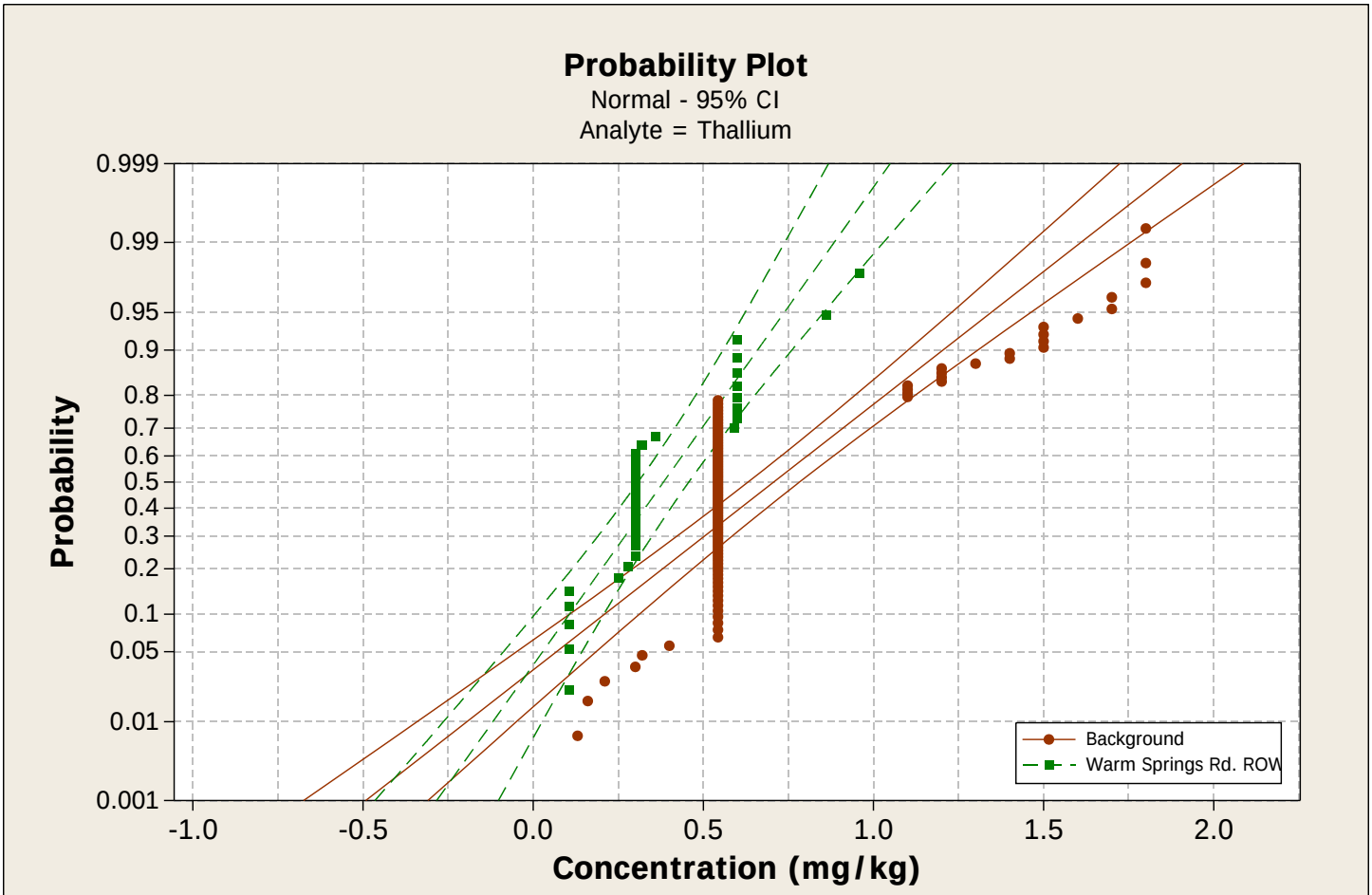

Boxplot
Analyte = Silver
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
0.30
0.25
0.20
0.15
0.10
0.05
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

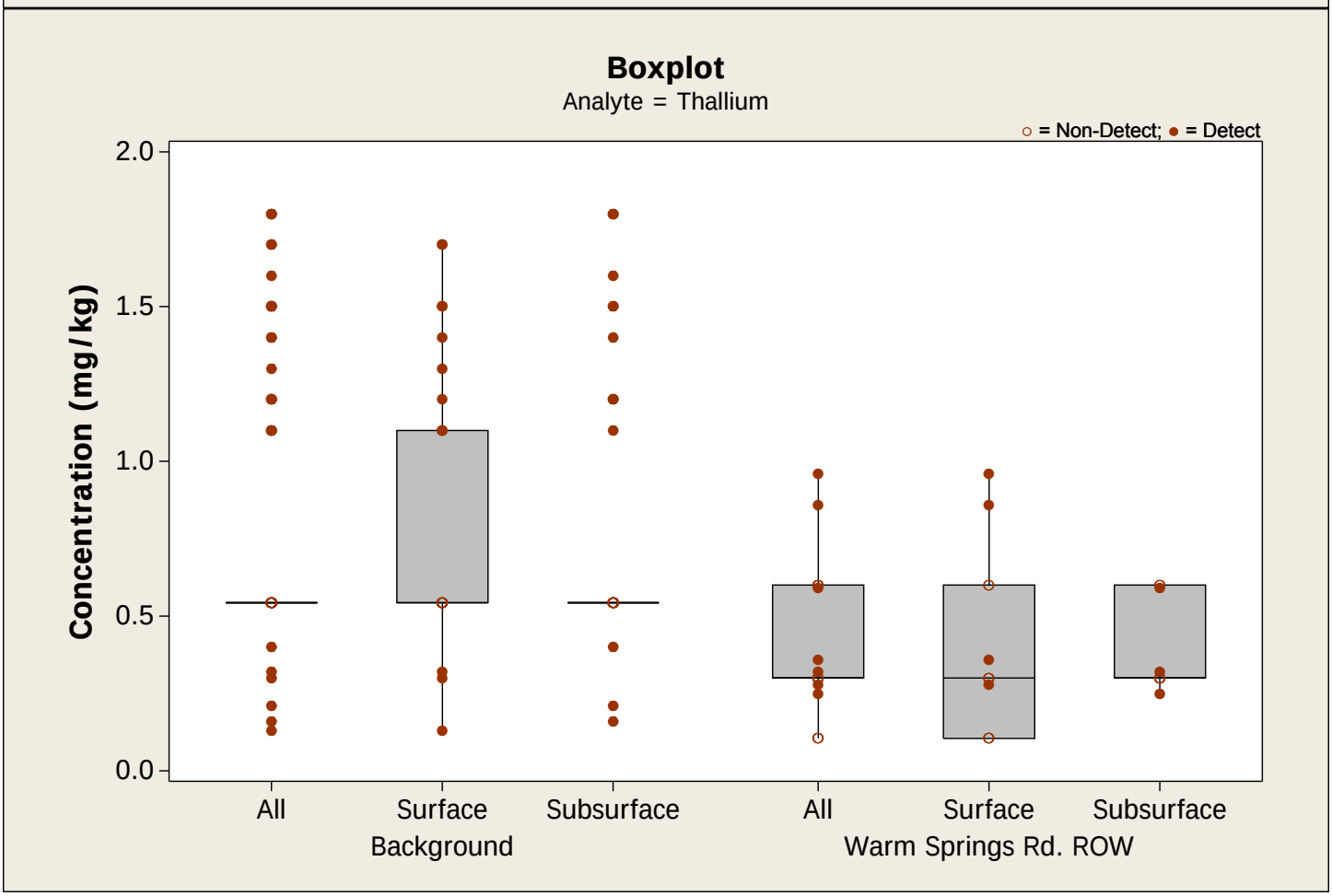

Probability Plot
Normal - 95% CI
Analyte = Sodium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-500
0
500
1000
1500
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

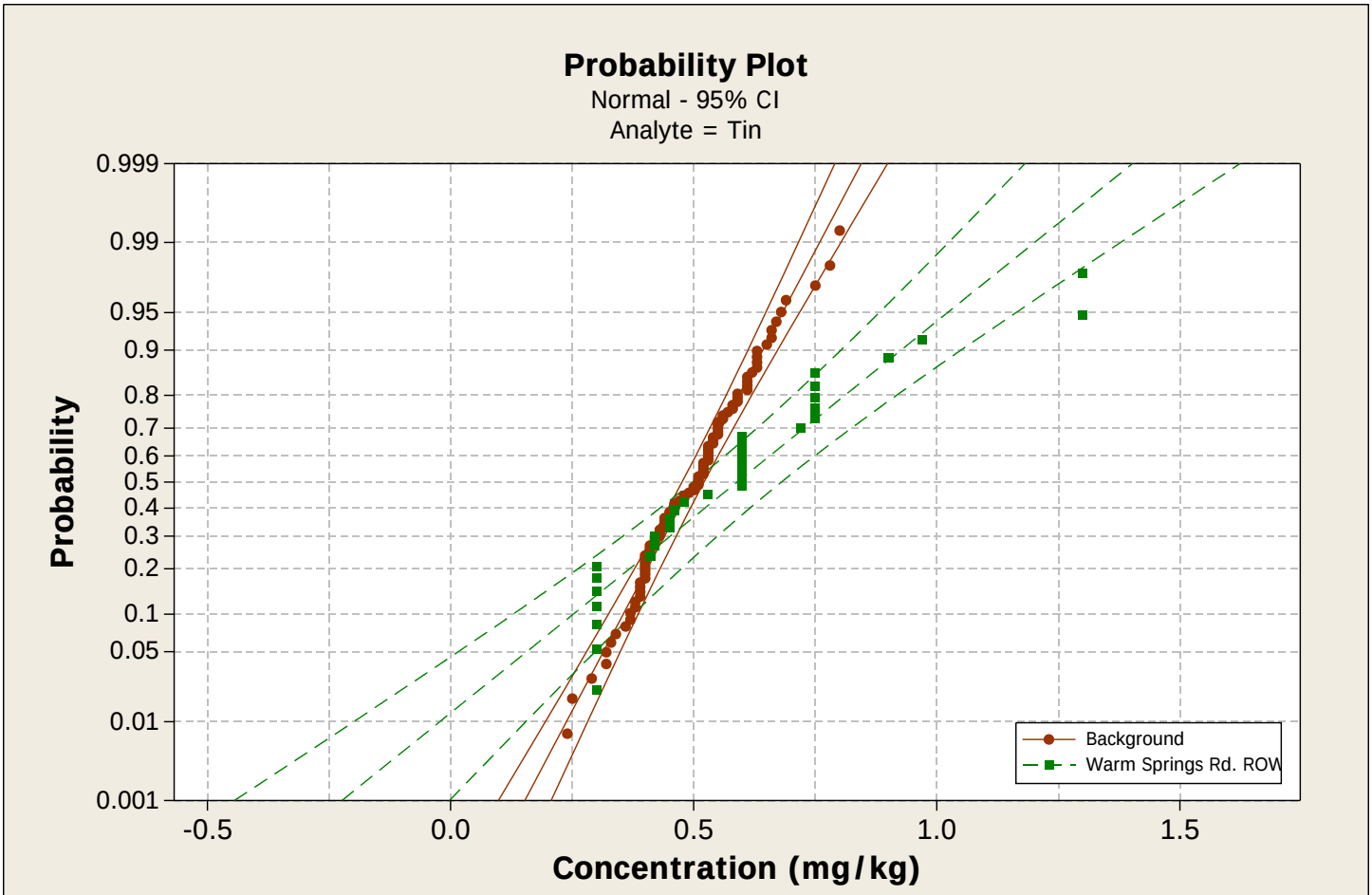

Boxplot
Analyte = Sodium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
1400
1200
1000
800
600
400
200
0
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

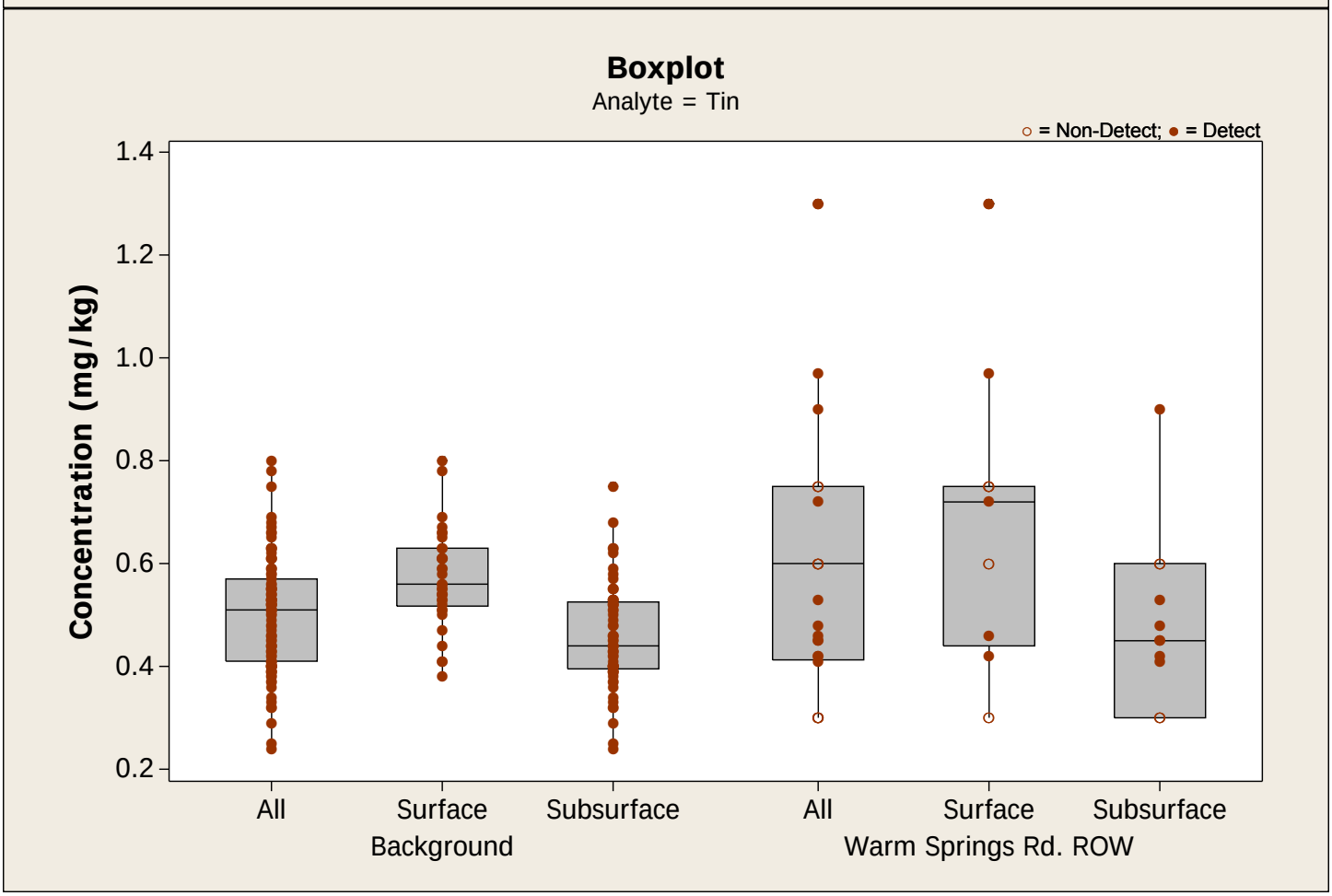

Probability Plot
Normal - 95% CI
Analyte = Strontium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-200
0
200
400
600
800
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

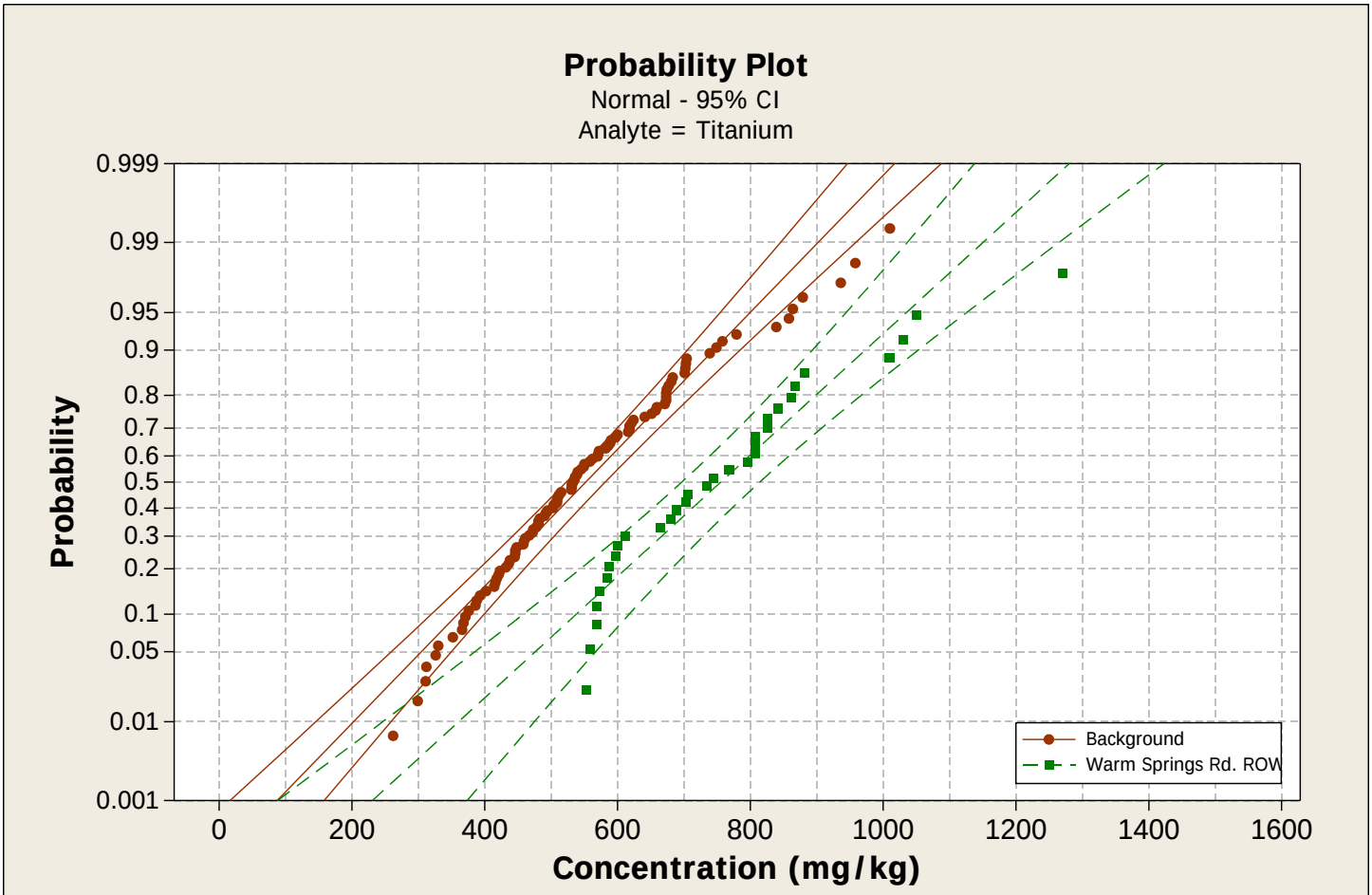

Boxplot
Analyte = Strontium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
900
800
700
600
500
400
300
200
100
0
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

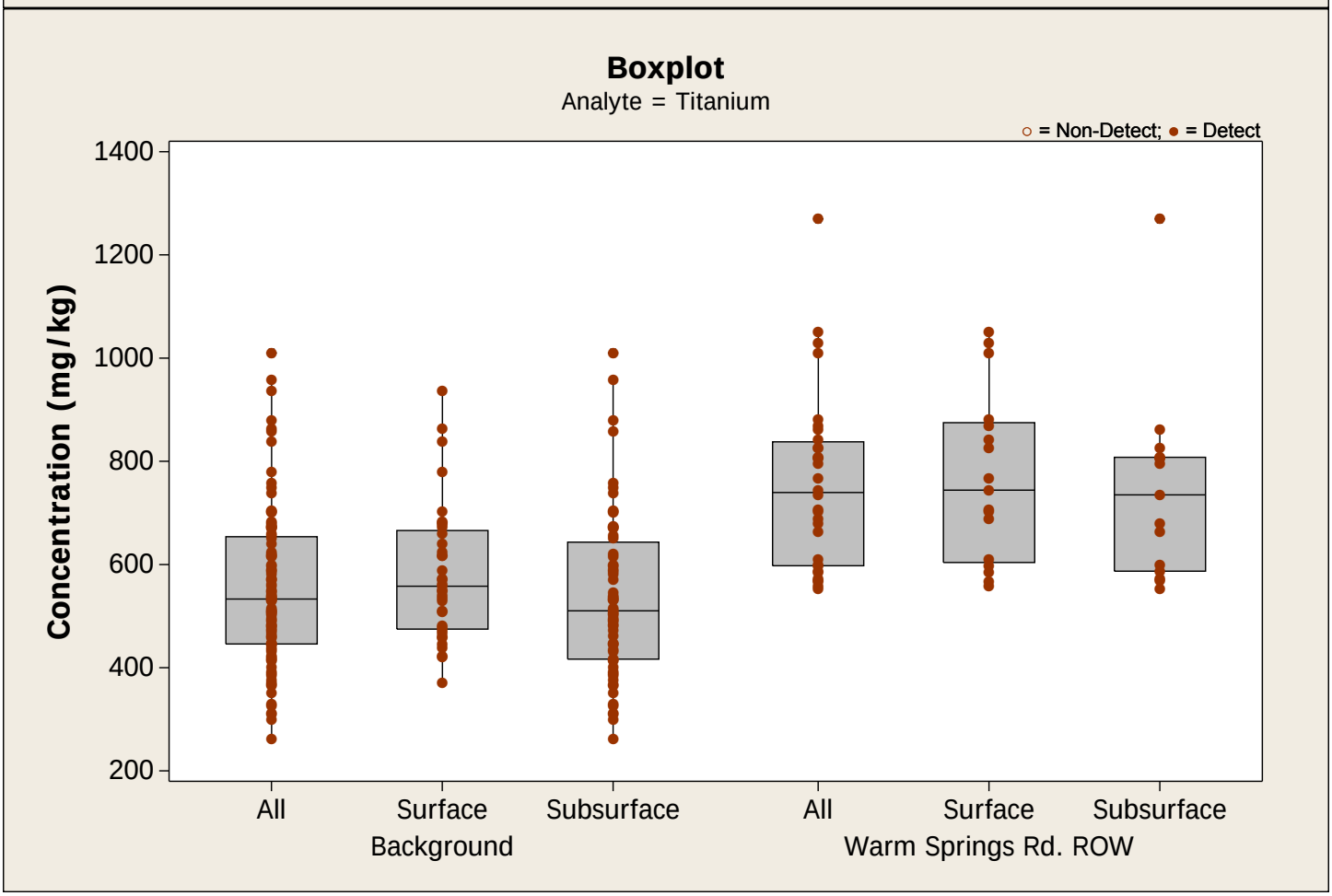

Probability Plot
Normal - 95% CI
Analyte = Thallium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

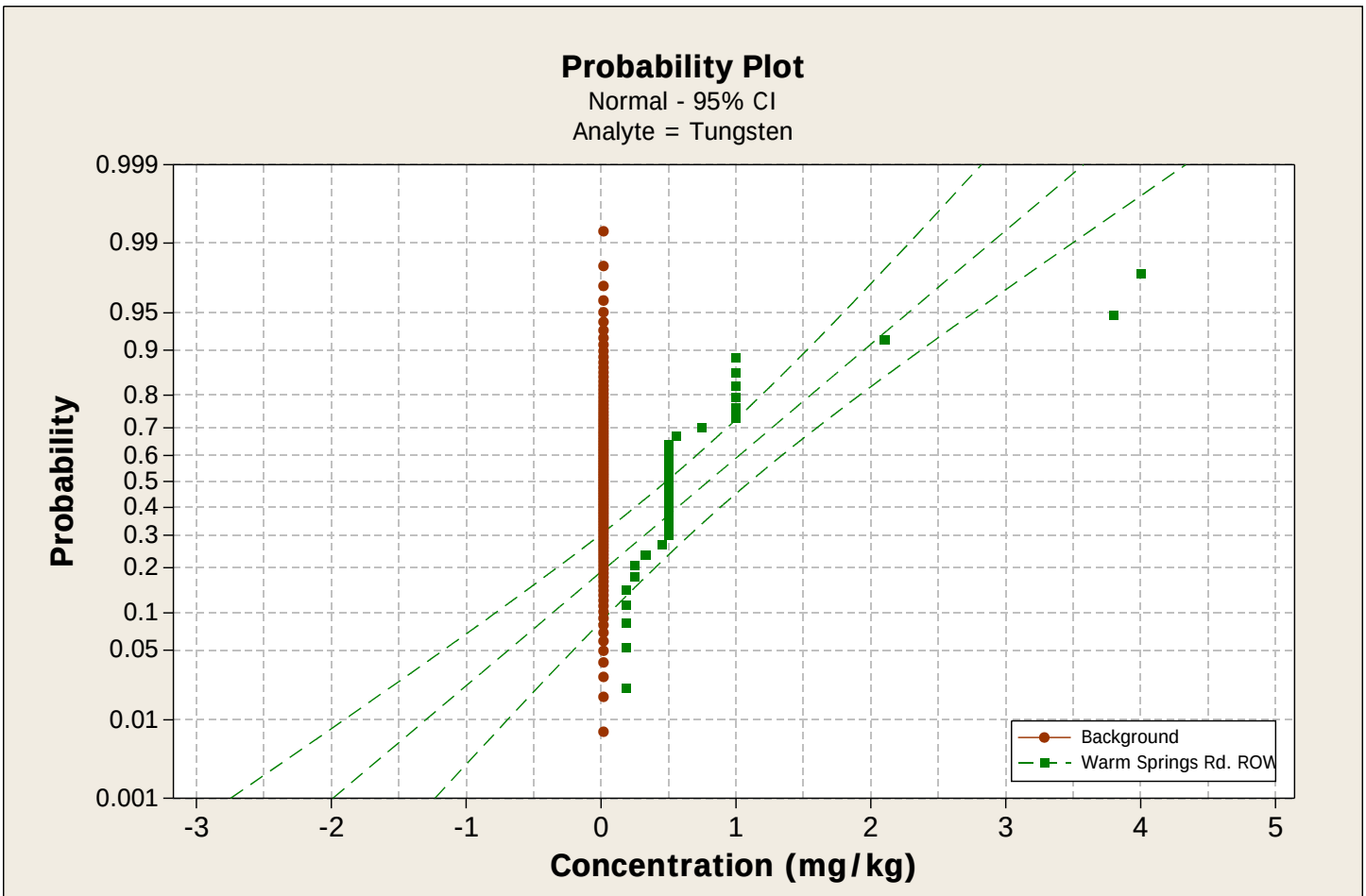

Boxplot
Analyte = Thallium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
2.0
1.5
1.0
0.5
0.0
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

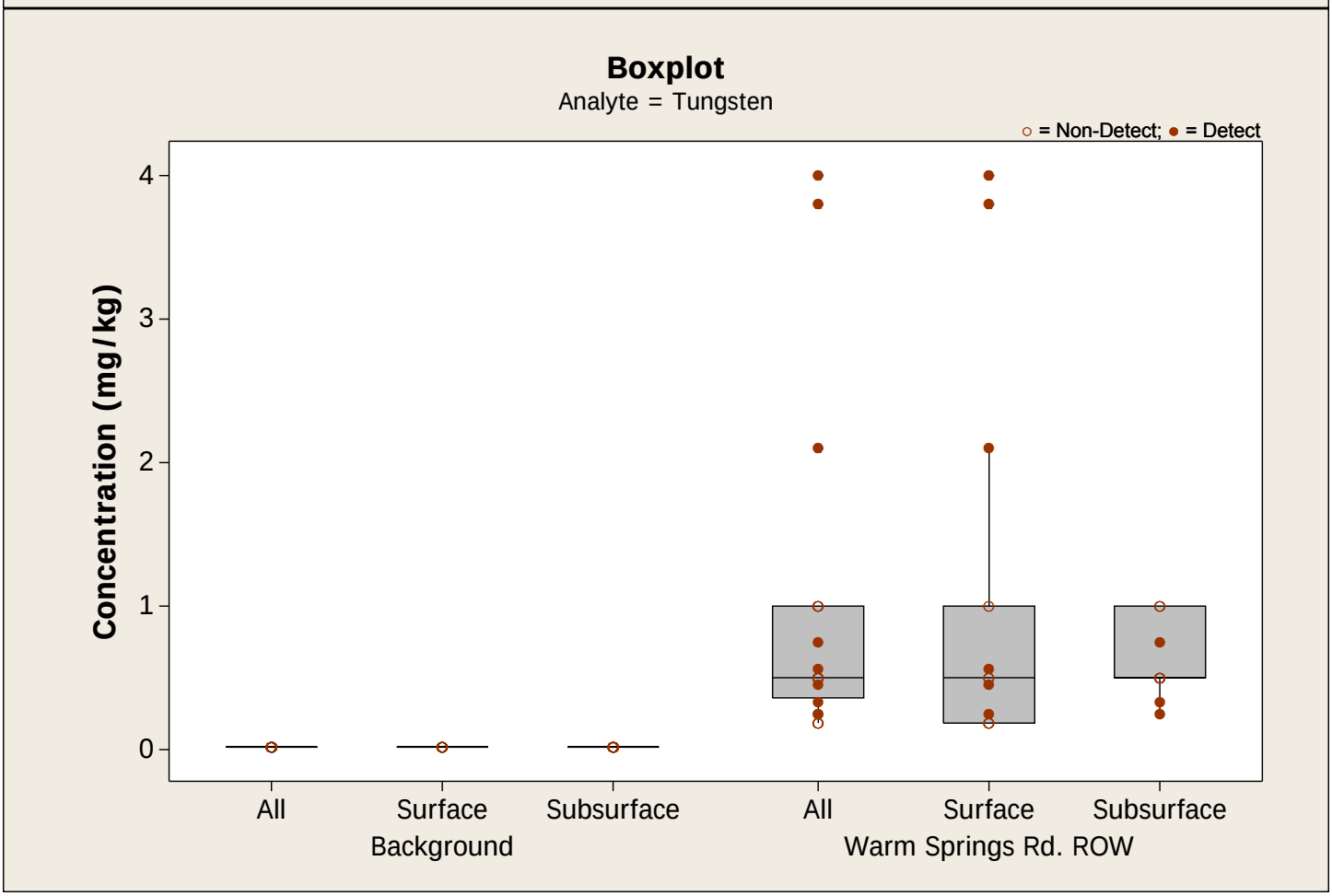

Probability Plot
Normal - 95% CI
Analyte = Tin
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-0.5
0.0
0.5
1.0
1.5
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

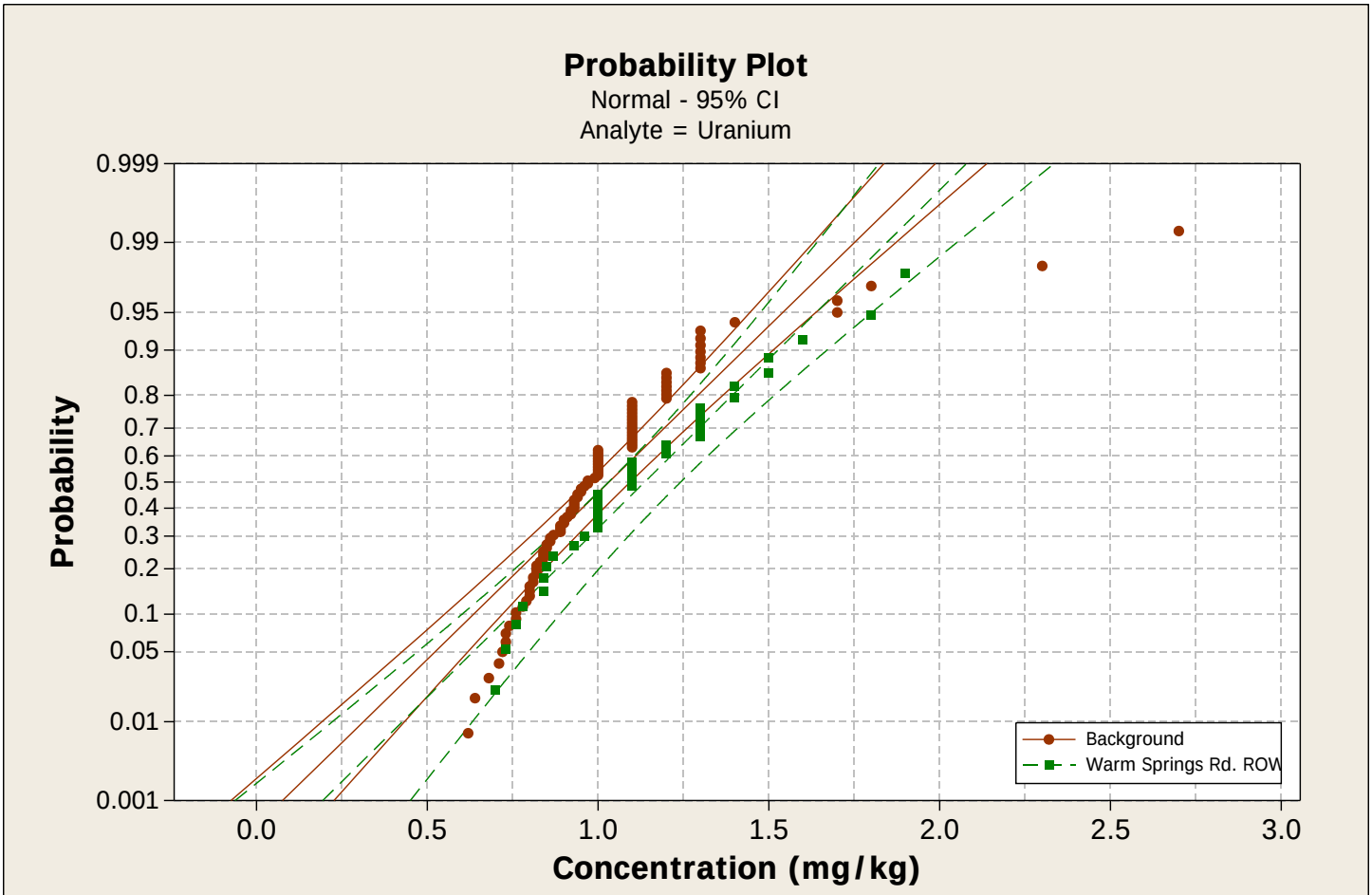

Boxplot
Analyte = Tin
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

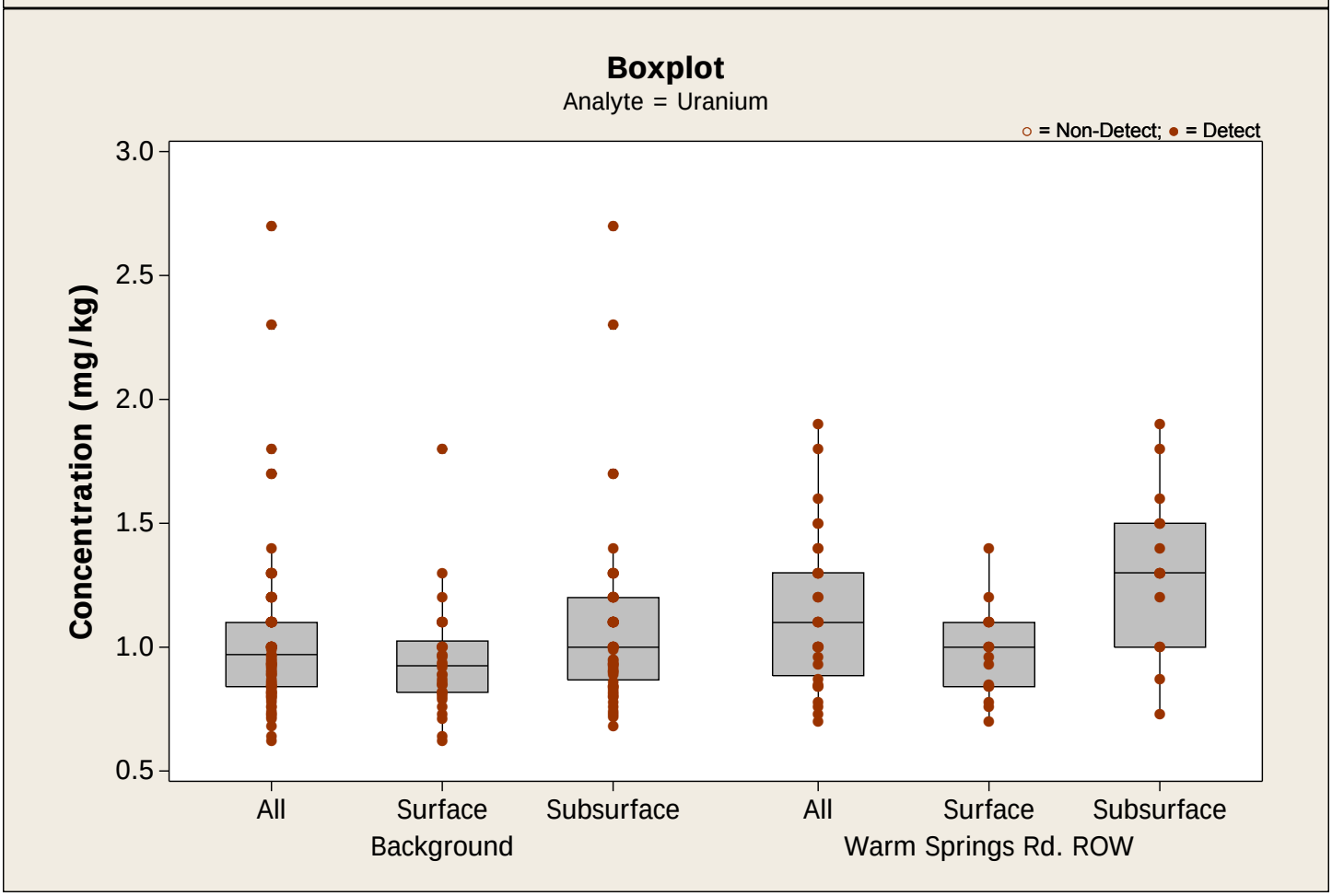

Probability Plot
Normal - 95% CI
Analyte = Titanium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
200
400
600
800
1000
1200
1400
1600
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

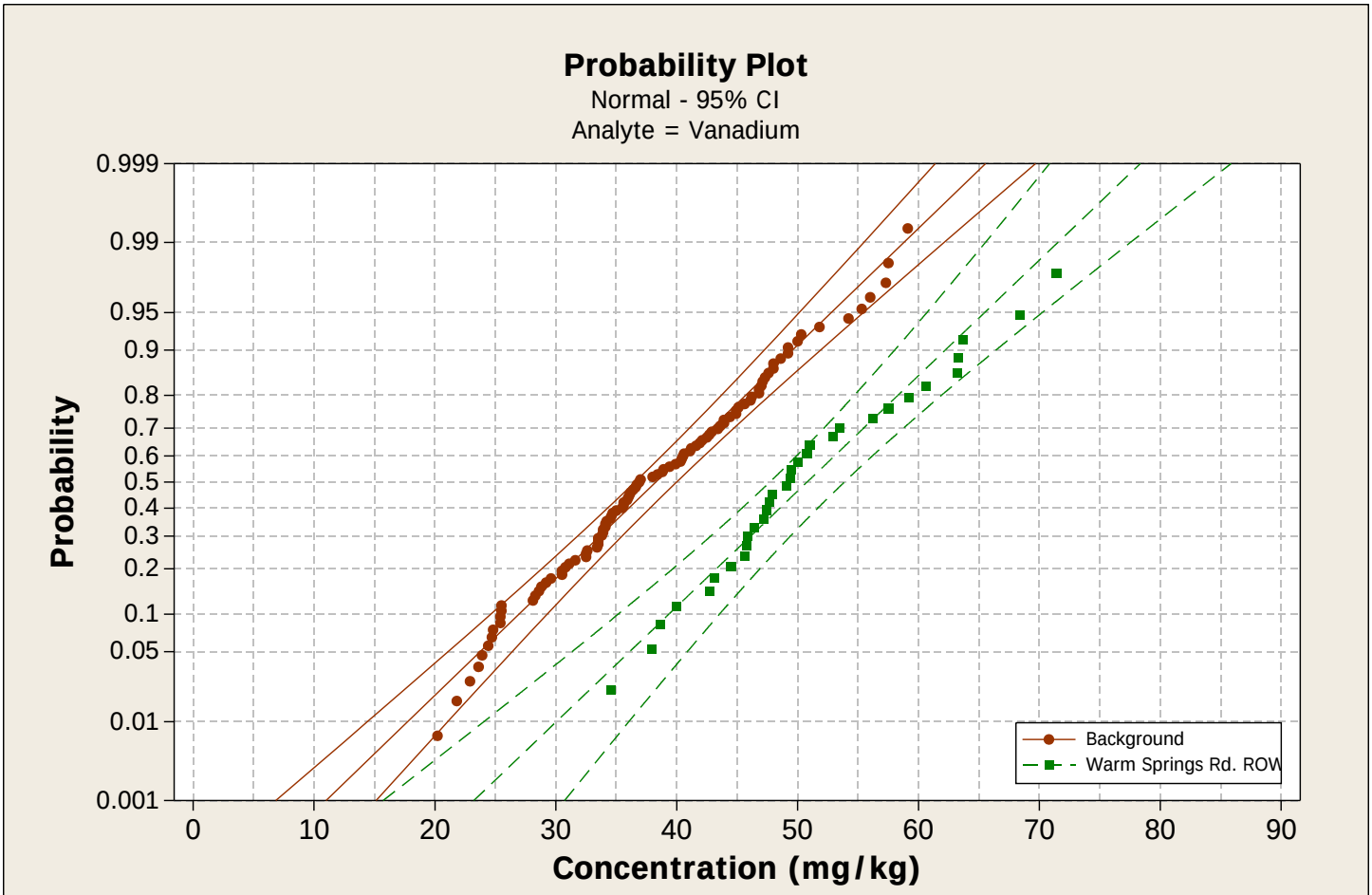

Boxplot
Analyte = Titanium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
1400
1200
1000
800
600
400
200
All
Surface
Subsurface
All
Surface
Subsurface
Background
Warm Springs Rd. ROW

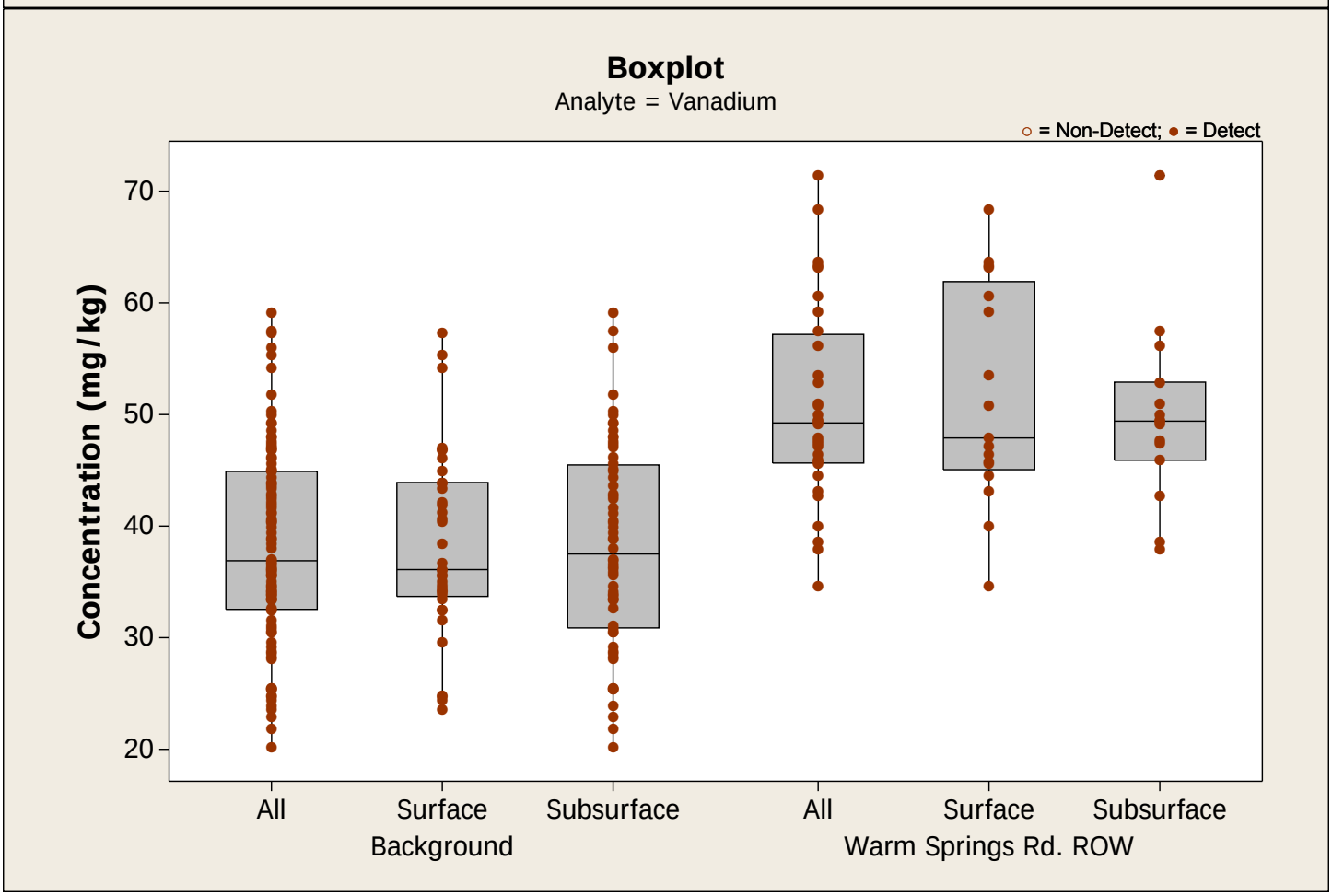

Probability Plot
Normal - 95% CI
Analyte = Tungsten
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-3
-2
-1
0
1
2
3
4
5
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

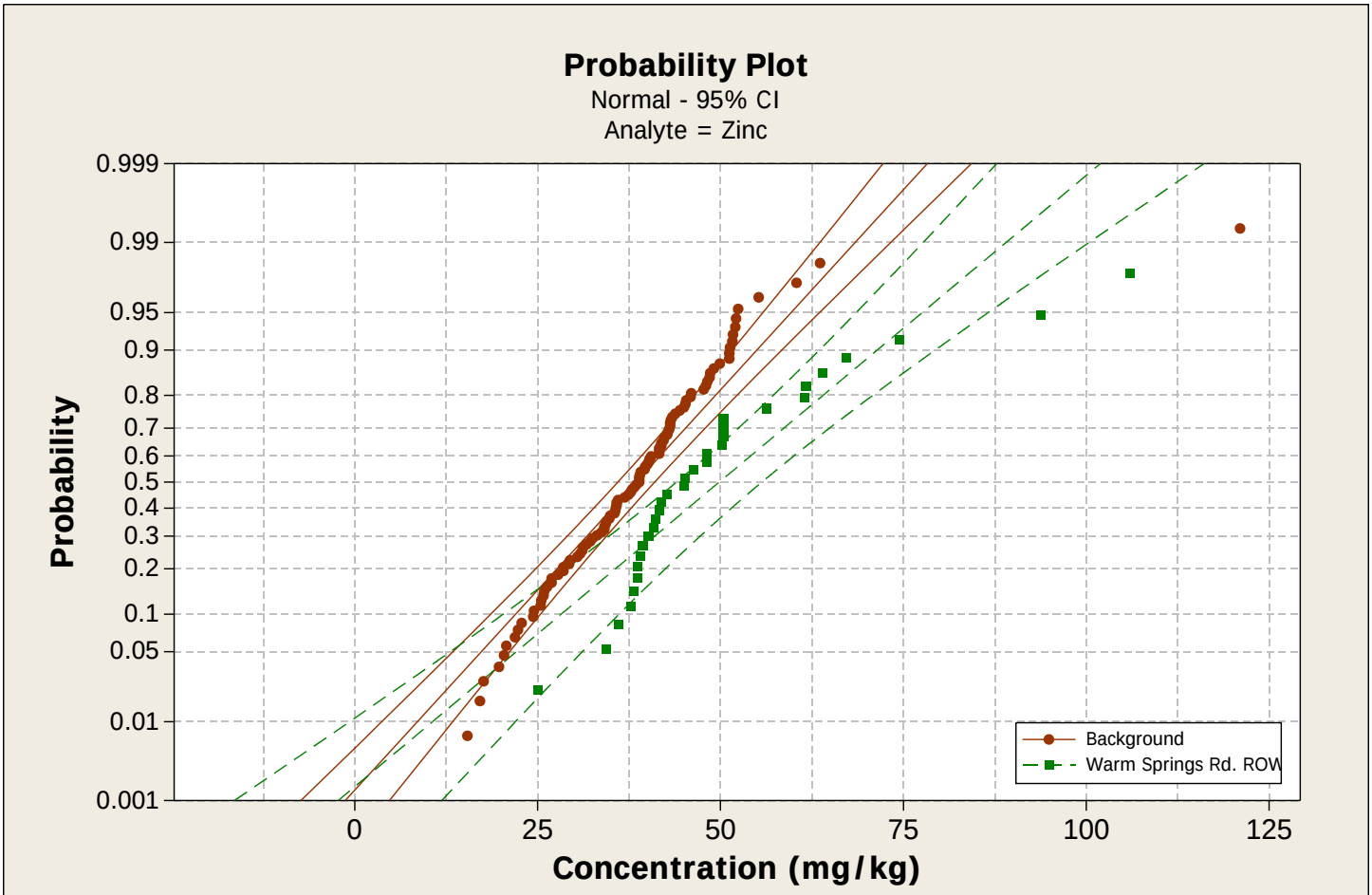

Boxplot
Analyte = Tungsten
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
4
3
2
1
0
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

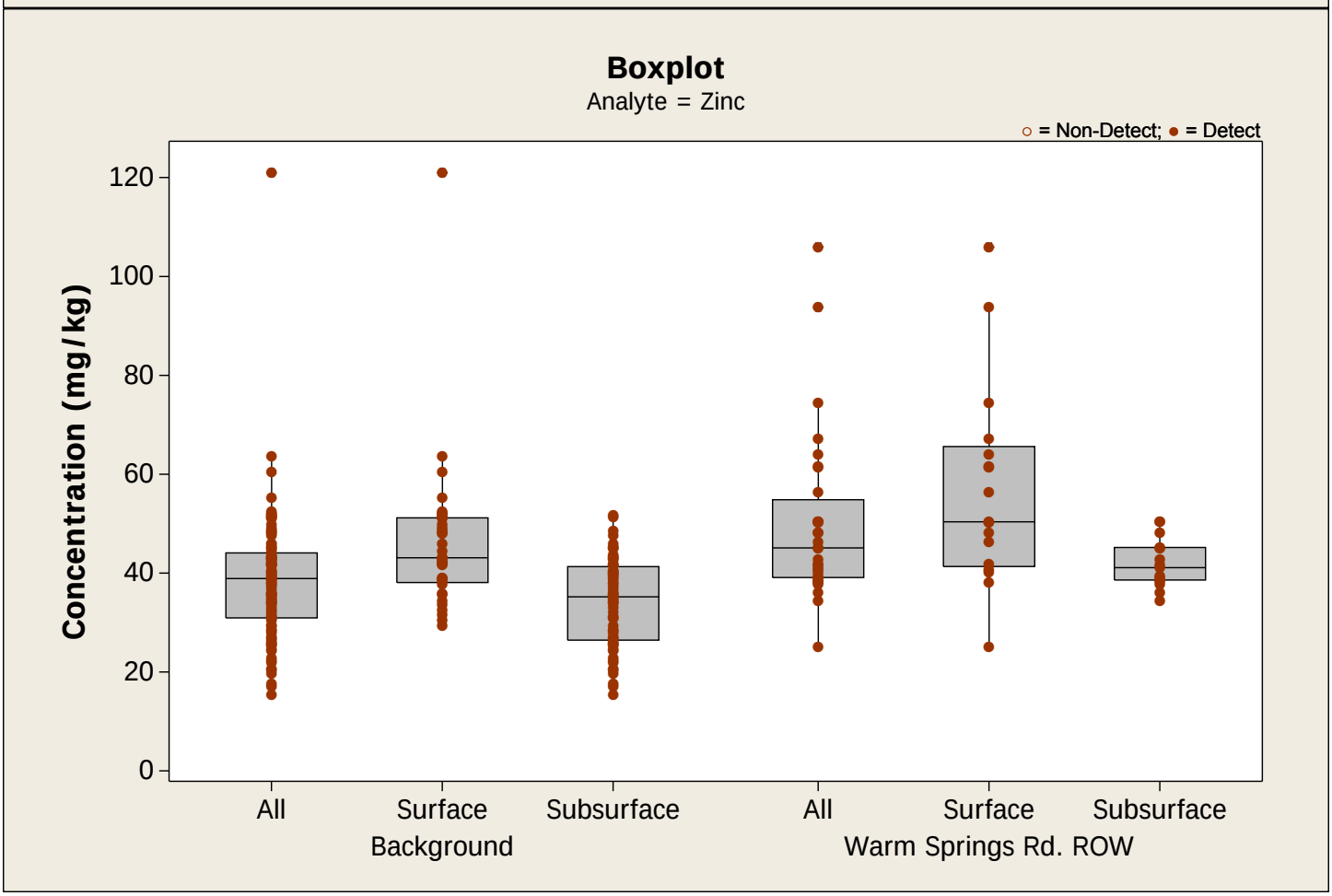

Probability Plot
Normal - 95% CI
Analyte = Uranium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

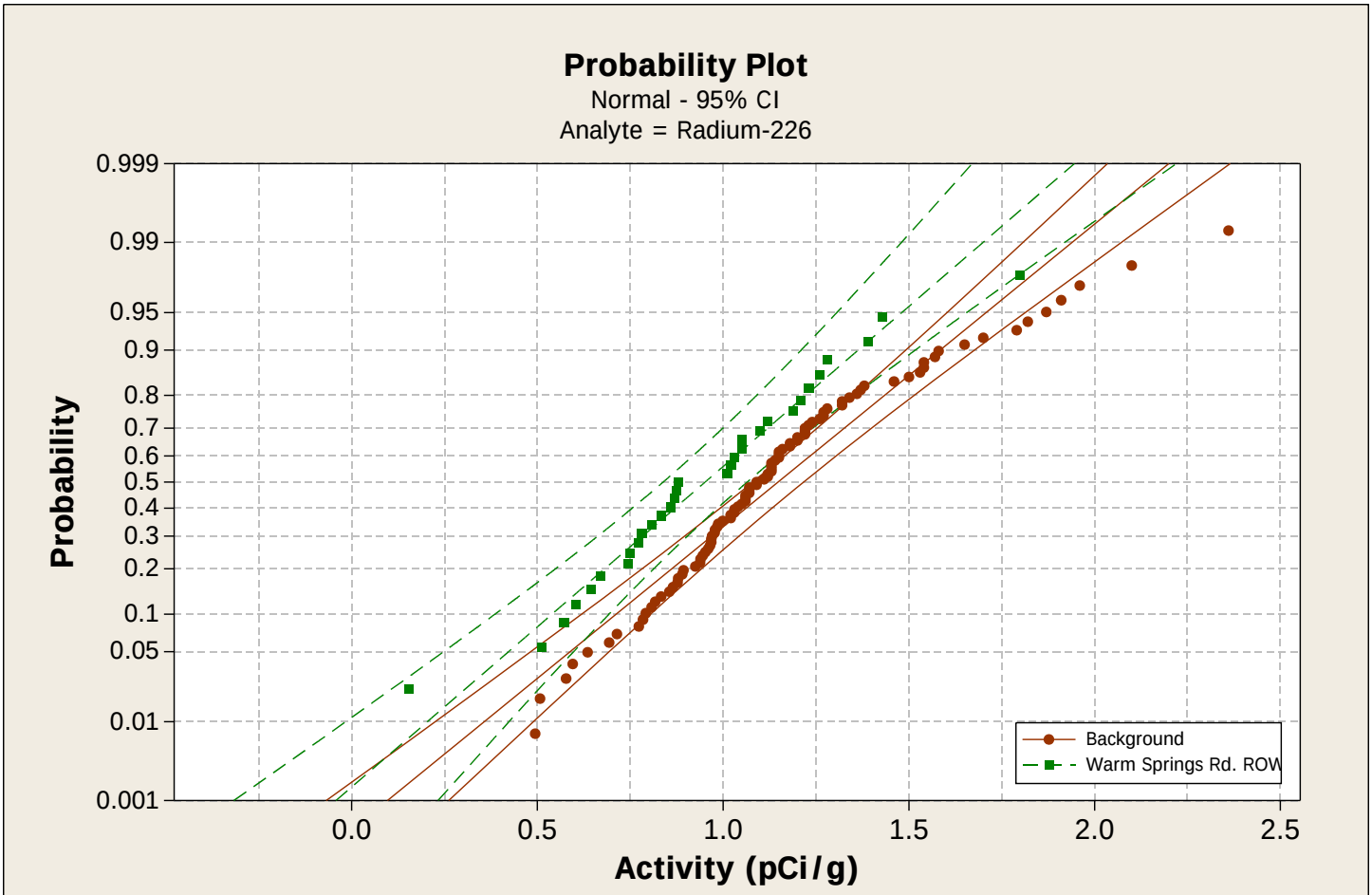

Boxplot
Analyte = Uranium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
3.0
2.5
2.0
1.5
1.0
0.5
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

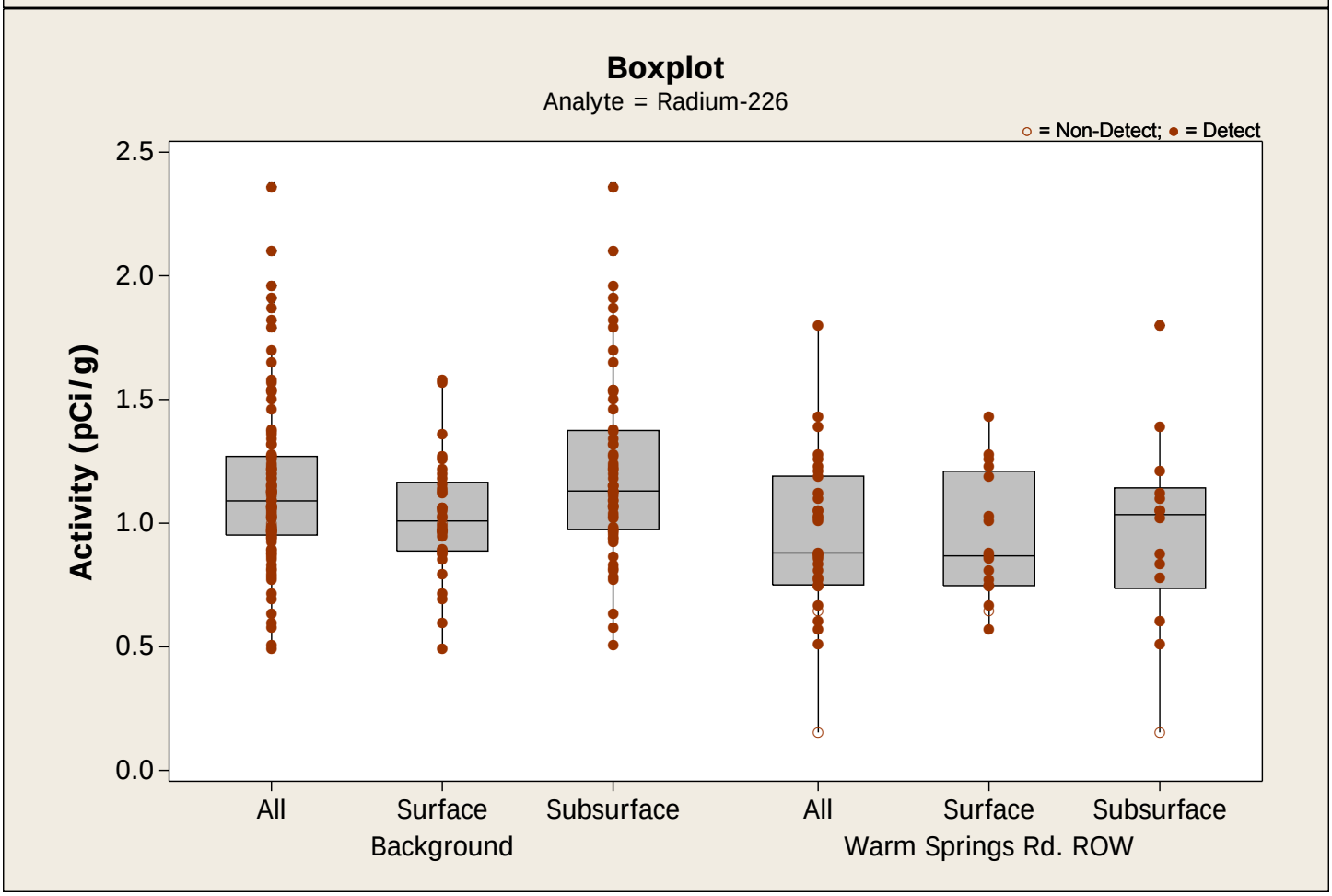

Probability Plot
Normal - 95% CI
Analyte = Vanadium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
10
20
30
40
50
60
70
80
90
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

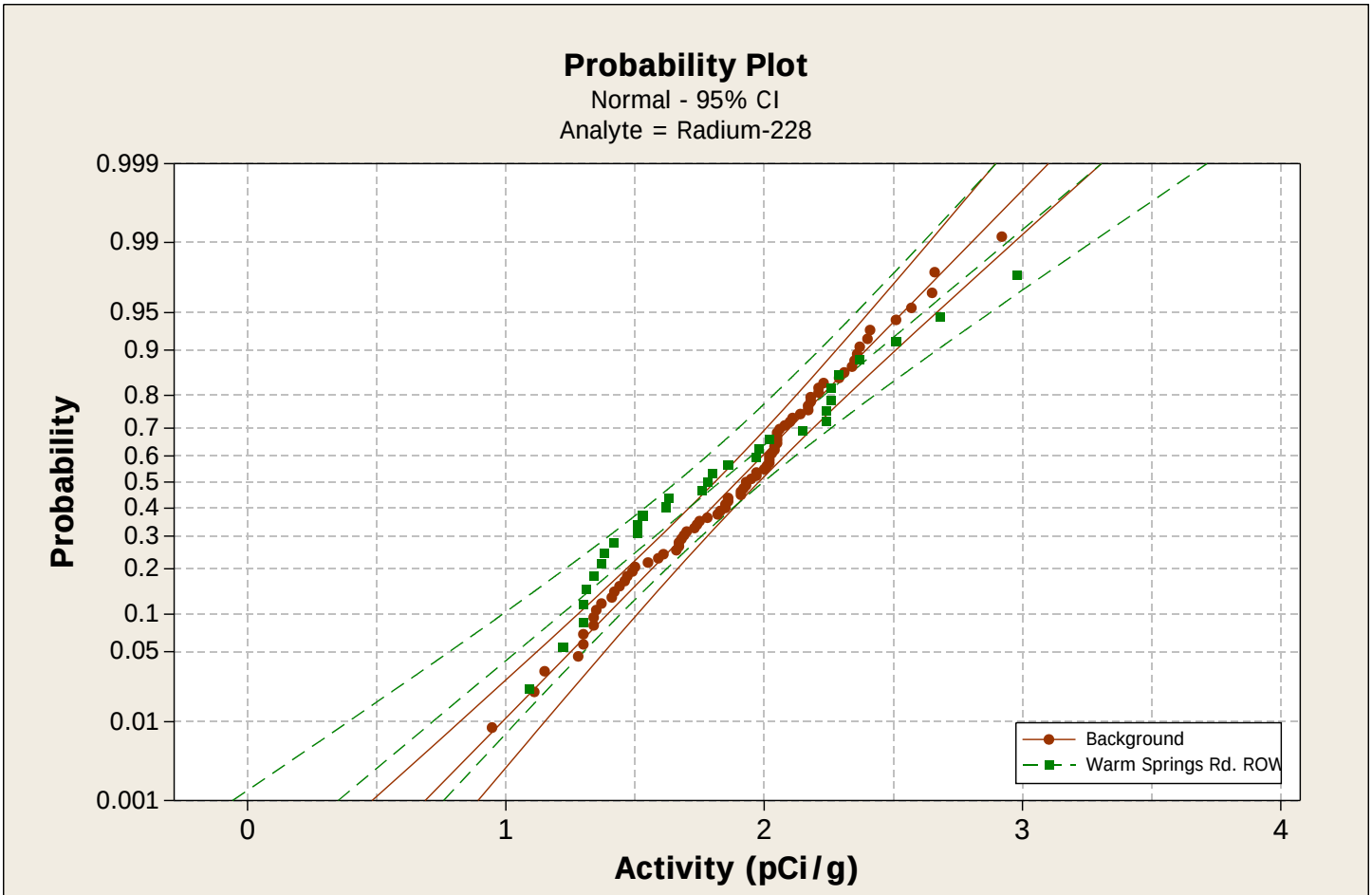

Boxplot
Analyte = Vanadium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
70
60
50
40
30
20
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

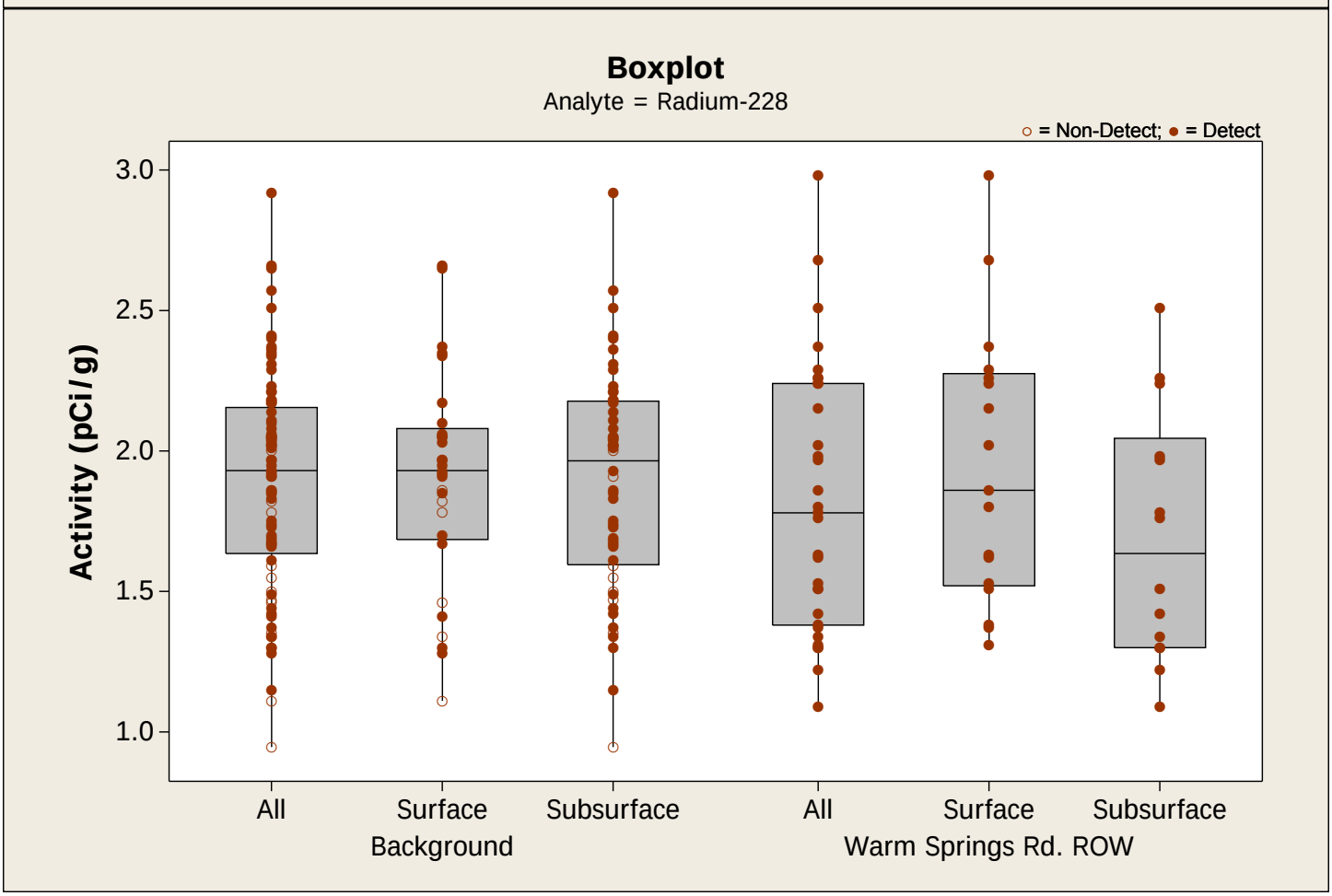

Probability Plot
Normal - 95% CI
Analyte = Zinc
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
25
50
75
100
125
Concentration (mg/kg)
Background
Warm Springs Rd. ROW

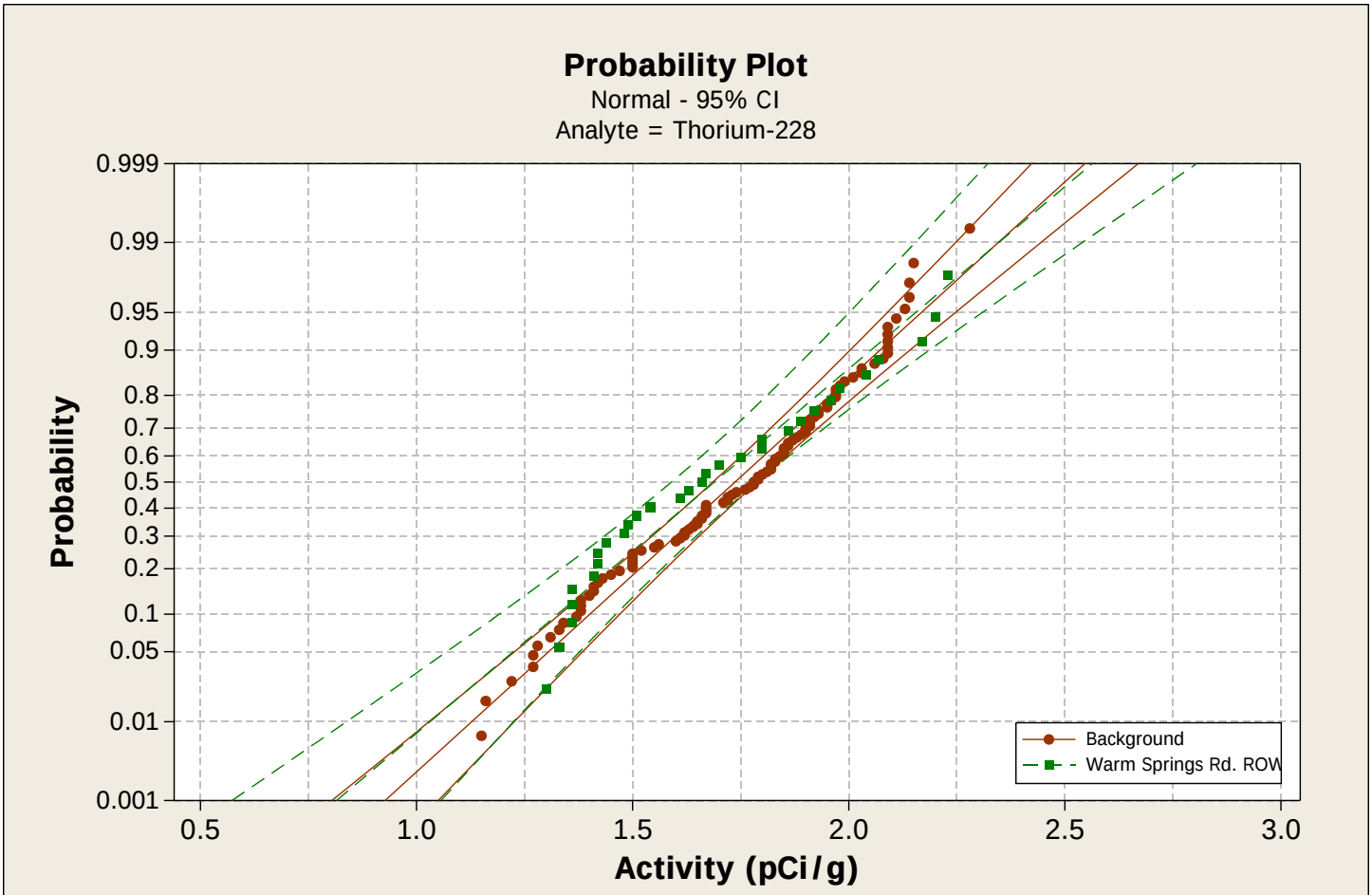

Boxplot
Analyte = Zinc
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
120
100
80
60
40
20
0
All
Surface
Subsurface
All
Surface
Subsurface
Background
Warm Springs Rd. ROW

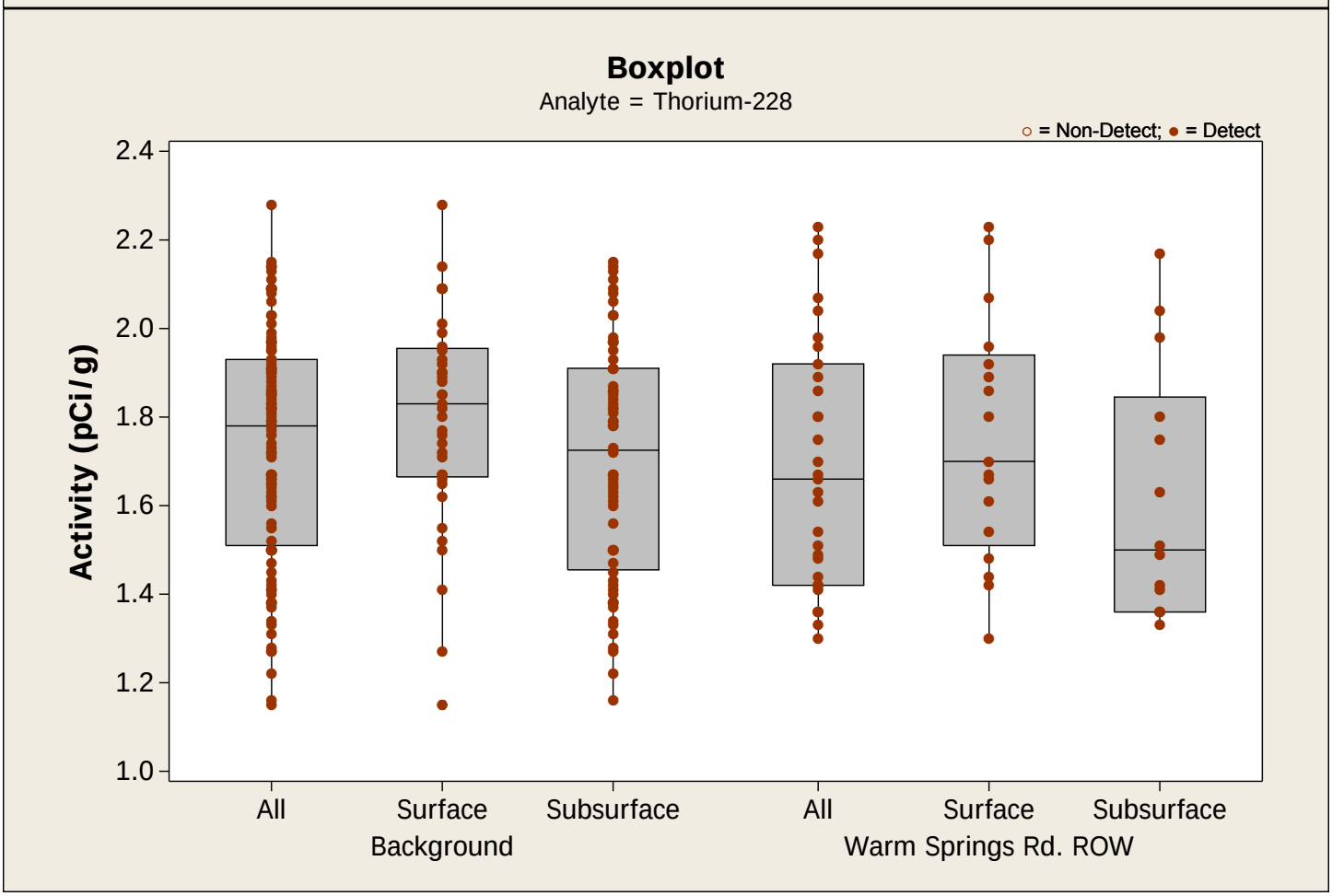

Probability Plot
Normal - 95% CI
Analyte = Radium-226
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0.0
0.5
1.0
1.5
2.0
2.5
Activity (pCi/g)
Background
Warm Springs Rd. ROW

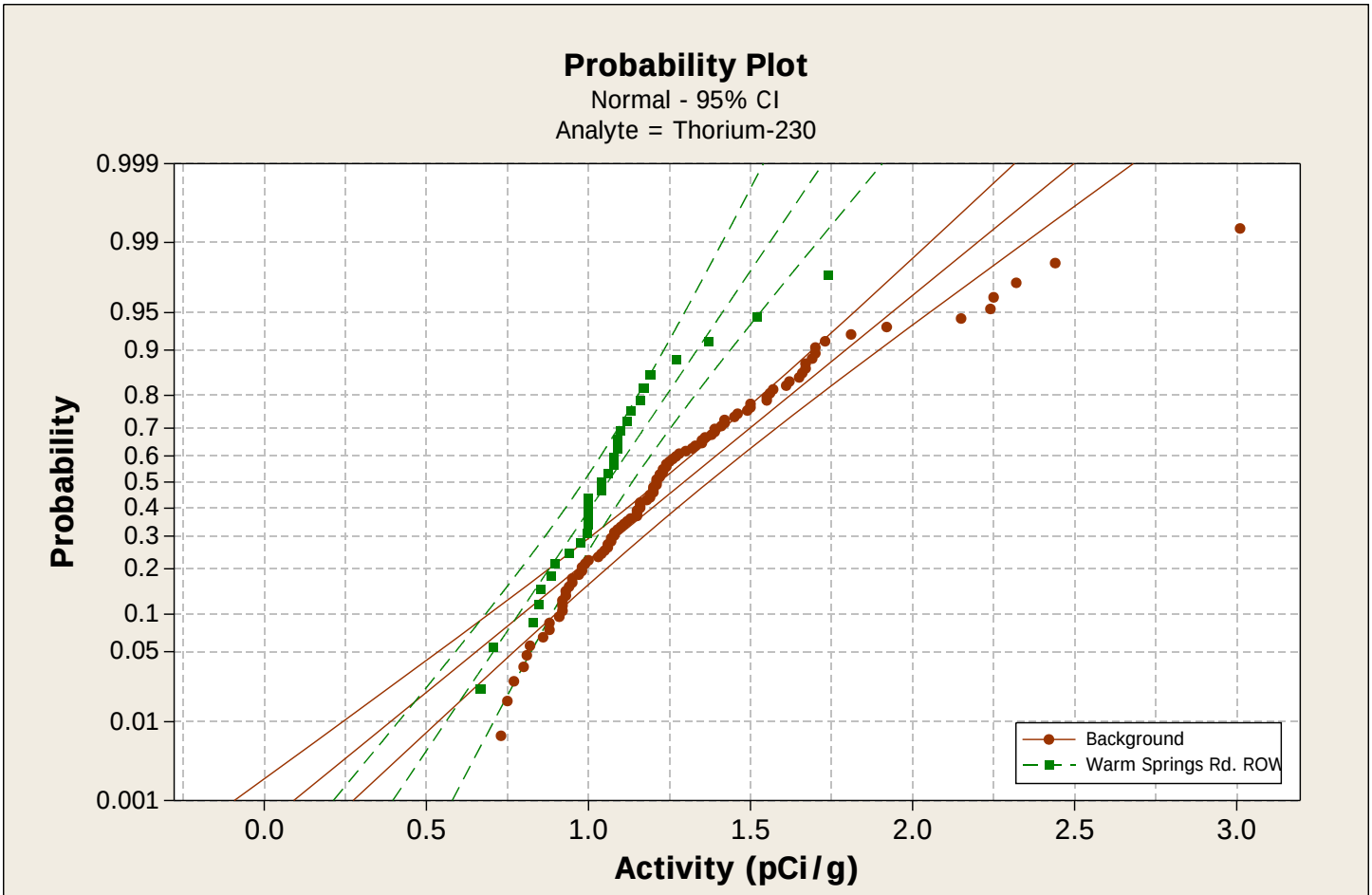

Boxplot
Analyte = Radium-226
○ = Non-Detect; ● = Detect
Activity (pCi/g)
2.5
2.0
1.5
1.0
0.5
0.0
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

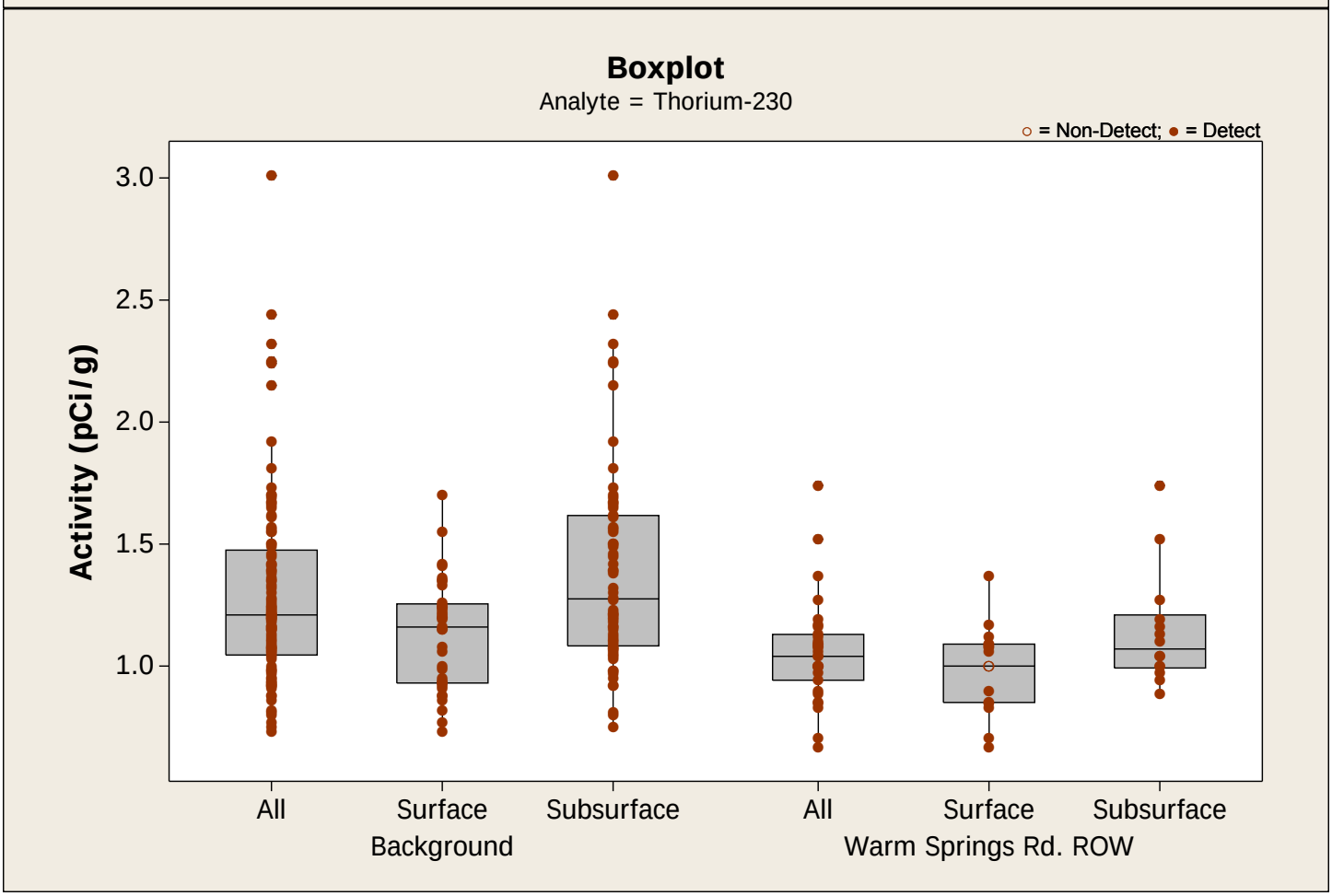

Probability Plot
Normal - 95% CI
Analyte = Radium-228
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
1
2
3
4
Activity (pCi/g)
Background
Warm Springs Rd. ROW

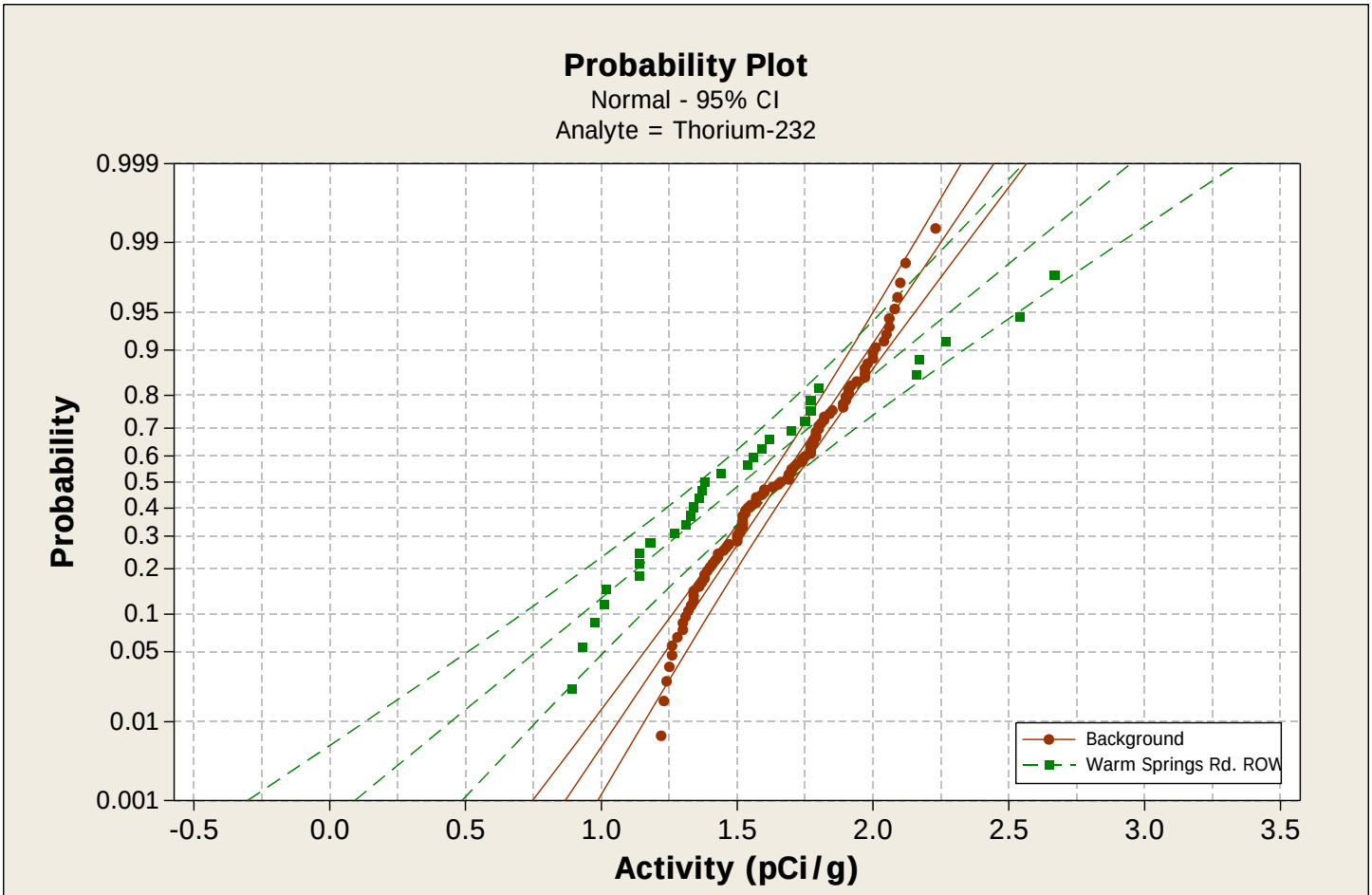

Boxplot
Analyte = Radium-228
○ = Non-Detect; ● = Detect
Activity (pCi/g)
3.0
2.5
2.0
1.5
1.0
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

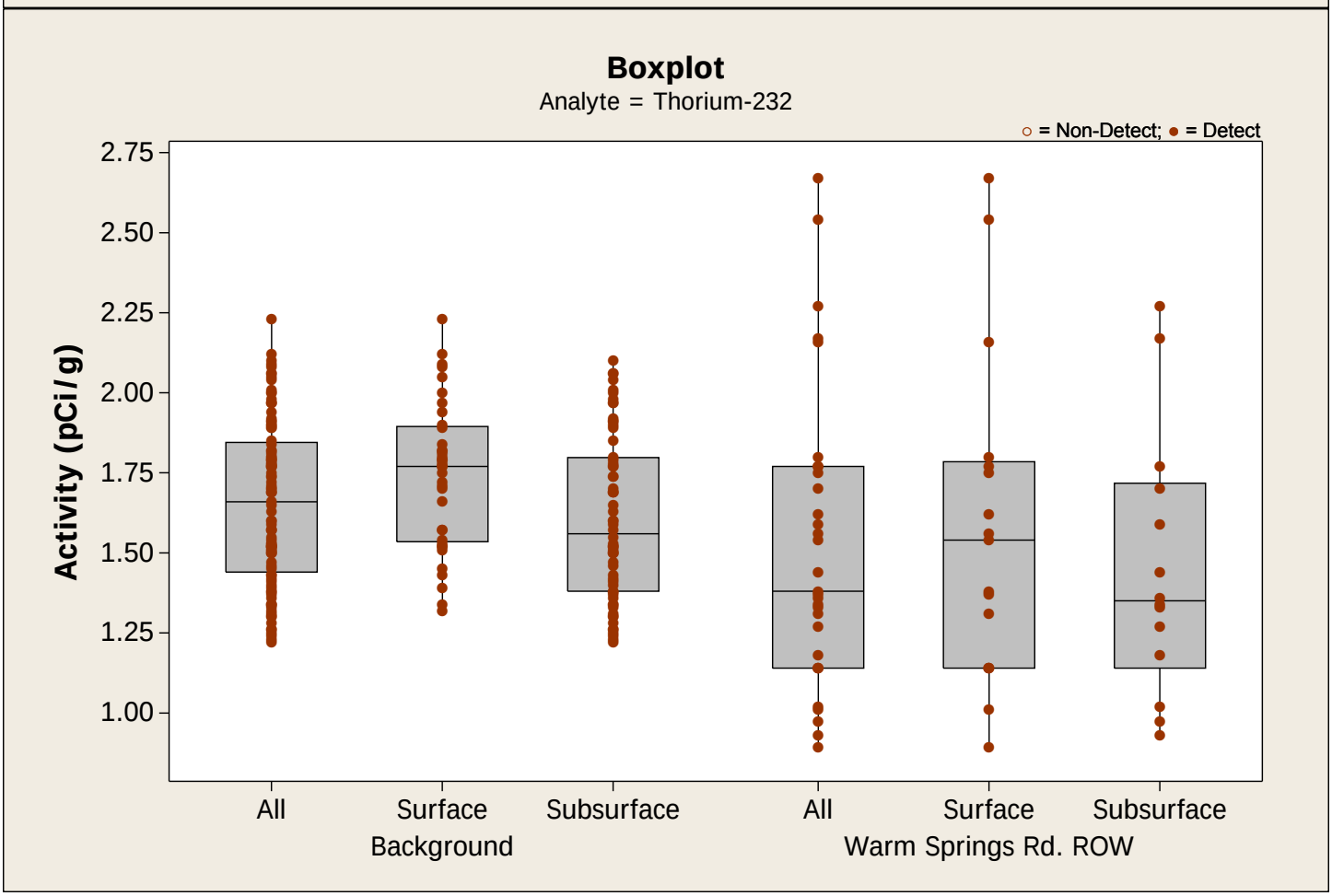

Probability Plot
Normal - 95% CI
Analyte = Thorium-228
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0.5
1.0
1.5
2.0
2.5
3.0
Activity (pCi/g)
Background
Warm Springs Rd. ROW

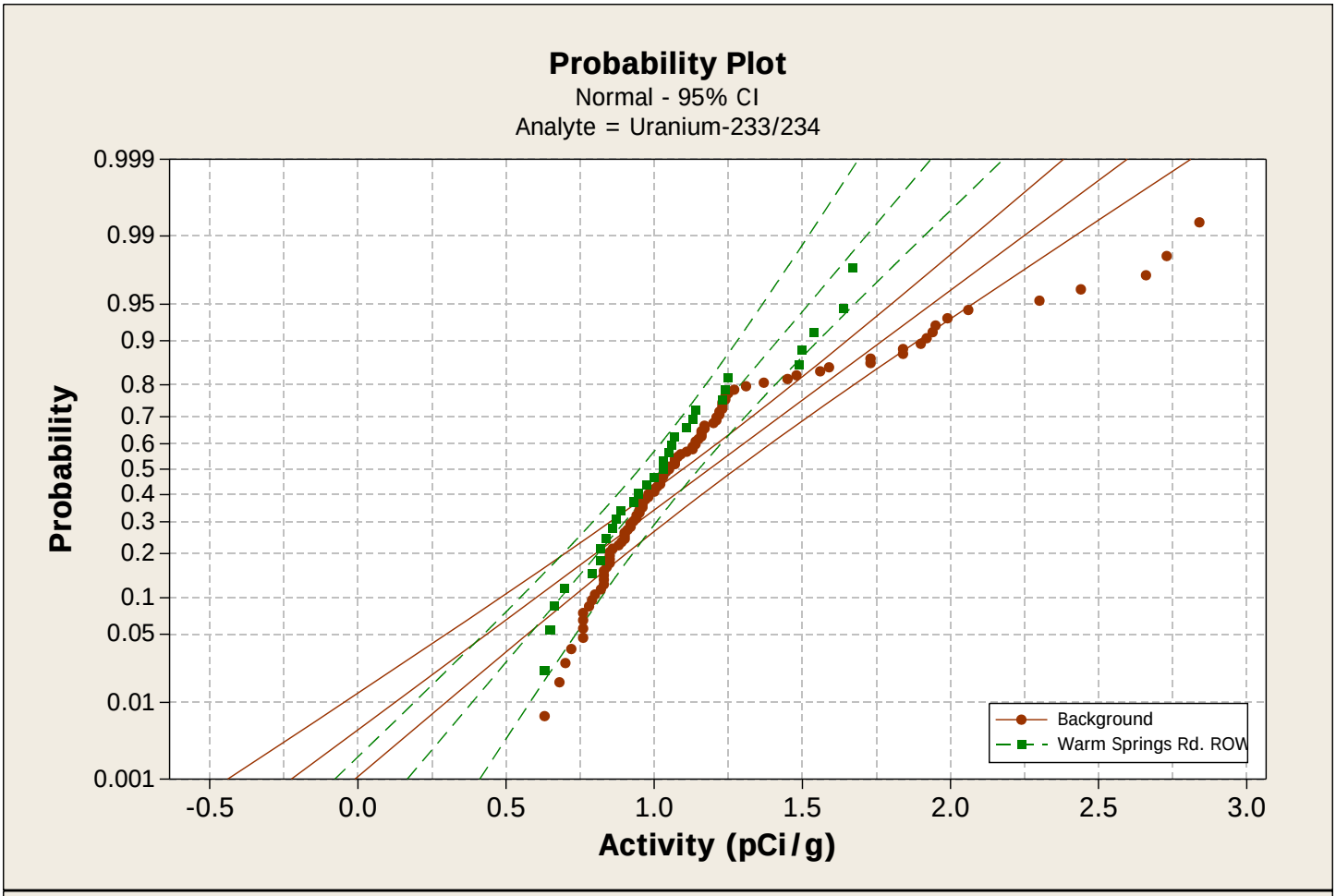

Boxplot
Analyte = Thorium-228
○ = Non-Detect; ● = Detect
Activity (pCi/g)
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

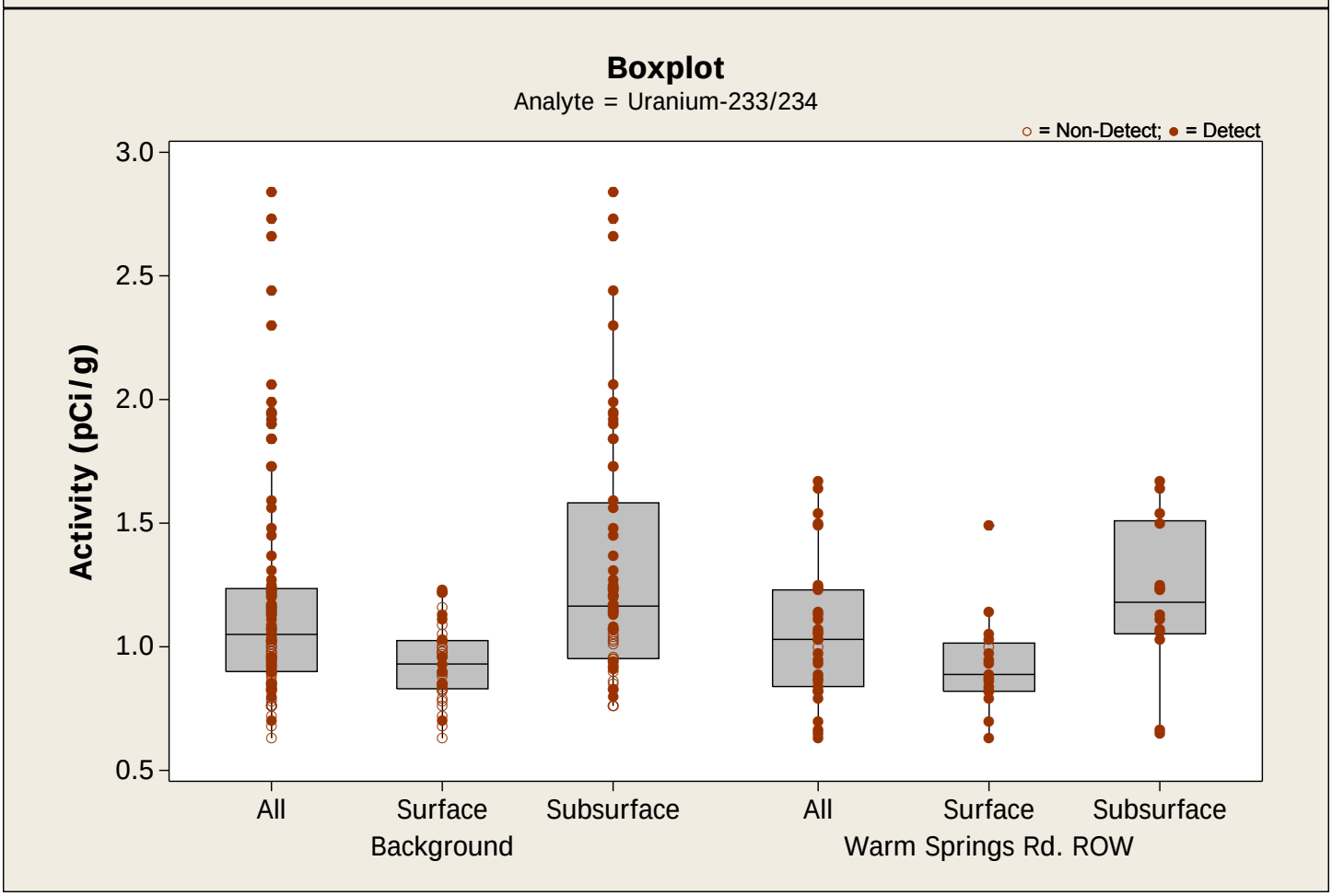

Probability Plot
Normal - 95% CI
Analyte = Thorium-230
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Activity (pCi/g)
Background
Warm Springs Rd. ROW

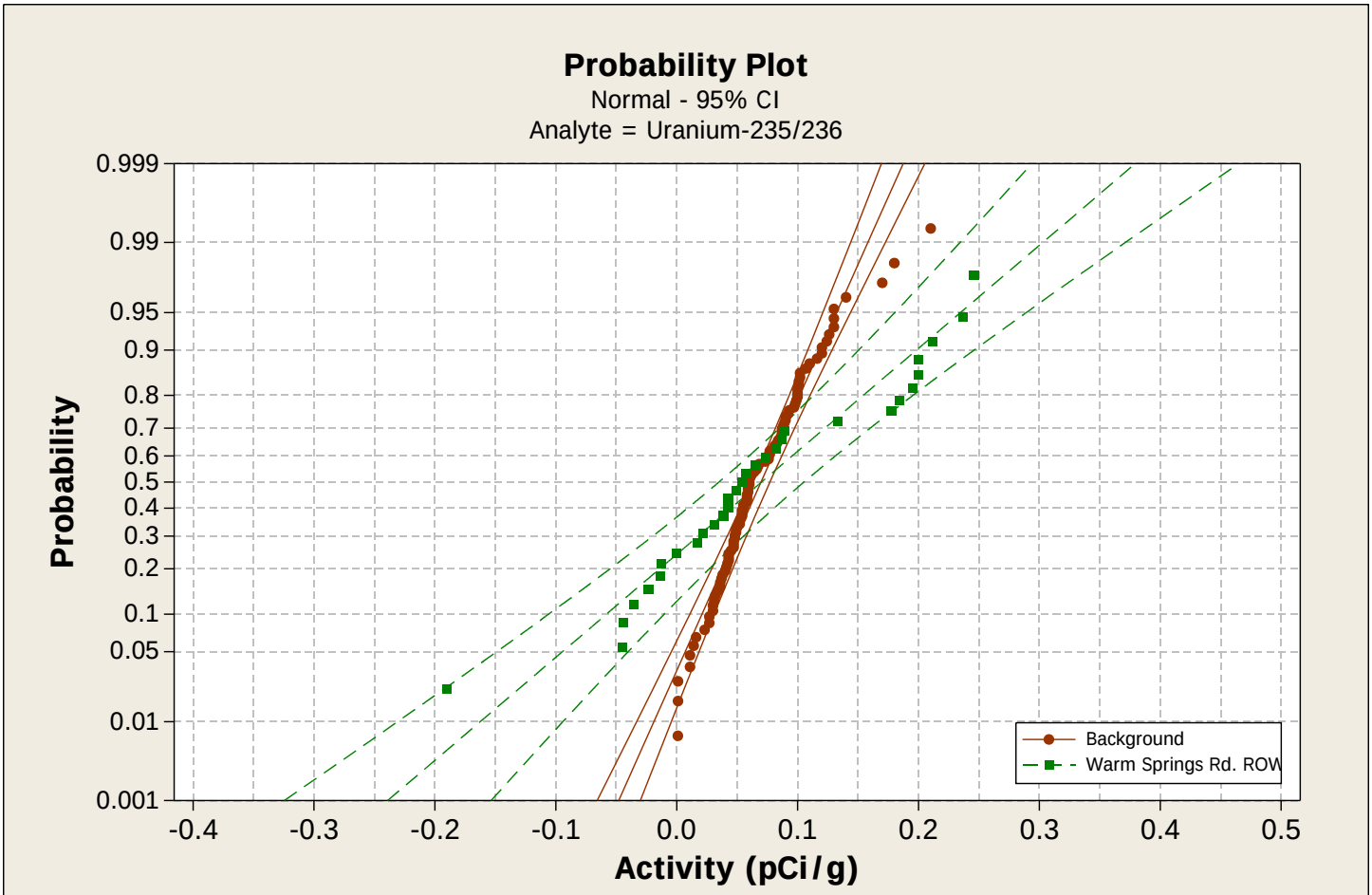

Boxplot
Analyte = Thorium-230
○ = Non-Detect; ● = Detect
Activity (pCi/g)
3.0
2.5
2.0
1.5
1.0
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

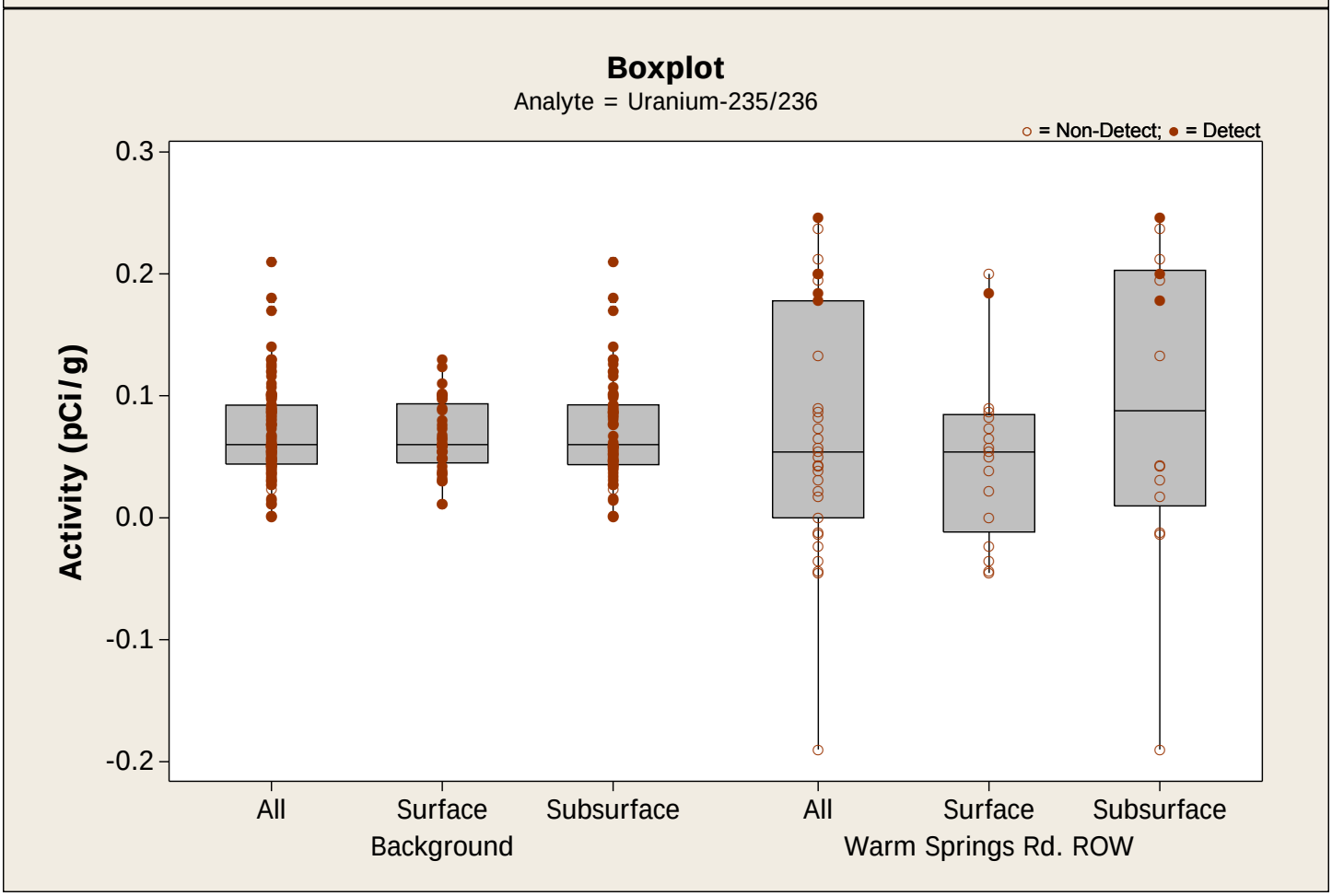

Probability Plot
Normal - 95% CI
Analyte = Thorium-232
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-0.5
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
Activity (pCi/g)
Background
Warm Springs Rd. ROW

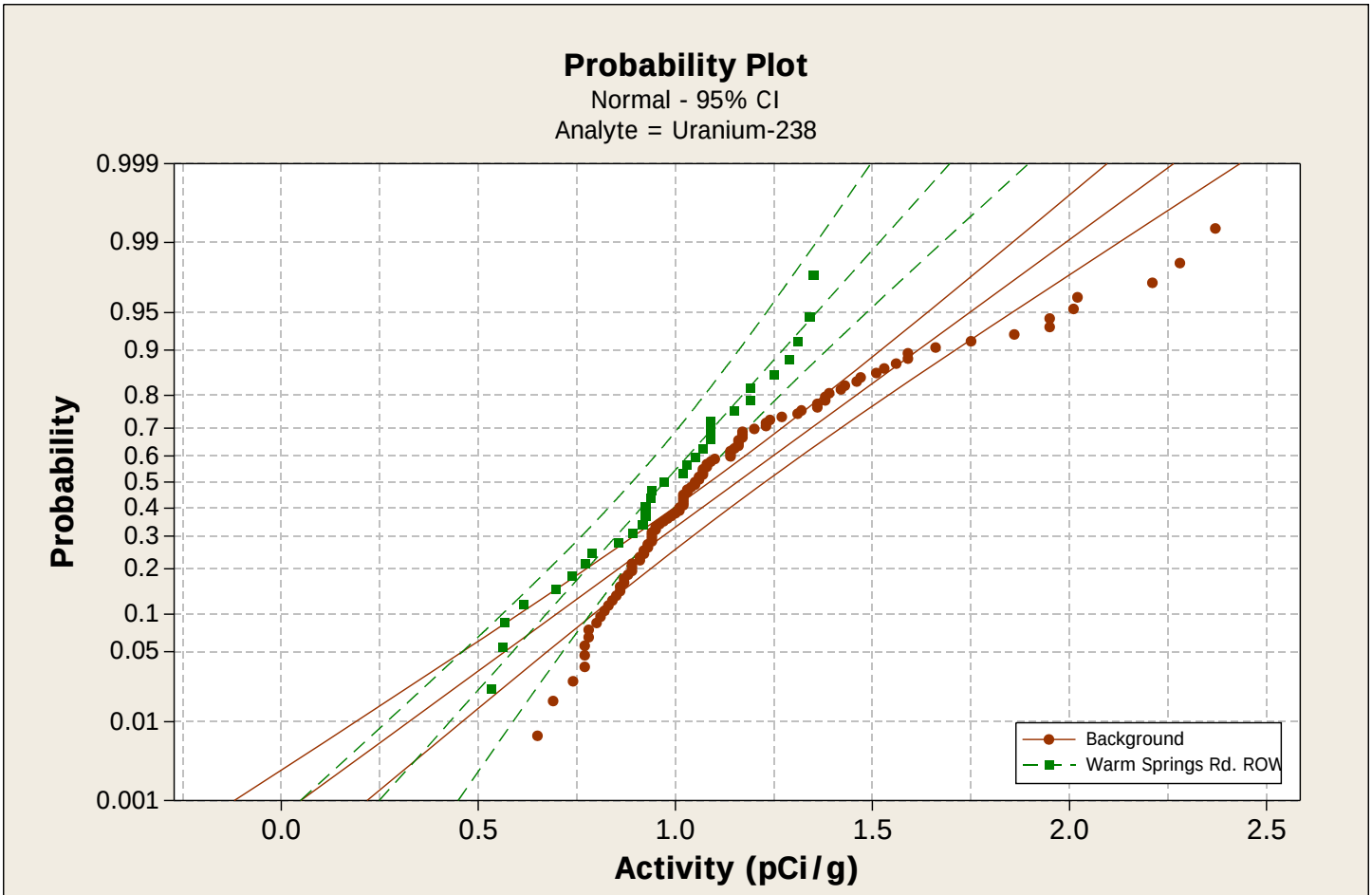

Boxplot
Analyte = Thorium-232
○ = Non-Detect; ● = Detect
Activity (pCi/g)
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

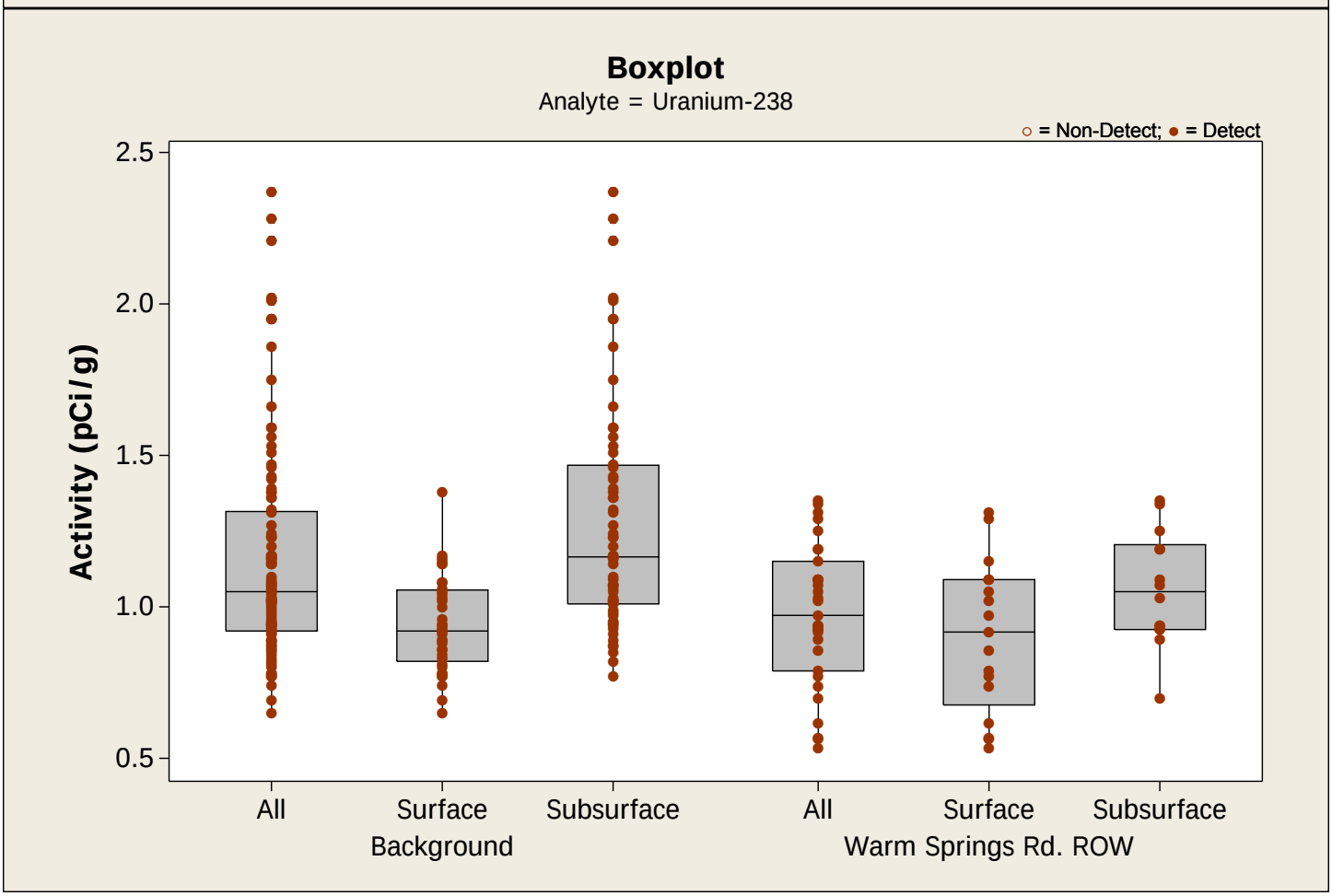

Probability Plot
Normal - 95% CI
Analyte = Uranium-233/234
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-0.5
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Activity (pCi/g)
Background
Warm Springs Rd. ROW


Boxplot
Analyte = Uranium-233/234
○ = Non-Detect; ● = Detect
Activity (pCi/g)
3.0
2.5
2.0
1.5
1.0
0.5
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW


Probability Plot
Normal - 95% CI
Analyte = Uranium-235/236
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-0.4
-0.3
-0.2
-0.1
0.0
0.1
0.2
0.3
0.4
0.5
Activity (pCi/g)
Background
Warm Springs Rd. ROW


Boxplot
Analyte = Uranium-235/236
○ = Non-Detect; ● = Detect
Activity (pCi/g)
0.3
0.2
0.1
0.0
-0.1
-0.2
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW


Probability Plot
Normal - 95% CI
Analyte = Uranium-238
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0.0
0.5
1.0
1.5
2.0
2.5
Activity (pCi/g)
Background
Warm Springs Rd. ROW


Boxplot
Analyte = Uranium-238
○ = Non-Detect; ● = Detect
Activity (pCi/g)
2.5
2.0
1.5
1.0
0.5
All
Surface
Subsurface
Background
All
Surface
Subsurface
Warm Springs Rd. ROW

ATTACHMENT F

POTENTIAL RE-ALIGNMENT DATA SUMMARY
(Database and Electronic Files on the enclosed CD in Attachment C)

**TABLE F-1**
**POTENTIAL RE-ALIGNMENT SOIL DATA SUMMARY**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Parameter of Interest | Compound List | Units | Total Count | Detect Freq | Censored (Non-Detect) Data | | | | | | | Detected Data[a] | | | | | | | Warm Spring Rd ROW Max. | Outdoor Worker BCL | Count of Detects > BCL | LBCL (DAF = 1) | Count of Detects > LBCL (1) | LBCL (DAF = 20) | Count of Detects > LBCL (20) | Back-ground | Count of Detects > Back-ground |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Count | Min | Q1 | Median | Mean | Q3 | Max | Count | Min | Q1 | Median | Mean | Q3 | Max | | | | | | | | | |
| **Asbestos**[b] | Chrysotile | Structures | 2 | 0% | 2 | 0 | -- | -- | -- | -- | 0 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Amphibole | Structures | 2 | 0% | 2 | 0 | -- | -- | -- | -- | 0 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Aldehydes** | Acetaldehyde | mg/kg | 5 | 0% | 5 | 0.303 | 0.305 | 0.311 | 0.313 | 0.323 | 0.323 | 0 | -- | -- | -- | -- | -- | -- | -- | 25.9 | -- | -- | -- | -- | -- | -- | -- |
| | Formaldehyde | mg/kg | 5 | 20.0% | 4 | 1.01 | 1.02 | 1.06 | 1.05 | 1.08 | 1.08 | 1 | 1.02 | -- | 1.02 | 1.02 | -- | 1.02 | 2.05 | 41.6 | 0 | -- | 0 | -- | 0 | -- | 0 |
| **Dioxins/ Furans** | 1,2,3,4,6,7,8-Heptachlorodibenzofuran | pg/g | 7 | 57.1% | 3 | 1.5 | 1.5 | 5 | 3.83 | 5 | 5 | 4 | 6.8 | 11.9 | 30 | 31.5 | 52.5 | 59 | 120 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin | pg/g | 7 | 42.9% | 4 | 0.18 | 0.32 | 2.87 | 2.73 | 5 | 5 | 3 | 3 | 3 | 3.5 | 4.07 | 5.7 | 5.7 | 14 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | 1,2,3,4,7,8,9-Heptachlorodibenzofuran | pg/g | 7 | 57.1% | 3 | 0.81 | 0.81 | 5 | 3.6 | 5 | 5 | 4 | 3.8 | 4.98 | 11.8 | 13.1 | 22.5 | 25 | 53 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | 1,2,3,4,7,8-Hexachlorodibenzofuran | pg/g | 7 | 57.1% | 3 | 1.1 | 1.1 | 5 | 3.7 | 5 | 5 | 4 | 5.7 | 6.68 | 12.3 | 15.1 | 26.3 | 30 | 49 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin | pg/g | 7 | 0% | 7 | 0.084 | 0.8 | 5 | 3.68 | 5 | 5 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3,6,7,8-Hexachlorodibenzofuran | pg/g | 7 | 57.1% | 3 | 0.69 | 0.69 | 5 | 3.56 | 5 | 5 | 4 | 3.4 | 4.65 | 11.2 | 11.5 | 18.5 | 20 | 38 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | pg/g | 7 | 0% | 7 | 0.066 | 0.79 | 5 | 3.68 | 5 | 5 | 0 | -- | -- | -- | -- | -- | -- | 3.5 | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3,7,8,9-Hexachlorodibenzofuran | pg/g | 7 | 14.3% | 6 | 0.34 | 0.738 | 5 | 3.54 | 5 | 5 | 1 | 3.4 | -- | 3.4 | 3.4 | -- | 3.4 | 7.4 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin | pg/g | 7 | 0% | 7 | 0.22 | 0.74 | 5 | 3.69 | 5 | 5 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3,7,8-Pentachlorodibenzofuran | pg/g | 7 | 57.1% | 3 | 0.92 | 0.92 | 5 | 3.64 | 5 | 5 | 4 | 3.7 | 4.78 | 10.5 | 10.9 | 17.5 | 19 | 36 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | 1,2,3,7,8-Pentachlorodibenzo-p-dioxin | pg/g | 7 | 0% | 7 | 0.21 | 1.2 | 5 | 3.76 | 5 | 5 | 0 | -- | -- | -- | -- | -- | -- | 3.1 | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2,3,4,6,7,8-Hexachlorodibenzofuran | pg/g | 7 | 28.6% | 5 | 0.22 | 0.595 | 5 | 3.24 | 5 | 5 | 2 | 3 | -- | 3.75 | 3.75 | -- | 4.5 | 8.7 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | 2,3,4,7,8-Pentachlorodibenzofuran | pg/g | 7 | 42.9% | 4 | 0.39 | 0.793 | 3.5 | 3.1 | 5 | 5 | 3 | 4.3 | 4.3 | 7.1 | 7.47 | 11 | 11 | 20 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | 2,3,7,8-Tetrachlorodibenzofuran | pg/g | 7 | 57.1% | 3 | 0.33 | 0.33 | 0.99 | 0.773 | 1 | 1 | 4 | 2.9 | 3.98 | 9.6 | 9.28 | 14.3 | 15 | 52 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | 2,3,7,8-Tetrachlorodibenzo-p-dioxin | pg/g | 7 | 14.3% | 6 | 0.14 | 0.538 | 0.99 | 0.798 | 1 | 1 | 1 | 0.51 | -- | 0.51 | 0.51 | -- | 0.51 | 1.3 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | Octachlorodibenzodioxin | pg/g | 7 | 28.6% | 5 | 0.57 | 1.39 | 9.9 | 6.51 | 9.95 | 10 | 2 | 9.9 | -- | 9.95 | 9.95 | -- | 10 | 98 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | Octachlorodibenzofuran | pg/g | 7 | 71.4% | 2 | 9.9 | -- | 9.95 | 9.95 | -- | 10 | 5 | 5.2 | 20.1 | 120 | 106 | 185 | 200 | 350 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | TCDD TEQ | pg/g | 7 | --[c] | -- | -- | -- | -- | -- | -- | -- | 7 | 0.58 | 3.3 | 6.4 | 8.43 | 13.4 | 18.6 | 33.2 | 1000 | 0 | -- | 0 | -- | 0 | -- | 0 |
| **General Chemistry** | Ammonia | mg/kg | 5 | 0% | 5 | 0.8 | 0.805 | 0.81 | 0.814 | 0.825 | 0.83 | 0 | -- | -- | -- | -- | -- | -- | 1.5 | 100000 | -- | -- | -- | -- | -- | -- | -- |
| | Bromide | mg/kg | 5 | 20.0% | 4 | 0.26 | 0.26 | 0.26 | 0.263 | 0.268 | 0.27 | 1 | 3.3 | -- | 3.3 | 3.3 | -- | 3.3 | 2.6 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | Chlorate | mg/kg | 5 | 0% | 5 | 0.54 | 0.545 | 0.55 | 0.552 | 0.56 | 0.56 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Chloride | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 1.1 | 14.6 | 151 | 125 | 224 | 260 | 395 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | Cyanide, Total | mg/kg | 5 | 40.0% | 3 | 0.082 | 0.082 | 0.083 | 0.083 | 0.084 | 0.084 | 2 | 0.22 | -- | 0.265 | 0.265 | -- | 0.31 | 0.33 | 13700 | 0 | 2 | 0 | 40 | 0 | -- | 0 |
| | Fluoride | mg/kg | 5 | 80.0% | 1 | 0.1 | -- | 0.1 | 0.1 | -- | 0.1 | 4 | 0.92 | 0.99 | 1.35 | 1.31 | 1.58 | 1.6 | 4.4 | 41000 | 0 | -- | 0 | -- | 0 | -- | 0 |
| | Nitrate | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 0.55 | 0.775 | 5.8 | 6.67 | 13 | 19 | 165 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | Nitrite | mg/kg | 5 | 0% | 5 | 0.021 | 0.021 | 0.021 | 0.021 | 0.021 | 0.021 | 0 | -- | -- | -- | -- | -- | -- | 0.16 | -- | -- | -- | -- | -- | -- | -- | -- |
| | Orthophosphate as P | mg/kg | 5 | 20.0% | 4 | 0.52 | 0.52 | 0.52 | 0.523 | 0.528 | 0.53 | 1 | 10.6 | -- | 10.6 | 10.6 | -- | 10.6 | 11.8 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | Perchlorate | mg/kg | 5 | 60.0% | 2 | 0.0106 | -- | 0.0107 | 0.0107 | -- | 0.0108 | 3 | 0.399 | 0.399 | 0.416 | 0.878 | 1.82 | 1.82 | 3.03 | 795 | 0 | -- | 0 | -- | 0 | -- | 0 |
| | Sulfate | mg/kg | 5 | 80.0% | 1 | 0.52 | -- | 0.52 | 0.52 | -- | 0.52 | 4 | 63.6 | 67.7 | 83.6 | 92.2 | 125 | 138 | 2190 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | Sulfide | mg/kg | 5 | 0% | 5 | 1.8 | 1.8 | 1.8 | 1.84 | 1.9 | 1.9 | 0 | -- | -- | -- | -- | -- | -- | 60.5 | -- | -- | -- | -- | -- | -- | -- | -- |
| | Total Kjeldahl Nitrogen (TKN) | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 21.8 | 29.7 | 55.2 | 60.2 | 93.2 | 121 | 647 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| **Metals** | Aluminum | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 10500 | 10600 | 14800 | 13800 | 16600 | 18100 | 18400 | 100000 | 0 | 75 | 5 | 1500 | 5 | 15300 | 1 |
| | Antimony | mg/kg | 5 | 0% | 5 | 0.126 | 0.126 | 0.126 | 0.126 | 0.126 | 0.126 | 0 | -- | -- | -- | -- | -- | -- | -- | 454 | -- | 0.3 | -- | 6 | -- | 0.5 | -- |
| | Arsenic | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 2.4 | 2.65 | 3.5 | 3.3 | 3.85 | 4.1 | 9.5 | 1.77 | 5 | 1 | 5 | 20 | 0 | 7.2 | 0 |
| | Barium | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 249 | 250 | 285 | 294 | 343 | 399 | 490 | 100000 | 0 | 82 | 5 | 1640 | 0 | 836 | 0 |
| | Beryllium | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 0.54 | 0.56 | 0.59 | 0.59 | 0.62 | 0.63 | 0.84 | 2150 | 0 | 3 | 0 | 60 | 0 | 0.89 | 0 |
| | Boron | mg/kg | 5 | 0% | 5 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 | 0 | -- | -- | -- | -- | -- | -- | 9.9 | 100000 | -- | 23.4 | -- | 467 | -- | 11.6 | -- |
| | Cadmium | mg/kg | 5 | 40.0% | 3 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 2 | 0.11 | -- | 0.12 | 0.12 | -- | 0.13 | 0.37 | 553 | 0 | 0.4 | 0 | 8 | 0 | 0.16 | 0 |
| | Calcium | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 16500 | 23600 | 31600 | 30800 | 37600 | 39700 | 92200 | -- | 0 | -- | 0 | -- | 0 | 82800 | 0 |
| | Chromium (Total) | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 11.2 | 12.5 | 14 | 13.9 | 15.2 | 16.1 | 19.7 | 100000 | 0 | 2 | 5 | 40 | 0 | 16.7 | 0 |
| | Chromium (VI) | mg/kg | 5 | 40.0% | 3 | 0.1 | 0.1 | 0.11 | 0.107 | 0.11 | 0.11 | 2 | 0.12 | -- | 0.18 | 0.18 | -- | 0.24 | 0.58 | 454 | 0 | 2 | 0 | 40 | 0 | 0.251 | 0 |
| | Cobalt | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 8.3 | 8.35 | 8.8 | 9.44 | 10.9 | 11.9 | 14.4 | 331 | 0 | 33 | 0 | 660 | 0 | 16.3 | 0 |
| | Copper | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 15 | 15 | 15.4 | 16.5 | 18.6 | 19.4 | 24.5 | 42200 | 0 | 35.2 | 0 | 704 | 0 | 30.5 | 0 |
| | Iron | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 16900 | 17000 | 17300 | 17900 | 19200 | 20300 | 23700 | 100000 | 0 | 7.56 | 5 | 151 | 5 | 19700 | 1 |
| | Lead | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 8.2 | 8.3 | 9 | 9.26 | 10.4 | 11.5 | 79.3 | 800 | 0 | -- | 0 | -- | 0 | 35.1 | 0 |
| | Lithium | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 9.2 | 9.4 | 12.4 | 11.9 | 14.1 | 14.1 | 21 | 2270 | 0 | -- | 0 | -- | 0 | 26.5 | 0 |
| | Magnesium | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 8410 | 8900 | 9610 | 9560 | 10200 | 10600 | 15400 | 100000 | 0 | 649 | 5 | 13000 | 0 | 17500 | 0 |
| | Manganese | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 365 | 369 | 436 | 447 | 532 | 590 | 1800 | 13700 | 0 | 3.26 | 5 | 65.2 | 5 | 1090 | 0 |
| | Mercury | mg/kg | 5 | 20.0% | 4 | 0.0115 | 0.0115 | 0.0115 | 0.0115 | 0.0115 | 0.0115 | 1 | 0.0228 | -- | 0.0228 | 0.0228 | -- | 0.0228 | 0.0438 | 182 | 0 | 0.104 | 0 | 2.09 | 0 | 0.11 | 0 |
| | Molybdenum | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 0.34 | 0.34 | 0.38 | 0.448 | 0.59 | 0.7 | 2.3 | 5680 | 0 | 3.64 | 0 | 72.7 | 0 | 2 | 0 |
| | Nickel | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 14.3 | 14.3 | 14.3 | 15.4 | 17.2 | 17.3 | 30.3 | 20100 | 0 | 7 | 5 | 140 | 0 | 30 | 0 |
| | Potassium | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 1080 | 1140 | 1350 | 1550 | 2050 | 2080 | 2800 | -- | 0 | -- | 0 | -- | 0 | 3890 | 0 |
| | Selenium | mg/kg | 5 | 0% | 5 | 0.16 | 0.16 | 0.16 | 9.7 | 24 | 24 | 0 | -- | -- | -- | -- | -- | -- | -- | 5680 | -- | 0.3 | -- | 6 | -- | 0.6 | -- |
| | Silver | mg/kg | 5 | 60.0% | 2 | 0.044 | -- | 0.227 | 0.227 | -- | 0.41 | 3 | 0.13 | 0.13 | 0.14 | 0.137 | 0.14 | 0.14 | 0.28 | 5680 | 0 | 2 | 0 | 40 | 0 | 0.261 | 0 |
| | Sodium | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 392 | 475 | 588 | 625 | 793 | 885 | 1140 | -- | 0 | -- | 0 | -- | 0 | 1320 | 0 |

**TABLE F-1**
**POTENTIAL RE-ALIGNMENT SOIL DATA SUMMARY**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Parameter of Interest | Compound List | Units | Total Count | Detect Freq | Censored (Non-Detect) Data | | | | | | | Detected Data[a] | | | | | | | Warm Spring Rd ROW Max. | Outdoor Worker BCL | Count of Detects > BCL | LBCL (DAF = 1) | Count of Detects > LBCL (1) | LBCL (DAF = 20) | Count of Detects > LBCL (20) | Back-ground | Count of Detects > Back-ground |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Count | Min | Q1 | Median | Mean | Q3 | Max | Count | Min | Q1 | Median | Mean | Q3 | Max | | | | | | | | | |
| **Metals** | Strontium | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 230 | 290 | 384 | 382 | 475 | 484 | 443 | 100000 | 0 | -- | 0 | -- | -- | 808 | 0 |
| | Thallium | mg/kg | 5 | 0% | 5 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0 | -- | -- | -- | -- | -- | -- | 0.96 | 79.5 | -- | 0.4 | -- | 8 | -- | 1.8 | -- |
| | Tin | mg/kg | 5 | 40.0% | 3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 2 | 0.53 | -- | 0.535 | 0.535 | -- | 0.54 | 1.3 | 100000 | 0 | -- | 0 | -- | 0 | 0.8 | 0 |
| | Titanium | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 741 | 786 | 852 | 848 | 910 | 927 | 1270 | 100000 | 0 | 150000 | 0 | 3000000 | 0 | 1010 | 0 |
| | Tungsten | mg/kg | 5 | 0% | 5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0 | -- | -- | -- | -- | -- | -- | 4 | 8510 | -- | 41.2 | -- | 823 | -- | 2.5 | -- |
| | Uranium | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 0.88 | 0.89 | 0.92 | 1.22 | 1.7 | 2.1 | 1.9 | 3390 | 0 | 13.5 | 0 | 270 | 0 | 2.7 | 0 |
| | Vanadium | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 44.7 | 46.1 | 50.2 | 50.7 | 55.7 | 60.3 | 71.4 | 5680 | 0 | 300 | 0 | 6000 | 0 | 59.1 | 1 |
| | Zinc | mg/kg | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 36.7 | 37 | 39 | 39.5 | 42.3 | 44.2 | 106 | 100000 | 0 | 620 | 0 | 12400 | 0 | 121 | 0 |
| **OCPs** | 2,4-DDD | mg/kg | 5 | 0% | 5 | 0.00031 | 0.000315 | 0.00032 | 0.000318 | 0.00032 | 0.00032 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2,4-DDE | mg/kg | 5 | 0% | 5 | 0.00021 | 0.00021 | 0.00021 | 0.00021 | 0.00021 | 0.00021 | 0 | -- | -- | -- | -- | -- | -- | 0.0071 | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4,4-DDD | mg/kg | 5 | 0% | 5 | 0.000092 | 0.000092 | 0.000093 | 0.000093 | 0.000094 | 0.000094 | 0 | -- | -- | -- | -- | -- | -- | -- | 11.1 | -- | 0.8 | -- | 16 | -- | -- | -- |
| | 4,4-DDE | mg/kg | 5 | 0% | 5 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0 | -- | -- | -- | -- | -- | -- | 0.025 | 7.8 | -- | 3 | -- | 60 | -- | -- | -- |
| | 4,4-DDT | mg/kg | 5 | 0% | 5 | 0.00021 | 0.00021 | 0.00021 | 0.00021 | 0.00021 | 0.00021 | 0 | -- | -- | -- | -- | -- | -- | 0.034 | 7.8 | -- | 2 | -- | 40 | -- | -- | -- |
| | Aldrin | mg/kg | 5 | 0% | 5 | 0.000098 | 0.0000985 | 0.000099 | 0.0000992 | 0.0001 | 0.0001 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.113 | -- | 0.02 | -- | 0.4 | -- | -- | -- |
| | alpha-BHC | mg/kg | 5 | 0% | 5 | 0.00029 | 0.00029 | 0.00029 | 0.000294 | 0.0003 | 0.0003 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.399 | -- | 0.00003 | -- | 0.0006 | -- | -- | -- |
| | alpha-Chlordane | mg/kg | 5 | 0% | 5 | 0.00022 | 0.00022 | 0.00022 | 0.00022 | 0.00022 | 0.00022 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | beta-BHC | mg/kg | 5 | 0% | 5 | 0.00019 | 0.00019 | 0.00019 | 0.000194 | 0.0002 | 0.0002 | 0 | -- | -- | -- | -- | -- | -- | 0.01 | 1.4 | -- | 0.0001 | -- | 0.002 | -- | -- | -- |
| | Chlordane | mg/kg | 5 | 0% | 5 | 0.0024 | 0.0024 | 0.0024 | 0.00244 | 0.0025 | 0.0025 | 0 | -- | -- | -- | -- | -- | -- | 0.031 | 7.19 | -- | 0.5 | -- | 10 | -- | -- | -- |
| | delta-BHC | mg/kg | 5 | 0% | 5 | 0.00017 | 0.00017 | 0.00017 | 0.000174 | 0.00018 | 0.00018 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Dieldrin | mg/kg | 5 | 0% | 5 | 0.000094 | 0.000094 | 0.000095 | 0.0000952 | 0.0000965 | 0.000097 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.12 | -- | 0.0002 | -- | 0.004 | -- | -- | -- |
| | Endosulfan I | mg/kg | 5 | 0% | 5 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Endosulfan II | mg/kg | 5 | 0% | 5 | 0.000096 | 0.0000965 | 0.000097 | 0.0000974 | 0.0000985 | 0.000099 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Endosulfan sulfate | mg/kg | 5 | 0% | 5 | 0.00027 | 0.00027 | 0.00027 | 0.000274 | 0.00028 | 0.00028 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Endrin | mg/kg | 5 | 0% | 5 | 0.000086 | 0.000086 | 0.000087 | 0.0000868 | 0.0000875 | 0.000088 | 0 | -- | -- | -- | -- | -- | -- | -- | 205 | -- | 0.05 | -- | 1 | -- | -- | -- |
| | Endrin aldehyde | mg/kg | 5 | 0% | 5 | 0.00018 | 0.000185 | 0.00019 | 0.000188 | 0.00019 | 0.00019 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Endrin ketone | mg/kg | 5 | 0% | 5 | 0.00017 | 0.00017 | 0.00017 | 0.00017 | 0.00017 | 0.00017 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | gamma-BHC (Lindane) | mg/kg | 5 | 0% | 5 | 0.00013 | 0.00013 | 0.00013 | 0.00013 | 0.00013 | 0.00013 | 0 | -- | -- | -- | -- | -- | -- | -- | 1.93 | -- | 0.0005 | -- | 0.01 | -- | -- | -- |
| | gamma-Chlordane | mg/kg | 5 | 0% | 5 | 0.000086 | 0.000086 | 0.000087 | 0.0000868 | 0.0000875 | 0.000088 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Heptachlor | mg/kg | 5 | 0% | 5 | 0.00018 | 0.00018 | 0.00018 | 0.00018 | 0.00018 | 0.00018 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.426 | -- | 1 | -- | 20 | -- | -- | -- |
| | Heptachlor epoxide | mg/kg | 5 | 0% | 5 | 0.00013 | 0.000135 | 0.00014 | 0.000138 | 0.00014 | 0.00014 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.21 | -- | 0.03 | -- | 0.6 | -- | -- | -- |
| | Methoxychlor | mg/kg | 5 | 0% | 5 | 0.00032 | 0.000325 | 0.00033 | 0.000328 | 0.00033 | 0.00033 | 0 | -- | -- | -- | -- | -- | -- | -- | 3420 | -- | 8 | -- | 160 | -- | -- | -- |
| | Toxaphene | mg/kg | 5 | 0% | 5 | 0.006 | 0.006 | 0.006 | 0.00606 | 0.00615 | 0.0062 | 0 | -- | -- | -- | -- | -- | -- | -- | 1.74 | -- | 2 | -- | 40 | -- | -- | -- |
| **PAHs** | Acenaphthene | mg/kg | 5 | 0% | 5 | 0.00169 | 0.00173 | 0.00178 | 0.00177 | 0.00181 | 0.00181 | 0 | -- | -- | -- | -- | -- | -- | 0.0038 | 68100 | -- | 29 | -- | 580 | -- | -- | -- |
| | Acenaphthylene | mg/kg | 5 | 0% | 5 | 0.00169 | 0.00173 | 0.00178 | 0.00177 | 0.00181 | 0.00181 | 0 | -- | -- | -- | -- | -- | -- | 0.00315 | 147 | -- | -- | -- | -- | -- | -- | -- |
| | Anthracene | mg/kg | 5 | 0% | 5 | 0.00169 | 0.00173 | 0.00178 | 0.00177 | 0.00181 | 0.00181 | 0 | -- | -- | -- | -- | -- | -- | 0.00496 | 100000 | -- | 590 | -- | 11800 | -- | -- | -- |
| | Benzo(a)anthracene | mg/kg | 5 | 0% | 5 | 0.00169 | 0.00173 | 0.00178 | 0.00177 | 0.00181 | 0.00181 | 0 | -- | -- | -- | -- | -- | -- | 0.0162 | 2.34 | -- | 0.08 | -- | 1.6 | -- | -- | -- |
| | Benzo(a)pyrene | mg/kg | 5 | 0% | 5 | 0.00169 | 0.00173 | 0.00178 | 0.00177 | 0.00181 | 0.00181 | 0 | -- | -- | -- | -- | -- | -- | 0.0144 | 0.234 | -- | 0.4 | -- | 8 | -- | -- | -- |
| | Benzo(b)fluoranthene | mg/kg | 5 | 0% | 5 | 0.00169 | 0.00173 | 0.00178 | 0.00177 | 0.00181 | 0.00181 | 0 | -- | -- | -- | -- | -- | -- | 0.0576 | 2.34 | -- | 0.2 | -- | 4 | -- | -- | -- |
| | Benzo(g,h,i)perylene | mg/kg | 5 | 0% | 5 | 0.00169 | 0.00173 | 0.00178 | 0.00177 | 0.00181 | 0.00181 | 0 | -- | -- | -- | -- | -- | -- | 0.0772 | 34100 | -- | -- | -- | -- | -- | -- | -- |
| | Benzo(k)fluoranthene | mg/kg | 5 | 0% | 5 | 0.00169 | 0.00173 | 0.00178 | 0.00177 | 0.00181 | 0.00181 | 0 | -- | -- | -- | -- | -- | -- | 0.00705 | 23.4 | -- | 2 | -- | 40 | -- | -- | -- |
| | Chrysene | mg/kg | 5 | 0% | 5 | 0.00169 | 0.00173 | 0.00178 | 0.00177 | 0.00181 | 0.00181 | 0 | -- | -- | -- | -- | -- | -- | 0.0394 | 234 | -- | 8 | -- | 160 | -- | -- | -- |
| | Dibenzo(a,h)anthracene | mg/kg | 5 | 0% | 5 | 0.00169 | 0.00173 | 0.00178 | 0.00177 | 0.00181 | 0.00181 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.234 | -- | 0.08 | -- | 1.6 | -- | -- | -- |
| | Indeno(1,2,3-cd)pyrene | mg/kg | 5 | 0% | 5 | 0.00169 | 0.00173 | 0.00178 | 0.00177 | 0.00181 | 0.00181 | 0 | -- | -- | -- | -- | -- | -- | 0.0786 | 2.34 | -- | 0.7 | -- | 14 | -- | -- | -- |
| | Phenanthrene | mg/kg | 5 | 0% | 5 | 0.00169 | 0.00173 | 0.00178 | 0.00177 | 0.00181 | 0.00181 | 0 | -- | -- | -- | -- | -- | -- | 0.0225 | 24.5 | -- | -- | -- | -- | -- | -- | -- |
| | Pyrene | mg/kg | 5 | 0% | 5 | 0.00169 | 0.00173 | 0.00178 | 0.00177 | 0.00181 | 0.00181 | 0 | -- | -- | -- | -- | -- | -- | 0.0356 | 34100 | -- | 210 | -- | 4200 | -- | -- | -- |
| **PCBs** | PCB 105 | pg/g | 7 | 100% | 0 | -- | -- | -- | -- | -- | -- | 7 | 2.3 | 4.5 | 22 | 25.3 | 41 | 62 | 260 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | PCB 114 | pg/g | 7 | 28.6% | 5 | 2 | 2 | 2 | 2.02 | 2.05 | 2.1 | 2 | 4.2 | -- | 4.3 | 4.3 | -- | 4.4 | 20 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | PCB 118 | pg/g | 7 | 100% | 0 | -- | -- | -- | -- | -- | -- | 7 | 4.8 | 9.6 | 50 | 49.2 | 79 | 120 | 430 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | PCB 123 | pg/g | 7 | 0% | 7 | 2 | 2 | 2 | 2.03 | 2.1 | 2.1 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | PCB 126 | pg/g | 7 | 42.9% | 4 | 2 | 2 | 2.05 | 2.05 | 2.1 | 2.1 | 3 | 2.5 | 2.5 | 3 | 3.6 | 5.3 | 5.3 | 13 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | PCB 156 | pg/g | 7 | 57.1% | 3 | 2 | 2 | 2 | 2.03 | 2.1 | 2.1 | 4 | 5.2 | 7.4 | 14.5 | 13.3 | 18 | 19 | 90 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | PCB 157 | pg/g | 7 | 42.9% | 4 | 2 | 2 | 2.05 | 2.05 | 2.1 | 2.1 | 3 | 4.4 | 4.4 | 4.6 | 4.63 | 4.9 | 4.9 | 33 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | PCB 167 | pg/g | 7 | 57.1% | 3 | 2 | 2 | 2 | 2.03 | 2.1 | 2.1 | 4 | 3 | 4.48 | 9 | 8 | 10.5 | 11 | 55 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | PCB 169 | pg/g | 7 | 0% | 7 | 2 | 2 | 2 | 2.03 | 2.1 | 2.1 | 0 | -- | -- | -- | -- | -- | -- | 2.8 | -- | -- | -- | -- | -- | -- | -- | -- |
| | PCB 189 | pg/g | 7 | 42.9% | 4 | 2 | 2 | 2.05 | 2.05 | 2.1 | 2.1 | 3 | 3.4 | 3.4 | 3.7 | 4.03 | 5 | 5 | 36 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | PCB 209 | pg/g | 7 | 71.4% | 2 | 2 | -- | 2 | 2 | -- | 2 | 5 | 68 | 124 | 730 | 716 | 1300 | 1400 | 6600 | -- | 0 | -- | 0 | -- | 0 | -- | 0 |
| | PCB 77 | pg/g | 7 | 0% | 7 | 2 | 2 | 2 | 2.03 | 2.1 | 2.1 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | PCB 81 | pg/g | 7 | 0% | 7 | 2 | 2 | 2 | 2.03 | 2.1 | 2.1 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**TABLE F-1**
**POTENTIAL RE-ALIGNMENT SOIL DATA SUMMARY**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**


| Parameter of Interest | Compound List | Units | Total Count | Detect Freq | Censored (Non-Detect) Data | | | | | | | Detected Data[a] | | | | | | | Warm Spring Rd ROW Max. | Outdoor Worker BCL | Count of Detects > BCL | LBCL (DAF = 1) | Count of Detects > LBCL (1) | LBCL (DAF = 20) | Count of Detects > LBCL (20) | Back-ground | Count of Detects > Back-ground |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Count | Min | Q1 | Median | Mean | Q3 | Max | Count | Min | Q1 | Median | Mean | Q3 | Max | | | | | | | | | |
| Radio-nuclides[d] | Radium-226 | pCi/g | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 0.662 | 0.764 | 1.03 | 1.07 | 1.39 | 1.59 | 1.8 | 0.023 | 4 | 0.016 | 4 | 0.32 | 4 | 2.36 | 0 |
| | Radium-228 | pCi/g | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 1.26 | 1.4 | 1.56 | 1.81 | 2.35 | 2.72 | 2.98 | 0.041 | 5 | 0.016 | 5 | 0.32 | 5 | 2.94 | 0 |
| | Thorium-228 | pCi/g | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 1.58 | 1.66 | 1.76 | 1.78 | 1.92 | 1.93 | 2.23 | 0.025 | 5 | 0.0023 | 5 | 0.045 | 5 | 2.28 | 0 |
| | Thorium-230 | pCi/g | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 0.319 | 0.466 | 0.839 | 0.791 | 1.09 | 1.26 | 1.74 | 8.3 | 0 | 0.00084 | 4 | 0.017 | 4 | 3.01 | 0 |
| | Thorium-232 | pCi/g | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 1.05 | 1.14 | 1.26 | 1.32 | 1.54 | 1.63 | 2.67 | 7.4 | 0 | 0.0029 | 5 | 0.058 | 5 | 2.23 | 0 |
| | Uranium-233/234 | pCi/g | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 0.728 | 0.864 | 1.01 | 1.14 | 1.48 | 1.89 | 1.67 | 11 | 0 | -- | 0 | -- | 0 | 2.84 | 0 |
| | Uranium-235/236 | pCi/g | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 0.0386 | 0.045 | 0.0668 | 0.0721 | 0.102 | 0.108 | 0.246 | 0.35 | 0 | -- | 0 | -- | 0 | 0.21 | 0 |
| | Uranium-238 | pCi/g | 5 | 100% | 0 | -- | -- | -- | -- | -- | -- | 5 | 0.576 | 0.734 | 0.898 | 0.947 | 1.19 | 1.35 | 1.35 | 1.4 | 0 | -- | 0 | -- | 0 | 2.37 | 0 |
| SVOCs | 1,2,4,5-Tetrachlorobenzene | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 205 | -- | -- | -- | -- | -- | -- | -- |
| | 1,2-Diphenylhydrazine | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 2.39 | -- | -- | -- | -- | -- | -- | -- |
| | 1,4-Dioxane | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 174 | -- | -- | -- | -- | -- | -- | -- |
| | 2,2'-Dichlorobenzil | mg/kg | 5 | 0% | 5 | 0.112 | 0.115 | 0.117 | 0.117 | 0.119 | 0.119 | 0 | -- | -- | -- | -- | -- | -- | -- | 341 | -- | 0.0003 | -- | 0.006 | -- | -- | -- |
| | 2,4,5-Trichlorophenol | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 68400 | -- | 14 | -- | 280 | -- | -- | -- |
| | 2,4,6-Trichlorophenol | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 174 | -- | 0.008 | -- | 0.16 | -- | -- | -- |
| | 2,4-Dichlorophenol | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 2050 | -- | 0.05 | -- | 1 | -- | -- | -- |
| | 2,4-Dimethylphenol | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 13700 | -- | 0.4 | -- | 8 | -- | -- | -- |
| | 2,4-Dinitrophenol | mg/kg | 5 | 0% | 5 | 0.128 | 0.131 | 0.135 | 0.134 | 0.138 | 0.138 | 0 | -- | -- | -- | -- | -- | -- | -- | 1370 | -- | 0.01 | -- | 0.2 | -- | -- | -- |
| | 2,4-Dinitrotoluene | mg/kg | 5 | 0% | 5 | 0.0338 | 0.0346 | 0.0355 | 0.0354 | 0.0361 | 0.0362 | 0 | -- | -- | -- | -- | -- | -- | -- | 6.18 | -- | 0.00004 | -- | 0.0008 | -- | -- | -- |
| | 2,6-Dinitrotoluene | mg/kg | 5 | 0% | 5 | 0.0338 | 0.0346 | 0.0355 | 0.0354 | 0.0361 | 0.0362 | 0 | -- | -- | -- | -- | -- | -- | -- | 684 | -- | 0.00003 | -- | 0.0006 | -- | -- | -- |
| | 2-Chloronaphthalene | mg/kg | 5 | 0% | 5 | 0.0118 | 0.0121 | 0.0124 | 0.0124 | 0.0127 | 0.0127 | 0 | -- | -- | -- | -- | -- | -- | -- | 90800 | -- | -- | -- | -- | -- | -- | -- |
| | 2-Chlorophenol | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 5680 | -- | 0.2 | -- | 4 | -- | -- | -- |
| | 2-Methylnaphthalene | mg/kg | 5 | 0% | 5 | 0.00676 | 0.00692 | 0.0071 | 0.00707 | 0.00722 | 0.00724 | 0 | -- | -- | -- | -- | -- | -- | 0.0142 | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2-Nitroaniline | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 2030 | -- | -- | -- | -- | -- | -- | -- |
| | 2-Nitrophenol | mg/kg | 5 | 0% | 5 | 0.0338 | 0.0346 | 0.0355 | 0.0354 | 0.0361 | 0.0362 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 3,3-Dichlorobenzidine | mg/kg | 5 | 0% | 5 | 0.101 | 0.104 | 0.107 | 0.106 | 0.109 | 0.109 | 0 | -- | -- | -- | -- | -- | -- | -- | 4.26 | -- | 0.0003 | -- | 0.006 | -- | -- | -- |
| | 3-Nitroaniline | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4-Bromophenyl phenyl ether | mg/kg | 5 | 0% | 5 | 0.0338 | 0.0346 | 0.0355 | 0.0354 | 0.0361 | 0.0362 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4-Chloro-3-methylphenol | mg/kg | 5 | 0% | 5 | 0.0338 | 0.0346 | 0.0355 | 0.0354 | 0.0361 | 0.0362 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4-Chlorophenyl phenyl ether | mg/kg | 5 | 0% | 5 | 0.0338 | 0.0346 | 0.0355 | 0.0354 | 0.0361 | 0.0362 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4-Chlorothioanisole | mg/kg | 5 | 0% | 5 | 0.112 | 0.115 | 0.117 | 0.117 | 0.119 | 0.119 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4-Nitroaniline | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4-Nitrophenol | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 5470 | -- | -- | -- | -- | -- | -- | -- |
| | Acetophenone | mg/kg | 5 | 0% | 5 | 0.0338 | 0.0346 | 0.0355 | 0.0354 | 0.0361 | 0.0362 | 0 | -- | -- | -- | -- | -- | -- | 0.0453 | 1740 | -- | -- | -- | -- | -- | -- | -- |
| | Aniline | mg/kg | 5 | 0% | 5 | 0.118 | 0.121 | 0.124 | 0.124 | 0.127 | 0.127 | 0 | -- | -- | -- | -- | -- | -- | -- | 336 | -- | -- | -- | -- | -- | -- | -- |
| | Benzenethiol | mg/kg | 5 | 0% | 5 | 0.112 | 0.115 | 0.117 | 0.117 | 0.119 | 0.119 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Benzoic acid | mg/kg | 5 | 0% | 5 | 0.169 | 0.173 | 0.178 | 0.177 | 0.181 | 0.181 | 0 | -- | -- | -- | -- | -- | -- | -- | 100000 | -- | 20 | -- | 400 | -- | -- | -- |
| | Benzyl alcohol | mg/kg | 5 | 0% | 5 | 0.101 | 0.104 | 0.107 | 0.106 | 0.109 | 0.109 | 0 | -- | -- | -- | -- | -- | -- | -- | 100000 | -- | -- | -- | -- | -- | -- | -- |
| | bis(2-Chloroethoxy)methane | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | bis(2-Chloroethyl) ether | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.616 | -- | 0.00002 | -- | 0.0004 | -- | -- | -- |
| | bis(2-Chloroisopropyl) ether | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 8.18 | -- | -- | -- | -- | -- | -- | -- |
| | bis(2-Ethylhexyl) phthalate | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | 0.0877 | 137 | -- | 180 | -- | 3600 | -- | -- | -- |
| | bis(p-Chlorophenyl) sulfone | mg/kg | 5 | 0% | 5 | 0.112 | 0.115 | 0.117 | 0.117 | 0.119 | 0.119 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | bis(p-Chlorophenyl)disulfide | mg/kg | 5 | 0% | 5 | 0.112 | 0.115 | 0.117 | 0.117 | 0.119 | 0.119 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Butylbenzyl phthalate | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | 0.0722 | 240 | -- | 810 | -- | 16200 | -- | -- | -- |
| | Carbazole | mg/kg | 5 | 0% | 5 | 0.0101 | 0.0104 | 0.0107 | 0.0106 | 0.0109 | 0.0109 | 0 | -- | -- | -- | -- | -- | -- | -- | 95.8 | -- | 0.03 | -- | 0.6 | -- | -- | -- |
| | Dibenzofuran | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 2270 | -- | -- | -- | -- | -- | -- | -- |
| | Dichloromethyl ether | mg/kg | 5 | 0% | 5 | 0.112 | 0.115 | 0.117 | 0.117 | 0.119 | 0.119 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.000477 | -- | -- | -- | -- | -- | -- | -- |
| | Diethyl phthalate | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 100000 | -- | -- | -- | -- | -- | -- | -- |
| | Dimethyl phthalate | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 100000 | -- | -- | -- | -- | -- | -- | -- |
| | Di-n-butyl phthalate | mg/kg | 5 | 0% | 5 | 0.0338 | 0.0346 | 0.0355 | 0.0354 | 0.0361 | 0.0362 | 0 | -- | -- | -- | -- | -- | -- | -- | 68400 | -- | 270 | -- | 5400 | -- | -- | -- |
| | Di-n-octyl phthalate | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Diphenyl disulfide | mg/kg | 5 | 0% | 5 | 0.112 | 0.115 | 0.117 | 0.117 | 0.119 | 0.119 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Diphenyl sulfide | mg/kg | 5 | 0% | 5 | 0.112 | 0.115 | 0.117 | 0.117 | 0.119 | 0.119 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Diphenyl sulfone | mg/kg | 5 | 0% | 5 | 0.112 | 0.115 | 0.117 | 0.117 | 0.119 | 0.119 | 0 | -- | -- | -- | -- | -- | -- | -- | 2050 | -- | -- | -- | -- | -- | -- | -- |
| | Diphenylamine | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 17100 | -- | -- | -- | -- | -- | -- | -- |
| | Fluoranthene | mg/kg | 5 | 0% | 5 | 0.0101 | 0.0104 | 0.0107 | 0.0106 | 0.0109 | 0.0109 | 0 | -- | -- | -- | -- | -- | -- | 0.0323 | 24400 | -- | 210 | -- | 4200 | -- | -- | -- |
| | Fluorene | mg/kg | 5 | 0% | 5 | 0.0101 | 0.0104 | 0.0107 | 0.0106 | 0.0109 | 0.0109 | 0 | -- | -- | -- | -- | -- | -- | -- | 45400 | -- | 28 | -- | 560 | -- | -- | -- |
| | Hexachlorobenzene | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 1.2 | -- | 0.1 | -- | 2 | -- | -- | -- |
| | Hexachlorobutadiene | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 24.6 | -- | 0.1 | -- | 2 | -- | -- | -- |

**TABLE F-1**
**POTENTIAL RE-ALIGNMENT SOIL DATA SUMMARY**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 4 of 5)**

| Parameter of Interest | Compound List | Units | Total Count | Detect Freq | Censored (Non-Detect) Data | | | | | | | Detected Data[a] | | | | | | | Warm Spring Rd ROW Max. | Outdoor Worker BCL | Count of Detects > BCL | LBCL (DAF = 1) | Count of Detects > LBCL (1) | LBCL (DAF = 20) | Count of Detects > LBCL (20) | Back-ground | Count of Detects > Back-ground |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Count | Min | Q1 | Median | Mean | Q3 | Max | Count | Min | Q1 | Median | Mean | Q3 | Max | | | | | | | | | |
| SVOCs | Hexachlorocyclopentadiene | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 4060 | -- | 20 | -- | 400 | -- | -- | -- |
| | Hexachloroethane | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 137 | -- | 0.02 | -- | 0.4 | -- | -- | -- |
| | Hydroxymethyl phthalimide | mg/kg | 5 | 0% | 5 | 0.112 | 0.115 | 0.117 | 0.117 | 0.119 | 0.119 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Isophorone | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 2020 | -- | 0.03 | -- | 0.6 | -- | -- | -- |
| | m,p-Cresols | mg/kg | 5 | 0% | 5 | 0.135 | 0.138 | 0.142 | 0.141 | 0.145 | 0.145 | 0 | -- | -- | -- | -- | -- | -- | -- | 3420 | -- | -- | -- | -- | -- | -- | -- |
| | Naphthalene | mg/kg | 5 | 0% | 5 | 0.0101 | 0.0104 | 0.0107 | 0.0106 | 0.0109 | 0.0109 | 0 | -- | -- | -- | -- | -- | -- | -- | 5.79 | -- | 4 | -- | 80 | -- | -- | -- |
| | Nitrobenzene | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 5.02 | -- | 0.007 | -- | 0.14 | -- | -- | -- |
| | N-nitrosodi-n-propylamine | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.274 | -- | 0.000002 | -- | 0.00004 | -- | -- | -- |
| | o-Cresol | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 34200 | -- | 0.8 | -- | 16 | -- | -- | -- |
| | Octachlorostyrene | mg/kg | 5 | 0% | 5 | 0.112 | 0.115 | 0.117 | 0.117 | 0.119 | 0.119 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | p-Chloroaniline | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 2740 | -- | 0.03 | -- | 0.6 | -- | -- | -- |
| | p-Chlorobenzenethiol | mg/kg | 5 | 0% | 5 | 0.112 | 0.115 | 0.117 | 0.117 | 0.119 | 0.119 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Pentachlorobenzene | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 547 | -- | -- | -- | -- | -- | -- | -- |
| | Pentachlorophenol | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 10 | -- | 0.001 | -- | 0.02 | -- | -- | -- |
| | Phenol | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 100000 | -- | 5 | -- | 100 | -- | -- | -- |
| | Phthalic acid | mg/kg | 5 | 0% | 5 | 0.112 | 0.115 | 0.117 | 0.117 | 0.119 | 0.119 | 0 | -- | -- | -- | -- | -- | -- | -- | 100000 | -- | -- | -- | -- | -- | -- | -- |
| | Pyridine | mg/kg | 5 | 0% | 5 | 0.0676 | 0.0692 | 0.071 | 0.0707 | 0.0722 | 0.0724 | 0 | -- | -- | -- | -- | -- | -- | -- | 684 | -- | -- | -- | -- | -- | -- | -- |
| VOCs | 1,1,1,2-Tetrachloroethane | mg/kg | 5 | 0% | 5 | 0.00018 | 0.00018 | 0.00019 | 0.000186 | 0.00019 | 0.00019 | 0 | -- | -- | -- | -- | -- | -- | -- | 7.59 | -- | -- | -- | -- | -- | -- | -- |
| | 1,1,1-Trichloroethane | mg/kg | 5 | 0% | 5 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0 | -- | -- | -- | -- | -- | -- | -- | 1390 | -- | 0.1 | -- | 2 | -- | -- | -- |
| | 1,1,2,2-Tetrachloroethane | mg/kg | 5 | 0% | 5 | 0.00008 | 0.0000805 | 0.000081 | 0.0000814 | 0.0000825 | 0.000083 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.97 | -- | 0.0002 | -- | 0.004 | -- | -- | -- |
| | 1,1,2-Trichloroethane | mg/kg | 5 | 0% | 5 | 0.000069 | 0.0000695 | 0.00007 | 0.0000702 | 0.000071 | 0.000071 | 0 | -- | -- | -- | -- | -- | -- | -- | 2.08 | -- | 0.0009 | -- | 0.018 | -- | -- | -- |
| | 1,1-Dichloroethane | mg/kg | 5 | 0% | 5 | 0.000072 | 0.0000725 | 0.000073 | 0.0000732 | 0.000074 | 0.000074 | 0 | -- | -- | -- | -- | -- | -- | -- | 8 | -- | 1 | -- | 20 | -- | -- | -- |
| | 1,1-Dichloroethene | mg/kg | 5 | 0% | 5 | 0.00012 | 0.00012 | 0.00013 | 0.000126 | 0.00013 | 0.00013 | 0 | -- | -- | -- | -- | -- | -- | -- | 474 | -- | 0.003 | -- | 0.06 | -- | -- | -- |
| | 1,1-Dichloropropene | mg/kg | 5 | 0% | 5 | 0.00009 | 0.00009 | 0.000091 | 0.000091 | 0.000092 | 0.000092 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3-Trichlorobenzene | mg/kg | 5 | 0% | 5 | 0.0004 | 0.0004 | 0.0004 | 0.000404 | 0.00041 | 0.00041 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,3-Trichloropropane | mg/kg | 5 | 0% | 5 | 0.00026 | 0.00026 | 0.00026 | 0.000262 | 0.000265 | 0.00027 | 0 | -- | -- | -- | -- | -- | -- | -- | 1.59 | -- | -- | -- | -- | -- | -- | -- |
| | 1,2,4-Trichlorobenzene | mg/kg | 5 | 0% | 5 | 0.00034 | 0.00034 | 0.00034 | 0.000344 | 0.00035 | 0.00035 | 0 | -- | -- | -- | -- | -- | -- | -- | 265 | -- | 0.3 | -- | 6 | -- | -- | -- |
| | 1,2,4-Trimethylbenzene | mg/kg | 5 | 0% | 5 | 0.00014 | 0.00014 | 0.00014 | 0.00014 | 0.00014 | 0.00014 | 0 | -- | -- | -- | -- | -- | -- | -- | 224 | -- | -- | -- | -- | -- | -- | -- |
| | 1,2-Dichlorobenzene | mg/kg | 5 | 0% | 5 | 0.00012 | 0.000125 | 0.00013 | 0.000128 | 0.00013 | 0.00013 | 0 | -- | -- | -- | -- | -- | -- | -- | 373 | -- | 0.9 | -- | 18 | -- | -- | -- |
| | 1,2-Dichloroethane | mg/kg | 5 | 0% | 5 | 0.000068 | 0.0000685 | 0.000069 | 0.000069 | 0.0000695 | 0.00007 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.841 | -- | 0.001 | -- | 0.02 | -- | -- | -- |
| | 1,2-Dichloroethene | mg/kg | 5 | 0% | 5 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,2-Dichloropropane | mg/kg | 5 | 0% | 5 | 0.00011 | 0.00011 | 0.00011 | 0.000114 | 0.00012 | 0.00012 | 0 | -- | -- | -- | -- | -- | -- | -- | 1.62 | -- | 0.001 | -- | 0.02 | -- | -- | -- |
| | 1,3,5-Trichlorobenzene | mg/kg | 5 | 0% | 5 | 0.00038 | 0.00038 | 0.00039 | 0.000386 | 0.00039 | 0.00039 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1,3,5-Trimethylbenzene | mg/kg | 5 | 0% | 5 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0 | -- | -- | -- | -- | -- | -- | -- | 78.3 | -- | -- | -- | -- | -- | -- | -- |
| | 1,3-Dichlorobenzene | mg/kg | 5 | 0% | 5 | 0.00013 | 0.000135 | 0.00014 | 0.000138 | 0.00014 | 0.00014 | 0 | -- | -- | -- | -- | -- | -- | -- | 373 | -- | -- | -- | -- | -- | -- | -- |
| | 1,3-Dichloropropane | mg/kg | 5 | 0% | 5 | 0.000053 | 0.000053 | 0.000053 | 0.0000534 | 0.000054 | 0.000054 | 0 | -- | -- | -- | -- | -- | -- | -- | 1130 | -- | 0.001 | -- | 0.02 | -- | -- | -- |
| | 1,4-Dichlorobenzene | mg/kg | 5 | 0% | 5 | 0.00014 | 0.00014 | 0.00014 | 0.00014 | 0.00014 | 0.00014 | 0 | -- | -- | -- | -- | -- | -- | -- | 5.15 | -- | 0.1 | -- | 2 | -- | -- | -- |
| | 2,2,3-Trimethylbutane | mg/kg | 5 | 0% | 5 | 0.00022 | 0.00022 | 0.00022 | 0.00022 | 0.00022 | 0.00022 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2,2-Dichloropropane | mg/kg | 5 | 0% | 5 | 0.00024 | 0.00024 | 0.00024 | 0.000242 | 0.000245 | 0.00025 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2,2-Dimethylpentane | mg/kg | 5 | 0% | 5 | 0.00028 | 0.000285 | 0.00029 | 0.000288 | 0.00029 | 0.00029 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2,3-Dimethylpentane | mg/kg | 5 | 0% | 5 | 0.00023 | 0.00023 | 0.00023 | 0.000234 | 0.00024 | 0.00024 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2,4-Dimethylpentane | mg/kg | 5 | 0% | 5 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2-Chlorotoluene | mg/kg | 5 | 0% | 5 | 0.00025 | 0.000255 | 0.00026 | 0.000258 | 0.00026 | 0.00026 | 0 | -- | -- | -- | -- | -- | -- | -- | 511 | -- | -- | -- | -- | -- | -- | -- |
| | 2-Hexanone | mg/kg | 5 | 0% | 5 | 0.00024 | 0.000245 | 0.00025 | 0.000248 | 0.00025 | 0.00025 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2-Methylhexane | mg/kg | 5 | 0% | 5 | 0.00021 | 0.00021 | 0.00021 | 0.000212 | 0.000215 | 0.00022 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2-Nitropropane | mg/kg | 5 | 0% | 5 | 0.00062 | 0.00062 | 0.00063 | 0.000628 | 0.000635 | 0.00064 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.338 | -- | -- | -- | -- | -- | -- | -- |
| | 3,3-Dimethylpentane | mg/kg | 5 | 0% | 5 | 0.00021 | 0.00021 | 0.00021 | 0.000212 | 0.000215 | 0.00022 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 3-Ethylpentane | mg/kg | 5 | 0% | 5 | 0.00022 | 0.00022 | 0.00022 | 0.00022 | 0.00022 | 0.00022 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 3-Methylhexane | mg/kg | 5 | 0% | 5 | 0.00014 | 0.000145 | 0.00015 | 0.000148 | 0.00015 | 0.00015 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4-Chlorotoluene | mg/kg | 5 | 0% | 5 | 0.00018 | 0.00018 | 0.00018 | 0.00018 | 0.00018 | 0.00018 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4-Methyl-2-pentanone (MIBK) | mg/kg | 5 | 0% | 5 | 0.0003 | 0.0003 | 0.0003 | 0.000302 | 0.000305 | 0.00031 | 0 | -- | -- | -- | -- | -- | -- | -- | 17200 | -- | -- | -- | -- | -- | -- | -- |
| | Acetone | mg/kg | 5 | 20.0% | 4 | 0.0018 | 0.0018 | 0.0018 | 0.0018 | 0.0018 | 0.0018 | 1 | 0.01 | -- | 0.01 | 0.01 | -- | 0.01 | 0.055 | 100000 | 0 | 0.8 | 0 | 16 | 0 | -- | 0 |
| | Acetonitrile | mg/kg | 5 | 0% | 5 | 0.0056 | 0.0056 | 0.0056 | 0.00564 | 0.0057 | 0.0057 | 0 | -- | -- | -- | -- | -- | -- | -- | 2280 | -- | -- | -- | -- | -- | -- | -- |
| | Benzene | mg/kg | 5 | 0% | 5 | 0.00009 | 0.00009 | 0.000091 | 0.000091 | 0.000092 | 0.000092 | 0 | -- | -- | -- | -- | -- | -- | -- | 1.58 | -- | 0.002 | -- | 0.04 | -- | -- | -- |
| | Bromobenzene | mg/kg | 5 | 0% | 5 | 0.00012 | 0.000125 | 0.00013 | 0.000128 | 0.00013 | 0.00013 | 0 | -- | -- | -- | -- | -- | -- | -- | 103 | -- | -- | -- | -- | -- | -- | -- |
| | Bromodichloromethane | mg/kg | 5 | 0% | 5 | 0.00022 | 0.00022 | 0.00022 | 0.000222 | 0.000225 | 0.00023 | 0 | -- | -- | -- | -- | -- | -- | -- | 51.3 | -- | 0.03 | -- | 0.6 | -- | -- | -- |
| | Bromoform | mg/kg | 5 | 0% | 5 | 0.000061 | 0.000061 | 0.000062 | 0.0000618 | 0.0000625 | 0.000063 | 0 | -- | -- | -- | -- | -- | -- | -- | 242 | -- | 0.04 | -- | 0.8 | -- | -- | -- |
| | Bromomethane | mg/kg | 5 | 0% | 5 | 0.00013 | 0.00013 | 0.00014 | 0.000136 | 0.00014 | 0.00014 | 0 | -- | -- | -- | -- | -- | -- | -- | 14.6 | -- | 0.01 | -- | 0.2 | -- | -- | -- |
| | Carbon disulfide | mg/kg | 5 | 0% | 5 | 0.00012 | 0.000125 | 0.00013 | 0.000128 | 0.00013 | 0.00013 | 0 | -- | -- | -- | -- | -- | -- | -- | 721 | -- | 2 | -- | 40 | -- | -- | -- |

**TABLE F-1**
**POTENTIAL RE-ALIGNMENT SOIL DATA SUMMARY**
**WARM SPRINGS ROAD RIGHT-OF-WAY**
**BMI COMMON AREAS (EASTSIDE)**
**CLARK COUNTY, NEVADA**
**(Page 5 of 5)**

| Parameter of Interest | Compound List | Units | Total Count | Detect Freq | Censored (Non-Detect) Data | | | | | | | Detected Data[a] | | | | | | | Warm Spring Rd ROW Max. | Outdoor Worker BCL | Count of Detects > BCL | LBCL (DAF = 1) | Count of Detects > LBCL (1) | LBCL (DAF = 20) | Count of Detects > LBCL (20) | Back-ground | Count of Detects > Back-ground |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Count | Min | Q1 | Median | Mean | Q3 | Max | Count | Min | Q1 | Median | Mean | Q3 | Max | | | | | | | | | |
| VOCs | Carbon tetrachloride | mg/kg | 5 | 0% | 5 | 0.00021 | 0.00021 | 0.00021 | 0.000214 | 0.00022 | 0.00022 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.582 | -- | 0.003 | -- | 0.06 | -- | -- | -- |
| | Chlorobenzene | mg/kg | 5 | 0% | 5 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0 | -- | -- | -- | -- | -- | -- | -- | 503 | -- | 0.07 | -- | 1.4 | -- | -- | -- |
| | Chlorobromomethane | mg/kg | 5 | 0% | 5 | 0.00023 | 0.00023 | 0.00023 | 0.000234 | 0.00024 | 0.00024 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Chloroethane | mg/kg | 5 | 0% | 5 | 0.00047 | 0.000475 | 0.00048 | 0.000482 | 0.00049 | 0.00049 | 0 | -- | -- | -- | -- | -- | -- | -- | 1100 | -- | -- | -- | -- | -- | -- | -- |
| | Chloroform | mg/kg | 5 | 0% | 5 | 0.0001 | 0.0001 | 0.0001 | 0.000104 | 0.00011 | 0.00011 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.577 | -- | 0.03 | -- | 0.6 | -- | -- | -- |
| | Chloromethane | mg/kg | 5 | 0% | 5 | 0.00028 | 0.00028 | 0.00028 | 0.00028 | 0.00028 | 0.00028 | 0 | -- | -- | -- | -- | -- | -- | -- | 2.98 | -- | -- | -- | -- | -- | -- | -- |
| | cis-1,2-Dichloroethene | mg/kg | 5 | 0% | 5 | 0.000056 | 0.000056 | 0.000056 | 0.0000564 | 0.000057 | 0.000057 | 0 | -- | -- | -- | -- | -- | -- | -- | 1200 | -- | 0.02 | -- | 0.4 | -- | -- | -- |
| | cis-1,3-Dichloropropene | mg/kg | 5 | 0% | 5 | 0.0001 | 0.0001 | 0.0001 | 0.000104 | 0.00011 | 0.00011 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Cymene (Isopropyltoluene) | mg/kg | 5 | 0% | 5 | 0.00013 | 0.00013 | 0.00013 | 0.00013 | 0.00013 | 0.00013 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Dibromochloromethane | mg/kg | 5 | 0% | 5 | 0.00012 | 0.00012 | 0.00012 | 0.000122 | 0.000125 | 0.00013 | 0 | -- | -- | -- | -- | -- | -- | -- | 2.3 | -- | 0.02 | -- | 0.4 | -- | -- | -- |
| | Dibromochloropropane | mg/kg | 5 | 0% | 5 | 0.00022 | 0.00022 | 0.00022 | 0.00022 | 0.00022 | 0.00022 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.0196 | -- | -- | -- | -- | -- | -- | -- |
| | Dibromomethane | mg/kg | 5 | 0% | 5 | 0.00017 | 0.00017 | 0.00017 | 0.000172 | 0.000175 | 0.00018 | 0 | -- | -- | -- | -- | -- | -- | -- | 11400 | -- | -- | -- | -- | -- | -- | -- |
| | Dichloromethane | mg/kg | 5 | 20.0% | 4 | 0.00071 | 0.00278 | 0.00925 | 0.00755 | 0.0106 | 0.011 | 1 | 0.0077 | -- | 0.0077 | 0.0077 | -- | 0.0077 | 0.011 | 22.3 | 0 | 0.001 | 1 | 0.02 | 0 | -- | 0 |
| | Dimethyldisulfide | mg/kg | 5 | 0% | 5 | 0.00018 | 0.00018 | 0.00018 | 0.000184 | 0.00019 | 0.00019 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Ethanol | mg/kg | 5 | 0% | 5 | 0.049 | 0.049 | 0.049 | 0.0494 | 0.05 | 0.05 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Ethylbenzene | mg/kg | 5 | 0% | 5 | 0.00006 | 0.00006 | 0.00006 | 0.0000606 | 0.0000615 | 0.000062 | 0 | -- | -- | -- | -- | -- | -- | 0.00027 | 7.37 | -- | 0.7 | -- | 14 | -- | -- | -- |
| | Freon-11 (Trichlorofluoromethane) | mg/kg | 5 | 0% | 5 | 0.00022 | 0.000225 | 0.00023 | 0.000228 | 0.00023 | 0.00023 | 0 | -- | -- | -- | -- | -- | -- | 0.00031 | 1420 | -- | -- | -- | -- | -- | -- | -- |
| | Freon-113 (1,1,2-Trifluoro-1,2,2-trichloroet | mg/kg | 5 | 0% | 5 | 0.00015 | 0.00015 | 0.00015 | 0.00015 | 0.00015 | 0.00015 | 0 | -- | -- | -- | -- | -- | -- | -- | 5550 | -- | -- | -- | -- | -- | -- | -- |
| | Freon-12 (Dichlorodifluoromethane) | mg/kg | 5 | 0% | 5 | 0.0003 | 0.0003 | 0.0003 | 0.000302 | 0.000305 | 0.00031 | 0 | -- | -- | -- | -- | -- | -- | -- | 340 | -- | -- | -- | -- | -- | -- | -- |
| | Heptane | mg/kg | 5 | 0% | 5 | 0.00017 | 0.00017 | 0.00017 | 0.00017 | 0.00017 | 0.00017 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Isopropylbenzene | mg/kg | 5 | 0% | 5 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0 | -- | -- | -- | -- | -- | -- | -- | 602 | -- | -- | -- | -- | -- | -- | -- |
| | m,p-Xylenes | mg/kg | 5 | 0% | 5 | 0.00017 | 0.00017 | 0.00017 | 0.000172 | 0.000175 | 0.00018 | 0 | -- | -- | -- | -- | -- | -- | 0.00055 | 214 | -- | 10 | -- | 200 | -- | -- | -- |
| | Methyl ethyl ketone | mg/kg | 5 | 0% | 5 | 0.00089 | 0.000895 | 0.0009 | 0.000904 | 0.000915 | 0.00092 | 0 | -- | -- | -- | -- | -- | -- | 0.0045 | 34100 | -- | -- | -- | -- | -- | -- | -- |
| | Methyl iodide | mg/kg | 5 | 0% | 5 | 0.00013 | 0.00013 | 0.00013 | 0.00013 | 0.00013 | 0.00013 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | MTBE (Methyl tert-butyl ether) | mg/kg | 5 | 0% | 5 | 0.000092 | 0.000092 | 0.000093 | 0.000093 | 0.000094 | 0.000094 | 0 | -- | -- | -- | -- | -- | -- | -- | 78.6 | -- | -- | -- | -- | -- | -- | -- |
| | n-Butyl benzene | mg/kg | 5 | 0% | 5 | 0.00019 | 0.00019 | 0.00019 | 0.00019 | 0.00019 | 0.00019 | 0 | -- | -- | -- | -- | -- | -- | -- | 237 | -- | -- | -- | -- | -- | -- | -- |
| | Nonanal | mg/kg | 5 | 0% | 5 | 0.00048 | 0.000485 | 0.00049 | 0.00049 | 0.000495 | 0.0005 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | n-Propylbenzene | mg/kg | 5 | 0% | 5 | 0.00011 | 0.00011 | 0.00011 | 0.000112 | 0.000115 | 0.00012 | 0 | -- | -- | -- | -- | -- | -- | -- | 237 | -- | -- | -- | -- | -- | -- | -- |
| | o-Xylene | mg/kg | 5 | 0% | 5 | 0.000078 | 0.0000785 | 0.000079 | 0.0000794 | 0.0000805 | 0.000081 | 0 | -- | -- | -- | -- | -- | -- | 0.00025 | 282 | -- | 9 | -- | 180 | -- | -- | -- |
| | sec-Butylbenzene | mg/kg | 5 | 0% | 5 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0 | -- | -- | -- | -- | -- | -- | -- | 223 | -- | -- | -- | -- | -- | -- | -- |
| | Styrene | mg/kg | 5 | 0% | 5 | 0.00018 | 0.00018 | 0.00018 | 0.00018 | 0.00018 | 0.00018 | 0 | -- | -- | -- | -- | -- | -- | -- | 1730 | -- | 0.2 | -- | 4 | -- | -- | -- |
| | tert-Butyl benzene | mg/kg | 5 | 0% | 5 | 0.0001 | 0.0001 | 0.0001 | 0.000104 | 0.00011 | 0.00011 | 0 | -- | -- | -- | -- | -- | -- | -- | 393 | -- | -- | -- | -- | -- | -- | -- |
| | Tetrachloroethene | mg/kg | 5 | 0% | 5 | 0.00009 | 0.00009 | 0.000091 | 0.000091 | 0.000092 | 0.000092 | 0 | -- | -- | -- | -- | -- | -- | -- | 1.74 | -- | 0.003 | -- | 0.06 | -- | -- | -- |
| | Toluene | mg/kg | 5 | 0% | 5 | 0.00033 | 0.00033 | 0.00034 | 0.000336 | 0.00034 | 0.00034 | 0 | -- | -- | -- | -- | -- | -- | 0.00048 | 521 | -- | 0.6 | -- | 12 | -- | -- | -- |
| | trans-1,2-Dichloroethene | mg/kg | 5 | 0% | 5 | 0.000093 | 0.000093 | 0.000094 | 0.0000942 | 0.0000955 | 0.000096 | 0 | -- | -- | -- | -- | -- | -- | -- | 204 | -- | 0.03 | -- | 0.6 | -- | -- | -- |
| | trans-1,3-Dichloropropene | mg/kg | 5 | 0% | 5 | 0.0001 | 0.0001 | 0.0001 | 0.000104 | 0.00011 | 0.00011 | 0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | Trichloroethene | mg/kg | 5 | 0% | 5 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0.00011 | 0 | -- | -- | -- | -- | -- | -- | -- | 3.39 | -- | 0.003 | -- | 0.06 | -- | -- | -- |
| | Vinyl acetate | mg/kg | 5 | 0% | 5 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0 | -- | -- | -- | -- | -- | -- | -- | 1550 | -- | 8 | -- | 160 | -- | -- | -- |
| | Vinyl chloride | mg/kg | 5 | 0% | 5 | 0.00012 | 0.00012 | 0.00012 | 0.00012 | 0.00012 | 0.00012 | 0 | -- | -- | -- | -- | -- | -- | -- | 0.863 | -- | 0.0007 | -- | 0.014 | -- | -- | -- |
| | Xylenes (total) | mg/kg | 5 | 0% | 5 | 0.00024 | 0.00024 | 0.00024 | 0.000242 | 0.000245 | 0.00025 | 0 | -- | -- | -- | -- | -- | -- | 0.00079 | 214 | -- | 10 | -- | 200 | -- | -- | -- |

**Notes:**

BCL = Basic Comparison Levels (BCLs) from NDEP 2010. Values used are outdoor worker soil BCLs.
LBCL = Leaching-based BCLs from NDEP 2010.
Max = Maximum
Min = Minimum
Q1 = 1st quartile (25th percentile)
Q3 = 3rd quartile (75th percentile)
Values for Q1, median, mean, and Q3 are rounded to 2 significant figures. BCLs are rounded to 3 significant figures.
a - Range of detections include estimated values of detect results between the detection limit and reporting limit. As such some minimum detected concentrations may be below the minimum reporting limit. In these cases the respective sample results are flagged in the dataset.
b - Asbestos results shown are for long protocol structures (>10um).
c - TCDD TEQ values are calculated from congener-specific concentrations. An individual TCDD TEQ value may include detect and non-detect congeners. Therefore, the number of detects and non-detects, and a frequency of detection for TCDD TEQ are not presented.
d - Because both non-detect and detected radionuclides have reported activity levels, calculated summary statistics (and exceedances of comparison levels) are presented as detected regardless of the lab detect flag. Lab detect flags are represented by the censored (non-detect) and detect count fields in the table.
-- = Not applicable or no value has been established.