Stantec Consulting Services Inc.
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April 30, 2020

Attention: Jesse Aviles
United States Environmental Protection Agency
1595 Wynkoop Street
Denver, CO 80202-1129

Subject: Technical Memorandum on Scoping the Revised Remedial Investigation for Vasquez Boulevard I-70, OU2, Revision 1

Dear Jesse,

This letter report has been prepared by Stantec Consulting Services Inc. (Stantec) on behalf of the City and County of Denver, Colorado (CCoD) to summarize the scope of additional work recommended at the Operable Unit 2 (OU2) portion of the Vasquez Boulevard and Interstate 70 (VB/I-70) Superfund site for completion of the Remedial Investigation (RI). It is intended to fulfill the requirement of the "Draft Technical Memorandum on Scoping the RI" deliverable as requested by the United States Environmental Protection Agency (EPA) in Table 1 of the notification letter *Additional Work Notification for Vasquez Boulevard I-70, Operable Unit 2 Remedial Investigation/Feasibility Study*, dated August 28, 2017. A draft version of this technical memorandum (TM) letter was submitted to the EPA on January 31, 2019 (Stantec, 2019). The CCoD received written comments on the January 2019 letter from the EPA on July 15, 2019 (EPA, 2019). Associated and subsequent correspondence and collaborative meetings between the EPA, CCoD, and Stantec regarding the approach for scoping the revised remedial investigation have resulted in the development of this revised TM letter.

An RI for OU2 was conducted in 2008 (referred to as the 2009 RI) in accordance with the *Administrative Settlement Agreement and Order on Consent for Remedial Investigation/Feasibility Study* (AOC), CERCLA-08-2008-0011, for OU2 between EPA and the CCoD, the "Respondent" (Engineering Management Support, Inc. [EMSI], 2009). Additionally, a Baseline Human Health Risk Assessment (HHRA) and a Screening Level Ecological Risk Assessment (SLERA) were conducted in 2009 (EPA, 2009a, 2009b). Several sampling events have occurred within and proximal to OU2 since the submittal of the 2009 RI, HHRA and SLERA. As a result, the EPA issued the aforementioned *Additional Work Notification* letter to CCoD to modify the Statement of Work (SOW) from the AOC to allow for revisions and updates to the RI and Feasibility Study (FS), and to include an update to the conceptual site model and risk assessments. This letter report provides recommendations for updating the RI, HHRA, and SLERA based on the additional sampling results and current industry standards. A draft FS will follow completion of the revised RI.

On behalf of the CCoD, Stantec conducted a review of the data collected since the 2009 RI in addition to data collected before and as part of the 2009 RI. A summary of these data, as well as an updated conceptual site model and risk assessment approach, are provided in the *Summary of Historical Site Characterization and Updated Conceptual Site Model* report, provided as **Attachment 2** to this letter. Based on this review, data gaps were identified and general recommendations for additional work were made to update the site characterization and meet the data objectives for the revised RI, as described in Section 7 of **Attachment 2**.

The general scope of the activities to update the RI, HHRA and SLERA is described herein. Following stakeholder concurrence on the scope of the updates, details on sampling procedures and methodology will be provided in a Remedial Investigation Work Plan, as described below. It should be noted that the scope of work described herein may be modified slightly based on the data quality objectives that will be developed as part of the RI Work Plan; however, any potential changes are not anticipated to be significant.

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Subject: Technical Memorandum on Scoping the Revised Remedial Investigation for Vasquez Boulevard I-70, OU2, Revision 1

SITE AND PROJECT BACKGROUND

The VB/I-70 Superfund site is located in the north-central portion of Denver, Colorado near the intersections of Interstate 70 and Brighton Boulevard and consists of three Operable Units (OUs). OU2 consists of the area of the VB/I-70 Superfund Site formerly occupied by the Omaha & Grant Smelter facility, which operated from 1882 to 1903. For a time, portions of OU2 were also operated as a municipal landfill; however, specific information on periods of operation or the nature of landfill activities are unknown. Between 1894 and 2012, portions of OU2 were deeded to CCoD, Union Pacific Railroad, the Pepsi Bottling Company, and various other corporate entities or individuals. The CCoD constructed the Denver Coliseum circa 1950 which encompasses part of the northeast portion of the former Omaha and Grant Smelter facility. The Globeville Landing Park within the southwest portion of OU2 along the South Platte River was constructed in the 1970s (EMSI, 2009) and has recently undergone reconstruction as a result of the Globeville Landing Outfall Project (EMSI, 2020). A depiction of OU2 site features and current site ownership are shown on **Figure 1**. Additional details on the site, such as topography and hydrogeology, are provided in Section 2 of **Attachment 2**.

Site investigations within and near OU2 were conducted from the early 1990's to recent investigations in 2017, 2018, and 2019 resulting in a fairly robust set of environmental data. However, the investigations varied in their scope, purpose, thoroughness, and documentation. Additionally, the investigations conducted after the 2009 RI had not been collectively reviewed and evaluated. As a result, a review of the available data was conducted to identify the usability, quality, and completeness of the data. Recent work conducted at the site (i.e., Globeville Landing Outfall Project), and its impact on site characterization, was also summarized and reviewed. The results of these reviews and the basis for the additional work recommended herein are provided in **Attachment 2**.

The next key steps in the CERCLA process for OU2 in accordance with the updated SOW (EPA, 2017) are as follows:

1. Develop an RI Work Plan, which will include the methods and screening values for the HHRA and SLERA
2. Complete site characterization
3. Complete a revised RI, HHRA, and SLERA
4. Complete a revised FS

To complete the RI, collection of select additional data is recommended below.

SUPPLEMENTAL REMEDIAL INVESTIGATION RECOMMENDATIONS

Most of the environmental data from both recent and historical investigations are considered usable for the revised RI, HHRA, and SLERA. However, there are some data gaps to be addressed for the revised RI, HHRA, and SLERA to adequately support a Record of Decision (ROD) and to inform decisions for redevelopment of OU2. The scope of work to fulfill the additional data needs is summarized below.

Groundwater Well Installation

Installation of nine additional groundwater monitoring wells are recommended to advance the characterization of the shallow alluvial aquifer at OU2, including:

- Three wells along the north side of Brighton Boulevard, just outside the OU2 boundary
- Four wells within the Coliseum parking lot
- One well in the Globeville Landing Park

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- One well along 38th Street to the south of the OU2 boundary

The approximate locations of each of the proposed wells along with existing wells are shown on **Figure 2**. These locations may shift slightly following field verification. The wells will be installed at adequate depths and screened intervals (e.g., across the water table) consistent with the groundwater levels within the shallow alluvial aquifer at the site and to account for slight seasonal fluctuations. The specific depths and screened intervals for each location will be described in the RI Work Plan. During well installation, the geology will be logged to characterize the subsurface conditions (e.g., geology, oxide staining, odors, potential presence of slag or landfill materials, etc.) in accordance with industry standards.

Groundwater Sampling

All nine new wells along with five existing wells (MW-02, CTL MW-04, CTL MW-05, PZ-1, PZ-3) for a total of 14 wells are recommended for sampling for metals, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) (including polycyclic aromatic hydrocarbons [PAHs]). The locations of the wells that are recommended for sampling are highlighted on **Figure 3**. The analyses will be conducted in accordance with EPA's Superfund Contract Laboratory Program (CLP). Sample locations and analysis methods are provided below in Exhibit 1.

Exhibit 1: Groundwater Sampling Summary

Sampling Location	CLP Target Analyte(s)	Analysis Method*
MW-02, CTL MW-04, CTL MW-05, PZ-1, PZ-3, and all nine new wells	Inorganics List	EPA methods SW-846 6010D and 6020B for metals, and SW-846 7470A for mercury
	Organics List - Volatiles	EPA method SW-846 8260C
	Organics List – Semi-Volatiles	EPA method SW-846 8270D

*Additional low-level analytical methods may need to be considered to achieve groundwater screening criteria. This will be considered and evaluated as part of the forthcoming RI Work Plan.

Groundwater sampling using standard low-flow sampling methodology is recommended for these 14 wells on a quarterly basis for the period of one year. Groundwater level gauging measurements are also recommended during the quarterly groundwater sampling events and will include all existing site wells. The groundwater sampling results will be evaluated for vapor intrusion risk in accordance with the *Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air* (EPA, 2015).

Soil and Soil Vapor Sampling

Collection of soil samples from the nine borings advanced for the new well locations is recommended. In addition, soil sampling is recommended at two additional borings. Generally, depth discrete samples will be collected from the surface (0 to 2 feet below ground surface [bgs]), subsurface (approximately 5 feet bgs), and deep (just above the water table) for a total of three samples from each boring. For borings outside the OU2 boundary, the numbers of samples may be adjusted. Soils will be analyzed for the metals, VOCs, and SVOCs (including PAHs) in accordance with EPA's Superfund CLP. The recommended soil sample locations are shown on **Figure 3**. The anticipated sampling and analysis methods for soil are provided below in Exhibit 2.

Exhibit 2: Soil Sampling Summary		
Sampling Location	**CLP Target Analyte(s)**	**Analysis Method***
Nine new well locations and two additional locations	Inorganics List	EPA methods SW-846 6010D for metals and SW-846 7471B for mercury
	Organics List - Volatiles	EPA method SW-846 8260C
	Organics List – Semi-Volatiles	EPA method SW-846 8270D

*Additional low-level analytical methods may need to be considered to achieve groundwater screening criteria. This will be considered and evaluated as part of the forthcoming RI Work Plan.

Soil vapor screening is recommended at the soil and groundwater sampling locations in and proximal to the Coliseum parking lot as follows:

- Four sample locations within the Coliseum parking lot
- One sample near the center of the Coliseum Barn
- One sample north of the Coliseum parking lot beneath I-70

The recommended soil vapor sample locations are shown on **Figure 3**. Field screening of soil vapor is recommended for landfill gas (i.e., methane) and VOCs to evaluate the potential sources of vapor intrusion at the site (e.g., landfill materials or impacted groundwater). The soil vapor field screening along with the groundwater data from this data collection will inform the need for a detailed vapor intrusion investigation.

Sediment and Surface Water Sampling

Sediment and surface water sampling are recommended at three locations along the South Platte River to the west of OU2 as shown on **Figure 3**. Sediment and surface water samples are recommended for analysis of the metals and VOCs. A single sediment sampling event is recommended. Collection of surface water samples is recommended quarterly for the period of one year and should be coordinated with the quarterly groundwater sampling. Sediment and surface water samples will be analyzed in accordance with EPA's Superfund as detailed in Exhibit 3 below.

Exhibit 3: Sediment and Surface Water Sampling Summary		
Sampling Location	**CLP Target Analyte(s)**	**Analysis Method**
Three locations along the South Platte River	Inorganics List	EPA methods SW-846 6010D and 6020B for metals, and SW-846 7470A for mercury
	Organics List - Volatiles	EPA method SW-846 8260C

*Additional low-level analytical methods may need to be considered to achieve groundwater screening criteria. This will be considered and evaluated as part of the forthcoming RI Work Plan.

HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT RECOMMENDATIONS

Risk assessment is an evolving science and important changes in assumptions, models, and exposure pathways of potential concern have occurred since the previous HHRA and SLERA were completed for OU2. Consistent with EPA's request, the Conceptual Site Models (CSMs) for land use, receptors, and pathways of exposure will be updated to reflect current and anticipated development patterns in this area of Denver. Relevant sampling results from historical investigations will be integrated with the new data proposed in this report to identify chemicals and environmental media of potential concern not previously considered (i.e. VOCs in the subsurface and the vapor intrusion pathway). The HHRA and SLERA will rely on current EPA

guidance documents, published screening level media concentrations for humans and ecological receptors, current toxicity factors and exposure variable values, and the most current versions of EPA's blood lead models.

Additionally, to facilitate communication of the potential site risks to a non-technical audience (e.g., community), a CSM pictorial has been developed for OU2 and is provided as **Attachment 3**.

URANIUM AND THORIUM BACKGROUND REVIEW

In accordance with EPA's request in the July 15, 2019 letter, a literature review was conducted to evaluate if relevant data on background concentrations of uranium and thorium exist for use in data comparison for the OU2 site. The information was limited; a summary is provided as **Attachment 4**.

REPORTING

Field Work Reporting

The methods and procedures for conducting the additional work recommended above will be detailed in a RI Work Plan, including those specified for the HHRA and SLERA. The RI Work Plan will describe the data quality objectives and include a sampling and analysis plan (SAP), a quality assurance project plan (QAPP), and a health and safety plan (HASP). The QAPP will conform to the Uniformed Federal Policy, collected data will be in a Scribe-compatible data deliverable, laboratory data deliverables will be received in a Staged Electronic Data Deliverable (SEED), and GIS data will follow the EPA guideline. The RI Work Plan will be submitted in accordance with the proposed schedule outlined below.

Once field work has begun, data reports will be submitted for each quarterly event to provide a brief summary of the work conducted and the tabulated results. Data evaluation and interpretation will not be included in the quarterly data reports, but rather presented collectively with the rest of the site data in the RI Report.

Remedial Investigation Reporting

Following completion of the recommended field work, the RI will be revised by compiling a new RI Report that incorporates data from relevant investigations since the previous 2009 RI and the data from the additional work recommended herein. The RI will also include the results of the HHRA and SLERA, which will be revised as appropriate based on the additional sampling results. The RI Report will contain an executive summary in English and Spanish. Also, electronic documents will be authored following accessibility guidelines if the GSA Government-wide IT Accessibility Program (www.section508.gov).

PROPOSED SCHEDULE

The proposed schedule for key deliverables and field activities to fulfill the needs of the RI is provided in Exhibit 3 below. This schedule assumes no expedited cleanup activities will occur at OU2. As previously discussed with EPA, CCoD is evaluating potentially removing historical urban fill and contaminated soils from the CCD-owned portions OU2 to facilitate redevelopment of the National Western Center (NWC). Therefore, the proposed schedule could be modified based on redevelopment of the NWC.

Subject: **Technical Memorandum on Scoping the Revised Remedial Investigation for Vasquez Boulevard I-70, OU2, Revision 1**

Exhibit 3: Draft Proposed Schedule	
Task or Deliverable	**Timeline**
EPA Response and Comment on this Draft Revised Technical Memorandum	45 days after receipt of this Technical Memorandum
Submittal of Final Revised Technical Memorandum including Spanish Translations	95 days after receipt of EPA Response and Comment on this Draft Revision 1 Technical Memorandum
Submittal of *Draft RI Work Plan* to EPA	90 days after receipt of EPA approval of the Final Technical Memorandum Scoping the Revised RI
EPA Comments to CCoD on *Draft RI Work Plan*	45 days after Submittal of the Draft RI Work Plan (September 2020)
Submittal of *Final RI Work Plan* to EPA	60 days after receipt of EPA comments on the Draft RI Work Plan
Approval of *Final RI Work Plan*	45 days after submission
Field Activities	Well installations and groundwater, surface water, soil, and sediment sampling, soil vapor screening
Submittal of *Draft Remedial Investigation Report for OU2*	90 days after completion of field activities
EPA Comments to CCoD on Draft RI Report for OU2	45 days after submittal of the RI report
Submittal of *Final Remedial Investigation Report for OU2*	60 days after receipt of EPA comments on the Draft RI report

Please do not hesitate to contact us if you have questions regarding the recommendations contained herein.

Regards,

Stantec Consulting Services Inc.

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Attachments:

Attachment 1: Figures

- Figure 1: Site map
- Figure 2: Proposed Well Installations
- Figure 3: Proposed Sampling Locations

Attachment 2: Summary of Historical Site Characterization and Updated Conceptual Site Model

Attachment 3: Conceptual Site Model Pictorial

Attachment 4: Uranium and Thorium Background Review

References:

EMSI, 2009. Remedial Investigation Vasquez Boulevard/Interstate 70 Superfund Site Operable Unit 2 – On-Facility Soils, Former Omaha and Grant Smelter. December 16

EMSI, 2020. Construction Completion Report Globeville Landing Outfall Project Removal Action, Vasquez Boulevard/Interstate 70 Site, Operable Unit 2. January 15.

EPA, 2009a. Final Screening-level Ecological Risk Assessment (SLERA) for the Vasquez Boulevard and Interstate 70 Site, Operable Unit 2, Denver, Colorado. August.

EPA, 2009b. Final Baseline Human Health Risk Assessment (HHRA) for the Vasquez Boulevard and Interstate 70 Site, Operable Unit 2, Denver, Colorado. August.

EPA, 2015. OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air. June.

EPA, 2017. Letter from Dania Zinner of the EPA to Ms. Jennifer Luthi of the CCoD: Additional Work Notification for Vasquez Boulevard I-70, Operable Unit 2 Remedial Investigation/Feasibility Study. August 28

EPA, 2019. Letter from Jesse Aviles of the EPA to Ms. Kara Edewaard of the CCoD: Vasquez Boulevard and I-70 Superfund site Review of the technical memorandum scoping the revised remedial investigation for OU2 and notes from the March 11, 2019 meeting. July 15.

Stantec, 2019. Technical Memorandum on Scoping the Revised Remedial Investigation for Vasquez Boulevard I-70, Operable Unit 2, Denver, Colorado. January.

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ATTACHMENT 1
Figures

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DENVER
THE MILE HIGH CITY

Operable Unit 2 (OU2)

Land Ownership

- Parcel Boundary
- Bottling Group LLC Brighton
- Annex LLC
- City & County of Denver
- Forney Museum
- HDP One Brighton LLC
- Union Pacific RR Co
- Westfield-Amen LLLP

"123" - Parcel Number

N

0 250 500 Feet

1:3,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base Image: ESRI World Imagery Service - DigitalGlobe (6/19/2017)

Project Location
T3N, R68W, S23
Denver County, CO

Review
Prepared by CBB on 2018-05-31
Technical Review by TL on 2018-06-01

Client/Project
City and County of Denver
VB/I-70 Remedial Investigation

Figure No.
1

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Title
OU2 Site Map

Figure 1

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Proposed Wells

Existing Wells and Piezometers

- ASARCO
- CTL Wells
- Cooling Water Wells
- SWDI Piezometers
- 2018 Piezometers
- Operable Unit 2 (OU2)

N

0 250 500 Feet

1:3,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base Image: ESRI World Imagery Service - DigitalGlobe (6/19/2017)

Project Location	Review
T3N, R68W, S23 Denver County, CO	Prepared by CBB on 2019-01-08 Technical Review by NC on 2019-01-09

Client/Project

City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.
2

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Title

Proposed Well Installation Locations

Figure 2

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- Groundwater
- Soil
- Surface Water and Sediment
- Soil Vapor
- Operable Unit 2 (OU2)

N

0 250 500 Feet
1:3,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base Image: ESRI World Imagery Service - DigitalGlobe (6/19/2017)

Project Location
T3N, R68W, S23
Denver County, CO

Review
Prepared by CBB on 2019-01-08
Technical Review by NC on 2019-01-09

Client/Project
City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.
3

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Title
Proposed Sample Locations

Figure 3

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ATTACHMENT 2
Summary of Historical Site Characterization and Updated Conceptual Site Model

Stantec

Summary of Historical Site Characterization and Updated Conceptual Site Model

April 30, 2020

Prepared for:

City and County of Denver
Vasquez Boulevard and Interstate 70
Operable Unit 2
Denver, Colorado

Prepared by:

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Sign-off Sheet

This document entitled Summary of Historical Site Characterization and Updated Conceptual Site Model was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of City and County of Denver (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by

Natalie Clopper

Reviewed and Approved by

A. Robert Thompson

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Abbreviations

µg/dL	micrograms per deciliter
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
ACM	asbestos containing material
AOC	Administrative Settlement Agreement and Order on Consent
ASARCO	American Smelting and Refining Company
bgs	below ground surface
CCoD	City and County of Denver
CDC	Centers for Disease Control and Prevention
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CH_4	methane
COPC	constituent of potential concern
CSM	Conceptual Site Model
CTE	Central Tendency Exposure
DCE	cis-1,2-dichloroethene
EMSI	Engineering Management Support, Inc
EPA	Environmental Protection Agency
EU	Exposure Unit
GLO	Globeville Landing Outfall
GSL	Regulation Number 41 groundwater screening levels
HHRA	Human Health Risk Assessment
ID	identification
LEL	lower explosive limit
LNAPL	light non-aqueous phase liquid
mg/kg	milligrams per kilogram
msl	mean sea level
NAAQS	National Ambient Air Quality Standards
ND	not detected
OU	Operable Unit
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PID	photoionization detector
PM	particulate matter
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RME	Reasonable Maximum Exposure
ROD	Record of Decision
RSL	EPA Regional Screening Levels
SLERA	Screening-Level Ecological Risk Assessment
SVOC	semi-volatile organic compound

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Abbreviations (Continued)

TCE	trichloroethene
TEPH	total extractable petroleum hydrocarbons
THQ	toxicity hazard quotient
TPH	total petroleum hydrocarbon
TWA	time weighted average
UST	underground storage tank
VB/I-70	Vasquez Boulevard and Interstate 70
VOC	volatile organic compound

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1.0 INTRODUCTION

This report provides a summary and evaluation of historical environmental and geotechnical investigations that have been performed within and near Operable Unit 2 (OU2) within the Vasquez Boulevard and Interstate 70 (VB/I-70) Superfund site. The VB/I-70 Superfund site is located in the north-central portion of Denver, Colorado near the intersections of Interstate 70 and Brighton Boulevard and consists of three Operable Units (OUs) (Figure 1). A Remedial Investigation (RI) of OU2 was conducted in 2008, as described in the report *Remedial Investigation, Vasquez Boulevard/Interstate 70 Superfund Site Operable Unit 2 – On-Facility Soils Former Omaha and Grant Smelter* (Engineering Management Support, Inc. [EMSI], 2009), referred to as the 2009 Remedial Investigation (RI). The 2009 RI was conducted in accordance with the *Administrative Settlement Agreement and Order on Consent for Remedial Investigation/Feasibility Study* (AOC), CERCLA-08-2008-0011, for OU2 between the United States Environmental Protection Agency (EPA) and the City and County of Denver, Colorado (CCoD, the "Respondent"). In a letter dated August 28, 2017, the EPA notified CCoD of additional work they consider necessary to update the RI and accomplish the objectives of the RI/FS and requested that CCoD compile and incorporate the results of additional sampling that has been conducted at OU2 since 2008.

The objective of this report is to perform an evaluation of the existing data for OU2 to identify potential data gaps that will be used as a basis for developing a scope of work for an updated RI. After completion of this report, a technical memorandum will be prepared with a proposed scope of work for a revised RI for OU2.

The report is organized as follows:

- Section 1.0 Introduction – presents the report purpose and organization
- Section 2.0 Physical Setting – provides a brief overview of the land use, property ownership and physical characteristics of OU2
- Section 3.0 Summary of Existing Data – provides a summary of the investigations conducted to date within OU2
- Section 4.0 Quality and Usability of Existing Data – provides a summary of the quality and usability of the data relevant to OU2
- Section 5.0 Summary of Nature and Extent – provides a summary of the nature and extent of constituents of potential concerns (COPCs) at OU2 based on the existing data and historical knowledge
- Section 6.0 Conceptual Site Model – provides a summary of COPCs, likely sources of release of COPCs, release or transport mechanisms, secondary sources, pathways of exposure, and potential receptors for OU2
- Section 7.0 Potential Data Gaps – provides a summary of the conclusions and potential data gaps relevant to the RI based on review of the available data
- Section 8.0 References Cited – references cited in this document

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2.0 PHYSICAL SETTING

2.1 LAND USE AND PROPERTY OWNERSHIP

OU2 consists of the area of the VB/I-70 Superfund Site formerly occupied by the Omaha & Grant Smelter facility. Figure 2 shows the extent of OU2 as defined by the EPA. The Omaha and Grant Smelters operated for approximately 21 years from 1882 until it closed in 1903. The smelter infrastructure was subsequently demolished, and slag was removed. A previous review of historic aerial photographs indicated that all visible slag was removed by 1949 (EMSI, 2009); however, some residual slag may be buried under the Denver Coliseum (Coliseum) parking lot. Between 1894 and 2012, portions of OU2 were deeded to CCoD, Union Pacific Railroad, the Pepsi Bottling Company, and various other corporate entities or individuals. Portions of OU2 were operated as a municipal landfill; however, specific information on periods of operation or the nature of landfill activities are unknown. The CCoD constructed the Coliseum circa 1950 which encompasses part of the northeast portion of the former Omaha and Grant Smelter facility. The Globeville Landing Park was constructed in the 1970s which encompasses part of the southwest portion of OU2 along the South Platte River (EMSI, 2009). A depiction of current site ownership is shown on Figure 3.

2.2 TOPOGRAPHY AND GEOGRAPHY

OU2 is bounded by Interstate 70 to the north, Brighton Boulevard to the southeast, portions of the Pepsi Bottling Facility and the Globeville Landing Park to the south, and the South Platte River to the west, which flows to the northeast (Figure 2).

The topography at OU2 is relatively flat, sloping slightly to the northwest towards the South Platte River. Elevations vary from approximately 5,200 feet above mean sea level (msl) along the northern boundary of OU2 to approximately 5,140 feet above msl within the flood plain of the South Platte River. A steep embankment is present east of McFarland Drive/Arkins Ct at the southern corner of the parking lot. A stormwater drainage feature, the Globeville Landing Open Channel and Outfall (GLO project), was constructed in the Coliseum parking lot and the Globeville Landing Park in 2017 and 2018. Stormwater is diverted through two subsurface conduits into the open channel. One conduit was constructed through the Pepsi property under the Coliseum parking lot and is connected to the east end of the open channel and the other conduit is routed under the Pepsi property and connects to the west end of the open channel. The stormwater ultimately discharges into the South Platte River. This work is summarized in the *Construction Completion Report, Globeville Landing Outfall Project Removal Action* report (EMSI, 2020). Current ground cover across OU2 consists of asphalt pavement, concrete flatwork, exposed soil, and buildings; however, recent construction efforts have been conducted in the Globeville Landing Park to revegetate the exposed soils with grass, trees, and shrubs. The ground surface of McFarland Drive and the Coliseum parking lot is significantly undulating in the form of one to two-foot deep depressions. It is assumed that the undulating surface is due to differential settlement of the underlying fill and/or decomposition of material within the former landfill.

2.3 GEOLOGY AND HYDROGEOLOGY

OU2 is within the Colorado Piedmont section of the Great Plains east of the Front Range of the southern Rocky Mountains. The subsurface of this region consists of sedimentary rocks that form an asymmetric, north-south trending

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structural basin known as the Denver Basin. The Denver Basin aquifer bedrock sequence is approximately 2,000 feet thick and includes the Denver, Arapahoe, Laramie, and Fox Hills formations. OU2 is located above the Denver Formation within surficial, alluvial deposits overlying the bedrock (EMSI, 2009; URS, 2004).

The shallow alluvial aquifer is unconfined and generally composed of sand and gravel with varying amounts of clay and silt (EMSI, 2009). The depth to groundwater in the alluvial deposits ranges from 10 to 20 feet below ground surface (bgs) with elevations ranging between 5,161 feet above msl to 5,150 feet above msl. The recent construction of the open stormwater drainage channel through the Globeville Landing Park and Coliseum parking lot included the addition of sheet piling on the upgradient (southeast) side of the channel to reduce groundwater levels beneath the channel to maintain the integrity of the channel liner (EMSI, 2018). This has resulted in a slight rise in groundwater levels (one to two feet) immediately upgradient of the channel. In general, groundwater flows towards the South Platte with a subtle divide where groundwater flows more to the west through the Globeville Landing Park in the southern portion of OU2, and to the north through the Coliseum Parking Lot in the northern portion of OU2. An additional discussion of water level measurements and groundwater flow is provided in Section 5.3.1. Information for the groundwater monitoring wells and piezometers within and near OU2 is provided on Table 2-1.

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3.0 SUMMARY OF EXISTING DATA

This section provides a summary of the existing available environmental data associated with OU2. The summary is organized into three categories as it relates to the previous 2009 RI: pre-RI, RI, and post-RI. For each investigation discussed, a brief overview of the findings is provided in the context of COPC concentrations relative to current screening criteria standards (referred to collectively as screening levels), with a more detailed evaluation of the data provided in Section 5. The screening levels used are presented in Table 3-1 and include EPA Regional Screening Levels (RSL) for a toxicity hazard quotient (THQ) of 0.1 for soils (residential and industrial), and Regulation Number 41 values (5 CCR 1002-41) for groundwater screening levels (GSLs) (EPA, 2018; CDPHE, 2016). In addition, arsenic soil concentrations are compared against the Region 8 EPA average background concentration of all land uses (11 milligrams per kilogram [mg/kg]) (Colorado Department of Public Health and Environment [CDPHE], 2014). For the GSLs for inorganics, the values for Domestic Water Supply were used, and where none were available, the Agricultural Standards were used. In addition, when a range for the water quality standards was provided, the maximum contaminant level was used rather than the health-based standard.

3.1 PRE-REMEDIAL INVESTIGATION (1991 – 2008)

The existing available data from investigations conducted prior to the 2009 RI include data from 1991 up to the RI investigation in 2008. Investigations were conducted prior to 1991 as noted in the *Preliminary Assessment Omaha & Grant Smelter Site* report (Buckingham, 1992). However, these reports and the associated data were not available for review and the available pre-RI data are considered sufficient for this review. This section presents a summary of the pre-2009 RI site investigation activities that were performed within OU2, as follows:

- Site Investigations for I-70 Modifications (Walsh Environmental Scientists and Engineers, Inc. [Walsh], 1997)
- 2001 Denver Coliseum Cooling Water Wells Sampling Event (Severn Trent Services, 2001)
- 2001 and 2002 Pepsi Property Investigations (Transportation & Industrial Services, Inc., 2001a, 2001b, 2001c, and 2002)
- 2002 Globeville Landing Park Soil Sampling (CH2MHill, 2002)
- 2003 Denver Coliseum Barn Soil Excavations (CH2MHill, 2004)
- 2003 and 2004 Phase II Investigation for Targeted Brownfields Assessment (URS, 2004)
- 2004 and 2005 American Smelting and Refining Company (ASARCO) Soil and Groundwater Phase I Investigations (No official report for this investigation was developed; however, the data from the investigation is available in tabulated form)
- 2005 and 2006 Sediment, Surface Water, and Groundwater Investigations (Brown and Caldwell, 2005a and 2005b; CCoD, 2006a and 2006b)
- 2007 Denver Coliseum Cooling Water Wells Sampling

A summary of each of these investigations is provided in the following sections. The sample locations from these investigations that are relevant to OU2 are displayed on Figure 4.

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3.1.1 Site Investigations for I-70 Modifications

The purpose of this study was to investigate environmental concerns as they related to the Phase I construction activities planned along I-70 from Washington Street to Humboldt Street (Figure 1) (Walsh, 1997). This included identification of potential environmental liabilities prior to property acquisition, and identification of areas where special handling and disposal may be required during excavations associated with the planned construction. Eight soil boreholes were drilled from 44th Street near the east end of the Denver Coliseum to the South Platte River (DC-1 through DC-8) advanced to the anticipated depth of excavation, or a maximum depth of 19.7 feet. Soil samples were collected from these boreholes and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and Resource Conservation and Recovery Act (RCRA) metals. Three of these boreholes, DC-2, DC-3, and DC-4, were completed as temporary monitoring wells, which were sampled for VOCs, SVOCs, metals, total extractable petroleum hydrocarbons (TEPH), and general parameters.

Additionally, eight shallow soil boreholes were advanced to a total depth of 6.5 feet and sampled (WSSB-1 through WSSB08), but these are along North Washington Street outside of the boundaries of OU2. Since these locations are outside OU2, they are not considered representative of OU2 and are not depicted on Figure 4. This report also included a summary of water level and chemical data from boreholes installed previously by Walsh in 1991 (TH-1 through TH-18). However, only boreholes TH-1 through TH-5 and TH-8 and TH-9 are associated with OU2. Borehole locations TH-6, TH-7, and TH-10 through TH-18 collected as part of this investigation fall within OU1 and are therefore not displayed on Figure 4. The original reports for these data are not available at this time, so the full set of data associated with these borings and depths at which samples were collected are unknown (Walsh, 1991a and 1991b); however, metal soil and groundwater concentration data are available as an appendix to the 1997 report (Walsh, 1997). In addition, a summary of the VOC groundwater data associated with these borings in the 1997 report mentions that tetrachloroethene (PCE) was detected at TH-9 at a concentration of six micrograms per liter (µg/L), which is slightly above the screening level of five µg/L. No other information regarding the VOC data associated with these borings is available.

Results from the I-70 modification investigations showed detections of select metals at concentrations above residential and industrial RSLs in soil. Concentrations of arsenic in soils from DC-2, DC-5, TH-2 and TH-3 were also above background. Additionally, results from the DC locations showed sporadic detections of petroleum hydrocarbons in soil and groundwater, and some sporadic low detections of SVOCs in soil and groundwater. These data are evaluated in more detail in Section 5 of this report.

3.1.2 2000 and 2001 Denver Coliseum Cooling Water Wells Sampling Event

In May of both 2000 and 2001 the CCoD collected water samples from the four wells that formerly provided cooling water for the Coliseum, QUAD-1 through QUAD-4. These wells are located at the four corners of the Coliseum. Water samples were analyzed for total (unfiltered) and dissolved (filtered) metal constituents (Severn Trent Services, 2001). Sample results showed low level detections of metals at concentrations below their respective GSLs.

3.1.3 2001 and 2002 Pepsi Property Investigations

Transportation and Industrial Service, Inc. performed several investigations for the Pepsi Bottling Group in the fall of 2001 and spring 2002, several of which included sampling areas within the OU2 boundary (Transportation & Industrial Services, 2001a, 2001b, 2001c, and 2002). The investigations of Pepsi Areas 2, 3, 4, 6, and 7 plus a utility trench

investigation were conducted within the OU2 boundary. Pepsi Areas 1 and 5 are outside of OU2 and are therefore not discussed. The relevant soil sampling included collection of soils from 20 locations from Area 3 (A3-1 through A3-20) from the surface to two feet bgs, 16 locations from Area 4 (A4-1 through A4-16) from the surface to three feet bgs, six locations from Area 6 (A6-1 through A6-6) from the surface to 20 feet bgs, seven locations from Area 7 (A7-1 through A7-10) from the surface to six feet bgs, and 14 utility trench samples (UT-1 through UT-14) from the surface to 13 feet bgs. Soil samples were analyzed for arsenic and lead.

Sample results showed detections of arsenic at concentrations above the residential and industrial RSLs, as well as above background. Lead concentrations in soil were present at concentrations above the residential screening level and in a few cases above the industrial screening level. The Pepsi area reports have some information regarding soils removal suggesting that most of these soils are no longer in place; however, the specific locations and details of the soil removal work is unknown at this time. As such, the concentrations from these samples may not accurately reflect the current conditions at the Pepsi property within OU2.

3.1.4 2002 Globeville Landing Park Soil Sampling

The purpose of the 2002 Globeville Landing Park soil sampling event conducted by CH2MHill was to evaluate the potential risks from smelter operation residuals to park workers during the performance of routine landscaping tasks (CH2MHill, 2002). Shallow subsurface soil samples were collected from 32 locations (SB-01 to SB-32) at depth intervals surface to two feet bgs, and two to three feet bgs at all locations, and from four to six feet bgs at four samples. The samples were analyzed for arsenic and lead and the study concluded that concentrations were not of concern and pose no unacceptable risks. These results were reviewed by the EPA, where they subsequently provided a No Further Action Letter for surface soils (i.e., surface to two feet bgs) at the Globeville Landing Park in April 2003 (EPA, 2003).

3.1.5 2003 Denver Coliseum Barn Soils Excavations

During a 2003 structural reinforcement for the Denver Coliseum Barn facility (Coliseum Barn) located on the west side of the Denver Coliseum, dark colored soil with evidence of slag and brick remnants from the former Omaha and Grant Smelter facility were uncovered just beneath the dirt floor. Eight excavations that occurred as part of the structural reinforcement work encountered this darker soil/slag material around four to five feet bgs (shown as 1 through 8 on Figure 4). Six composite subsurface samples from the eight excavations were collected (VB10220301 from 3 and 4, VB10220303 from 1 and 2, VB10220304 from 1 through 4, VB10220305 from 5 and 6, VB10220306 from 7 and 8, VB10220307 from 5 through 8) along with one grab sample of what appeared to be the most impacted (darker) material from the base of Excavation 3 (VB10220302). Additionally, a five-point composite sample of soil was collected from a stockpile from unknown origin to the west of the Denver Coliseum (may have originated from Coliseum operations). The samples were analyzed for arsenic, cadmium, chromium, lead, mercury, selenium, silver, and zinc. The arsenic concentrations were above the residential and industrial RSLs in the samples from the Coliseum Barn excavations, and also exceeded arsenic background in four of the six Coliseum Barn excavation samples. The stockpile sample had arsenic concentrations above the residential screening level, but below the industrial screening level. Lead was detected above its residential RSL in the grab sample from Excavation 3 at an estimated concentration, but all other detections of lead were below RSLs. No other metals were detected above the RSLs.

3.1.6 2003 and 2004 Phase II Investigation for Targeted Brownfields Assessment

The purpose of the 2003 and 2004 Phase II Investigation for Targeted Brownfields Assessment conducted by URS (URS, 2004) was to evaluate the environmental conditions along Brighton Boulevard located on the eastern edge of OU2 to help with the redevelopment and revitalization of the Brighton Boulevard corridor. Field activities were conducted in 2003 and 2004 and consisted of collection of soil samples from 75 locations, collection of 46 groundwater samples from open boreholes, and water level measurements. Soil and groundwater samples were analyzed for VOCs, SVOCs, TEPH, and metals. The locations sampled as part of this investigation that are within or proximal to the OU2 boundary are BB-BB-26 through BB-BB-37, BB-38-22, BB-38-25, and BB-CT-38 through BB-CT-40. Results for these locations showed detections of metals (including arsenic and lead) in soil above residential and industrial RSLs. Arsenic soil concentrations were also above background at eight of these locations. The groundwater metals data is limited to total metals, and therefore, not suitable for comparison to the GSLs which are intended for dissolved concentrations. VOCs were not detected in soil above residential or industrial RSLs. Groundwater from locations BB-BB-27 through BB-BB-34 and BB-CT-38 through BB-CT-40 were sampled for VOCs. VOCs were not detected above GSLs at locations along Brighton Boulevard (i.e., BB-BB's) except for BB-BB-26 located on the southeast corner of Brighton Boulevard and 26th Ave. This location contained detections of methylene chloride, cis-1,2-dichloroethene (DCE), chloroform, bromodichloromethane, trichloroethene (TCE), and PCE at concentrations above their GSLs, with TCE and PCE at relatively high concentrations (700 and 4800 µg/L, respectively). Results for BB-CT-38 and BB-CT-39 to the north of the site showed elevated concentrations of PCE. TCE was also present at a concentration slightly above its GSL at BB-CT-38. SVOCs were detected above screening levels in both soil and groundwater at some of these locations. Results for the two locations to the southwest of the site showed detections of bromodichloromethane, TCE, and PCE above GSLs at BB-38-22, and detections of TCE above its GSL at BB-38-25. TEPH was detected in soil, but not detected in groundwater. Although there were some detections of constituents above screening levels in groundwater, the samples were collected from uncased open boreholes; therefore, the values for the various constituents are judged not to be reflective of in-situ conditions.

3.1.7 2004 and 2005 Soil and Groundwater Phase I Investigations

EnviroGroup under contract to ASARCO performed soil sampling for metals during 2004 and 2005 as part of an initiative to complete an RI and Feasibility Study for OU2. Sampling activities included:

- Composite surface soils from south and east areas of the Denver Coliseum parking lot (4600 Humboldt St.) and at various locations along Brighton Boulevard (3801, 4201, 4301, and 4375 Brighton Boulevard)
- Soil samples from various depths at seven soil boreholes dispersed throughout OU2 (BH-01 through BH-07)
- Installation of five groundwater monitoring wells within and near OU2 (MW-01, MW-02, MW-03, MW-05, and MW-06), and collection of surface and subsurface soils from the boreholes drilled for the monitoring wells

Figure 4 displays the composite surface soil sample locations as green hatched areas, but additional detail on the sample locations relative to the sample identifiers is provided in Appendix A which includes the historic figure developed as part of these investigations. This sampling was not formally documented as part of a report due to ASARCO's bankruptcy, and as a result the findings of this investigation were never summarized. A review of the data indicates the areal composite soil samples contained arsenic concentrations above RSLs and background. Areal composites from 4201 also contained lead concentrations above residential and industrial RSLs. Soil samples from the seven boreholes contained concentrations of arsenic, cadmium, and lead at concentrations above the residential and industrial RSLs.

Soil samples collected from the monitoring well borings contained concentrations of arsenic and lead above residential and industrial RSLs. Arsenic concentrations were also above background in these samples.

3.1.8 2005 and 2006 Sediment, Surface Water, and Groundwater Investigations

Brown and Caldwell performed sampling of surface water and sediment for the CCoD to evaluate if the South Platte River had any potential impacts from OU2 (CCoD, 2006a and 2006b). The sediment and surface water samples were collected along the South Platte River from a location considered to be upstream of OU2 (N43) and a location considered to be downstream of OU2 (N46). Samples were collected on four occasions between November 2005 and July 2006 and were analyzed for metal constituents. The investigation report concluded there was no significant difference in metal concentrations between the upstream and downstream sediment and surface water samples. In addition, the five existing wells installed as part of the investigation conducted by EnviroGroup (MW-01, -02, -03, -05, and -06) were sampled for metals quarterly from November 2005 through July 2006 (Brown and Caldwell, 2005b, 2006a, and 2006b). Groundwater samples were collected for metals, SVOCs, polychlorinated biphenyls (PCBs), and diesel range organics from MW-02 and MW-03 in August 2005 (Brown and Caldwell, 2005a). The 2005 and 2006 groundwater sampling showed detections of dissolved arsenic above its GSL at MW-02 and MW-03.

3.1.9 2007 Denver Coliseum Cooling Water Wells Sampling

In August of 2007 the CCoD collected water samples from the four wells that provide cooling water for the Coliseum, QUAD-1 through QUAD-4. Water samples were analyzed for total arsenic. Sample results showed no detections of arsenic at QUAD-2, QUAD-3, or QUAD-4, and a low-level estimated concentration at QUAD-1 (0.01 mg/L).

3.2 REMEDIAL INVESTIGATION (2009)

The 2009 RI field work was conducted in December 2008 and consisted of drilling and coring sixteen (16) soil boreholes (SB-2-1 to SB-2-4, SS-3-1 and SS-3-2, SB-3-1 to SB-3-5, SB-4-1 to SB-4-5) and collection of soil samples for laboratory analyses. The sample locations associated with the 2009 RI are shown on Figure 4. A complete description of this work and the findings is provided in the 2009 *Remedial Investigation Vasquez Boulevard/Interstate 70 Superfund Site Operable Unit 2 – On-Facility Soils* report (EMSI, 2009). A summary of the soil sampling conducted during this investigation is provided below.

Soil samples were collected at three to four different depths at each of the SB boreholes, and one surface sample between one to two feet below the asphalt was collected from the two SS locations and sampled for arsenic and lead. In addition, VOCs, SVOCs, and the full list of Resource Conservation and Recovery Act (RCRA) metals were analyzed for at samples collected from SB-3-2, SB-3-4, SB-3-5, SB-4-2, SB-4-3, and SB-4-4. The results of the soil sampling showed detections of arsenic and lead above residential and industrial RSLs, detections of cadmium above its residential RSL, no detections of VOCs above residential or industrial RSLs, and no detections of SVOCs. No additional groundwater samples were collected for the 2009 RI, because existing groundwater data at the time only showed the presence of arsenic above state and federal drinking water standards at one well (MW-02) and EPA had concluded that groundwater was not a significant exposure pathway (EMSI, 2009).

3.3 POST-REMEDIAL INVESTIGATION)

This section presents a summary of site investigation activities that were performed within OU2 between 2010 and 2017. These additional investigations were not conducted as part of the RI/FS, but were performed for other reasons, as described in the following subsections. These investigations included the following:

- 2010 High Street Limited Subsurface Investigation (Brown and Caldwell, 2010)
- 2011 Limited Phase II Environmental Site Assessment (CTL Thompson, 2011)
- 2012 Groundwater Sampling (Pacific Western Technologies, Inc. [PWT], 2013)
- 2013 Supplemental Geotechnical Investigation (CTL Thompson, 2013a)
- 2013 Limited Phase II Environmental Site Assessment (CTL Thompson, 2013b)
- 2014 Groundwater Monitoring (PWT, 2014)
- 2015 Environmental Conditions Investigation, Storm Sewer System (EMSI, 2015)
- 2015 Supplemental Geotechnical Investigation (CTL Thompson, 2016a)
- Addendum 1 Data Summary of Environmental Conditions Investigations High Street Outfall (EMSI, 2016b)
- 2016 Soils Evaluation between Globeville Landing Park and the Denver Coliseum parking lot (CTL Thompson, 2016b)
- 2016 Addendums for Environmental Components of the Globeville Landing Outfall Project (EMSI, 2016c and 2016d)
- 2016 and 2017 Ambient Air Studies (Airtech Environmental Services, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h; Weston Solutions, 2017a, 2017b)
- 2019 38th and Brighton Groundwater Sampling (Professional Service Industries, Inc. [PSI], 2019a, 2019b)
- 2019 Central 70 OU2 Subsurface Investigation (Iron Woman Construction and Environmental Services LLC [Iron Woman], 2020)
- 2019 Annual Globeville Landing Outfall – Environmental Monitoring and Maintenance Plan (Apex Companies, LLC [Apex], 2020)

A summary of each of these investigations is provided in the following sections. The sample locations established post-RI are displayed on Figure 5. Existing wells and surface water locations established during the previous years are not shown on Figure 5; however, some of these locations were sampled as part of the post-RI work, as discussed below.

3.3.1 2010 High Street Limited Subsurface Investigation

The purpose of the High Street Limited Subsurface Investigation (Brown and Caldwell, 2010) was to characterize the soil, groundwater, and soil gas to evaluate the potential for human and environmental health concerns resulting from the proposed construction activities related to the upgraded storm water sewer project near OU2. Eight soil boreholes,

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HS-01 through HS-08, were completed where soil samples were collected from intervals selected based on photoionization detector (PID) readings, and temporary groundwater monitoring wells were installed in all boreholes except for HS-06. The soil samples were collected from depths ranging from five to 25 feet bgs.

Soil samples were analyzed for VOCs, polycyclic aromatic hydrocarbons (PAHs), and metals. Acetone was the only VOC detected in the soil samples, which is common laboratory contaminant. Low levels of PAHs were detected were detected in some of the samples. The soil samples showed detections of arsenic above the residential and industrial RSLs, but all were below background. Lead detections were all below the RSLs. Soil samples from boreholes HS-02, HS-03 and HS-08 were also analyzed for total petroleum hydrocarbons (TPH) and polychlorinated biphenyls (PCBs). Gasoline range organics were not detected, but diesel range organics were detected at low levels for each sample. PCBs were not detected in any samples.

Groundwater samples were analyzed for VOCs, PAHs, and metals. VOCs were detected at concentrations greater than GSLs, including chloroform, TCE, and PCE. Low concentrations of PAHs were detected from HS-08. Barium and cadmium were the only two dissolved metals detected; cadmium was detected at concentrations above its GSL in HS-03 and HS-04.

Following the completion of soil and groundwater sampling at the boreholes, landfill gas monitoring was conducted at HS-01, HS-02, HS-03, HS-04, and HS-08 by drilling adjacent to the boreholes (within one to two feet) to the suspected depth of landfill materials and testing with a Landtec Gem 500® landfill gas meter. Methane was detected by the landfill gas monitoring in all wells except HS-04.

3.3.2 2011 Limited Phase II Environmental Site Assessment

The objective of the Limited Phase II Environmental Site Assessment conducted in 2011 (CTL Thompson, 2011) was to evaluate possible human health and environmental concerns related to the proposed construction activities associated with the western portion of the 40th Street Outfall. In addition, geotechnical data were collected during this investigation to support the planned outfall project. The investigation was conducted on March 30 and 31, 2011 and consisted of drilling 13 test holes, six of which were screened and sampled for environmental purposes and subsequently completed as groundwater monitoring wells and sampled. Six soil samples were collected at varying depths from the borehole locations TH-13, TH-14, TH-15, TH-17, TH-18, and TH-19, which were completed as wells CTL MW-01 through CTL MW-06. Soil samples were analyzed for VOCs, SVOCs, and metals. Groundwater samples were collected from the newly installed wells CTL MW-01 through CTL MW-06 and analyzed for VOCs, SVOCs, and metals.

The results of the soil sampling revealed low levels of a few VOCs from CTL MW-6 only. Arsenic was detected in all soil samples at elevated concentrations; however, the concentrations were not above the background concentration. Lead was detected in all soil samples at low concentrations. Low concentrations of cadmium were detected in some soil samples.

Groundwater samples revealed detections of chloroform, PCE, TCE, arsenic, cadmium, iron, and manganese at concentrations above GSLs at one or more of the well locations (see Section 5.3 for detail).

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3.3.3 2012 Groundwater Sampling

Groundwater monitoring was conducted quarterly (March, May, August, and December) during 2012 to further assess groundwater quality near the historic landfill at OU2 and contribute data to be used in support of site characterization and identifying the potential need for future remediation (PWT, 2013). The groundwater monitoring consisted of collecting water level measurements and groundwater samples from five existing wells. These five wells were installed as part of the Phase I activities and include downgradient wells MW-01, MW-02, and MW-03 within the OU2 boundary, and upgradient wells MW-05 and MW-06 just outside the OU2 boundary to the southeast. Samples were analyzed for VOCs, SVOCs, and dissolved and total metals. Samples were analyzed in accordance with methods specified in the Quality Assurance Project Plan for OU2 (PWT, 2012). Results of the groundwater sampling revealed: detections of chloroform at concentrations above the GSL at MW-06 and detections of TCE and PCE at concentrations above GSLs at MW-01; detections of antimony, arsenic, iron, and manganese at concentrations above GSLs at well MW-02, and; SVOCs were either not detected or were detected at low concentrations below GSLs.

Light non-aqueous phase liquids (LNAPLs) were encountered in well MW-03 during well development and sampling. A sample of the LNAPL was analyzed by EPA Method 8015C, which indicated it consisted of carbon ranges associated with lubricating oil or grease.

3.3.4 2013 Supplemental Geotechnical Investigation

The purpose of the supplemental geotechnical investigation was to build upon previous investigations to support the 40th Street Outfall project (CTL Thompson, 2013a). Soil boreholes TH-1 through TH-10 were drilled in 2010 and this supplemental investigation involved an additional twenty boreholes (TH-11 to TH-30) to explore and evaluate subsurface conditions to support geotechnical design and construction criteria for the outfall. No environmental samples were collected as part of this effort, so they are not displayed on Figure 5. However, the results of the subsurface sampling provided information regarding the presence or absence of landfill waste materials. As such, select locations are displayed on Figure 6, which presents information on the potential extent of the landfill waste.

3.3.5 2013 Limited Phase II Environmental Site Assessment

The purpose of the 2013 Phase II investigation was to evaluate the nature of buried debris within the storm water construction path as related to the 40th Street Outfall project. Five test pits (TP1 through TP5) were excavated, primarily to investigate the potential to encounter asbestos containing material (ACM). Additionally, a PID was used for the field-screening of soils for volatiles from various depths within the test pits (CTL Thompson, 2013b). The test pits were approximately 10 feet long, two feet wide, and between 12 and 14 feet deep. PID readings were all low and did not indicate the presence of VOCs. All test pits contained suspect ACM which were submitted for polarized light microscopy analysis. Results from the analysis showed that each test pit had some amount of ACM ranging from 20 to 50 percent chrysotile and two samples contained amosite at five to 30 percent.

3.3.6 2014 Groundwater Monitoring

Sampling was conducted at ten wells (MW-01, MW-02, MW-03, MW-05, MW-06, and CTL MW-01, CTL MW-02, CTL MW-04, CTL MW-05, and CTL MW-06) near and within OU2 in first quarter 2014 to evaluate groundwater concentrations of arsenic, cadmium, iron, PCE, TCE, and cis-1,2-DCE (PWT, 2014). The results indicated arsenic, iron,

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PCE, and TCE above GSLs at one or more locations (see Section 5.3 for details). SVOCs were also sampled, but there were no detections above the GSLs.

3.3.7 2015 Environmental Conditions Investigation, Storm Sewer System

The 2015 field investigations were conducted to assess baseline environmental conditions to support design considerations for a storm water drainage feature to be constructed through a portion of OU2 of the VB/I70 Superfund Site. Samples of waste material and subsurface condition information were collected from 16 boreholes identified as the Surface Water Design Investigation (SWDI)-series boreholes (EMSI, 2015). Solids (e.g., suspected landfill materials) and soil samples were collected from the boreholes for toxicity characteristic leaching procedure (TCLP) testing, total chemical constituents, and ACM analysis. Additionally, soil gas was monitored for total VOCs using a PID and oxygen and combustible gas levels, carbon monoxide, and hydrogen sulfide using a hand-held 4-gas meter during the borehole drilling and sampling activities.

Temporary piezometers were installed in 15 of the 16 SWDI-series boreholes (SWDI-11 was not completed at a piezometer since existing well CTL MW-06 adjacent to the borehole was available for monitoring). Groundwater levels and samples were collected from all 15 piezometers along with CTL MW-06, MW-01, MW-02, and MW-03. Groundwater samples were analyzed for metals, inorganics, and VOCs.

Arsenic and lead were detected in soil samples from all 16 boreholes, with the highest concentrations detected in boreholes SWDI-4, SWDI-5, SWDI-9, and SWDI-10. Some PAHs were detected above RSLs and some VOCs were detected, but concentrations were below the RSLs.

Arsenic, cadmium, chromium, iron, lead, manganese, silver and uranium were detected in the groundwater samples; however, arsenic and uranium results were limited to total metals analysis. Analysis of the dissolved metal results relative to the GSLs is provided in Section 5.3. The VOCs benzene, PCE, TCE, and vinyl chloride were also detected in the groundwater samples.

3.3.8 2015 Supplemental Geotechnical Investigations

The purpose of the supplemental geotechnical investigation was to build upon previous investigations to support the 40th Street Outfall project (CTL Thompson, 2016b). Soil boreholes TH-1 through TH-30 were previously drilled in 2010 and 2013, and this supplemental investigation involved an additional ten boreholes (TH-31 to TH-40) to explore and evaluate subsurface conditions to support geotechnical design and construction criteria for the outfall. No environmental samples were collected as part of this effort, so they are not displayed on Figure 5. Information from these locations may be useful for evaluations of subsurface geology relating to potential migration pathways and can be revisited during the RI.

3.3.9 Addendum 1 Data Summary of Environmental Conditions Investigations

Twelve additional exploratory boreholes (TH-41 to TH-52) were completed in December 2015 to supplement the previous investigations (EMSI, 2016b). In five of the boreholes located along the western bank of the Globeville Landing Park (TH-45, TH-46, TH-47, TH-48, and TH-52), the approximate elevation and depth to bedrock and groundwater were evaluated, and temporary monitoring wells were installed. The other seven boreholes were drilled to assist in evaluation of the soils for environmental planning purposes; however, no environmental samples were collected for

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chemical analysis from these borings, and as a result they are not displayed on Figure 5. Groundwater samples were collected at TH-45, TH-46, TH-47, TH-48, and TH-52 and analyzed for metals and VOCs. Groundwater analytical results were as follows:

- Arsenic, cadmium, iron, lead, manganese, selenium and uranium were detected
- PCE was detected at elevated concentrations in samples from all five piezometers
- TCE was detected at elevated concentrations in samples from all five piezometers

3.3.10 2016 Soils Evaluation between Globeville Landing Park and the Denver Coliseum Parking Lot

The purpose of this investigation was to evaluate the subsurface conditions and shallow soil quality in the tract of land in between Globeville Landing Park and the Denver Coliseum parking lot (CTL Thompson, 2016b). As part of this effort, 13 soil boreholes were completed (TH-53 to TH-65). Soil material was collected from the top five-foot interval from boreholes TH-61 through TH-65. No soil samples were collected from TH-53 to TH-60, and as a result these locations are not displayed on Figure 5. The analytical results for arsenic and lead indicated that arsenic concentrations were above the industrial and residential RSL in all samples, and also above background in all locations but TH-62, and lead concentrations were above the residential RSL at TH-61 and TH-65. Soils were also screened during drilling for volatiles using a PID. No PID readings were detected above one part per million by volume at any of the sampled intervals.

3.3.11 2016 Addendums for Environmental Components of GLO Project

Soil sampling was conducted in October of 2016 within the Globeville Landing Park to characterize lead and arsenic levels in the upper three feet of proposed finished grade soils to determine if these proposed surface soils exceed lead or arsenic cleanup action levels (EMSI, 2016d). As part of this effort, nine shallow boreholes (SWDI-43 through SWDI-51), and twenty-six deeper boreholes (SWDI-17 through SWDI-42) were drilled. Three composite samples were collected from each of the shallow boreholes, and one composite sample was collected from each of the deeper boreholes. Samples were analyzed for arsenic and lead by Method 6010C. Sampling results from these composite soil samples indicated the following:

- Lead was detected at elevated concentrations in soil samples from SWDI-17, -39, -42, -43, and -51
- Arsenic was detected at elevated concentrations in soil samples from SWDI-43 and -51

In addition to the soil sampling, two 4-inch diameter wells were installed in the Globeville Landing Park (PW-1) and the Coliseum parking lot (PW-2) to conduct aquifer testing to determine the horizontal hydraulic conductivity and specific yield of the aquifer materials (EMSI, 2016c). As part of this aquifer testing, groundwater quality was examined to assess any potential changes during the pump tests. The groundwater quality analysis included sampling for metals and general chemistry.

3.3.12 2016 and 2017 Ambient Air Studies

Airtech Environmental Services (now Montrose Environmental Group, Inc.) was contracted by the CCoD to perform ambient air studies at the GLO project site (Airtech Environmental Services 2017a through 2017h). The studies were performed in late 2016 and early 2017 with the specific objectives to determine the concentration of particulate matter

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with a nominal diameter of 10 microns or less (PM_{10}) at each of four sampling locations and analyze a fraction of the filters for arsenic and lead.

Additionally, during 2017, EPA and their contractor Weston Solutions conducted several particulate air monitoring events at the OU2 site to support the Time Critical Removal action for the GLO construction (Weston Solutions, 2017a and 2017b). During this period, no exceedance of the 24-hour time weighted average (TWA) for PM_{10} occurred at the construction perimeter fence line. The $PM_{2.5}$ TWA was below the National Ambient Air Quality Standards (NAAQS) for the duration of the monitoring event as well.

Several ambient air studies were conducted in 2017 for PM_{10} that included arsenic and lead evaluations as well. The sampling indicated that both arsenic and lead remained below the EPA allowable air concentrations for residential receptors.

Air monitoring at OU2 for the GLO project, which included PM_{10}, arsenic, and lead, concluded in August 2018. These data may be useful and can be included in subsequent evaluations conducted as part of the RI.

3.3.13 2019 38th and Brighton Groundwater Sampling

Ten borings were advanced, followed by soil sampling, well installation, and groundwater sampling in 2019 in properties adjacent to OU2 eastern boundary as part of a limited subsurface investigation (PSI, 2019a, 2019b). The properties include the two parking lots to the southeast of the Pepsi Bottling plant across Brighton Blvd and between 38th and 40th St. These areas are within OU1 of the VB/I-70 Superfund Site and were investigated based on their proximity to past smelting operations and historical operation as a lumber yard and gasoline station. Although the soil and groundwater sampling locations are outside of the OU2 boundary, the data provides useful information about upgradient groundwater quality and potential upgradient sources to groundwater. Ground penetrating radar was also used in an attempt to identify potential presence of buried utilities and underground storage tanks (UST).

Soil sampling indicated the presence of arsenic above residential and industrial RSLs, but concentrations were within naturally occurring background. Petroleum constituents and chlorinated ethanes were also detected in soil along with observations of visible staining. The chlorinated solvent impacts to groundwater discussed below do not appear to be sourced from an on-site source based on the soil sampling.

Groundwater sampling at the ten wells (GW-1 through GW-10) located upgradient of OU2, confirmed the presence of petroleum hydrocarbon constituents, PAHs, and chlorinated solvents cis-1,2-DCE, PCE, and TCE above GSLs.

The GPR investigation indicated likely presence of an UST and decommissioned product or utility line in the southern parking lot.

3.3.14 2019 Central 70 OU2 Subsurface Investigation

The objective of the 2019 Central 70 limited subsurface investigation was to characterize both soil and groundwater beneath and along the proposed alignment of approximately 400 feet of sanitary sewer utility line located near the northern boundary of OU2 (Iron Woman, 2020). Four soil boreholes, OU2-01 through OU2-04, were completed where soil samples were collected at three depth intervals at each borehole, and temporary piezometers were installed. Following groundwater well purging and development, groundwater from each location was collected.

Soil samples were analyzed for VOCs, PAHs, SVOCs, and metals (eight RCRA metals and mercury). No VOCs were detected at concentrations above residential screening levels. Arsenic was detected above its residential and industrial RSL at all four locations. Lead was only detected above its residential and industrial RSL at OU2-03. Benzo(a)pyrene was detected slightly above its residential RSL at OU2-02 and OU2-03.

Groundwater samples were analyzed for VOCs, PAHs, SVOCs, TPH, PCBs, and general parameters. Low concentrations of select PAHs and SVOCs were detected in groundwater at OU2-01 through OU2-04. The majority of VOCs were not detected with the exception of 1,2,4-trimethylbenzene and sec-butylbenzene at OU2-02, naphthalene at OU2-03, and chloroform at OU2-04. TPH and PCBs were not detected in any of the samples.

3.3.15 2019 Annual Globeville Landing Outfall Report

As part of the Annual Globeville Landing Outfall Environmental Monitoring and Maintenance, groundwater elevation monitoring was conducted on a quarterly basis in 2019. Monitoring included piezometers PZ-1, PZ-2, and PZ-3 that were installed to monitor groundwater elevations adjacent to the newly constructed stormwater channel, and OU2 monitoring wells and piezometers MW-2, CTL MW-04, CTL MW-05, SWDI-5, and SWDI-6. The groundwater elevations indicated a groundwater gradient in which groundwater flows to northwest towards the South Platte River. This is consistent with other groundwater elevation data at OU2.

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4.0 QUALITY AND USABILITY OF EXISTING DATA

4.1 QUALITY OF DATA SOURCES

Data from many of the previous investigations discussed under Section 3 were evaluated. This included data summary tables, field notes/forms, and lab reports from the previous investigation reports referenced above. In addition, tabulated analytical data were provided in the form of Excel® spreadsheets and Access® databases. The combination of the various data sources was used to conduct the evaluations presented in Section 5.

The data that were evaluated included soil, sediment, surface water, and groundwater chemical analytical data and groundwater level data. In general, the large number of data sources and inconsistent data handling practices from the various sources from which the tabulated data were compiled resulted in usability challenges. Specific challenges with the quality of the tabulated data and how they were resolved are described below:

- **Depths**: Soil sample depths were not populated in many cases. The reports from the investigation(s) where these samples were collected were referenced when available to populate the missing depth fields. If the depth for a sample considered important to include in the evaluation could not be resolved (e.g., historical report did not include the information, or the report was unavailable), the sample was included, and its depth noted as "unknown" in the text and tables where results are presented.

- **Duplicate results**: Sample results are identical with the only difference being in the laboratory qualifier field. When available, laboratory reports and data quality reports were reviewed to select the appropriate results and qualifier to use.

- **Dates**: Sample dates were missing in several cases for the soil and groundwater data making it difficult to link the data to an investigation, particularly when multiple investigations used the same sample identifications (IDs) (e.g., TH boreholes). The results presented in the investigation reports that contained sample location IDs that matched those without dates were reviewed to resolve the unknown dates.

- **Redundancy in Sample Identifiers**: Multiple investigations used the same or similar sample IDs (e.g., TH boreholes). The investigations using the same sample IDs were reviewed to resolve which data were relevant to and sample IDs were modified to make unique as needed.

- **Results Errors and Uncertainty**: Some issues were identified with incorrect sample IDs linked to data that should be associated with another sample ID when the laboratory report is referenced. Several cases were identified when spot checking groundwater data against laboratory reports and summary reports where data that are non-detect are listed in the database as the reporting limit with no qualifier, so it appears as a detection. There was also uncertainty surrounding the total and dissolved metals data for groundwater since some laboratory reports show them as total, but the database showed two results with one listed as total and the other as dissolved. To resolve these data issues, the investigation and laboratory reports were referenced. Most reports provided information on whether samples were field filtered, which allowed correction of total metals results to dissolved metals.

- **Missing Data**: As mentioned above, some of the data were only partial and compilation of all sources did not complete the set. For evaluation of data that were incomplete or missing from the tabulated sources, the previous investigation reports were reviewed, and relevant results were hand entered into the database.

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- **Inconsistent Sample Location Identifiers**: Some of the IDs do not align with the reports and have varied nomenclature throughout the database but refer to the same location. The investigation and laboratory reports were referenced to verify that the IDs were referencing the same location and results were presented under one sample ID for this report.
- **Unknown Symbols**: some of the data were flagged with a "?" or "^". These appeared to have been added during data handling and management (i.e., not a product of the laboratory reports). The meaning of these is unknown. Reference back to the laboratory reports could not identify the meaning of these; therefore, they were not used in the presentation of data for this report. Instead the qualifiers provided with the original investigation and laboratory reports were used.

In summary, despite challenges with the tabulated data, several of the investigation reports provided data tables and laboratory reports that helped to resolve some of the uncertainty around the data. However, some previous data or reports were not available to resolve all data challenges listed above. Specifically, depths for the soil sampling from the I-70 test boreholes described in Section 3.1.1 were unable to be resolved because the original reports that disclose those details are unavailable.

The data incorporated into the database described in the next section and summarized in this report are considered usable for summarizing the results of the previous investigations and evaluating potential data gaps for the RI. Data that are complete and meet the minimum requirements for data quality will be usable for the updated RI, other data may be considered screening level data and cannot be used in the RI. The data included in the project database will be annotated to indicate its level of usability (i.e., screening level data or RI data). No data are considered unusable.

4.2 PROJECT DATABASE

The data described above that are related to OU2 were compiled into a central database using Oracle®. Not all data issues were resolved due to the inability to link some previously compiled data to a source, or the effort required to resolve the issues outweighed the relative benefit it provided for the evaluation. Instead, data that were identified as key to the understanding of the nature and extent of contaminants were selected for additional quality evaluations to confirm accurate representation in the database. The evaluation of some data that was considered important required referencing summary reports and laboratory reports, as it was not included in the available electronic, tabulated data. Additionally, the project database has been converted into a Scribe-compatible format for delivery to the EPA for their records.

4.3 DATA SCREENING ANALYSIS CHECK

Soil and groundwater data collected at OU2 were screened against existing screening criteria as presented in Table 3-1. An analysis was conducted to evaluate the potential impact of results reported as not detected (ND) where the quantitation limit exceeds the existing screening criteria (referred to below as elevated NDs) to evaluate data quantity and quality.

This evaluation was completed for metals, VOCs, and SVOCs in soil and groundwater by querying the database for the number of total results, detections, NDs, and NDs above current screening criteria for individual compounds within these chemical groups. For each compound, the number of elevated NDs (not detected but the quantitation limit was above the screening criteria) was then compared to the total number of results, providing the percentage of the total results that were elevated NDs.

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Soil results for three metals and five PAHs showed some ND results that had quantitation limits above the current screening criteria; however, the percentage of these results compared to the total number of results considered low (i.e., ranging from five to 5 percent) in all but two metals. Forty percent of the soil results for antimony and 60 percent of the soil results for thallium were elevated NDs.

For groundwater data, there were more instances where quantitation limits were above the GSLs for metals, SVOCs, and VOCs; however, the percentage of these results compared to the total number of results is considered low (i.e., ranging from one to 18 percent) for the majority of the compounds. Twenty-five SVOCs (including PAHs) and 19 VOCs had relatively higher occurrences of elevated NDs (i.e., ranging from 29 to 100 percent).

These results are presented in Table 4-1a and 4-1b and were considered collectively in the additional sampling recommendations made in the *Technical Memorandum on Scoping the Revised Remedial Investigation for Vasquez Boulevard I-70, Operable Unit 2, Revision 1* (Stantec, 2020). Additional soil and groundwater sampling will include comprehensive analyte lists consistent with the inorganics and organics list provided for the Superfund Contract Laboratory Program.

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5.0 SUMMARY OF NATURE AND EXTENT

This section of the report provides an evaluation of the nature and extent of COPCs within OU2. Only data within or proximal to the boundary of the OU2 were evaluated. This section is divided by media type, where various COPCs are discussed for each. This evaluation included a review of historical (pre-RI and 2009 RI) and recent (post-RI) data.

5.1 LANDFILL/WASTE MATERIAL

Prior to construction of the Denver Coliseum, the area of the Coliseum parking lot and possibly other portions of OU2 were used as a landfill for disposal of municipal solid wastes (EMSI, 2009). The 2009 RI report (EMSI, 2009) provided a characterization of the nature and extent of the landfill/waste material (landfill material). The lateral extent of the landfill material was shown to extend just to the edges of the Coliseum parking lot and no further, as shown on Figure 27 of the 2009 RI report and on Figure 6 of this report. The extent was based on the following:

- The northern, northeastern, and western boundaries were based on an absence of landfill material encountered in boreholes located in these areas, and on relatively uniform surface topography observed outside of the inferred boundary of the extent of landfill material in these areas.
- The southwestern and southeastern boundaries were based on the limits of the undulating surface of OU2 (e.g., the surface of the Coliseum parking lot).

Figure 6 also shows pre-RI, 2009 RI, and post-RI boreholes along with the landfill material thickness in feet that is shown on the individual borehole logs. Some of the borehole logs are just summary graphs of the logs, and not the actual field logs, and as a result lack site-specific detail. However, the graphical logs do provide general descriptions that indicate where landfill material was observed.

Subsurface sampling that was conducted after the 2009 RI suggests that the landfill material extends beyond the edges of the Coliseum parking lot, particularly outside the northeastern and southeastern boundaries. The subsurface sampling locations (boreholes and test pits) that were used to evaluate the extent of landfill waste at OU2 are shown on Figure 6 including borings advanced during and after the 2009 RI which provided additional information regarding the extent of landfill material.

The northeastern boundary of the landfill material shown in the 2009 RI report was based on one subsurface sampling location (SB-3-1). The SB-3-1 borehole indicated "trash" was observed from 3.5 to 4 feet bgs with alluvial soil below that to the total depth of the borehole at 14 feet bgs. However, the borehole log for the ASARCO monitoring well MW-03 located approximately 180 feet east of SB-3-1 indicated the presence of "fill material" to the total depth of the borehole at 20 feet bgs. The fill material was described as containing gray and black silt with sand and gravel mixed with brick, wood, glass, newspaper, and metal, with a petroleum odor starting at approximately 5 feet bgs. Figure 27 of the RI report indicates that the landfill material was not present at the location of MW-03 with a zero-thickness line shown 50 feet southwest of this location. The historical 1997 data from the DC boreholes were also reviewed given their proximity to the northern and eastern boundary of the landfill extent depiction provided in the 2009 RI. The log for DC-3, just north of MW-03, indicated intermitted layers of trash down to 20 feet bgs, and DC-4, at the north boundary of the 2009 RI depiction, indicated trash down to 11 feet bgs. The log for DC-7 to the west of the OU2 boundary showed some indication of possible landfill debris; however, rather than noting trash, the log indicates glass, brick, and metal

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debris down to 6.5 feet bgs. In addition, the boring log from DC-5 to the east of DC-7 and closer to the OU2 site boundary did not indicate any landfill or building debris waste, so the materials observed at DC-7 are unlikely to be representative of the municipal waste landfill. More recent sampling in 2019 along the northern border of the site conducted as part of the Central 70 OU2 subsurface investigation indicated the presence of construction debris (i.e., wood and brick) in borings OU2-01 through OU2-04, suggesting the landfill may extend further north than what was suggested in the 2009 RI report.

The southeastern extent of the landfill waste material, which was based on the extent of the undulating ground surface within the Coliseum parking lot, is shown to run along McFarland Drive (see Figure 6) and is depicted as the zero-thickness line of the landfill material in the 2009 RI report. However, there are several boreholes in that area that were conducted during the subsequent studies that were located outside of the boundary of the previous depicted extent shown in the 2009 RI Report, including: HS-03, TH-7, and TH-16 that describe landfill material at least 15 feet thick, some thicker (TH-16 indicated landfill material up to 29 feet thick). Borehole BH-03, which was advanced in 2004, prior to the 2009 RI, also indicated the presence of landfill material beyond the extent shown in the RI Report.

Just inside the southeastern boundary of the landfill material, the 2009 RI report indicates a landfill material thickness of approximately 5 feet bgs. However, more recent boreholes in that same area (i.e., CTL MW-04 (TH-17), SWDI-1, SWDI-2, and TH-8) indicated landfill material thicknesses of 14 to 27 feet. TH-8 and CTL MW-04 (TH-17) also exhibited a strong chemical or petroleum odor.

The southwestern boundary of the landfill material is shown in the 2009 RI report as a zero thickness along Arkins Drive and the edge of the Coliseum parking lot. However, more recent boreholes in that area indicated landfill material thicknesses up to 28 feet thick (i.e., SWDI-10).

In summary, the results of the subsurface soil sampling from the 2009 RI and more recent investigations indicate that landfill material is thicker in places and is more laterally extensive than what was shown in the 2009 RI report.

5.2 SOIL - METALS, VOCS, SVOCS

5.2.1 Previous Work and Excavation Considerations

Soil sampling locations evaluated as part of this nature and extent discussion are depicted on Figure 7 and include locations from the pre-RIs, 2009 RI, and post-RIs. Previous investigations of surface soil in the Globeville Landing Park resulted in a letter from the EPA acknowledging no unacceptable risk exists for the surface soils (surface to two feet bgs) at the Globeville Landing Park (EPA, 2003). As a result, soil results collected from the shallow interval within the Globeville Landing Park were not considered as part of this evaluation. Excavations of soils within the Globeville Landing Park that occurred after 2002 as part of the GLO project were queried against the remaining samples collected at depths below two feet. In addition, excavation information from the recently upgraded stormwater conduit system routing from Brighton Boulevard through the Coliseum parking lot were also reviewed against sample locations and depths to identify those soils no longer in place. Drawings of the excavation extents and depths were provided by the GLO project team to allow for spatial comparison to the pre-RI, 2009 RI, and post RI sample locations. These drawings are provided as Appendix B for reference. If a sample location fell within an excavation area and the sampling interval fell within the excavation interval depths, the soil was assumed as not in place and thus is not evaluated as part of this nature and extent discussion. The areas where excavations were conducted as part of the GLO project are shaded blue in Figure 7.

Other previous work that was considered was the 2001 and 2002 Pepsi Property Investigations (Transportation & Industrial Services, Inc., 2001a, 2001b, 2001c, and 2002). The soils sampled during these investigations are not likely in place due to excavation activities conducted as part of the various projects; however, the documentation does not provide specific information on the removal actions. As a result, the Pepsi area sampling data from within the OU2 boundary were included in this section for completeness, but concentrations are not likely representative of current conditions.

The available soils data that were not eliminated based on the above criteria were split into different depth categories to evaluate the vertical delineation of COPCs. These categories are defined as follows:

- Shallow soils – surface to approximately two feet bgs.
- Subsurface soils – soils between two and ten (10) feet bgs. This category also included sample results for which composites were collected from varying depths going past two feet (e.g., depth was reported as zero to 20 feet).
- Deep soils – samples collected from intervals with a top depth of 10 feet or greater. Results from these depths should be considered with the understanding that many of these reach into the saturated zone and may not be representative of vadose zone soil conditions.

The seven I-70 boreholes had unknown depths (TH-1 through TH-5, TH-8, and TH-9) and were grouped with the subsurface soil depth category for this discussion. A summary of the soil sampling results is provided by chemical groups below. Results are discussed in terms of the EPA RSLs and arsenic background value presented in Table 3-1.

5.2.2 Metals

The primary metals of potential concern at OU2 based on sampling results collected to date and historical use include arsenic and lead; therefore, arsenic and lead are discussed individually. Metals other than arsenic and lead were evaluated for completeness and are discussed together at the end of this section.

Table 5-1 summarizes the arsenic and lead soil sampling and indicates arsenic and/or lead results that exceeded the RSLs (residential and industrial). In addition, arsenic is compared to its background value. Figures 8a through 8c show the spatial distribution of arsenic concentrations in soil and Figures 9a through 9c show the same for lead. For these figures, areal composites are not shown for simplicity, since they are tied to multiple locations (e.g., Coliseum Barn excavation composite samples); however, Table 5-1 includes all soil results (depth discrete, depth composites, and areal composites). A discussion of these results is summarized below for each metal.

5.2.2.1 Arsenic

Shallow soils contained detected arsenic concentrations that ranged from 1.4 mg/kg at SB-2-1 to 510 mg/kg at BH-07. Detections were all above the residential RSL of 0.68 mg/kg with most concentrations also above the industrial RSL of 3.0 mg/kg. The background value for arsenic was exceeded at 21 of the locations shown on Figure 8a. The highest detections in the shallow soils occurred at BH-07 and BH-06 near the Forney Museum (see Figure 8a).

Subsurface soils contained detected arsenic concentrations that ranged from 0.3 mg/kg at TH-1 (a location with unknown depth) to 630 mg/kg at UT-7. Results showed concentrations above the residential and industrial RSLs, with 43 of the locations shown on Figure 8b with concentrations above background. The highest detections occurred at

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UT-7 and BH-05 near the southeastern edge of the site, MW-06 outside the OU2 boundary to the southeast, and at Pepsi Area 4 sampling locations A4-1, A4-4, and A4-8 (see Figure 8b).

Deep soils contained the highest detected concentrations ranging from 0.27 mg/kg at SB-2-3 to 1500 mg/kg at BH-03. All but one of the arsenic detections in deep soils were above the residential RSL with the majority also above the industrial RSL. Arsenic concentrations were above background at 25 locations. The highest detections occurred at BH-03 at depths from 10 to 20 feet bgs, and at BH-01 at 24 feet bgs, suggesting these samples were in the saturated zone (see Figure 8c).

These data show elevated arsenic detections in shallow, subsurface, and deep soils. The highest detections were present at depths near or within the saturated zone. This could be an artifact of arsenic groundwater concentrations in that area or could indicate the presence of residual materials from smelter operations at depths near the water table. Elevated detections of arsenic occur throughout the footprint of OU2; however, the data density at the center of the Coliseum parking lot is sparse, making it difficult to discern if impacts at levels above background are contiguous (Figures 8a, 8b, and 8c). There is some indication from the Pepsi Area 3 sampling along the southeast boundary of the Pepsi parking lot that arsenic impacts are not present in shallow soils in this area (see black colored sampling locations on Figure 8a indicative of no arsenic detections); however, concentrations further east and south within the boundary contained concentrations above background during the Pepsi sampling efforts. Subsurface and deep soils that are considered in place in the central portion of the Globeville Landing Park contain arsenic at levels below background; however, samples in the south, north, and east of the park had some detections above background.

5.2.2.2 Lead

Shallow soils contained detections of lead above the residential of 400 mg/kg RSL at nine locations shown on Figure 9a. Concentrations were also above the industrial RSL of 800 mg/kg at five of these locations. The concentrations above the screening level ranged from only slightly above the residential RSL at 430 mg/kg at A3-10 to 34,000 mg/kg at BH-06; however, the majority of shallow soils contained lead concentrations below the RSLs (see Figure 9a).

Subsurface soils contained detections of lead above the residential RSL at 21 locations. Concentrations were also above the industrial RSL at 10 of these locations. The concentrations above the screening level ranged from only slightly above the residential RSL at 410 mg/kg at DC-8 and A4-13 to 3,600 mg/kg at MW-02; however, most subsurface soils contained lead concentrations below the RSLs (see Figure 9b).

Deep soils contained detections of lead above the residential RSL at 13 locations. Concentrations were also above the industrial RSL at seven of these locations. The concentrations above the screening level ranged from only slightly above the residential RSL at 410 mg/kg at A6-4 to 100,000 mg/kg at BH-03; however, most of the deep soils contained lead concentrations below RSLs. The highest detections occurring at BH-03 and A6-6 were at depths indicative of the saturated zone (see Figure 9c).

These data show sporadic elevated lead detections in shallow, subsurface, and deep soils. The presence of lead is soil does not mirror that of the arsenic results discussed above. There is no observed concentration trend in the data vertically and lateral impacts do not appear to be contiguous. However, lead exceedances occurred more frequently in the shallow and subsurface soils and only appear elevated in deep soils in samples in the southern portion of the parking lots and just south of the parking lots (e.g., BH-01). Elevated detections of lead occur throughout the footprint

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of the OU2, but exceedances appear sporadic (not clustered in distinct areas). The data density within the Coliseum parking lot is sparse, making it difficult to discern if impacts are contiguous.

5.2.2.3 Other metals

Soil samples included in this evaluation were also analyzed for other metals with the scope varying depending on the investigation. These additional metals results are summarized on Tables 5-2a through 5-2c. Concentrations of these metals were compared to the EPA residential and industrial RSLs, except for calcium, potassium, and sodium as no RSLs are available for these.

A subset of these other metals had detections above residential RSLs. Only cadmium, iron, manganese, and thallium were detected above their industrial RSLs and these detections were limited to a few results.

5.2.3 VOCs and SVOCs

Soils from a subset of the locations depicted on Figure 7 were analyzed for VOCs and SVOCs (e.g., 2009 RI, 2010 High Street, 2011 Phase II Site Assessment, and 2015 Investigation for Stormwater Drainage investigations). A summary of the results is provided below.

5.2.3.1 VOCs

The detected VOC soil results from these sample locations are presented in Table 5-3. A few locations had detections of VOCs in subsurface and deep soils; however, no detected concentrations were above residential or industrial RSLs. Additionally, the VOC detections were predominantly estimated concentrations (flagged with a J qualifier). The remaining VOC results showed no detections and VOCs were not detected in shallow soils.

5.2.3.2 SVOCs (including PAHs)

The detected SVOC results from these sample locations are presented in Table 5-4. A few locations had detections of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene above residential RSLs in subsurface and deep soils; however, none of the concentrations exceeded the industrial RSLs. One location, SWDI-10 also had a detection of indeno(1,2,3-c,d)pyrene at a concentration equal to its residential RSL. The remaining sample results showed SVOCs were either not detected or detections were below the RSLs.

SVOCs were not detected in shallow soils; however, the shallow soil sampling for SVOCs was limited to two locations (TH-18 and OU2-02). Additionally, SVOC detections appear to occur within the samples collected in the southern portion of the parking lots (e.g., HS and SWDI locations) and the northern portion of OU2 (e.g., DC locations and OU2-01 through OU2-04). The 2009 RI samples collected within the Coliseum parking lot show either no detections or sporadic low-level detections (e.g., SB locations).

5.2.4 Total Petroleum Hydrocarbons

Subsurface and deep soil samples collected as part of the I-70 Modifications Investigations (DC locations) and the 2010 High Street Investigation (HS-02, HS-03, and HS-08) were analyzed for petroleum hydrocarbons (see Figure 7). A summary of the TPH results are presented in Table 5-5. Gasoline range organics were not detected. Diesel range organics were detected at DC-3 through DC-8, HS-02, HS-03, and HS-08. Concentrations in the DC locations ranged

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from 24 mg/kg at DC-8 to 1400 mg/kg at DC-4. The more recent sampling for the 2010 High Street Investigation showed concentrations from 219 mg/kg to 248 mg/kg. Additionally, petroleum odors or visible free product were noted or observed on the borehole logs for several boreholes on or near the northern and southeastern boundaries of OU2 (e.g., SB-4-2, MW-02, MW-03, TH-7, TH-8, TH-17 and TH-18). Widespread soil sampling for TPH has not been conducted at OU2, and as such, potential impacts cannot be vertically or laterally delineated.

5.2.5 Other Constituents (Pesticides and PCBs)

Subsurface and deep soil samples collected as part of the 2010 High Street Investigation (HS-02, HS-03, and HS-08) were analyzed for pesticides and polychlorinated biphenyls (PCBs). No detections of PCBs were observed as shown in Table 5-6. The pesticides were also not detected except for 4,4-DDD at HS-02, and gamma-chlordane, 4,4-DDD, and 4,4-DDE at HS-08 as shown in Table 5-7. All detections were below the residential and industrial RSLs.

5.3 GROUNDWATER

Groundwater sampling locations evaluated as part of this nature and extent discussion are depicted on Figure 10. The sample locations included in the evaluation are described in the more detail in the following section.

This nature and extent evaluation for groundwater provides an overview of the historical and existing groundwater wells at and near OU2 and their location relative to the hydraulic gradient and the property. Additionally, a review of all available analytical groundwater data is provided. Results are summarized in terms of historical (pre-2009 RI) and recent (post-2009 RI) data to allow for an understanding of historical concentrations compared to current conditions. For the purposes of this discussion, all groundwater results were compared to the GSLs presented on Table 3-1.

5.3.1 Groundwater Monitoring Wells and Water Levels

Numerous monitoring wells, piezometers, and temporary wells have been installed in or near OU2 in the past, as shown in Table 2-1 and on Figure 10. There are currently three existing monitoring wells (MW-02, CTL MW-04 and CTL MW-05) and five piezometers (SWDI-5, SWDI-6, PZ-1, PZ-2, and PZ-3). Additionally, there are four existing wells that were historically used for cooling water at the Coliseum building that have been sampled for chemical analysis (QUAD-1, -2, -3, -4). MW-01 and MW-03 were existing until recently when they were inadvertently abandoned in June 2018 during construction activities associated with the National Western Complex. Wells installed in 2019 include the temporary piezometers OU2-01 through OU2-04 in the northern portions of the site, and off-site, upgradient wells GW-1 through GW-10 installed in the parking lots to the southeast of OU2. The 2019 wells may still be existing; however, it is unknown at this time and they are therefore assumed to be abandoned. The remainder of the wells and piezometers were abandoned or were destroyed during other construction activities that have occurred in or near OU2. A list of the wells that were used to collect groundwater samples and water levels on or near OU2 is included in Table 2-1. Table 2-1 also summarizes the well construction details and indicates the locations of the wells.

The 2009 RI assumed the direction of groundwater flow to be from southeast to northwest with groundwater discharging to the South Platte River, since the wells that were present at that time had not been surveyed. Information collected since the 2009 RI indicates that groundwater flows towards the South Platte with a subtle divide where ground flows westerly through the Globeville Landing Park in the southern portion of OU2, and to the north through the Coliseum parking lot in the northern portion of OU2. Water level measurements indicate that groundwater levels are approximately 10 to 20 feet bgs at elevations from approximately 5,161 feet above msl to 5,150 feet above msl; with

the lowest elevations measured in MW-01, PZ-3, and PZ-2 at around 5,150 feet above msl. A potentiometric surface map (groundwater elevations) that was developed based on water levels measured in 2015 indicated that the direction of groundwater flow beneath the Coliseum parking lot was to the north-northwest and to the west through the Globeville Landing Park area (EMSI, 2016a). Groundwater level monitoring in the southern portion of OU2 was conducted in 2019 after the completion of the GLO project to evaluate groundwater flow direction near the new stormwater feature (Apex, 2020). The GLO project included excavation of soils (at depth in certain areas) and installation of an impermeable barrier system (e.g., compaction grout columns, Vibro-stone columns, a strengthening layer, and a geomembrane liner), as described in the report *Final Design Report, Environmental Components for Globeville Landing Outfall Project* (EMSI, 2016a). Groundwater elevations measured post-construction in 2019 indicate a steeper groundwater gradient towards the stormwater feature as compared to the groundwater gradient presented based on the 2015. The potentiometric surface maps from the 2015 (EMSI, 2016a) and 2019 (Apex, 2020) water level monitoring are provided as Appendix C for reference. Quarterly monitoring of water levels in 2012 and 2019 indicate that the water table only fluctuates slightly due to seasonal effects (PWT, 2013; Apex, 2020).

During the excavations associated with the GLO project, the base of the Delgany sanitary sewer lines were exposed and a flowing underdrain layer consisting of gravel approximately 1.5 feet thick was discovered along with a leaking nine-inch diameter clay pipe within the underdrain. This sanitary sewer containing high hydraulic conductivity materials runs through the western portion of OU2. These features could create a preferential flow path for groundwater and additional consideration for their impact on the overall gradient is recommended.

The long-term impacts to the potentiometric surface due to the GLO project were modeled, and the results indicated that the re-equilibrated water levels and groundwater flux through the fill materials will be lower in the southwestern part of the Coliseum parking lot downgradient of the sheet piles. Model simulations also showed a slight increase in flux from the fill beneath the Coliseum parking lot overall following completion of the GLO project, partially due to the change in recharge conditions associated with the northern segment of the clay pipe beneath the Delgany sewer line (EMSI, 2018).

Stantec conducted a field assessment of the existing groundwater monitoring wells and piezometers in 2018 and observed that the elevation of the ground surface at some locations appears to have changed due to differential settlement of the ground surface, especially within the Coliseum parking lot, which is where the former municipal landfill was operated.

5.3.2 Dissolved Metals

Results for dissolved metals were reviewed against the available GSLs. Total metals data is also available for many of the investigations and in some cases only total metals data is available; however, these results are not discussed since the screening criteria used for the evaluation is intended for use with dissolved results. A review of total metals data can provide additional insights and can be revisited during the RI.

5.3.2.1 Historical Data (prior to 2010)

The dissolved metals results for wells sampled prior to the 2009 RI are presented in Table 5-8 and summarized below.

Arsenic

Dissolved arsenic concentrations were detected above the GSL of 10 µg/L at DC-3 and DC-4 during the 1997 sampling, MW-02 during 2005 and 2006 sampling, and once at MW-03 during 2005 sampling. In addition, the 1997 sampling showed a concentration at DC-2 equivalent to the GSL. All other results were either not detected or were detected below the GSL. The highest detected concentrations occurred at MW-02 where they ranged from 63 µg/L to 150 µg/L.

Lead

Dissolved lead concentrations were not detected above the GSL of 50 µg/L in historical results. The highest detected results were still well below the GSL at 6 µg/L at upgradient well MW-06 in 2006, and 2.6 µg/L at downgradient well MW-02 in 2005.

Other Metals

Other metals above GSLs in historical data included:

- Dissolved antimony was slightly above its GSL at MW-02 during 2005 sampling
- Dissolved iron was above its GSL in at MW-03 during 2005 sampling
- Dissolved manganese was above its GSL in 1991 samples collected from I-70 boreholes TH-1 through TH-5. It was also detected above its GSL in 2005 sampling at MW-02 and MW-03.
- Dissolved mercury was above its GSL at DC-3
- Dissolved selenium was above its GSL at DC-2, DC-3, and DC-4

The above list of other metals detected in historical data above GSLs were detected in upgradient, downgradient, and cross-gradient wells; however, these detections were sporadic in nature and/or concentrations were only slightly above respective GSLs.

5.3.2.2 Recent Data (2010 to 2019)

The dissolved metals results for wells sampled after the 2009 RI are presented in Table 5-9 and summarized below.

Arsenic

Dissolved arsenic was detected at concentrations above its GSL in recent data at wells CTL MW-04, CTL MW-06, MW-02, and MW-05; however, results for CTL MW-04 and MW-05 were estimated concentrations (flagged with a J qualifier).

The highest dissolved arsenic concentrations were present at downgradient well MW-02 during the 2012 sampling at 141 µg/L. The High Street locations which are considered upgradient and cross-gradient (HS-01 through HS-08) showed no arsenic detections in groundwater when sampled in 2010. It is difficult to perform a direct comparison of the results from all the wells as the data were collected during different time periods. However, quarterly data from 2012 which included upgradient, cross-gradient, and downgradient wells indicated that arsenic is only present above the GSL at downgradient well MW-02. The 2014 data show further indication of elevated arsenic at MW-02, but it was also detected above the GSL at upgradient well MW-05. Arsenic remained below the GSL at upgradient well MW-06 in 2014. Sampling of the CTL wells in 2014 showed no elevated arsenic concentrations at CTL MW-01, -02, or -03, which

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are upgradient, but CTL wells within OU2 (CTL MW-04 and CTL MW-06) contained detections above the GSL. CTL MW-02 is positioned just downgradient of MW-05, which suggests the exceedance that occurred in 2014 at MW-05 may be a false positive.

In general, these results suggest that the water flowing from upgradient wells into the OU2 does not contain elevated arsenic concentrations, so the higher detections observed at MW-02, CTL MW-04, and CTL MW-06 could be from localized sources near the wells or a result of dissolution of arsenic as groundwater migrates through the southeastern boundary of OU2 where arsenic soil concentrations are relatively high (see Figures 8a through 8c). Since there are no centrally located monitoring points between upgradient and downgradient wells, it is unclear if the elevated arsenic detections at wells within the footprint of OU2 are continuous or isolated.

Lead

Dissolved lead concentrations were not detected above the GSL of 50 µg/L in recent results. The highest detected results were still well below the GSL at 20.6 µg/L at upgradient well MW-05 in 2014, and 18.4 µg/L at downgradient well MW-03 in 2012.

Lead concentrations in groundwater are well characterized near site boundaries. However, potential impacts central to the Coliseum parking lot and beneath the Globeville Landing Park are unknown.

Other Metals

Other metals above GSLs in recent data included:

- Dissolved antimony at MW-02 in 2012 (slightly above its GSL at MW-02 in the third and fourth quarters of the 2012 sampling); dissolved antimony in 2014 at MW-01 and MW-05 (estimated)

  Dissolved beryllium at MW-01 and MW-05 in 2014 (estimated)

- Dissolved cadmium at SWDI-1 in 2015, MW-05 in 2014 (estimated), HS-03 and HS-04 in 2010, and CTL MW-03 in 2011

- Dissolved copper at MW-05 in 2014 (estimated)

- Dissolved iron at MW-02 and MW-03 in 2012 and 2014, CTL MW-04 in 2014, CTL MW-05 in 2014 and 2015, CTL MW-06 in 2014, SWDI-6 in 2015, and OU2-02 and OU2-03 in 2019

- Dissolved manganese at CTL MW-04 and CTL MW-05 in 2011 and 2014, at CTL MW-06 in 2011, 2014, and 2015, at MW-01, MW-02, and MW-03 in 2012 and 2014, at MW-05 in 2014, at multiple SWDI locations in 2015, at TH-47 in 2016, and at OU2-01 through OU2-04 in 2019

- Dissolved nickel at MW-01 in 2014 (estimated)

- Dissolved thallium at MW-01 and MW-05 in 2014 (estimated)

- Dissolved uranium at TH-45, TH-47, and TH-48 in 2016

- Dissolved vanadium at MW-01 in 2014 (estimated)

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Although the list of "other metals" above GSLs for recent data appears extensive, these are naturally occurring in groundwater and are being compared to the drinking water and agricultural standards. Additionally, most of the concentrations were estimated (flagged with a J qualifier). Many of the concentrations are likely within the limits of natural variability for metals in groundwater.

5.3.3 Volatile Organic Compounds

5.3.3.1 Historical Data (prior to 2010)

The historical VOC detected results are summarized in Table 5-10. Available historical VOC groundwater data includes samples collected from DC-2, DC-3, and DC-4 in 1997 (Walsh, 1997) and MW-02 and MW-03 in 2005 (Brown and Caldwell, 2005a). No VOCs were detected above GSLs in the 1997 or August 2005 data collected from the DC and MW locations noted above. Additionally, VOCs were sampled as part of the Brighton Boulevard Investigation at locations along the eastern boundary of the site (BB-BB-26 through BB-BB-34 and BB-CT-38 through BB-CT-40). These data are not tabulated in Table 5-10 because they are considered screening level in nature due to the sample collection methods (see Section 3.1.6). Results for this sampling did show detections of VOCs at some of the locations along Brighton Boulevard; however, concentrations were all below GSLs, with the exception of BB-BB-26. Concentrations of VOCs were detected above the GSLs at this location with TCE and PCE at relatively high concentrations of 700 and 4,800 µg/L, respectively. The TCE result at BB-BB-26 was flagged with a B qualifier, indicating that TCE was also detected in the blank. Results for BB-CT-38 and BB-CT-39 to the north of the site showed elevated concentrations of PCE at 300 µg/L and 92 µg/L, respectively. TCE was also present at a concentration slightly above its GSL at BB-CT-38 at 6 µg/L. Results for the two locations to the southwest of the site, BB-38-22 and BB-38-25, showed detections of bromodichloromethane, TCE, and PCE above GSLs at BB-38-22, and detections of TCE above its GSL at BB-38-25.

5.3.3.2 Recent Data (2010 to 2019)

The recent groundwater VOC data are summarized in Table 5-11[1]. The VOC groundwater results from these investigations were as follows:

- Benzene was detected slightly above the GSL at MW-03 in 2014 and SWDI-1 in 2015 (7.7 and 6 µg/L compared to a GSL of 5 µg/L)
- Chlorobenzene was detected slightly above the GSL in one result with an estimated concentration from MW-03 in 2014
- Chloroform was detected in 17 of the wells, but was above the GSL only at CTL MW-01 in 2011, HS-04 in 2010, MW-06 in 2012 and 2014, and QUAD-3 and QUAD-4 in 2015

[1] VOC groundwater data from wells GW-1 through GW-10 are evaluated to provide additional information on potential upgradient sources. Because these wells are upgradient of OU2, results are not indicative of impacts sourced from OU2. As such, data from these wells are not included in the groundwater data tables of this report but are instead discussed qualitatively in the following sections as appropriate.

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- PCE was detected above the GSL at CTL MW-01 in 2014, CTL MW-06 in 2011, HS-01 in 2010, MW-01 in 2010, 2012, and 2014, MW-03 in 2014, SWDI-2, SWDI-4, SWDI-7, SWDI-12, SWDI-14 through SWDI-16 in 2015, and TH-45 through TH-48, and TH-52 in 2016. Concentrations ranged from 0.17 µg/L at MW-06 to 52 µg/L at MW-01.
- TCE was detected above its GSL at CTL MW-01 in 2014, CTL MW-06 in 2011, HS-01 in 2010, MW-01 in 2012 and 2014, MW-03 in 2014, SWDI-2, SWDI-4, SWDI-8, and SWDI-16 in 2015, and TH-48 and TH-52 in 2016. Concentrations ranged from 0.14 µg/L at MW-05 to 19 µg/L at MW-01.
- Vinyl chloride was detected above its GSL once at SWDI-7 in 2015 and the concentration was estimated (flagged with a J qualifier)
- Other VOCs were detected, but concentrations were below their respective GSLs.

Most of the VOC detections were low concentration and isolated to a few detections at select locations. Exceptions to this include chloroform, PCE, and TCE. Chloroform is a common lab contaminant and it was only above the GSL at three locations. The PCE detections above the GSL occur within the southern portion of OU2 and extend offsite to the south at CTL MW-01; however, sampling at nearby groundwater monitoring wells HS-05 and MW-06 has not shown elevated detections. The highest detections occurred in samples collected from MW-01 which is considered a downgradient groundwater monitoring well near the western boundary of the OU2; however, groundwater monitoring wells offsite and upgradient also contained elevated PCE detections. The elevated TCE detections are similar in location and relative magnitude as the PCE detections, with the highest detected concentrations at MW-01, and offsite upgradient groundwater monitoring wells also containing elevated detections. Figure 11 shows the most recent set of TCE and PCE groundwater data for the site and displays a combination of sampling results depending on the location as follows:

- April 2011 results at CTL MW-03
- Quarter 1, 2014 results at CTL MW-01, CTL MW-02, CTL MW-04, CTL MW-05, MW-01, MW-02, MW-03, MW-05, and MW-06
- Quarter 2 2015 results at QUAD wells
- July 2015 results at CTL MW-06 and the SWDI wells
- April 2019 results at upgradient OU1 wells GW-1 through GW-5
- May 2019 results at upgradient OU1 wells GW-6 through GW-8
- June 2019 results at upgradient OU1 wells GW-9 and GW-10
- November 2019 results at OU2-01 through OU2-04

Since there are no centrally located groundwater monitoring wells, potential VOC impacts central to the Coliseum parking lot and beneath the Globeville Landing Park are unknown.

5.3.4 Semi-Volatile Organic Compounds

5.3.4.1 Historical Data (prior to 2010)

The historical groundwater SVOC detected results are summarized along with VOCs in Table 5-10. Groundwater samples were collected for analysis of SVOCs in historical data from DC-2, DC-3, and DC-4 in 1997 (Walsh, 1997) and MW-02 and MW-03 in 2005 (Brown and Caldwell, 2005a). No SVOCs were detected above GSLs in 1997 (DC locations) or 2005 (MW-02 and MW-03).

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5.3.4.2 Recent Data (2010 to 2019)

The recent groundwater SVOC detected results are summarized along with VOCs in Table 5-11. Samples were collected at wells throughout OU2 including the QUAD, CTL, and MW wells as well as temporary piezometers during the High Street investigation (HS-01 through HS-08) and the Central 70 investigation (OU2-01 through OU2-04). Results showed some sporadic low-level detections with concentrations all below GSLs for the recent sampling events. Data from these wells suggests SVOCs are not likely a concern in groundwater at the site.

5.3.5 Total Petroleum Hydrocarbons

Groundwater sampling for petroleum hydrocarbons occurred in 1997 from locations DC-2, DC-3, DC-4, in 2005 at wells MW-02 and MW-03, and in 2019 from locations OU2-01 through OU2-04. Results showed low level detections of oil range organics (oil & grease, total recoverable) and diesel range organics (TPH as diesel fuel) at DC-4 at 5.8 mg/L and 2 mg/L, respectively. Results from 2005 showed low level detections of TPH (C10-C36) at MW-02 and MW-03, and a low-level detection of gasoline range organics at MW-03 (0.049 mg/L). Total petroleum hydrocarbons were not detected in the sampling from OU2-01 through OU2-04 in 2019.

5.3.6 Polychlorinated Biphenyls

Groundwater sampling for PCBs was conducted at wells MW-02 and MW-03 in 2005 and at wells OU2-01 through OU2-04 in 2019. These results showed no detections of PCBs in groundwater except for an estimated detection of 0.03444 (flagged with a J qualifier) at OU2-03.

5.4 SURFACE WATER AND SEDIMENTS

Surface water and sediment sampling locations evaluated as part of this nature and extent discussion are depicted on Figure 12. The two sample locations are within the South Platte River and includes analytical results from the 2005 and 2006 Sediment, Surface Water, and Groundwater Investigations (CCoD, 2006a and 2006b). A summary of the comparative analysis of the surface water and sediment data is provided in Table 5-12. Surface water and sediment samples were analyzed for metals only. Location N43 is located upstream of OU2 and appears to be near the eastern bank of the river and N46 is located downstream of the OU2 and appears to be near the western bank of the river. For the purposes of this extent discussion, a comparative analysis was performed between the upstream and downstream data for the surface water and sediment results. A summary of these results is provided below.

- The surface water data collected at the two locations did not indicate significant differences in arsenic and lead concentrations between upstream and downstream of OU2. Dissolved arsenic and lead detected at both locations where as follows:
    - Dissolved arsenic concentrations ranged from 0.65 µg/L to 1.6 µg/L at N43 and 0.73 µg/L to 1.7 µg/L at N46
    - Dissolved lead concentrations ranged from 0.19 µg/L to 0.35 µg/L at N43 and 0.08 µg/L to 4.9 µg/L at N46. The lead detection of 4.9 µg/L was an anomaly, with all other results at 0.33 µg/L or lower.
- Similarly, metal concentrations in the sediment samples did not indicate significant differences in metal concentrations between the upstream and downstream location. Arsenic and lead were detected at both locations, as follows:

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- Arsenic concentrations ranged from 1.0 mg/kg to 1.9 mg/kg at N43 and 1.0 mg/kg to 2.7 mg/kg at N46
- Lead concentrations ranged from 27 mg/kg to 550 mg/kg at N43 and 20 mg/kg to 68 mg/kg at N46. The lead detection at 550 mg/kg at upstream location N43 was an anomaly, with all other results below 50 mg/kg.

Although these data do not indicate increases in arsenic and lead concentrations downstream of OU2, these data are not comprehensive enough to conclude regarding the nature and extent of COPCs in surface water and sediment within the South Platte River relative to OU2. However, additional sampling data for surface water and sediment is available for review based on regular sampling that the CCoD conducts upstream and downstream of OU2 as part an ongoing evaluation of water quality in the South Platte River.

5.5 LANDFILL GAS AND SOIL GAS

Landfill gas sampling (e.g., methane [CH_4] monitoring) was conducted as part of the 2010 High Street Limited Subsurface Investigation (Brown and Caldwell, 2010) in boreholes HS-01, HS-02, HS-03, HS-04, and HS-08. The monitoring was conducted using a Landtec Gem 500® landfill gas meter. Gas samples were collected by drilling an additional borehole 2 to 3 feet from the existing borehole. The drilling rods were connected to the gas meter with disposable Tygon® tubing and measurements were collected at suspected depths of landfill material. The readings were collected from the bottom of the drill rods and the results are shown in Exhibit 5-1 below.

Exhibit 5-1: Landfill Gas Field Sampling Data (Brown and Caldwell, 2010)

Loc ID	Soil Gas (percent of total)				Sample Depth (feet)	
	O_2	CH_4	CO_2	Balance	Top	Bottom
HS-01	0.0	0.5	5.8	93.7	17	20
HS-02	0.0	43.4	16.3	40.5	7	10
HS-03	0.0	56.7	16.1	27.5	12	15
HS-04	17.3	0.0	1.3	81.4	17	20
HS-08	3.6	9.8	8.0	78.7	10	13

Methane concentrations ranged from 0.0 at HS-04 to 56.7 at HS-03 percent of total soil gas. Concentrations of methane were higher at HS-02 and HS-03 which contained soils with diesel range organics (Table 5-5), suggesting that the presence of methane could be a result of the biodegradation of petroleum hydrocarbons, landfill materials or naturally occurring organics via methanogenesis. The presence of methane in the subsurface could degrade water quality in the shallow aquifer. Although methane itself is not a concern in groundwater, the oxidation of methane can result in higher concentrations of dissolved metals in groundwater. Additionally, methane concentrations above five percent (100 percent lower explosive limit [LEL]) present potential explosive hazards during subsurface work/construction efforts. These results provide some indication of the presence of methane in the subsurface at OU2 but are limited in scope and cover only a portion of the site (see Figure 5 for the 2010 High Street sample locations).

6.0 CONCEPTUAL SITE MODEL

6.1 HISTORICAL CONCEPTUAL SITE MODEL

Three risk assessment reports prepared by EPA and Syracuse Research Corporation for OU2 were reviewed to evaluate the conceptual site model, as follows:

- 2006 Draft Baseline Human Health and Screening Level Ecological Risk Assessment for the Vasquez Boulevard and Interstate 70 Site, Operable Unit 2 (EPA, 2006)
- 2009 Final Screening-level Ecological Risk Assessment (SLERA) for the Vasquez Boulevard and Interstate 70 Site, Operable Unit 2 (EPA, 2009a)
- 2009 Final Baseline Human Health Risk Assessment (HHRA) for the Vasquez Boulevard and Interstate 70 Site, Operable Unit 2 (EPA, 2009b)

The Final 2009 HHRA and SLERA considered additional soil sample data for lead and arsenic collected after the 2006 Draft risk assessment (EPA, 2006). EPA's risk assessment was confined to COPCs associated with wastes from the historical Omaha & Grant Smelter. Arsenic, cadmium, copper, lead, and zinc were the primary COPCs. High levels of arsenic and lead were detected in some subsurface soil samples.

6.1.1 Summary of the 2009 HHRA

The 2009 HHRA divided OU2 into two large Commercial Exposure Units assuming future commercial development (Figure 3-4 / 2009 HHRA), and four Residential Exposure Units (Figure 3-5 / 2009 HHRA) assuming future development for multifamily residential use. Figures 3-4 and 3-5 from the 2009 HHRA are provided as Appendix D for reference. The Globeville Landing Park was not identified as an Exposure Unit, although recreational contact with surface water and sediment in the South Platte River was evaluated. Soil data for the Globeville Landing Park were excluded from the 2006 HHRA and SLERA because EPA delisted the surface soils in this area from the VB/I-70 OU2 Superfund Site study area based on sampling efforts conducted in 2002 (EPA, 2003).

The 2009 HHRA considered four on-site receptors; commercial workers, construction workers, adult and child residents, and recreational visitors to the South Platte River. Incidental ingestion of COPCs in surface soil and subsurface soil (construction worker) was identified as the only potentially significant pathway of exposure for quantitative analysis. Other potentially complete pathways of exposure were identified but determined to contribute little to cancer risk and non-cancer hazard. Recreational visitors to the South Platte River were quantitatively evaluated for incidental ingestion of surface water and sediment.

Quantitative estimates of cancer risk and non-cancer hazard presented in the 2009 HHRA were calculated using methods consistent with the state of the practice at that time. Reasonable Maximum Exposure (RME) and Central Tendency Exposure (CTE) estimates were presented. The RME estimates are more conservative (higher) than the CTE estimates and typically drive risk management decisions.

Exposure to inorganic lead in soil was evaluated using Physiologically-Based Pharmacokinetic Models to estimate fetal blood lead concentration from maternal exposure (Commercial Worker and Construction Worker) and blood lead

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concentrations of young children ages zero to six years (Future Residential Receptor). The blood lead models estimate the probability that the blood lead concentration of the fetus of an exposed mother, or the blood lead concentration of a young child, will be greater than a target value given a specified concentration of lead in soil. In 2009, the target blood lead concentration for protection of young children was 10 micrograms of lead per deciliter of blood (10 µg/dL). In 2009 a less than 5 percent probability of exceeding 10 µg/dL (from exposure to lead in soil) was considered acceptable. In the intervening years, the target blood lead concentration has been reduced. The target blood lead concentration recommended by the Centers for Disease Control and Prevention (CDC) is currently 5 µg/dL (CDC 2012).

The 2009 HHRA reached the following conclusions for each of the four receptors:

Commercial Workers in Commercial EUs:

- The RME cancer risk and non-cancer hazard were: 2E-06 and 2E-02 for Commercial Exposure Unit 1, respectively; and 1E-05 and 3E-01 for Commercial Exposure Unit 2, respectively.
    - Cancer risk and non-cancer hazard from ingestion of COPCs in surface soil were below levels of regulatory concern.
- The probability of exceeding the target fetal blood lead concentration of 10 µg/dL for a pregnant Commercial Worker was less than 0.1% for Commercial Exposure Unit 1; but 70% for Commercial Exposure Unit 2.
    - The 2009 HHRA indicated that exposure to lead in surface soil in Commercial Exposure Unit 2 is of potential concern for the fetus of a pregnant Commercial Worker.

Construction Workers in Residential and Commercial EUs:

- The RME cancer risk and non-cancer hazard for Construction Workers were estimated at:

Exhibit 6-1: RME Cancer and Non-Cancer for Construction Workers from 2009 HHRA

Exposure Unit	Cancer Risk	Non-Cancer Hazard
Residential EU 1	4E-06	2E-01
Residential EU 2	5E-06	6E-01
Residential EU 3	5E-07	3E-02
Residential EU 4	1E-06	7E-02
Commercial EU 1	6E-07	5E-02
Commercial EU 2	4E-06	5E-01

    - Cancer risk and non-cancer hazard from ingestion of COPCs in surface and subsurface soil were below levels of regulatory concern.
- The probability of exceeding the fetal blood lead concentration of 10 µg/dL for a pregnant Construction Worker was less than 0.1% for Residential Exposure Units 1, 3, and 4, and Commercial Exposure Unit 1; but greater than 95% for Residential Exposure Unit 2, and 18% for Commercial Exposure Unit 2.
    - The 2009 HHRA indicated that exposure to lead in surface and subsurface soil in Residential Exposure Unit 2 and Commercial Exposure Unit 2 is of potential concern for the fetus of a pregnant Construction

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Worker. Note that Residential Exposure Units 1 and 2 are within the boundaries of Commercial Exposure Unit 2 and coincide with the location of the former smelter buildings (Figures 3-4 and 3-5).

Hypothetical Future Residents in Residential EUs:

- The RME cancer risk and non-cancer hazard for Hypothetical Future Residents were estimated at:

Exhibit 6-2: RME Cancer and Non-Cancer for Hypothetical Future Residents from 2009 HHRA

Exposure Unit	Cancer Risk	Non-Cancer Hazard
Residential EU 1	6E-05	4E-01
Residential EU 2	1E-04	3E+00
Residential EU 3	1E-05	1E-01
Residential EU 4	3E-05	2E-01

  - The 2009 HHRA stated that RME (and CTE) cancer risks were within EPA's risk management range for cancer (1E-06 to 1E-04) for all Residential Exposure Units; but the RME non-cancer hazard exceeds a level of concern in Residential Exposure Unit 2 due to concentrations of arsenic, manganese, and thallium in surface soil.
- The probability that a young child resident would have a blood lead concentration exceeding 10 µg/dL was 6.9% for Residential Exposure Unit 1; greater than 95% for Residential Exposure Unit 2; 5.9% for Residential Exposure Unit 3; and 1.5% for Residential Exposure Unit 4.
  - The 2009 HHRA indicates that the concentrations of lead are a potential concern for a hypothetical future young child resident.

Recreational Visitors to the South Platte River Exposure Unit:

- The RME cancer risks and non-cancer hazards were less than 1E-07 and less than or equal to 1E-03 for incidental ingestion of surface water and sediments during recreation activities in the South Platte River Exposure Unit.
  - Cancer risk and non-cancer hazard from incidental ingestion of COPCs in surface water and sediment were well below regulatory levels of concern.
- The probability of exceeding the fetal blood lead concentration of 10 µg/dL for a pregnant Recreational Visitor to the South Platte River was less than 0.1%.
  - The 2009 HHRA indicated that exposure to lead in sediment and surface water in the South Platte River was not a potential concern for the fetus of a pregnant Recreational Visitor.

6.1.2 Summary of the 2009 SLERA

The 2009 SLERA identified three groups of ecological receptors potentially affected by COPCs in soil and groundwater on OU2; Urban Wildlife, Terrestrial Plants, and Aquatic Receptors (fish and benthic organisms) in the South Platte River. The conclusions of the SLERA are briefly summarized below.

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- Although common Urban Wildlife species (e.g. squirrels, rodents, sparrows) may occasionally be present on OU2, there is little if any habitat or resources that would support these receptors.
    - Future development of OU2 for Commercial and/or Multifamily Residential use would be unlikely to create significant habitat for Urban Wildlife.
    - Consequently, potential exposures to Urban Wildlife were not evaluated.
- Since future development could include landscaping and trees, surface, and subsurface concentrations of COPCs were compared to toxicity benchmarks for plants.
    - The 2009 SLERA concluded that the concentrations of metals in some locations were within the phytotoxic range.
- The 2009 SLERA identified groundwater from OU2 migrating to surface water and sediment in the South Platte River as a potential pathway of exposure to Aquatic Receptors (fish and benthic organisms). Concentrations of COPCs in surface water and sediment samples from the South Platte River were compared to toxicity benchmarks.
    - The 2009 SLERA concluded that any impacts from groundwater discharging from OU2 to the South Platte River were not of ecological concern.

6.1.3 Uncertainties Associated with the 2009 HHRA and SLERA

Although the 2009 HHRA and SLERA were consistent with the state of risk assessment practice and understanding at the time, over the intervening years new developments in the evaluation of exposures to lead in soil and concerns about the vapor intrusion pathway have occurred and are sources of uncertainty that could not have been anticipated in the previous risk assessments. The objective of the revised Conceptual Site Model (CSM) described below and subsequent risk assessments based on existing and new environmental sampling data is to establish a basis for informing management decisions for OU2 that are consistent with the current state of the practice and likely plans for future land development.

6.2 REVISED CONCEPTUAL SITE MODELS AND RISK ASSESSMENT APPROACH

The Additional Work Notification letter (August 8, 2017) from EPA Region 8 to the CCoD requested a revised CSM and risk assessment approach. Stantec reviewed the CSMs prepared for the 2009 HHRA and SLERA and discussed possible future development strategies for OU2 with the CCoD. There are multiple parcels (June 2018) within the boundaries of OU2 as previously defined by EPA Region 8's Superfund Program; but not all parcels are owned and controlled by CCoD. Consistent with EPA's request, preliminary revised CSMs were developed for OU2 based on current information about likely future development. The rationale for defining the boundaries of Exposure Units within OU2 and associated receptors to be evaluated in the HHRA and SLERA are briefly discussed in the following sections.

The revised CSMs provide a framework for identifying potential human and ecological receptors, sources, and transport of COPCs in environmental media, and potential pathways and routes of exposure through which receptors may contact COPCs. Risk assessment is an evolving science, and many new developments have occurred since the HHRA and SLERA were submitted in 2009. Additional environmental information is available from investigations that occurred after 2010. CCoD and private-sector redevelopment plans for the properties encompassed by OU2 have changed since 2009 and continue to change. Many of the models and assumptions used to quantitatively evaluate exposure and

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associated cancer risk and non-cancer hazard have been updated. For example, the potential for vapor intrusion from VOCs in the subsurface to indoor air has come to the forefront of risk assessment and public health concerns. The public health community has lowered the level of concern for lead in the blood of children and the developing conceptus of a pregnant woman exposed to environmental lead. The revised HHRA for OU2 will consider new information and the current state of risk assessment practice.

6.2.1 CSMs for the Revised HHRA

The boundaries of OU2 were established based on the original property boundary of the Omaha and Grant Smelter and contain areas that could be considered for future development. From a practical standpoint, the potentially developable land is bounded by Brighton Boulevard, the South Platte River, the Pepsi Bottling Group property, the rail lines on the northwest side of the Denver Coliseum parking lots, and 44th Street to the east of the Coliseum buildings. There is a minimum of three distinctly different Exposure Units within these boundaries defined by current and possible future land use:

- Exposure Unit 1 - The Globeville Landing Park
- Exposure Unit 2 - The Denver Coliseum Buildings and parking lot
- Exposure Unit 3 – Commercial and Industrial Properties

The three exposure units are shown on Figure 13 and the preliminary CSMs for the revised HHRA are represented graphically in Figures 14 to 16.

An Exposure Unit is generally defined as a geographical area within which a receptor has an equal chance of contacting contaminated media at all locations. The HHRA CSM for each Exposure Unit identifies receptors (classes of people) that may be present within the Exposure Unit. Receptors that are currently or may be present on one or more of the four Exposure Units, and have frequent and/or intense contact with environmental media are:

- Recreational users (Globeville Landing Park)
- Residents of multi-family housing (future development)
- Indoor Workers (people who work in shops, restaurants, and offices)
- Outdoor Workers (people who work primarily outdoors performing maintenance or landscaping)
- Construction/excavation workers who are involved in activities such as digging building foundations, installing underground utilities, and contouring the land surface
- Indoor/Outdoor Workers (people who work in the horse barn adjacent to the Coliseum)

Other individuals may visit the Exposure Units to shop, dine in restaurants, and attend events at the Coliseum. However, these receptors are not expected to be present frequently or to have extensive contact with environmental media on OU2. Risks and hazards to these groups of receptors are represented by the categories of individuals listed above.

The CSM for each Exposure Unit also identified the pathways of exposure by which COPCs may move from a source through environmental media (i.e. soil, groundwater, surface water, sediment, ambient and indoor air) to locations

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where receptors are located and may have contact with media containing COPCs through ingestion, inhalation, and/or dermal absorption (routes of exposure).

Based on current and historical information, pathways and routes of exposure are designated as Potentially Complete; Potentially Complete but Insignificant (unlikely to contribute to estimated cancer risk and non-cancer hazard); and Incomplete. Potentially complete pathways and routes of exposure will be evaluated quantitatively using historical data, and any new investigation data generated for the Exposure Unit. Potentially complete but insignificant pathways and routes of exposure will be evaluated qualitatively and may be evaluated quantitatively if sufficient sampling data are available. Incomplete pathways will be discussed but not evaluated.

The pathways and routes of exposure identified in the CSMs for OU2 are outlined below and more fully described in the discussion of each of the four proposed Exposure Units. The potential for exposure to COPCs in environmental media is dependent on individual receptor activities, the geographic locations where those activities occur, and the presence of COPCs in environmental media in those locations. Pathways and routes of exposure considered in the CSMs are specific to the current and/or potential future land use for each Exposure Unit and the types of receptors expected to be present.

Soil Pathway:

Contact with soil is a function of receptor daily activities. Receptors may be exposed to COPCs in soil through incidental ingestion (i.e. hand to mouth transfer), skin contact and absorption into the bloodstream through the dermis, and inhalation of COPCs volatilizing from soil or COPCs adsorbed to soil particulate released to ambient air by wind or mechanical disturbance. Except as noted for the Globeville Landing Park, direct contact with COPCs in soil is expected to be a complete pathway of exposure for receptors on OU2.

The distribution of COPCs in soil can vary by depth below ground surface depending on the historical activity from which the COPCs originated. Depending on the questions to be answered by the HHRA, risk assessors frequently evaluate potential contact with COPCs in surficial soil (0 to 2 ft. bgs) and potential contact with COPCs in subsurface soils (0 to 10 ft. bgs or deeper). Receptors may contact surface soil while walking across uncovered ground (i.e. not covered by pavement or other physical barriers), during recreational activities, landscape maintenance, gardening, etc. Except for construction and utility workers, all other receptors are assumed to have contact with COPCs in surficial soils (0 to 2 ft. bgs).

Contact with subsurface soil is associated with intrusive activities such as construction of building foundations, installation and repair of underground utilities, removal of subsurface structures (i.e. underground storage tanks or vaults). For this HHRA only construction workers and excavation workers are assumed to have direct contact with COPCs in subsurface soils from the ground surface to the depth of a standard excavation (0 to 10 ft. bgs). Specific site development plans may warrant evaluation of potential exposures to COPCs in soils deeper than 10 ft. No other receptors identified in the revised CSMs for OU2 engage in activities where they would contact soil deeper than 0 to 2 ft. bgs.

It is Stantec's understanding that the Soil Management Plan for OU2 requires that disturbed or excavated soils be removed from the property and not used as grading material, limiting potential contact with COPCs in subsurface soils to the duration of a specific project.

Sediment in the South Platte River:

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Recreational users of the Globeville Landing Park and the stretch of the South Platte River adjacent to OU2 may have limited, incidental exposure to site-related COPCs in bank and submerged sediment-if such COPCs are present in sediment at locations accessed by receptors. Although potentially complete, contact with COPCs in sediments in the South Platte River (if present) is expected to contribute little to cancer risk and non-cancer hazard for recreational receptors.

Surface Water Pathway:

Recreational users of Globeville Landing Park may have incidental contact with COPCs in near-shore surface water in the South Platte River that originated from groundwater beneath OU2 venting to the River. Although potentially complete, contact with COPCs in surface water of the South Platte River (if present) is expected to contribute little to cancer risk and non-cancer hazard for recreational receptors.

Groundwater Pathway:

Groundwater beneath OU2 is not a current or future source of potable water for current and/or future receptors. However, if volatile COPCs are present in groundwater beneath existing buildings, or the intended locations of future buildings, the potential for migration of volatile COPCs from the subsurface to indoor air inside occupied buildings (vapor intrusion) must be considered as a pathway of exposure.

Other potential pathways of exposure to COPCs in groundwater involve incidental ingestion and dermal contact during recreational activities where groundwater from beneath OU2 vents to surface water in the South Platte River; and incidental contact during construction or excavation work where groundwater pools in the bottom of a building foundation or utility trench. Although these pathways may be potentially complete for specific receptors, direct contact with COPCs in groundwater (if present) is expected to contribute little to cancer risk and non-cancer hazard.

Pathways of Exposure to Biological Media:

There are two potential pathways of exposure to COPCs in biological media; consumption of fish from the South Platte River and consumption of produce from urban garden plots. Although these pathways are potentially complete, they are not expected to contribute significantly to cancer risk or non-cancer hazard for the receptors identified in the revised CSMs for OU2. The reasons for this determination are briefly discussed below.

Recreational users of the South Platte River at the Globeville Landing Park or along the shore adjacent to OU2 may catch and consume fish that have accumulated site-related COPCs. People are known to fish in the South Platte River, and it is possible that anglers occasionally consume their catch. Although ingestion of fish from the South Platte River adjacent to OU2 may be a complete pathway of exposure for recreators, it is unlikely to be a significant source of exposure to site-related COPCs. The primary COPCs from historical metal smelting on OU2, arsenic and lead, may be taken up by fish tissues but do not bioconcentrate in the same way as persistent organic compounds such as PCBs. Furthermore, it is very unlikely that recreationally caught fish from the South Platte River are frequently consumed.

Future development of portions of OU2 could include space for urban garden plots on unimproved surface soil, with the possibility that urban garden produce could uptake COPCs from soil and become a pathway of exposure to consumers of the produce. However, it is unlikely that a receptor would consume produce from urban gardens frequently enough to contribute to cancer risk and non-cancer hazard. This pathway will be evaluated qualitatively for future residents on Exposure Units 2 and 3.

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Proposed Exposure Units for the revised HHRA are briefly described in the following sections. Receptors and potential pathways of exposure are described for each Exposure Unit.

6.2.1.1 Exposure Unit 1: Globeville Landing Park

The Globeville Landing Park (Exposure Unit 1) consists of all or portions of the following parcels owned by the CCoD: #45; #46; #159; #190; #123, and #229. The physical boundaries of Exposure Unit 1 are shown on Figure 13.

The Globeville Landing Park is integral to the CCoD's overall plan to incorporate public greenspace into infrastructure improvement projects. The recently renovated Globeville Landing Park provides enhanced recreational opportunities and access to the South Platte River. Adults and children are expected to use the greenspace areas of the park for a variety of activities, such as walking, cycling, picnicking, and playing in open areas; and the South Platte River for wading and/or swimming, kayaking/canoeing, and fishing. Intermittently

While engaging in these activities, recreational visitors are expected to have direct contact surface soils; however, contact with surface soil is not a complete pathway of exposure to COPCs. Surface soils were delisted by the EPA and soils in place are assumed to be clean (i.e., clean fill placed during recent construction). Recreational visitors may have occasional contact with sediments and surface water in the South Platte River by incidental ingestion and dermal contact. Although these may be complete pathways of exposure to COPCs, they are unlikely to contribute significantly to cancer risk and non-cancer hazards because the frequency (number of visits per unit time) of contact is expected to be limited. Recreational visitors to the Globeville Landing Park are not expected to have direct contact with subsurface soils or groundwater.

As discussed previously, consumption of recreationally-caught fish is identified as a potentially complete but insignificant pathway of exposure. Sampling fish tissue from the South Platte River adjacent to OU2 is not warranted based on current information. Consumption of fish will be qualitatively evaluated in the HHRA.

The Globeville Landing Park is expected to continue as public recreational greenspace into the future, and there are few uncertainties about receptors and pathways of exposure.

Figure 14 is a graphical depiction of the CSM for Exposure Unit 1 for the revised HHRA.

6.2.1.2 Exposure Unit 2: The Denver Coliseum and Parking Lot

The Denver Coliseum buildings and Coliseum parking lot (Exposure Unit 2) consist of parcel #123 owned by the CCoD. The physical boundaries of Exposure Unit 2 are shown on Figure 13.

Future use of the land now occupied by the Denver Coliseum buildings and parking lot is not known but it is likely to be consistent with the current trend of mixed commercial/high density residential developments. Although there are no (known) specific plans, a mixed commercial/high density residential development could include features such as landscaped greenspaces, recreational areas, and urban garden plots. Re-use of the existing Denver Coliseum or the construction of new performance venues (e.g., rodeo and equestrian events and/or exhibits) is also a possible future use. Since future land use is not known, all plausible receptors and pathways of exposure are being considered in the CSM for Exposure Unit 2.

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If some portion of the land within Exposure Unit 2 is developed for mixed commercial/high density residential use (most likely use), future receptors would be; adult and child residents; people who work indoors in restaurants, shops and businesses (indoor workers); people who work outdoors performing maintenance or landscaping; and construction/excavation workers. If the Coliseum Building and adjacent horse barn continue as they are currently, receptors associated with this portion of Exposure Unit 2 include individuals who spend most of their workday in and around the horse barn and Coliseum building (indoor/outdoor workers). Other groups of receptors who are assumed to be present less frequently and have limited opportunity for contact with environmental media include performers and participants in rodeo and/or equestrian events, visitors to events in the Coliseum, and visitors to shops and restaurants.

All current and possible future receptors on Exposure Unit 2 are assumed to have complete pathways of exposure to COPCs in soil through incidental ingestion and dermal contact. Construction workers and excavation workers are assumed to have direct contact with COPCs in soils from the surface to the depth of an excavation (0 to 10 ft. bgs). All other receptors are assumed to have direct contact with COPCs in surface soil (0 to 2 ft. bgs). Receptors who work indoors and future residents are assumed to have potential inhalation exposure to vapors migrating from groundwater to the air inside future or existing buildings (if volatile COPCs are present in the subsurface at those locations.

Other potential pathways of exposure that may also contribute to cancer risk and non-cancer hazard are: inhalation of COPCs released to ambient air from wind and mechanical disturbance of surface soil by construction/excavation workers; and consumption of produce from urban garden plots.

Shallow groundwater beneath Exposure Unit 2 is not a source of potable water. However, the depth to groundwater is approximately 10 feet bgs in some locations in OU2. If sub-grade construction is required for future buildings, it is likely that groundwater may be encountered during excavations and would need to be pumped out and managed. In this case, a construction/excavation worker may have incidental contact with shallow groundwater through dermal contact and inhalation of VOCs (if these COPCs are present in groundwater at the project location).

Figure 15 is a graphical depiction of the CSM for Exposure Unit 2 for the revised HHRA.

6.2.1.3 Exposure Unit 3: Commercial and Industrial Properties

Exposure Unit 3 is comprised of multiple parcels owned by different entities and includes commercial properties and an active industrial facility: #009, #046, #049, #052, #182, #226, #227, and #228. The physical boundaries of Exposure Unit 3 are shown on Figure 13.

Current CCoD development plans are to enhance the Brighton Boulevard Street-scape, including the portion of Brighton Boulevard within the boundaries of OU2. Current land use along Brighton Boulevard adjacent to the Denver Coliseum is primarily commercial, but also includes an industrial facility owned by the Pepsi Bottling Group. Mixed high-density residential/commercial and possibly public green space would be consistent with current trends. Enhancement of the Brighton Boulevard street-scape could include renovation/re-purposing of existing shops and restaurants, construction of new multi-family housing, open landscaped and public greenspace along McFarland Drive adjacent to the Coliseum parking lot, and community garden plots. Development of the Brighton Boulevard area could also be integrated into a larger plan involving the Denver Coliseum and parking lot (i.e., Exposure Unit 2).

Possible receptors for the Brighton Boulevard Exposure Unit 3 are; residents of high-density multi-family housing, people who work in shops, offices, industrial facilities, and restaurants (indoor workers), outdoor maintenance workers and landscapers (outdoor workers), and construction/excavation workers.

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All current and possible future receptors on Exposure Unit 3 are assumed to have complete pathways of exposure to COPCs in soil through incidental ingestion and dermal contact. Construction workers and excavation workers are assumed to have direct contact with COPCs in soils from the surface to the depth of an excavation (0 to 10 ft. bgs). All other receptors are assumed to have direct contact with COPCs in surface soil (0 to 2 ft. bgs). Receptors who work indoors and future residents are assumed to have potential inhalation exposure to vapors migrating from groundwater to the air inside future or existing buildings (if volatile COPCs are present in the subsurface at those locations).

Other potential pathways of exposure that may also contribute to cancer risk and non-cancer hazard are inhalation of COPCs released to ambient air from wind and mechanical disturbance of surface soil by construction/excavation workers.

Shallow groundwater beneath Exposure Unit 3 is not a source of potable water. However, the depth to groundwater is approximately 10 feet bgs in some locations in OU2. If sub-grade construction is required for future buildings, it is likely that groundwater may be encountered during excavations and would need to be pumped out and managed. In this case, a construction/excavation worker may have incidental contact with shallow groundwater through dermal contact and inhalation of VOCs (if these COPCs are present in groundwater at the project location).

Figure 16 is a graphical depiction of the CSM for Exposure Unit 3 for the revised HHRA.

6.2.2 CSM for the Revised SLERA

Except for the greenspace in Globeville Landing Park and the South Platte River corridor, there is little, if any useable habitat and resources to support ecological receptors, including common Urban Wildlife species. Mixed commercial and high-density residential development of the land area currently occupied by the Denver Coliseum building and parking lot, and the Brighton Boulevard Exposure Unit is anticipated to include landscaping and greenspace but is not expected to create wildlife habitat.

The 2009 SLERA indicated that concentrations of metals in some soil in some locations were in the phytotoxic range. While this is hypothetically a complete exposure pathway for vegetation, this is unlikely to be a concern for landscape plantings integrated into future development. Ingestion of COPCs in surface soils or prey items such as earthworms and arthropods may be a complete pathway of exposure for some common urban wildlife such as birds and rodents, it is not likely to be a significant concern due to the general absence of habitat on OU2 except for the Globeville Landing Park.

The 2009 SLERA identified groundwater from OU2 migrating into surface water and sediment of the South Platte River as a potential pathway of exposure to fish and benthic organisms. However, the 2009 SLERA concluded that groundwater discharges to the River were not an ecological concern. The CSM for the revised SLERA also identifies fish and benthic organisms as receptors but adds urban wildlife species that forage along the river bank and in the shallow water (i.e., raccoons, opossum, wading shorebirds, and other waterfowl such as ducks) that may be exposed to COPCs associated with OU2 through contact with sediments and consumption of prey items.

The updated SLERA will compare historical data and any new investigation data generated for OU2 to current ecological screening values for sediment and soil (bank soils along the South Platte River) and for surface soil in other locations on OU2.

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There are uncertainties associated with potential exposures to ecological receptors that will be evaluated qualitatively in the revised SLERA.

Figure 17 is a graphical depiction of the CSM for the revised SLERA.

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7.0 POTENTIAL DATA GAPS

This section summarizes the potential data gaps for the RI within OU2. This summary provides the basis for the additional sampling recommendations set forth in the *Technical Memorandum on Scoping the Revised Remedial Investigation for Vasquez Boulevard I-70, Operable Unit 2, Revision 1* (Stantec, 2020).

7.1.1 Environmental Media and Sample Locations

As summarized in Section 3.0 of this letter report, several environmental investigations were conducted in, and around the boundaries of OU2 for different purposes after the completion of the 2009 RI. Environmental data from both recent and historical investigations are expected to be usable for the revised RI, HHRA, and SLERA. However, there are some data gaps to be addressed for the revised RI, HHRA, and SLERA to adequately support a Record of Decision (ROD) and to inform decisions for redevelopment of OU2. Additional data needs are summarized below.

7.1.1.1 Landfill Waste Material

The results of the subsurface soil sampling in the pre-RI, 2009 RI and post-RI investigations indicated that landfill material is thicker in places and is more laterally extensive than what was shown in the 2009 RI Report, as presented in Section 5.1 and shown on Figure 6. Therefore, a limited number of additional boreholes are recommended to confirm the thickness of the landfill material within OU2 in the central portion of the Coliseum parking lot, the Coliseum Barn area, and along the southeast side of Arkins Court / McFarland Drive. This can be incorporated into the scope of the recommended groundwater monitoring well installations discussed below to minimize the number of additional boreholes advanced.

7.1.1.2 Soil

Most of the existing environmental data are for surface and subsurface soil, with a high density of sample locations in the Globeville Landing Park and the area between Brighton Boulevard and the Pepsi Bottling Group. However, recent construction has removed most surface soils from the Globeville Landing Park, and clean fill placed over the area. EPA issued a letter to the CCoD "delisting" surface soil at the Globeville Landing Park (EPA, 2003). Although direct contact with surface soil is a potentially complete pathway of exposure for recreational receptors at the Globeville Landing Park, COPCs are not expected to be present in the soil cover placed during the recent park construction. Recreational receptors are not expected to have direct contact with deeper soils below the clean fill. Additional soil samples are not proposed for the Globeville Landing Park. While soil was removed from the Pepsi property, as referenced in Section 3.1.3 of this report, the data collected does not cover a current list of COPCs that would be required by the EPA. However, the EPA is not currently requiring collection of additional data from the Pepsi property (EPA, 2019). Soil conditions beneath the pavement of the Coliseum parking lot are relatively well characterized, except for some data sparsity at the center and southwest portions of the parking lot.

7.1.1.3 Sediments in the South Platte River

Bank soil and submerged sediment along the South Platte River in the Globeville Landing Park has not been well characterized for COPCs associated with historical smelting operations or COPCs potentially associated with the former municipal waste landfill. Recent construction at the Globeville Landing Park has replaced concrete-lined storm water

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channels with open, natural channels in a new alignment before reaching the South Platte River. This project removed some of the existing bank sediment and reinforced a portion of the bank with rip-rap and stone. Post-construction, confirmatory sediment samples upstream, adjacent to, and downstream of the Globeville Landing Park would characterize any potential changes to conditions based on the recent work.

7.1.1.4 Surface Water in the South Platte River

Existing surface water sample data are limited to metals analysis in the South Platte River upstream and downstream of OU2. Although surface water is a complete pathway of exposure for recreational receptors (wading, kayaking) and aquatic/terrestrial ecological receptors, it is not expected to be a significant contributor to human or ecological exposures to COPCs associated with OU2. A summary of data for an upstream and downstream location are provided in Section 5.4 of this report; however, additional sampling data for surface water is available for review based on regular sampling that the CCoD conducts upstream and downstream of OU2 as part of an ongoing evaluation of water quality in the South Platte River. Surface water data from the regularly conducted sampling for water quality will be reviewed as part of the RI.

7.1.1.5 Groundwater

Groundwater has been analyzed for metals, VOCs, SVOCs, TPH, and PCBs at varied locations and frequencies. The groundwater COPCs based on previous sampling and historical site use are metals, VOCs, and TPH. Groundwater between upgradient and downgradient (historical) wells has not been well characterized historically due to a lack of centrally located monitoring points. Additionally, the recent abandonment of wells and piezometers has left the current monitoring network to one downgradient monitoring well (MW-02) and five closely spaced wells and piezometers in the southern portion of the Coliseum parking lot. Collection of additional groundwater data is recommended to evaluate 1) the vapor intrusion pathway for the occupants of future commercial and residential buildings, 2) the direct contact pathways of exposure to construction/excavation workers, 3) the potential for migration of impacted groundwater onto OU2 from upgradient sources, and 4) the potential for migration of impacted groundwater from OU2 to surface water.

7.1.1.6 Soil Gas

Soil gas samples were previously analyzed for methane from open boreholes; however, sample locations were limited and there are no soil gas data for other VOCs that may be related to the former municipal waste landfill. As such, soil vapor data at OU2 is considered limited. Additional sampling should be considered consistent with the *Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air* (EPA, 2015).

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TABLES

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Table 2-1
List of Monitoring Wells and Piezometers
VB/I-70 Superfund Site, OU2

Loc ID	Year Installed	Status	Location Relative to Site Boundary	Gradient Location	Northing[1]	Easting[1]	Total Depth (feet)	Ground Elevation	TOC Elevation	Casing Diameter (inches)
ASARCO Monitoring Wells										
QUAD-1	Unknown	**Existing**	Off-site	Down-gradient	1709258.25	3148916.40	35	unknown	unknown	unknown
QUAD-2	Unknown	**Existing**	On-site	Down/cross-gradient	1708966.44	3148919.10	35	unknown	unknown	unknown
QUAD-3	Unknown	**Existing**	On-site	Down/cross-gradient	1708959.01	3148611.08	25	unknown	unknown	unknown
QUAD-4	Unknown	**Existing**	Off-site	Down-gradient	1709257.58	3148611.08	25	unknown	unknown	unknown
Walsh Monitoring Wells										
DC-2	1997	Abandoned	On-site	Down/cross-gradient	1709326.96	3148414.37	22	unknown	unknown	2
DC-3	1997	Abandoned	On-site	Down/cross-gradient	1709309.90	3148198.67	20	unknown	unknown	2
DC-4	1997	Abandoned	On-site	Down/cross-gradient	1709231.81	3147905.90	18	unknown	unknown	2
ASARCO Monitoring Wells										
MW-01	2004	Abandoned	On-site	Down/cross-gradient	1708732.35	3147158.77	29	5173.67	5173.50	2
MW-02	2005	**Existing**	On-site	Down/cross-gradient	1709183.92	3147657.53	19	5162.02	5161.66	2
MW-03	2004	Abandoned	On-site	Down/cross-gradient	1709228.21	3148228.30	20	5163.72	5163.34	2
MW-05	2005	Abandoned	Off-site	Upgradient	1707710.22	3148804.43	38.5	5189.84	5189.62	2
MW-06	2005	Abandoned	Off-site	Upgradient	1707313.42	3148484.39	39	5192.42	5192.08	2
2010 High Street Temporary Piezometers										
HS-01	2010	Abandoned	On-site	Down/cross-gradient	1708495.00	3147060.39	unknown	unknown	unknown	1
HS-02	2010	Abandoned	On-site	Cross-gradient	1708540.45	3147863.84	unknown	unknown	unknown	1
HS-03	2010	Abandoned	On-site	Cross-gradient	1708302.12	3148123.05	unknown	unknown	unknown	1
HS-04	2010	Abandoned	On-site	Cross-gradient	1708144.87	3148254.50	unknown	unknown	unknown	1
HS-05	2010	Abandoned	Off-site	Upgradient	1707413.91	3148167.28	unknown	unknown	unknown	1
HS-07	2010	Abandoned	Off-site	Upgradient	1706669.43	3148796.28	unknown	unknown	unknown	1
HS-08	2010	Abandoned	On-site	Cross-gradient	1708531.85	3147408.06	unknown	unknown	unknown	1
CTL Thompson Monitoring Wells										
CTL MW-1	2011	Abandoned	Off-site	Upgradient	1707492.45	3148160.79	34	5189	unknown	2
CTL MW-2	2011	Abandoned	Off-site	Upgradient	1707895.43	3148551.97	35	5189	unknown	2
CTL MW-3	2011	Abandoned	On-site	Cross-gradient	1708149.60	3148409.95	35	5190	unknown	2
CTL MW-4	2011	**Existing**	On-site	Cross-gradient	1708365.39	3147930.87	35	5172	unknown	2
CTL MW-5	2011	**Existing**	On-site	Cross-gradient	1708290.42	3147565.90	28	5171	unknown	2
CTL MW-6	2011	Abandoned	On-site	Cross-gradient	1708215.29	3147172.82	30	5180	unknown	2
SWDI Temporary Piezometers										
SWDI-1	2015	Abandoned	On-site	Cross-gradient	1708442.31	3147949.42	20	5170.93	5170.50	1
SWDI-2	2015	Abandoned	On-site	Cross-gradient	1708363.86	3147903.60	25	5171.14	5170.73	1
SWDI-3	2015	Abandoned	On-site	Cross-gradient	1708511.75	3147863.35	25	5166.25	5165.80	1
SWDI-4	2015	Abandoned	On-site	Cross-gradient	1708539.17	3147612.44	25	5166.55	5166.16	1
SWDI-5	2015	**Existing**	On-site	Cross-gradient	1708447.04	3147700.93	26	5167.89	5167.44	1
SWDI-6	2015	**Existing**	On-site	Cross-gradient	1708350.83	3147613.61	26	5169.58	5169.12	1

Table 2-1
List of Monitoring Wells and Piezometers
VB/I-70 Superfund Site, OU2

Loc ID	Year Installed	Status	Location Relative to Site Boundary	Gradient Location	Northing[1]	Easting[1]	Total Depth (feet)	Ground Elevation	TOC Elevation	Casing Diameter (inches)
SWDI-7	2015	Abandoned	On-site	Cross-gradient	1708447.80	3147531.53	25	5169.30	5168.91	1
SWDI-8	2015	Abandoned	On-site	Cross-gradient	1708338.01	3147509.27	28	5171.78	5171.06	1
SWDI-9	2015	Abandoned	On-site	Cross-gradient	1708427.37	3147304.97	25	5175.39	5175.01	1
SWDI-10	2015	Abandoned	On-site	Cross-gradient	1708294.70	3147206.19	32	5177.16	5176.45	1
SWDI-12	2015	Abandoned	On-site	Cross-gradient	1708335.42	3147126.87	26.5	5174.79	5174.38	1
SWDI-13	2015	Abandoned	On-site	Cross-gradient	1708279.27	3147003.79	19	5163.22	5162.84	1
SWDI Temporary Piezometers										
SWDI-14	2015	Abandoned	On-site	Cross-gradient	1708278.12	3146913.84	9	5154.04	5153.73	1
SWDI-15	2015	Abandoned	On-site	Cross-gradient	1708420.25	3147086.38	25	5174.64	5174.34	1
SWDI-16	2015	Abandoned	On-site	Down/cross-gradient	1708461.54	3146893.27	16	5153.91	5153.60	1
2015 Temporary Piezometers - Addendum 1 Data Summary Report										
TH-45	2015	Abandoned	Off-site	Upgradient	1707812.33	3146781.63	unknown	unknown	5152.55	1
TH-46	2015	Abandoned	Off-site	Upgradient	1707885.51	3146837.42	unknown	unknown	5160.20	1
TH-47	2015	Abandoned	Off-site	Upgradient	1707994.95	3146864.90	unknown	unknown	5161.20	1
TH-48	2015	Abandoned	On-site	Down/cross-gradient	1708250.26	3146919.65	unknown	unknown	5155.93	1
TH-52	2015	Abandoned	On-site	Down/cross-gradient	1708432.24	3146890.49	unknown	unknown	5153.40	1
Temporary Wells For 2016 Pump Test										
PW-1	2016	Abandoned	On-site	Cross-gradient	1708282.92	3147163.44	34	5178.34	5177.92	4
PW-2	2016	Abandoned	On-site	Cross-gradient	1708433.54	3147423.19	29	5168.52	5168.07	4
2018 Piezometers										
PZ-1	2018	Existing	On-site	Down/cross-gradient	1708407.91	3147398.33	22.71	Not Measured	5168.518	2
PZ-2	2018	Existing	On-site	Down/cross-gradient	1708298.97	3147259.46	21.19	Not Measured	5163.425	2
PZ-3	2018	Existing	On-site	Down/cross-gradient	1708197.83	3147172.77	22.04	Not Measured	5163.831	2
2019 Pepsi										
GW-1	2019	Unknown	Off-site	Upgradient	1706829.89	3147568.41	35	unknown	unknown	1
GW-2	2019	Unknown	Off-site	Upgradient	1706849.05	3147611.53	35	unknown	unknown	1
GW-3	2019	Unknown	Off-site	Upgradient	1706880.19	3147581.59	35	unknown	unknown	1
GW-4	2019	Unknown	Off-site	Upgradient	1706782.38	3147796.78	35	unknown	unknown	1
GW-5	2019	Unknown	Off-site	Upgradient	1706847.85	3147859.47	35	unknown	unknown	1
GW-6	2019	Unknown	Off-site	Upgradient	1706675.78	3147795.19	35	unknown	unknown	1
GW-7	2019	Unknown	Off-site	Upgradient	1706721.29	3147838.71	35	unknown	unknown	1
GW-8	2019	Unknown	Off-site	Upgradient	1706760.42	3147881.82	35	unknown	unknown	1
GW-9	2019	Unknown	Off-site	Upgradient	1706837.07	3147540.47	34.5	unknown	unknown	2
GW-10	2019	Unknown	Off-site	Upgradient	1706863.82	3147543.66	34.5	unknown	unknown	2

Table 2-1
List of Monitoring Wells and Piezometers
VB/I-70 Superfund Site, OU2

Loc ID	Year Installed	Status	Location Relative to Site Boundary	Gradient Location	Northing[1]	Easting[1]	Total Depth (feet)	Ground Elevation	TOC Elevation	Casing Diameter (inches)
2019 C70 Temporary Piezometers										
OU2-01	2019	Unknown	On-site	Down-gradient	1709276.54	3148094.34	20	unknown	unknown	0.75
OU2-02	2019	Unknown	On-site	Down-gradient	1709228.53	3148169.66	20	unknown	unknown	0.75
OU2-03	2019	Unknown	On-site	Down-gradient	1709271.46	3148286.34	20	unknown	unknown	0.75
OU2-04	2019	Unknown	On-site	Down-gradient	1709327.27	3148487.54	20	unknown	unknown	0.75

Notes and Abbreviations:
1. Coordinates in State Plane, Colorado Central zone (FIPS 0502), NAD83, US feet

TOC - top of casing

Table 3-1
Screening Criteria Levels
VB/I-70 Superfund Site, OU2

CAS Number	Chemical Name	Residential Soil RSL[1] (mg/kg)	Industrial Soil RSL[1] (mg/kg)	Background Soil SL[2] (mg/kg)	CO Reg 41 GSL[3,4,5] (µg/L)
630-20-6	1,1,1,2-Tetrachloroethane	2.0	8.8	--	0.18
71-55-6	1,1,1-Trichloroethane	810	3600	--	200(M)
79-34-5	1,1,2,2-Tetrachloroethane	0.60	2.70	--	0.18
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	670	2800	--	--
79-00-5	1,1,2-Trichloroethane	0.15	0.63	--	5(M)
75-34-3	1,1-Dichloroethane	3.6	16	--	5
75-35-4	1,1-Dichloroethene	23	100	--	7
87-61-6	1,2,3-Trichlorobenzene	6.3	93.0	--	--
96-18-4	1,2,3-Trichloropropane	0.01	0.11	--	0.00037
95-94-3	1,2,4,5-Tetrachlorobenzene	2.3	35	--	2.1
120-82-1	1,2,4-Trichlorobenzene	5.8	26	--	70
95-63-6	1,2,4-Trimethylbenzene	30	180	--	70
96-12-8	1,2-Dibromo-3-chloropropane	0.01	0.06	--	0.2
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.04	0.16	--	0.05(M)
95-50-1	1,2-Dichlorobenzene	180	930	--	600
107-06-2	1,2-Dichloroethane	0.46	2.0	--	5(M)
78-87-5	1,2-Dichloropropane	1.6	6.6	--	5(M)
541-73-1	1,3-Dichlorobenzene	--	--	--	94
142-28-9	1,3-Dichloropropane	160	2300	--	--
106-46-7	1,4-Dichlorobenzene	2.6	11	--	75
123-91-1	1,4-Dioxane (p-Dioxane)	5.3	24	--	0.35
460-00-4	1-Bromo-4-fluorobenzene	2.3	35	--	--
90-12-0	1-Methylnaphthalene	18	73	--	--
108-60-1	2,2'-oxybis(1-chloro)Propane	310	4700	--	280
58-90-2	2,3,4,6-Tetrachlorophenol	190	2500	--	--
95-95-4	2,4,5-Trichlorophenol	630	8200	--	700
118-79-6	2,4,6-Tribromophenol	57	740	--	--
88-06-2	2,4,6-Trichlorophenol	6.3	82	--	3.2
88-06-2	2,4,6-Trichlorophenol	6.3	82	--	500
120-83-2	2,4-Dichlorophenol	19	250	--	21
105-67-9	2,4-Dimethyl phenol	130	1600	--	140
51-28-5	2,4-Dinitrophenol	13	160	--	14
121-14-2	2,4-Dinitrotoluene	1.7	7.4	--	0.11
606-20-2	2,6-Dinitrotoluene	0.36	1.5	--	--
91-58-7	2-Chloronaphthalene	480	6000	--	560
95-57-8	2-Chlorophenol	39	580	--	35
95-49-8	2-Chlorotoluene	160	2300	--	--
591-78-6	2-Hexanone	20	130	--	35
91-57-6	2-Methylnaphthalene	24	300	--	--
95-48-7	2-Methylphenol (o-Cresol)	320	4100	--	--
88-74-4	2-Nitroaniline	63	800	--	--
91-94-1	3,3'-Dichlorobenzidine	1.20	5.10	--	0.078
534-52-1	4,6-Dinitro-2-methylphenol	0.51	6.60	--	0.27
59-50-7	4-Chloro-3-methylphenol	630	8200	--	210
106-47-8	4-Chloroaniline	2.7	11	--	--
106-43-4	4-Chlorotoluene	160	2300	--	--
106-44-5	4-Methylphenol (p-Cresol)	630	8200	--	--
100-01-6	4-Nitroaniline	25	110	--	--
83-32-9	Acenaphthene	360	4500	--	420

Table 3-1
Screening Criteria Levels
VB/I-70 Superfund Site, OU2

CAS Number	Chemical Name	Residential Soil RSL[1] (mg/kg)	Industrial Soil RSL[1] (mg/kg)	Background Soil SL[2] (mg/kg)	CO Reg 41 GSL[3,4,5] (µg/L)
67-64-1	Acetone	6100	67000	--	6300
98-86-2	Acetophenone	780	12000	--	--
107-02-8	Acrolein	0.01	0.06	--	3.5
309-00-2	Aldrin	0.04	0.18	--	0.0021
319-84-6	alpha Bhc (alpha Hexachlorocyclohexane)	0.09	0.36	--	0.0056
959-98-8	alpha Endosulfan	--	--	--	42
7429-90-5	Aluminum	7700	110000	--	5000
120-12-7	Anthracene	1800	23000	--	2100
7440-36-0	Antimony	3.1	47	--	6
7440-38-2	Arsenic	0.68	3.0	11	10
1912-24-9	Atrazine	2.40	10	--	3
7440-39-3	Barium	1500	22000	--	2000
100-52-7	Benzaldehyde	170	820	--	--
71-43-2	Benzene	1.20	5.10	--	5
92-87-5	Benzidine	0.00053	0.010	--	0.00015
56-55-3	Benzo(a)anthracene	1.1	21	--	0.0048
50-32-8	Benzo(a)pyrene	0.11	2.1	--	0.2[(M)]
205-99-2	Benzo(b)fluoranthene	1.1	21	--	0.0048
207-08-9	Benzo(k)fluoranthene	11	210	--	0.0048
65-85-0	Benzoic acid	25000	330000	--	--
100-51-6	Benzyl alcohol	630	8200	--	--
85-68-7	Benzyl butyl phthalate	290	1200	--	1400
7440-41-7	Beryllium	16	230	--	4
319-85-7	beta BHC (beta Hexachlorocyclohexane)	0.30	1.3	--	--
33213-65-9	beta Endosulfan	--	--	--	42
92-52-4	Biphenyl (Diphenyl)	4.7	20	--	4.4
111-91-1	bis(2-chloroethoxy) Methane	19	250	--	--
111-44-4	bis(2-chloroethyl) Ether	0.23	1.0	--	0.032
108-60-1	bis(2-chloroisopropyl) Ether	310	4700	--	280
117-81-7	bis(2-ethylhexyl) Phthalate	39	160	--	6[(M)]
7440-42-8	Boron	1600	23000	--	750
108-86-1	Bromobenzene	29	180	--	56
74-97-5	Bromochloromethane	15	63	--	--
75-27-4	Bromodichloromethane	0.29	1.3	--	0.56
75-25-2	Bromoform	19.00	86	--	4
74-83-9	Bromomethane	0.68	3.0	--	--
7440-43-9	Cadmium	7.1	98	--	5
105-60-2	Caprolactam	3100	40000	--	--
75-15-0	Carbon disulfide	77	350	--	--
56-23-5	Carbon tetrachloride	0.65	2.90	--	5[(M)]
12789-03-6	Chlordane	1.70	7.70	--	2[(M)]
16887-00-6	Chloride (As Cl)	--	--	--	250000
108-90-7	Chlorobenzene	28.00	130.00	--	100
75-00-3	Chloroethane	1400	5700	--	--
67-66-3	Chloroform	0.32	1.40	--	3.5
74-87-3	Chloromethane	11.00	46.00	--	--
16065-83-1	Chromium III	12000	180000	--	--

Table 3-1
Screening Criteria Levels
VB/I-70 Superfund Site, OU2

CAS Number	Chemical Name	Residential Soil RSL[1] (mg/kg)	Industrial Soil RSL[1] (mg/kg)	Background Soil SL[2] (mg/kg)	CO Reg 41 GSL[3,4,5] (µg/L)
18540-29-9	Chromium, Hexavalent	0.30	6.30	--	--
7440-47-3	Chromium, Total			--	100
218-01-9	Chrysene	110	2100	--	0.0048
156-59-2	cis-1,2-Dichloroethylene	16	230	--	70(M)
7440-48-4	Cobalt	2.3	35	--	50
7440-50-8	Copper	310	4700	--	50
110-82-7	Cyclohexane	650	2700	--	--
53-70-3	Dibenz(a,h)anthracene	0.11	2.1	--	0.0048
132-64-9	Dibenzofuran	7.3	100	--	--
124-48-1	Dibromochloromethane	8.30	39	--	14
74-95-3	Dibromomethane	2.4	9.9	--	--
75-71-8	Dichlorodifluoromethane	8.7	37	--	--
60-57-1	Dieldrin	0.03	0.14	--	0.002
60-29-7	Diethyl ether (Ethyl ether)	1600	23000	--	--
84-66-2	Diethyl Phthalate	5100	66000	--	5600
84-74-2	Di-n-butyl phthalate	630	8200	--	700
117-84-0	Di-n-octylphthalate	63	820	--	--
1031-07-8	Endosulfan sulfate	--	--	--	42
72-20-8	Endrin	1.9	25	--	2.0
7421-93-4	Endrin aldehyde	--	--	--	2.1
100-41-4	Ethylbenzene	5.8	25	--	700
206-44-0	Fluoranthene	240	3000	--	280
86-73-7	Fluorene	240	3000	--	280
58-89-9	gamma BHC (Lindane)	0.57	2.50	--	0.2
76-44-8	Heptachlor	0.13	0.63	--	0.4(M)
1024-57-3	Heptachlor epoxide	0.07	0.33	--	0.2(M)
118-74-1	Hexachlorobenzene	0.21	0.96	--	1.0(M)
87-68-3	Hexachlorobutadiene	1.2	5.3	--	0.45
77-47-4	Hexachlorocyclopentadiene	0.18	0.75	--	50(M)
67-72-1	Hexachloroethane	1.8	8.0	--	0.88
193-39-5	Indeno(1,2,3-c,d)Pyrene	1.10	21	--	0.0048
7439-89-6	Iron	5500	82000	--	300
78-59-1	Isophorone	570	2400	--	140
98-82-8	Isopropylbenzene (Cumene)	190	990	--	--
7439-92-1	Lead	400	800	--	50
7439-96-5	Manganese		180.00	--	50
7439-97-6	Mercury	1.1	4.6	--	2
72-43-5	Methoxychlor	32	410	--	40(M)
79-20-9	Methyl acetate	7800	120000	--	--
78-93-3	Methyl ethyl ketone (2-Butanone)	2700	19000	--	--
75-09-2	Methylene chloride	35	320	--	5(M)
7439-98-7	Molybdenum	39	580	--	210
91-20-3	Naphthalene	3.8	17	--	140
104-51-8	n-Butylbenzene	390	5800	--	--
7440-02-0	Nickel	150	2200	--	100
98-95-3	Nitrobenzene	5.1	22	--	14
14797-55-8	Nitrogen, Nitrate (as N)	13000	190000	--	--
14797-65-0	Nitrogen, Nitrite	780	12000	--	--
621-64-7	n-Nitrosodiisopropylamine	0.08	0.33	--	0.005

Table 3-1
Screening Criteria Levels
VB/I-70 Superfund Site, OU2

CAS Number	Chemical Name	Residential Soil RSL[1] (mg/kg)	Industrial Soil RSL[1] (mg/kg)	Background Soil SL[2] (mg/kg)	CO Reg 41 GSL[3,4,5] (µg/L)
621-64-7	n-Nitroso-di-n-propylamine	0.08	0.33	--	0.005
86-30-6	n-Nitrosodiphenylamine	110	470	--	7.1
103-65-1	n-Propylbenzene	380	2400	--	--
95-47-6	o-Xylene (1,2-Dimethylbenzene)	65	280	--	--
72-54-8	p,p'-DDD	0.19	2.5	--	0.15
72-55-9	p,p'-DDE	2.0	9.3	--	0.1
50-29-3	p,p'-DDT	1.9	8.5	--	0.1
1336-36-3	Pcb, Total	0.23	0.94	--	0.5[(M)]
12674-11-2	PCB-1016 (Arochlor 1016)	0.41	5.1	--	--
11104-28-2	PCB-1221 (Arochlor 1221)	0.20	0.83	--	--
11141-16-5	PCB-1232 (Arochlor 1232)	0.17	0.72	--	--
53469-21-9	PCB-1242 (Arochlor 1242)	0.23	0.95	--	--
12672-29-6	PCB-1248 (Arochlor 1248)	0.23	0.95	--	--
11097-69-1	PCB-1254 (Arochlor 1254)	0.12	0.97	--	--
11096-82-5	PCB-1260 (Arochlor 1260)	0.24	0.99	--	--
87-86-5	Pentachlorophenol	1.0	4.0	--	1.0[(M)]
108-95-2	Phenol	1900	25000	--	2100
129-00-0	Pyrene	180	2300	--	210
135-98-8	sec-Butylbenzene	780	12000	--	--
7782-49-2	Selenium	39	580	--	50
7440-22-4	Silver	39	580	--	50
100-42-5	Styrene	600	3500	--	100
14808-79-8	Sulfate (As SO4)	--	--	--	250000
98-06-6	t-Butylbenzene	780	12000	--	--
1634-04-4	tert-Butyl methyl ether	47	210	--	--
127-18-4	Tetrachloroethylene (PCE)	8.1	39	--	5[(M)]
7440-28-0	Thallium	0.078	1.2	--	2
108-88-3	Toluene	490	4700	--	1000[(M)]
542-75-6	Total, 1,3-Dichloropropene	1.8	8.2	--	--
8001-35-2	Toxaphene	0.49	2.1	--	3[(M)]
156-60-5	trans-1,2-Dichloroethene	160	2300	--	100[(M)]
79-01-6	Trichloroethylene (TCE)	0.41	1.90	--	5
75-69-4	Trichlorofluoromethane	2300	35000	--	--
7440-61-1	Uranium	--	--	--	30
7440-62-2	Vanadium	39	580	--	100[(a)]
108-05-4	Vinyl acetate	91	380	--	--
75-01-4	Vinyl chloride	0.06	1.70	--	2[(M)]
1330-20-7	Xylenes, Total	58	250	--	10000[(M)]
7440-66-6	Zinc	2300	35000	--	5000

Table 3-1
Screening Criteria Levels
VB/I-70 Superfund Site, OU2

Notes and Abbreviations:

1. USEPA Regional Screening Levels for a THQ of 0.1 is provided for the soil screening.

2. The average background concentration for all land uses was used based on Region 8 USEPA 95% UCLM Background Soil Asenic Concentrations in Colorado.

3. Colorado Regulation No. 41 - The Basic Standards For Groundwater (5CCR 1002-41).

4. For inorganics, if a domesic water supply and agricultural standard both exist, the value for domesic water supply is listed. If no domestic water supply standard was listed, the agricultural standard is listed and marked with an (a).

5. For organics, if more than one value is listed in Reg 41, the maximum contaminant level is listed. These cases are marked with an (m).

UCLM - upper confidence limit mean
RSL - Reigonal Screening Level
GSL - Groundwater Screening Level

mg/kg - milligram per kilogram
µg/L - micrograms per liter

Table 4-1a
Data Screening Analysis Check for Soil
VB/I-70 Superfund Site, OU2

Analyte Group/Analyte	No. of Results	No. of Detections	No. of NDs	No. of NDs > Background	No. of NDs > Industrial Soil SL	No. of NDs > Residential Soil SL	% Detected	% Elevated NDs	Comments and Discussion
Metals									
Aluminum	5	5		0	0	0	100%	0%	--
Antimony	5	3	2	0	0	2	60%	40%	Most recent relevant OU2 soils data is from 2003 (URS, 2004) and is limited to the area along Brighton Boulevard
Arsenic	363	326	37	32	32	37	90%	10%	The percentage of results with elevated quantitation limits is considered low.
Barium	46	46		0	0	0	100%	0%	--
Beryllium	12	1	11	0	0	0	8%	0%	--
Cadmium	128	92	36	0	0	0	72%	0%	--
Chromium, Total	46	43	3	0	0	0	93%	0%	--
Cobalt	12	11	1	0	0	0	92%	0%	--
Copper	17	16	1	0	0	0	94%	0%	--
Iron	17	17		0	0	0	100%	0%	--
Lead	363	358	5	0	0	1	99%	0%	--
Manganese	17	17		0	0	0	100%	0%	--
Mercury	46	26	20	0	0	0	57%	0%	--
Nickel	12	10	2	0	0	0	83%	0%	--
Selenium	46	12	34	0	0	0	26%	0%	--
Silver	46	24	22	0	0	0	52%	0%	--
Thallium	5	2	3	0	3	3	40%	60%	Most recent relevant OU2 soils data is from 2003 (URS, 2004) and is limited to the area along Brighton Boulevard
Vanadium	12	12		0	0	0	100%	0%	--
Zinc	98	98		0	0	0	100%	0%	--
SVOCs									
1-Methylnaphthalene	20	8	12	0	0	0	40%	0%	--
2-Methylnaphthalene	39	10	29	0	0	0	26%	0%	--
4-Methylphenol (p-Cresol)	19	1	18	0	0	0	5%	0%	--
Acenaphthene	39	11	28	0	0	0	28%	0%	--
Anthracene	39	17	22	0	0	0	44%	0%	--
Benzo(a)anthracene	39	17	22	0	0	2	44%	5%	The percentage of results with elevated quantitation limits is considered low.
Benzo(a)pyrene	39	15	24	0	0	5	38%	13%	The percentage of results with elevated quantitation limits is considered low.
Benzo(b)fluoranthene	39	17	22	0	0	2	44%	5%	The percentage of results with elevated quantitation limits is considered low.
Benzo(k)fluoranthene	39	12	27	0	0	0	31%	0%	--
bis(2-chloroisopropyl) Ether	14	1	13	0	0	0	7%	0%	--
bis(2-ethylhexyl) Phthalate	19	2	17	0	0	0	11%	0%	--
Chrysene	39	18	21	0	0	0	46%	0%	--
Dibenz(a,h)anthracene	39	5	34	0	0	6	13%	15%	The percentage of results with elevated quantitation limits is considered low.
Dibenzofuran	19	3	16	0	0	0	16%	0%	--
Diethyl Phthalate	19		19	0	0	0		0%	--
Di-n-butyl phthalate	19	6	13	0	0	0	32%	0%	--
Fluoranthene	39	21	18	0	0	0	54%	0%	--
Fluorene	39	13	26	0	0	0	33%	0%	--
Indeno(1,2,3-c,d)Pyrene	39	14	25	0	0	2	36%	5%	The percentage of results with elevated quantitation limits is considered low.
Nitrobenzene	19	2	17	0	0	0	11%	0%	--
Pyrene	39	26	13	0	0	0	67%	0%	--

Table 4-1a
Data Screening Analysis Check for Soil
VB/I-70 Superfund Site, OU2

Analyte Group/Analyte	No. of Results	No. of Detections	No. of NDs	No. of NDs > Background	No. of NDs > Industrial Soil SL	No. of NDs > Residential Soil SL	% Detected	% Elevated NDs	Comments and Discussion
VOCs									
1,1-Dichloroethene	31	2	29	0	0	0	6%	0%	--
1,2,4-Trichlorobenzene	34	4	30	0	0	0	12%	0%	--
1,2,4-Trimethylbenzene	6	2	4	0	0	0	33%	0%	--
1,4-Dichlorobenzene	44	2	42	0	0	0	5%	0%	--
Acetone	31	17	14	0	0	0	55%	0%	--
Benzene	32	3	29	0	0	0	9%	0%	--
cis-1,2-Dichloroethylene	31	3	28	0	0	0	10%	0%	--
Ethylbenzene	32	6	26	0	0	0	19%	0%	--
Isopropylbenzene	18	5	13	0	0	0	28%	0%	--
m,p-Xylene	18	8	10	0	0	0	44%	0%	--
Methyl ethyl ketone	31	4	27	0	0	0	13%	0%	--
Methylene chloride	31	10	21	0	0	0	32%	0%	--
Naphthalene	45	15	30	0	0	0	33%	0%	--
n-Butylbenzene	6	1	5	0	0	0	17%	0%	--
n-Propylbenzene	6	1	5	0	0	0	17%	0%	--
o-Xylene	18	6	12	0	0	0	33%	0%	--
p-Cymene	6	1	5	0	0	0	17%	0%	--
sec-Butylbenzene	6	1	5	0	0	0	17%	0%	--
t-Butylbenzene	9	4	5	0	0	0	44%	0%	--
Tetrachloroethylene (PCE)	31	1	30	0	0	0	3%	0%	--
Toluene	32	2	30	0	0	0	6%	0%	--
Trichloroethylene (TCE)	31	1	30	0	0	0	3%	0%	--
Xylenes, Total	20	3	17	0	0	0	15%	0%	--

ND - non-detects (not detected)
No. - number
OU - operable unit
SL - screening level (USEPA Reigonal Screening Level)
SVOC - semi-volatile organic compound
VOC - volatile organic compound

Table 4-1b
Data Screening Analysis Check for Groundwater
VB/I-70 Superfund Site, OU2

Analyte Group	No. of Results	No. of Detections	No. Of NDs	No. of NDs > Reg 41	% Detected	% Elevated NDs	Comments and Discussion
Dissolved Metals							
Aluminum	47	40	7	0	85%	0%	--
Antimony	46	41	5	0	89%	0%	--
Arsenic	98	83	15	7	85%	7%	The percentage of results with elevated quantitation limits is considered low.
Barium	69	69		0	100%	0%	--
Beryllium	51	10	41	9	20%	18%	Results from data collected after the 2009 RI all have quantitation limits below the GSL
Cadmium	122	64	58	12	52%	10%	The percentage of results with elevated quantitation limits is considered low.
Chromium, Hexavalent	31	15	16	0	48%	0%	--
Chromium, Total	72	53	19	3	74%	4%	The percentage of results with elevated quantitation limits is considered low
Cobalt	52	45	7	0	87%	0%	--
Copper	113	89	24	0	79%	0%	--
Iron	89	75	14	0	84%	0%	--
Lead	120	79	41	0	66%	0%	--
Manganese	87	84	3	0	97%	0%	--
Mercury	67	18	49	0	27%	0%	--
Nickel	81	73	8	1	90%	1%	The percentage of results with elevated quantitation limits is considered low
Selenium	97	70	27	0	72%	0%	--
Silver	94	36	58	0	38%	0%	--
Thallium	44	12	32	0	27%	0%	--
Uranium	6	6		0	100%	0%	--
Vanadium	51	38	13	6	75%	12%	The percentage of results with elevated quantitation limits is considered low
Zinc	115	109	6	0	95%	0%	--
SVOCs							
1,2,4,5-Tetrachlorobenzene	51	11	40	27	22%	53%	SVOCs are COPCs at OU2, consider for sampling
1,2-Dichlorobenzene	99	11	88	0	11%	0%	--
1,4-Dioxane (p-Dioxane)	6		6	6		100%	SVOCs are COPCs at OU2, consider for sampling
2,2'-oxybis(1-chloro)Propane	54	16	38	24	30%	44%	
2,4-Dichlorophenol	65	16	49	24	25%	37%	
2-Chlorophenol	66	22	44	21	33%	32%	
3,3'-Dichlorobenzidine	65	16	49	49	25%	75%	
4,6-Dinitro-2-methylphenol	70	16	54	54	23%	77%	
4-Nitrophenol	66	18	48	1	27%	2%	The percentage of results with elevated quantitation limits is considered low.
Acenaphthene	73	18	55	23	25%	32%	SVOCs are COPCs at OU2, consider for sampling
Anthracene	72	14	58	24	19%	33%	
Benzidine	3		3	3		100%	
Benzo(a)anthracene	72	14	58	58	19%	81%	
Benzo(a)pyrene	72	14	58	58	19%	81%	
Benzo(b)fluoranthene	72	14	58	58	19%	81%	
Benzo(k)fluoranthene	72	14	58	58	19%	81%	
Biphenyl (Diphenyl)	54	16	38	27	30%	50%	
bis(2-chloroethyl) Ether (2-Chloroethyl Ether)	65	16	49	49	25%	75%	
bis(2-chloroisopropyl) Ether	14		14	0		0%	--
bis(2-ethylhexyl) Phthalate	65	28	37	2	43%	3%	The percentage of results with elevated quantitation limits is considered low
Chrysene	72	14	58	58	19%	81%	SVOCs are COPCs at OU2, consider for sampling
Dibenz(a,h)anthracene	67	14	53	53	21%	79%	
Diethyl Phthalate	70	18	52	0	26%	0%	--
Di-n-butyl phthalate	70	20	50	0	29%	0%	--
Fluoranthene	72	14	58	24	19%	33%	SVOCs are COPCs at OU2, consider for sampling
Fluorene	72	14	58	24	19%	33%	
Hexachlorocyclopentadiene	65	16	49	0	25%	0%	--
Indeno(1,2,3-c,d)Pyrene	72	14	58	58	19%	81%	SVOCs are COPCs at OU2, consider for sampling
Nitrobenzene	65	16	49	25	25%	38%	
n-Nitrosodiisopropylamine	2		2	2		100%	
Phenol	66	19	47	24	29%	36%	
Pyrene	73	16	57	24	22%	33%	

Table 4-1b
Data Screening Analysis Check for Groundwater
VB/I-70 Superfund Site, OU2

Analyte Group	No. of Results	No. of Detections	No. Of NDs	No. of NDs > Reg 41	% Detected	% Elevated NDs	Comments and Discussion
VOCs							
1,1,1-Trichloroethane	108	16	92	8	15%	7%	The percentage of results with elevated quantitation limits is considered low.
1,1,2,2-Tetrachloroethane	108	15	93	77	14%	71%	Not considered a compound sourced from OU2, but consider for sampling for completeness as part of evaluation of vapor intrusion potential
1,1,2-Trichloroethane	108	15	93	1	14%	1%	The percentage of results with elevated quantitation limits is considered low.
1,1-Dichloroethene	114	21	93	0	18%	0%	--
1,2,3-Trichloropropane	5		5	5		100%	Not considered a compound sourced from OU2, but consider for sampling for completeness as part of evaluation of vapor intrusion potential
1,2,4-Trichlorobenzene	90	16	74	0	18%	0%	--
1,2,4-Trimethylbenzene	5	1	4	0	20%	0%	--
1,2-Dibromo-3-chloropropane	72	11	61	44	15%	61%	Not considered a compound sourced from OU2, but consider for sampling for completeness as part of evaluation of vapor intrusion potential
1,2-Dibromoethane (Ethylene dibromide)	72	11	61	61	15%	85%	
1,2-Dichloroethane	108	16	92	1	15%	1%	The percentage of results with elevated quantitation limits is considered low.
1,2-Dichloropropane	109	15	94	1	14%	1%	The percentage of results with elevated quantitation limits is considered low.
1,3-Dichlorobenzene	101	18	83	0	18%	0%	--
1,4-Dichlorobenzene	101	32	69	0	32%	0%	--
2,4,5-Trichlorophenol	65	16	49	0	25%	0%	--
2,4,6-Trichlorophenol	65	16	49	27	25%	42%	Not considered a compound sourced from OU2, but consider for sampling for completeness as part of evaluation of vapor intrusion potential
2,4-Dimethyl phenol	65	16	49	24	25%	37%	
2,4-Dinitrophenol	65	16	49	4	25%	6%	The percentage of results with elevated quantitation limits is considered low.
2,4-Dinitrotoluene	66	18	48	48	27%	73%	Not considered a compound sourced from OU2, but consider for sampling for completeness as part of evaluation of vapor intrusion potential
2-Chloronaphthalene	65	16	49	0	25%	0%	--
2-Hexanone	81	9	72	34	11%	42%	Not considered a compound sourced from OU2, but consider for sampling for completeness as part of evaluation of vapor intrusion potential
4-Chloro-3-methylphenol	71	18	53	24	25%	34%	
Acetone	82	16	66	0	20%	0%	--
Acrolein	24	6	18	0	25%	0%	--
Atrazine	54	16	38	27	30%	50%	--
Benzene	111	32	79	0	29%	0%	--
Benzyl butyl phthalate	70	16	54	24	23%	34%	Not considered a compound sourced from OU2, but consider for sampling for completeness as part of evaluation of vapor intrusion potential
Bromobenzene	5		5	0		0%	--

Table 4-1b
Data Screening Analysis Check for Groundwater
VB/I-70 Superfund Site, OU2

Analyte Group	No. of Results	No. of Detections	No. Of NDs	No. of NDs > Reg 41	% Detected	% Elevated NDs	Comments and Discussion
VOCs Continued							
Bromodichloromethane	85	10	75	28	12%	33%	Not considered a compound sourced from OU2, but consider for sampling for completeness as part of evaluation of vapor intrusion potential
Bromoform	108	15	93	6	14%	6%	The percentage of results with elevated quantitation limits is considered low.
Carbon tetrachloride	108	15	93	1	14%	1%	The percentage of results with elevated quantitation limits is considered low.
Chlorobenzene	111	34	77	7	31%	6%	The percentage of results with elevated quantitation limits is considered low.
Chloroform	110	50	60	8	45%	7%	The percentage of results with elevated quantitation limits is considered low.
cis-1,2-Dichloroethylene	89	45	44	0	51%	0%	--
Dibromochloromethane	108	15	93	12	14%	11%	The percentage of results with elevated quantitation limits is considered low.
Ethylbenzene	108	17	91	0	16%	0%	--
Hexachlorobenzene	65	16	49	47	25%	72%	Not considered a compound sourced from OU2, but consider for sampling for completeness as part of evaluation of vapor intrusion potential
Hexachlorobutadiene	70	16	54	54	23%	77%	
Hexachloroethane	65	16	49	49	25%	75%	
Isophorone	65	16	49	24	25%	37%	
Methylene chloride	84	21	63	1	25%	1%	The percentage of results with elevated quantitation limits is considered low.
Naphthalene	77	26	51	22	34%	29%	Not considered a compound sourced from OU2, but consider for sampling for completeness as part of evaluation of vapor intrusion potential
n-Nitroso-di-n-propylamine	64	18	46	46	28%	72%	
n-Nitrosodiphenylamine	65	16	49	0	25%	0%	--
Pentachlorophenol	66	18	48	48	27%	73%	Not considered a compound sourced from OU2, but consider for sampling for completeness as part of evaluation of vapor intrusion potential
Styrene	84	9	75	12	11%	14%	The percentage of results with elevated quantitation limits is considered low.
Tetrachloroethylene (PCE)	112	73	39	1	65%	1%	The percentage of results with elevated quantitation limits is considered low.
Toluene	111	35	76	10	32%	9%	The percentage of results with elevated quantitation limits is considered low.
trans-1,2-Dichloroethene	110	17	93	12	15%	11%	The percentage of results with elevated quantitation limits is considered low.
Trichloroethylene (TCE)	113	57	56	1	50%	1%	The percentage of results with elevated quantitation limits is considered low.
Vinyl chloride	111	19	92	6	17%	5%	The percentage of results with elevated quantitation limits is considered low.
Xylenes, Total	16	4	12	1	25%	6%	The percentage of results with elevated quantitation limits is considered low.

COPC - contaminant of potential concern
No. - number
ND - non-detects (not detected)
OU - operable unit
SL - screening level (USEPA Reigonal Screening Level)
SVOC - semi-volatile organic compound
VOC - volatile organic compound

Table 5-1
Arsenic and Lead Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	Arsenic (mg/kg)	Lead (mg/kg)
Screening Criteria		**Residential Soil RSL(mg/kg)**		**0.68**	**400**
		Industrial Soil RSL(mg/kg)		**3**	**800**
		Background Soil(mg/kg)		**11**	**--**
3801 Brighton-S-01	23-Jun-05	0 - 0.17	Shallow	**11**	140 J
3801 Brighton-S-02	23-Jun-05	0 - 0.17	Shallow	94	**640 J**
3801 Brighton-S-03	23-Jun-05	0 - 0.17	Shallow	15	260 J
3801 Brighton-S-04	23-Jun-05	0 - 0.17	Shallow	15	170 J
3801 Brighton-S-05	23-Jun-05	0 - 0.17	Shallow	**8.3**	98 J
3801 Brighton-S-06	23-Jun-05	0 - 0.17	Shallow	15	230 J
3801 Brighton-S-07	23-Jun-05	0 - 0.17	Shallow	18	200 J
3801 Brighton-S-08	23-Jun-05	0 - 0.17	Shallow	22	230 J
3801 Brighton-S-09	23-Jun-05	0 - 0.17	Shallow	85	**790 J**
4201 Brighton-S-01	20-Dec-04	0 - 0.17	Shallow	34	**540**
4201 Brighton-S-02	20-Dec-04	0 - 0.17	Shallow	48	**1600**
4201 Brighton-S-03	20-Dec-04	0 - 0.17	Shallow	36	**1300**
4201 Brighton-S-04	20-Dec-04	0 - 0.17	Shallow	86	**880**
4201 Brighton-S-05	20-Dec-04	0 - 0.17	Shallow	88	36
4301 Brighton-S-01	23-Jun-05	0 - 0.17	Shallow	**9.9**	330 J
4375 Brighton-S-01	23-Jun-05	0 - 0.17	Shallow	23	**470 J**
4375 Brighton-S-02	23-Jun-05	0 - 0.17	Shallow	21	230 J
4600 Humbolt-S-01	17-Dec-04	0 - 0.17	Shallow	27	380
4600 Humbolt-S-02	17-Dec-04	0 - 0.17	Shallow	27	380
4600 Humbolt-S-03	17-Dec-04	0 - 0.17	Shallow	46	380
4600 Humbolt-S-04	17-Dec-04	0 - 0.17	Shallow	**11**	82
4600 Humbolt-S-05	17-Dec-04	0 - 0.17	Shallow	**7.1**	110
4600 Humbolt-S-06	17-Dec-04	0 - 0.17	Shallow	**7.5**	170
4600 Humbolt-S-07	17-Dec-04	0 - 0.17	Shallow	**6.4**	190
4600 Humbolt-S-08	17-Dec-04	0 - 0.17	Shallow	**6.4**	110
4600 Humbolt-S-09	17-Dec-04	0 - 0.17	Shallow	13	230
4600 Humbolt-S-10	17-Dec-04	0 - 0.17	Shallow	17	260
A3-1	18-Oct-01	0 - 2	Shallow	52	290
A3-2	18-Oct-01	0 - 2	Shallow	**9.4**	90
A3-3	18-Oct-01	0 - 2	Shallow	<8.1	37
A3-4	18-Oct-01	0 - 2	Shallow	<8.3	60
A3-5	18-Oct-01	0 - 2	Shallow	<8.1	66
A3-6	18-Oct-01	0 - 2	Shallow	<8.1	93
A3-7	18-Oct-01	0 - 2	Shallow	61	260
A3-8	18-Oct-01	0 - 2	Shallow	<8.3	88
A3-10	18-Oct-01	0 - 2	Shallow	55	**430**
A3-11	18-Oct-01	0 - 2	Shallow	**9**	110
A3-12	18-Oct-01	0 - 2	Shallow	50	370
A3-13	18-Oct-01	0 - 2	Shallow	30	340
A3-14	18-Oct-01	0 - 2	Shallow	<8.2	300
A3-15	18-Oct-01	0 - 2	Shallow	65	**610**
A3-16	18-Oct-01	0 - 2	Shallow	18	150
A3-17	18-Oct-01	0 - 2	Shallow	21	290
A3-18	18-Oct-01	0 - 2	Shallow	<7.6	11
A3-20	18-Oct-01	0 - 2	Shallow	**8.6**	350
A4-10	05-Sep-01	0 - 1.8	Shallow	20	230
A4-11	05-Sep-01	0 - 1.2	Shallow	55	380
A4-12	05-Sep-01	0 - 2	Shallow	29	310

Table 5-1
Arsenic and Lead Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	Arsenic (mg/kg)	Lead (mg/kg)
Screening Criteria		Residential Soil RSL(mg/kg)		0.68	400
		Industrial Soil RSL(mg/kg)		3	800
		Background Soil(mg/kg)		11	--
A4-15	05-Sep-01	0 - 1.6	Shallow	38	270
A4-16	05-Sep-01	0 - 1.4	Shallow	44	390
BB-38-22	07-May-03	0 - 0	Shallow	**2**	49
BB-38-25	25-Apr-03	0 - 0	Shallow	**5**	80
BB-BB-26	07-May-03	0 - 0	Shallow	<3	2
BB-BB-27	30-Apr-03	0 - 0	Shallow	**11**	166
BB-CT-40	21-May-03	0 - 0	Shallow	**2 J**	16
BH-01	15-Dec-04	1.5 - 1.5	Shallow	30	240
BH-02	14-Dec-04	1.7 - 1.7	Shallow	48	**1400**
BH-03	15-Dec-04	0.7 - 0.7	Shallow	22	**1200**
BH-04	20-Dec-04	1 - 1	Shallow	16	**460**
BH-06	15-Dec-04	0.9 - 0.9	Shallow	270	**34000**
BH-07	28-Mar-05	0.4 - 0.7	Shallow	510	**15000**
BH-07	28-Mar-05	1.5 - 1.8	Shallow	17	180
MW-01	14-Dec-04	2 - 2	Shallow	**7.8**	180
MW-03	14-Dec-04	1.8 - 1.8	Shallow	23	**950**
MW-05	28-Mar-05	0.7 - 1.2	Shallow	23	**530**
OU2-02	06-Nov-16	0 - 1	Shallow	**4.89**	86.1
SB-2-1	18-Dec-08	0 - 2	Shallow	**1.4**	7
SB-2-2	18-Dec-08	0 - 2	Shallow	**7.7**	280
SB-2-3	18-Dec-08	0 - 2	Shallow	**2.4**	1.9
SB-2-4	18-Dec-08	0 - 2	Shallow	**7.4**	160
SB-3-1	17-Dec-08	0 - 2	Shallow	**5.9 J**	190
SB-3-2	17-Dec-08	0 - 2	Shallow	**2.9**	13
SB-3-3	17-Dec-08	0 - 2	Shallow	**7.8 J**	140
SB-3-4	17-Dec-08	0 - 2	Shallow	**4.6 J**	270
SB-3-5	18-Dec-08	0 - 2	Shallow	**5.9**	180
SB-4-1	18-Dec-08	0 - 2	Shallow	**3**	30
SB-4-2	18-Dec-08	0 - 2	Shallow	**3.4**	55
SB-4-3	17-Dec-08	0 - 2	Shallow	**3.4**	39
SB-4-4	17-Dec-08	0 - 2	Shallow	**5.3**	150
SB-4-5	18-Dec-08	0 - 2	Shallow	**1.5**	12
SS-3-1	17-Dec-08	0 - 2	Shallow	**7.6 J**	130
SWDI-49	17-Oct-16	0 - 1	Shallow	**4.6**	23
SWDI-49	17-Oct-16	1 - 2	Shallow	**3.8**	14
CTL MW-05 (TH-18)	31-Mar-11	0.58 - 0.58	Shallow	**3.4**	21.2
VB10220303 (Excavations 1 and 2)	22-Oct-03	0 - 0.5	Shallow	17	**590**
VB10220307 (Excavations 5 - 8)	22-Oct-03	0 - 0.5	Shallow	**6.9**	110
A4-1	05-Sep-01	0 - 3	Subsurface	79	**1100**
A4-2	05-Sep-01	0 - 2.5	Subsurface	**3.9**	27
A4-3	05-Sep-01	0 - 3	Subsurface	32	360
A4-4	05-Sep-01	0 - 2.8	Subsurface	63	**580**
A4-5	05-Sep-01	0 - 3	Subsurface	18	240
A4-6	05-Sep-01	0 - 3	Subsurface	54	**570**

Table 5-1
Arsenic and Lead Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	Arsenic (mg/kg)	Lead (mg/kg)
Screening Criteria		**Residential Soil RSL(mg/kg)**		**0.68**	**400**
		Industrial Soil RSL(mg/kg)		**3**	**800**
		Background Soil(mg/kg)		**11**	**--**
A4-7	05-Sep-01	0 - 2.6	Subsurface	37	**520**
A4-8	05-Sep-01	0 - 3	Subsurface	85	**600**
A4-9	05-Sep-01	0 - 3	Subsurface	27	280
A4-13	05-Sep-01	0 - 2.6	Subsurface	33	**410**
A4-14	05-Sep-01	0 - 2.2	Subsurface	17	210
A6-1	15-Oct-01	0 - 10	Subsurface	**9.2**	210
A6-2	15-Oct-01	0 - 10	Subsurface	16	**630**
A6-3	15-Oct-01	0 - 10	Subsurface	23	400
A6-4	15-Oct-01	0 - 10	Subsurface	19	**1500**
A6-5	15-Oct-01	0 - 10	Subsurface	19	160
A6-6	15-Oct-01	0 - 10	Subsurface	**10**	300
A7-1	15-Oct-02	0 - 6	Subsurface	73	**560**
A7-2	17-Oct-02	0 - 6	Subsurface	**9.5**	130
A7-3	17-Oct-02	0 - 6	Subsurface	<7.6	33
A7-4	17-Oct-02	0 - 6	Subsurface	**7.7**	39
A7-5	15-Oct-02	0 - 6	Subsurface	<7.6	71
A7-6	15-Oct-02	0 - 6	Subsurface	24	240
A7-7	17-Oct-02	0 - 6	Subsurface	12	85
A7-8	15-Oct-02	0 - 6	Subsurface	**8**	61
A7-9	17-Oct-02	0 - 6	Subsurface	**8**	120
A7-10	15-Oct-02	0 - 6	Subsurface	12	200
BB-CT-38	21-May-03	4 - 4	Subsurface	**1 J**	3
BH-01	15-Dec-04	6.8 - 6.8	Subsurface	21	250
BH-01	15-Dec-04	9.5 - 9.5	Subsurface	46	300
BH-02	14-Dec-04	4.5 - 4.5	Subsurface	21	330
BH-02	14-Dec-04	9 - 9	Subsurface	15	180
BH-03	15-Dec-04	6 - 6	Subsurface	<6	75
BH-04	20-Dec-04	3 - 3	Subsurface	14	330
BH-05	24-Mar-05	2 - 2.5	Subsurface	420	**2900**
BH-05	24-Mar-05	6.5 - 7	Subsurface	15	230
BH-06	15-Dec-04	5.5 - 5.5	Subsurface	<6	12
BH-07	28-Mar-05	5.6 - 6	Subsurface	<6	8.9
BH-07	28-Mar-05	9.5 - 10	Subsurface	<6	17
CTL MW-02 (TH-14)	31-Mar-11	5 - 7	Subsurface	**2.2**	11.5
CTL MW-04 (TH-17)	31-Mar-11	5 - 5	Subsurface	**6.8**	205
DC-1	30-May-97	0 - 20	Subsurface	**1.5**	6.1
DC-2	30-May-97	0.5 - 22	Subsurface	13	170
DC-3	30-May-97	0.5 - 20	Subsurface	**6.1**	98
DC-4	02-Jun-97	1 - 17	Subsurface	**3.5**	110
DC-5	02-Jun-97	1 - 13.5	Subsurface	17	210
DC-6	02-Jun-97	1 - 20	Subsurface	**5.3**	37
DC-7	02-Jun-97	1 - 17	Subsurface	**2.6**	20
DC-8	02-Jun-97	0 - 15	Subsurface	**7.4**	**410**
HS-02	25-Feb-10	5 - 15	Subsurface	**3.7**	97.2
MW-01	14-Dec-04	6 - 6	Subsurface	31	260
MW-02	24-Mar-05	2 - 2.5	Subsurface	<6	130
MW-02	24-Mar-05	5 - 5.5	Subsurface	59	**3600**
MW-03	14-Dec-04	5.5 - 5.5	Subsurface	13	320

Table 5-1
Arsenic and Lead Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	Arsenic (mg/kg)	Lead (mg/kg)
Screening Criteria		Residential Soil RSL(mg/kg)		0.68	400
		Industrial Soil RSL(mg/kg)		3	800
		Background Soil(mg/kg)		11	--
MW-03	14-Dec-04	9 - 9	Subsurface	**8.8**	**1600**
MW-05	28-Mar-05	4.5 - 5	Subsurface	<6	6.3
MW-05	28-Mar-05	9.5 - 10	Subsurface	<6	14
MW-06	24-Mar-05	1.6 - 2.1	Subsurface	**100**	**3300**
MW-06	24-Mar-05	5 - 5.5	Subsurface	<6	7.2
OU2-01	06-Nov-19	1 - 3	Subsurface	**4.01**	49
OU2-01	06-Nov-19	5 - 8.5	Subsurface	**3.26 J**	55.6
OU2-02	06-Nov-19	5 - 6	Subsurface	**3.05 J**	36.7
OU2-03	06-Nov-19	1.5 - 3.5	Subsurface	**3.87**	47.4
OU2-04	06-Nov-19	0 - 3	Subsurface	**16.5**	391
SB-01	24-Jul-02	2 - 3	Subsurface	**11.1**	185 J
SB-01	24-Jul-02	4 - 6	Subsurface	**7.38**	147 J
SB-02	24-Jul-02	2 - 3	Subsurface	**6.14**	148 J
SB-03	24-Jul-02	2 - 3	Subsurface	**6.55**	120 J
SB-03	24-Jul-02	4 - 6	Subsurface	**9.26**	143 J
SB-04	24-Jul-02	2 - 3	Subsurface	**7.24**	159 J
SB-12	24-Jul-02	2 - 3	Subsurface	**8.49**	166 J
SB-13	24-Jul-02	2 - 3	Subsurface	**3.43**	16.7 J
SB-14	24-Jul-02	2 - 3	Subsurface	**2.26**	46.6 J
SB-22	24-Jul-02	2 - 3	Subsurface	**4.85**	79 J
SB-29	24-Jul-02	2 - 3	Subsurface	**7.65**	88.5 J
SB-30	24-Jul-02	2 - 3	Subsurface	**2.88 J**	87.8 J
SB-31	24-Jul-02	2 - 3	Subsurface	**3.89 J**	200 J
SB-32	24-Jul-02	2 - 3	Subsurface	**3.17 J**	50.3 J
SB-2-1	18-Dec-08	2 - 4	Subsurface	**2.1**	11
SB-2-1	18-Dec-08	4 - 9	Subsurface	**0.68**	4.8
SB-2-2	18-Dec-08	2 - 4	Subsurface	**1.6**	18
SB-2-2	18-Dec-08	4 - 9	Subsurface	**0.79**	4.1
SB-2-4	18-Dec-08	4 - 5	Subsurface	**0.95**	6.3
SB-3-1	17-Dec-08	4 - 9	Subsurface	**32 J**	**1900**
SB-3-2	17-Dec-08	2 - 3	Subsurface	**9.7 J**	210
SB-3-2	17-Dec-08	4 - 9	Subsurface	**2.9**	41
SB-3-3	17-Dec-08	4 - 9	Subsurface	**1.9 J**	22
SB-3-4	17-Dec-08	2 - 4	Subsurface	**1.3**	14
SB-3-5	18-Dec-08	6 - 8	Subsurface	**4.9**	26
SB-4-1	18-Dec-08	2 - 4	Subsurface	**4.1**	51
SB-4-2	18-Dec-08	2 - 4	Subsurface	**3.4**	61
SB-4-2	18-Dec-08	8 - 9	Subsurface	**9.4**	290
SB-4-3	17-Dec-08	2 - 4	Subsurface	**2.3**	64
SB-4-3	17-Dec-08	4 - 9	Subsurface	**4.1**	62
SB-4-4	17-Dec-08	2 - 4	Subsurface	**1.2**	17
SB-4-5	18-Dec-08	2 - 4	Subsurface	**2.1**	21
SB-4-5	18-Dec-08	8 - 9	Subsurface	**22**	**780**
SWDI-18	17-Oct-16	8.5 - 11	Subsurface	**5.9**	140
SWDI-20	17-Oct-16	8.5 - 11	Subsurface	**5.9**	69
SWDI-32	17-Oct-16	7.8 - 10.3	Subsurface	**4.8**	150
SWDI-34	19-Oct-16	9.8 - 12.3	Subsurface	**1.9 J**	2.6 J
SWDI-35	19-Oct-16	9.9 - 12.4	Subsurface	**5.9**	56

Table 5-1
Arsenic and Lead Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	Arsenic (mg/kg)	Lead (mg/kg)
Screening Criteria		**Residential Soil RSL(mg/kg)**		**0.68**	**400**
		Industrial Soil RSL(mg/kg)		**3**	**800**
		Background Soil(mg/kg)		**11**	**--**
SWDI-36	19-Oct-16	5 - 7.5	Subsurface	23	190
SWDI-41	17-Oct-16	8.8 - 11.3	Subsurface	15	88
SWDI-44	19-Oct-16	2 - 3	Subsurface	**8.5**	96
SWDI-45	19-Oct-16	2 - 3	Subsurface	**3**	7.7
SWDI-46	19-Oct-16	2 - 3	Subsurface	**4.4**	23
SWDI-47	17-Oct-16	2 - 3	Subsurface	13	300
SWDI-49	17-Oct-16	2 - 3	Subsurface	**5.3**	15
TH-1	1991*	Unknown	Subsurface	0.3	1.1
TH-2	1991*	Unknown	Subsurface	41	**3000**
TH-3	1991*	Unknown	Subsurface	**11**	180
TH-4	1991*	Unknown	Subsurface	**0.8**	6.5
TH-5	1991*	Unknown	Subsurface	**2**	15
TH-8	1991*	Unknown	Subsurface	*<0.8*	2.3
TH-9	1991*	Unknown	Subsurface	*<0.8*	3.4
TH-63	30-Aug-16	0 - 5	Subsurface	**20**	145
TH-65	30-Aug-16	0 - 5	Subsurface	**22.8**	**459**
UT-1	17-Oct-01	0 - 10	Subsurface	**11**	160
UT-2	17-Oct-01	0 - 10	Subsurface	12	300
UT-3	17-Oct-01	0 - 8	Subsurface	14	**940**
UT-5	17-Oct-01	0 - 7	Subsurface	**9.1**	160
UT-6	18-Oct-01	0 - 13	Subsurface	<7.8	180
UT-7	18-Oct-01	0 - 10	Subsurface	630	**2800**
UT-8	18-Oct-01	0 - 9	Subsurface	16	130
UT-9	18-Oct-01	0 - 8	Subsurface	<7.8	46
UT-10	18-Oct-01	0 - 8	Subsurface	17	210
UT-11	18-Oct-01	0 - 12	Subsurface	42	**490**
UT-12	18-Oct-01	0 - 9	Subsurface	**9.4**	370
UT-13	18-Oct-01	0 - 12	Subsurface	<7.4	31
UT-14	18-Oct-01	0 - 11	Subsurface	16	190
VB10220301 (Excavations 3 and 4)	22-Oct-03	0 - 5	Subsurface	14	120
VB10220302 (Excavation 3)	22-Oct-03	5 - 5	Subsurface	24	**700**
VB10220304 (Excavations 1 - 4)	22-Oct-03	0 - 5	Subsurface	**5.5**	50
VB10220305 (Excavations 5 and 6)	22-Oct-03	0 - 5	Subsurface	**7.4**	160
VB10220306 (Excavations 7 and 8)	22-Oct-03	0 - 5	Subsurface	14	330
A6-1	15-Oct-01	10 - 20	Deep	13	110
A6-2	15-Oct-01	10 - 20	Deep	67	**540**
A6-3	15-Oct-01	10 - 20	Deep	12	220
A6-4	15-Oct-01	10 - 20	Deep	19	**410**
A6-5	15-Oct-01	10 - 20	Deep	25	190

Table 5-1
Arsenic and Lead Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	Arsenic (mg/kg)	Lead (mg/kg)
Screening Criteria		Residential Soil RSL(mg/kg)		0.68	400
		Industrial Soil RSL(mg/kg)		3	800
		Background Soil(mg/kg)		11	--
A6-6	15-Oct-01	10 - 20	Deep	**8.3**	**4900**
BH-01	15-Dec-04	14 - 14	Deep	18	220
BH-01	15-Dec-04	24 - 24	Deep	760	**2300**
BH-03	15-Dec-04	10.2 - 10.2	Deep	950	**470**
BH-03	15-Dec-04	14 - 14	Deep	1500	**100000**
BH-03	15-Dec-04	20.6 - 20.6	Deep	880	<25
BH-03	15-Dec-04	28.5 - 28.5	Deep	27	250
BH-05	24-Mar-05	10.4 - 10.9	Deep	85	**3000**
BH-05	24-Mar-05	16.1 - 16.6	Deep	<6	5.6
BH-05	24-Mar-05	25 - 25.5	Deep	<6	23
BH-06	15-Dec-04	10.5 - 10.5	Deep	<6	14
BH-06	15-Dec-04	15.8 - 15.8	Deep	<6	88
BH-06	15-Dec-04	20 - 20	Deep	<6	<5
BH-07	28-Mar-05	16.5 - 17	Deep	<6	11
BH-07	28-Mar-05	18.5 - 19	Deep	<6	24
HS-01	24-Feb-10	15 - 25	Deep	**3.5**	29.2
HS-03	25-Feb-10	10 - 15	Deep	<2.1	<4.3
HS-04	25-Feb-10	25 - 35	Deep	**2.5**	<4.3
HS-05	24-Feb-10	25 - 34	Deep	<2.4	5.2
HS-06	24-Feb-10	12 - 14	Deep	**4.3**	102
HS-07	24-Feb-10	25 - 35	Deep	<1.9	<3.9
HS-08	25-Feb-10	10 - 20	Deep	**7.4**	176
MW-01	14-Dec-04	11 - 11	Deep	<6	34
MW-01	14-Dec-04	16.8 - 16.8	Deep	12	130
MW-01	14-Dec-04	19 - 19	Deep	27	**830**
MW-03	14-Dec-04	19.5 - 19.5	Deep	96	42
MW-05	28-Mar-05	15 - 15.5	Deep	<6	13
MW-05	28-Mar-05	23.7 - 24.1	Deep	<6	5.5
MW-05	28-Mar-05	38 - 38.5	Deep	91	42
MW-06	24-Mar-05	15 - 15.5	Deep	<6	20
MW-06	24-Mar-05	20 - 20.5	Deep	<6	5.4
MW-06	24-Mar-05	34 - 34.3	Deep	22	240
OU2-01	06-Nov-19	16 - 20	Deep	11.6	109
OU2-02	06-Nov-19	15 - 15.5	Deep	**2.18 J**	35.8
OU2-03	06-Nov-19	10 - 12	Deep	**2.44 J**	73.7
OU2-03	06-Nov-19	15 - 15.5	Deep	**9.22**	933
OU2-04	06-Nov-19	10 - 11.5	Deep	**10.7**	240
OU2-04	06-Nov-19	15 - 17	Deep	11.9	13.7
SB-2-3	18-Dec-08	18 - 19	Deep	**0.89**	6.2
SB-2-3	18-Dec-08	20 - 20.5	Deep	0.27 J	1.1
SB-2-4	18-Dec-08	14 - 15	Deep	**1.7**	9.1
SB-3-1	17-Dec-08	14 - 15	Deep	**1.4 J**	1.8
SB-3-2	17-Dec-08	14 - 15	Deep	14 J	190
SB-3-3	17-Dec-08	14 - 15	Deep	**1.3 J**	2.7
SB-3-4	17-Dec-08	14 - 15	Deep	**0.78 J**	1.1
SB-3-5	18-Dec-08	10 - 15	Deep	**7**	140 J
SB-3-5	18-Dec-08	14 - 15	Deep	**4.4**	82
SB-4-1	18-Dec-08	12 - 14	Deep	14	140

Table 5-1
Arsenic and Lead Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	Arsenic (mg/kg)	Lead (mg/kg)
Screening Criteria		**Residential Soil RSL(mg/kg)**		**0.68**	**400**
		Industrial Soil RSL(mg/kg)		**3**	**800**
		Background Soil(mg/kg)		**11**	**--**
SB-4-2	18-Dec-08	12 - 14	Deep	**7**	180 J
SB-4-3	17-Dec-08	22 - 24	Deep	18	130
SB-4-4	17-Dec-08	23 - 24.5	Deep	**4.6**	10
SWDI-1	09-Jul-15	10 - 12	Deep	**10**	230
SWDI-2	09-Jul-15	10 - 12	Deep	**9.6**	96
SWDI-3	08-Jul-15	15 - 17	Deep	**7.6**	110
SWDI-4	08-Jul-15	10 - 12	Deep	67 J	**650 J**
SWDI-5	08-Jul-15	10 - 12	Deep	29	**900**
SWDI-6	09-Jul-15	10 - 12	Deep	**7.9**	120
SWDI-7	08-Jul-15	15 - 17	Deep	**2.3**	8.5
SWDI-8	09-Jul-15	10 - 12	Deep	**8.4 J**	98 J
SWDI-10	10-Jul-15	20 - 22	Deep	110	**470**
SWDI-13	13-Jul-15	10 - 12	Deep	**3.9**	11
SWDI-15	13-Jul-15	15 - 17	Deep	**5.9**	130
SWDI-16	13-Jul-15	15 - 17	Deep	**4.2**	23
SWDI-17	17-Oct-16	10 - 12.5	Deep	14	**580**
SWDI-19	17-Oct-16	10.5 - 13	Deep	41	170
SWDI-23	19-Oct-16	19.1 - 21.6	Deep	**8.2**	11
SWDI-25	17-Oct-16	15.5 - 18	Deep	**2.9**	7.9
SWDI-27	17-Oct-16	11.1 - 13.6	Deep	**1.8**	13
SWDI-28	19-Oct-16	11.9 - 12.5	Deep	**3.8**	12
SWDI-33	17-Oct-16	13.6 - 16.1	Deep	**7.5**	150
SWDI-33D	17-Oct-16	13.6 - 16.1	Deep	**9.4**	340
SWDI-37	17-Oct-16	14.4 - 16.9	Deep	32	160
SWDI-38	17-Oct-16	16.7 - 19.2	Deep	**8.2**	350
SWDI-39	17-Oct-16	13.8 - 16.3	Deep	20	**780**
SWDI-40	17-Oct-16	13.6 - 16.1	Deep	**3.7**	25
SWDI-40D	17-Oct-16	13.6 - 16.1	Deep	**3.9**	26
CTL MW-01 (TH-13)	30-Mar-11	10 - 12	Deep	**1.6**	22.3
CTL MW-06 (TH-19)	31-Mar-11	22 - 25	Deep	11.2	162

Notes and Abbreviations:

Bold indicates a detection above the residential RSL.
Bold and underlined indicates a detection above the industrial RSL.
Bold and underlined and red indicates a detection above the background for arsenic.
A "<" indicates the compound was not detected at concentrations above the reporting limit.
bgs - below ground surface
J - indicates an estimated value
mg/kg - milligrams per kilogram
RSL - USEPA Reigonal Screening Level
* - The full sample date is unknown since the original report could not be located.
The summary provided in WALSH, 1997 for this 1991 sampling only provides the year.

Table 5-2a
Other Metals Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	Cadmium (mg/kg)	Zinc (mg/kg)
Screening Criteria	Residential Soil RSL(mg/kg)			7.1	2300
	Industrial Soil RSL(mg/kg)			98	35000
3801 Brighton-S-01	23-Jun-05	0 - 0.17	Shallow	2.7	210
3801 Brighton-S-02	23-Jun-05	0 - 0.17	Shallow	5.7	430
3801 Brighton-S-03	23-Jun-05	0 - 0.17	Shallow	2.9	250
3801 Brighton-S-04	23-Jun-05	0 - 0.17	Shallow	4.4	230
3801 Brighton-S-05	23-Jun-05	0 - 0.17	Shallow	<1	130
3801 Brighton-S-06	23-Jun-05	0 - 0.17	Shallow	3.2	220
3801 Brighton-S-07	23-Jun-05	0 - 0.17	Shallow	2.2	180
3801 Brighton-S-08	23-Jun-05	0 - 0.17	Shallow	2.3	210
3801 Brighton-S-09	23-Jun-05	0 - 0.17	Shallow	**11**	360
4201 Brighton-S-01	20-Dec-04	0 - 0.17	Shallow	6.4	1300
4201 Brighton-S-02	20-Dec-04	0 - 0.17	Shallow	**8.1**	770
4201 Brighton-S-03	20-Dec-04	0 - 0.17	Shallow	6	580
4201 Brighton-S-04	20-Dec-04	0 - 0.17	Shallow	**8.1**	440
4201 Brighton-S-05	20-Dec-04	0 - 0.17	Shallow	**15**	3.5
4301 Brighton-S-01	23-Jun-05	0 - 0.17	Shallow	3	470
4375 Brighton-S-01	23-Jun-05	0 - 0.17	Shallow	4.1	350
4375 Brighton-S-02	23-Jun-05	0 - 0.17	Shallow	<0.5	730
4600 Humbolt-S-01	17-Dec-04	0 - 0.17	Shallow	2.7	230
4600 Humbolt-S-02	17-Dec-04	0 - 0.17	Shallow	2.7	230
4600 Humbolt-S-03	17-Dec-04	0 - 0.17	Shallow	4.2	210
4600 Humbolt-S-04	17-Dec-04	0 - 0.17	Shallow	0.93	77
4600 Humbolt-S-05	17-Dec-04	0 - 0.17	Shallow	1.2	240
4600 Humbolt-S-06	17-Dec-04	0 - 0.17	Shallow	1.4	160
4600 Humbolt-S-07	17-Dec-04	0 - 0.17	Shallow	1	150
4600 Humbolt-S-08	17-Dec-04	0 - 0.17	Shallow	1	150
4600 Humbolt-S-09	17-Dec-04	0 - 0.17	Shallow	3.3	250
4600 Humbolt-S-10	17-Dec-04	0 - 0.17	Shallow	5.1	370
BB-38-22	07-May-03	0 - 0	Shallow	*<1*	93
BB-38-25	25-Apr-03	0 - 0	Shallow	*<1*	135 J
BB-BB-26	07-May-03	0 - 0	Shallow	*<1*	9
BB-BB-27	30-Apr-03	0 - 0	Shallow	2	238
BB-CT-40	21-May-03	0 - 0	Shallow	*<1*	31
BH-01	15-Dec-04	1.5 - 1.5	Shallow	5.2	160
BH-02	14-Dec-04	1.7 - 1.7	Shallow	**7.5**	1800
BH-03	15-Dec-04	0.7 - 0.7	Shallow	5.8	310
BH-04	20-Dec-04	1 - 1	Shallow	2	690
BH-06	15-Dec-04	0.9 - 0.9	Shallow	**100**	**14000**
BH-07	28-Mar-05	0.4 - 0.7	Shallow	**25**	560
BH-07	28-Mar-05	1.5 - 1.8	Shallow	2.1	190
MW-01	14-Dec-04	2 - 2	Shallow	2.1	190
MW-03	14-Dec-04	1.8 - 1.8	Shallow	3	**3400**
MW-05	28-Mar-05	0.7 - 1.2	Shallow	**7.6**	280
CTL MW-05 (TH-18)	31-Mar-11	0.58 - 0.58	Shallow	0.78	49.0
OU2-02	06-Nov-16	0 - 1	Shallow	1.1	--
VB10220303 (Excavations 1 and 2)	22-Oct-03	0 - 0.5	Shallow	3.6	--
VB10220307 (Excavations 5 - 8)	22-Oct-03	0 - 0.5	Shallow	1.2	--

Table 5-2a
Other Metals Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	Cadmium (mg/kg)	Zinc (mg/kg)
Screening Criteria	Residential Soil RSL(mg/kg)			7.1	2300
	Industrial Soil RSL(mg/kg)			98	35000
BB-CT-38	21-May-03	4 - 4	Subsurface	<1	10
BH-01	15-Dec-04	6.8 - 6.8	Subsurface	4.9	230
BH-01	15-Dec-04	9.5 - 9.5	Subsurface	**9.4**	250
BH-02	14-Dec-04	4.5 - 4.5	Subsurface	4.4	620
BH-02	14-Dec-04	9 - 9	Subsurface	1.5	800
BH-03	15-Dec-04	6 - 6	Subsurface	<0.5	82
BH-04	20-Dec-04	3 - 3	Subsurface	1.7	460
BH-05	24-Mar-05	2 - 2.5	Subsurface	**37**	460
BH-05	24-Mar-05	6.5 - 7	Subsurface	**70**	480
BH-06	15-Dec-04	5.5 - 5.5	Subsurface	<0.5	27
BH-07	28-Mar-05	5.6 - 6	Subsurface	2.8	420
BH-07	28-Mar-05	9.5 - 10	Subsurface	**14**	1300
DC-1	30-May-97	0 - 20	Subsurface	0.09	--
DC-2	30-May-97	0.5 - 22	Subsurface	**29**	--
DC-3	30-May-97	0.5 - 20	Subsurface	0.09	--
DC-4	02-Jun-97	1 - 17	Subsurface	0.65	--
DC-5	02-Jun-97	1 - 13.5	Subsurface	2.8	--
DC-6	02-Jun-97	1 - 20	Subsurface	0.57	--
DC-7	02-Jun-97	1 - 17	Subsurface	0.5	--
DC-8	02-Jun-97	0 - 15	Subsurface	1.5	--
HS-02	25-Feb-10	5 - 15	Subsurface	<0.95	--
MW-01	14-Dec-04	6 - 6	Subsurface	**9.1**	210
MW-02	24-Mar-05	2 - 2.5	Subsurface	1.3	140
MW-02	24-Mar-05	5 - 5.5	Subsurface	<2.5	**19000**
MW-03	14-Dec-04	5.5 - 5.5	Subsurface	<2.5	180
MW-03	14-Dec-04	9 - 9	Subsurface	5.5	**2400**
MW-05	28-Mar-05	4.5 - 5	Subsurface	<0.5	28
MW-05	28-Mar-05	9.5 - 10	Subsurface	<1	61
MW-06	24-Mar-05	1.6 - 2.1	Subsurface	**30**	**3000**
MW-06	24-Mar-05	5 - 5.5	Subsurface	2.8	360
OU2-01	06-Nov-19	1 - 3	Subsurface	0.466 J	--
OU2-01	06-Nov-19	5 - 8.5	Subsurface	0.299 J	--
OU2-02	06-Nov-19	5 - 6	Subsurface	0.369 J	--
OU2-03	06-Nov-19	1.5 - 3.5	Subsurface	0.640	--
OU2-04	06-Nov-19	0 - 3	Subsurface	3.63	--
SB-3-2	17-Dec-08	4 - 9	Subsurface	1.3	--
TH-1	1991*	Unkown	Subsurface	*<1*	15
TH-2	1991*	Unkown	Subsurface	*<5*	**25000**
TH-3	1991*	Unkown	Subsurface	*<1*	240
TH-4	1991*	Unkown	Subsurface	2	94
TH-5	1991*	Unkown	Subsurface	*<1*	42
TH-8	1991*	Unkown	Subsurface	*<1*	15
TH-9	1991*	Unkown	Subsurface	*<1*	18
CTL MW-02 (TH-14)	31-Mar-11	5 - 7	Subsurface	1.2	189
CTL MW-04 (TH-17	31-Mar-11	5 - 5	Subsurface	1.2	337
VB10220301 (Excavations 3 and 4)	22-Oct-03	0 - 5	Subsurface	3.1	--

Table 5-2a
Other Metals Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	Cadmium (mg/kg)	Zinc (mg/kg)
Screening Criteria		Residential Soil RSL(mg/kg)		7.1	2300
		Industrial Soil RSL(mg/kg)		98	35000
VB10220302 (Excavation 3)	22-Oct-03	5 - 5	Subsurface	3.4	--
VB10220304 (Excavations 1 - 4)	22-Oct-03	0 - 5	Subsurface	0.56	--
VB10220305 (Excavations 5 and 6)	22-Oct-03	0 - 5	Subsurface	1.2	--
VB10220306 (Excavations 7 and 8)	22-Oct-03	0 - 5	Subsurface	1.7	--
BH-01	15-Dec-04	14 - 14	Deep	1.9	150
BH-01	15-Dec-04	24 - 24	Deep	**230**	440
BH-03	15-Dec-04	10.2 - 10.2	Deep	**150**	26
BH-03	15-Dec-04	14 - 14	Deep	**160**	84
BH-03	15-Dec-04	20.6 - 20.6	Deep	3.3	160
BH-03	15-Dec-04	28.5 - 28.5	Deep	<0.5	770
BH-05	24-Mar-05	10.4 - 10.9	Deep	**33**	530
BH-05	24-Mar-05	16.1 - 16.6	Deep	**7.9**	120
BH-05	24-Mar-05	25 - 25.5	Deep	**16**	190
BH-06	15-Dec-04	10.5 - 10.5	Deep	<0.5	53
BH-06	15-Dec-04	15.8 - 15.8	Deep	<2.5	71
BH-06	15-Dec-04	20 - 20	Deep	<0.5	17
BH-07	28-Mar-05	16.5 - 17	Deep	**17**	900
BH-07	28-Mar-05	18.5 - 19	Deep	**9.3**	550
HS-01	24-Feb-10	15 - 25	Deep	<0.93	--
HS-03	25-Feb-10	10 - 15	Deep	<0.85	--
HS-04	25-Feb-10	25 - 35	Deep	5.6	--
HS-05	24-Feb-10	25 - 34	Deep	<0.96	--
HS-06	24-Feb-10	12 - 14	Deep	<0.83	--
HS-07	24-Feb-10	25 - 35	Deep	<0.78	--
HS-08	25-Feb-10	10 - 20	Deep	1.2	--
MW-01	14-Dec-04	11 - 11	Deep	<0.5	78
MW-01	14-Dec-04	16.8 - 16.8	Deep	1	490
MW-01	14-Dec-04	19 - 19	Deep	3.2	**4700**
MW-03	14-Dec-04	19.5 - 19.5	Deep	**18**	5.5
MW-05	28-Mar-05	15 - 15.5	Deep	<1	50
MW-05	28-Mar-05	23.7 - 24.1	Deep	<0.5	20
MW-05	28-Mar-05	38 - 38.5	Deep	**18**	7.4
MW-06	24-Mar-05	15 - 15.5	Deep	<1	58
MW-06	24-Mar-05	20 - 20.5	Deep	<0.5	10
MW-06	24-Mar-05	34 - 34.3	Deep	<0.5	750
OU2-01	06-Nov-19	16 - 20	Deep	0.135 J	--
OU2-02	06-Nov-19	15 - 15.5	Deep	<0.111	--
OU2-03	06-Nov-19	10 - 12	Deep	<0.107	--
OU2-03	06-Nov-19	15 - 15.5	Deep	2.94	--
OU2-04	06-Nov-19	10 - 11.5	Deep	2.51	--
OU2-04	06-Nov-19	15 - 17	Deep	0.298 J	--
SB-3-4	17-Dec-08	14 - 15	Deep	<0.55	--
SB-3-5	18-Dec-08	10 - 15	Deep	0.67	--
SB-4-2	18-Dec-08	12 - 14	Deep	**7.3**	--

Table 5-2a
Other Metals Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	Cadmium (mg/kg)	Zinc (mg/kg)
Screening Criteria		**Residential Soil RSL(mg/kg)**		**7.1**	**2300**
		Industrial Soil RSL(mg/kg)		**98**	**35000**
SB-4-3	17-Dec-08	22 - 24	Deep	7	--
SB-4-4	17-Dec-08	23 - 24.5	Deep	3.3	--
CTL MW-01 (TH-13)	30-Mar-11	10 - 12	Deep	*<1.1*	39.6
CTL MW-06 (TH-19)	31-Mar-11	22 - 25	Deep	2.4	162

Notes and Abbreviations:

Bold indicates a detection above the residential RSL.
Bold and underlined indicates a detection above the industrial RSL.

A "<" indicates the compound was not detected at concentrations above the reporting limit.
If italicized it displays the method detection limit instead of the reporting limit.
bgs - below ground surface
J - indicates an estimated value
mg/kg - milligrams per kilogram
RSL - USEPA Reigonal Screening Level
* - The full sample date is unknown since the original report could not be located.
The summary provided in WALSH, 1997 for this 1991 sampling only provides the year.

Table 5-2b
Other Metals Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	Barium (mg/kg)	Chromium, Total (mg/kg)	Mercury (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)
Screening Criteria	**Residential Soil RSL(mg/kg)**			**1500**	**--**	**1.1**	**39**	**39**
	Industrial Soil RSL(mg/kg)			**22000**	**--**	**4.6**	**580**	**580**
BB-38-22	07-May-03	0 - 0	Shallow	86	6	*<0.1*	<7	*<2 J*
BB-38-25	25-Apr-03	0 - 0	Shallow	153	9	*<0.1*	<7	*<2 J*
BB-BB-26	07-May-03	0 - 0	Shallow	29	1	*<0.1*	<7	<2
BB-BB-27	30-Apr-03	0 - 0	Shallow	125	11	*<0.1*	<7	*<2 J*
BB-CT-40	21-May-03	0 - 0	Shallow	57	4	*<0.1*	<7	<2
CTL MW-05 (TH-18)	31-Mar-11	0.58 - 0.58	Shallow	93.4	8.4	0.021	*<6.7*	0.40
OU2-02	06-Nov-16	0 - 1	Shallow	93.2	7.72	<0.00407	*<0.482*	*<0.964*
VB10220303 (Excavations 1 and 2)	22-Oct-03	0 - 0.5	Shallow	180	13	0.087	0.66	3.6
VB10220307 (Excavations 5 - 8)	22-Oct-03	0 - 0.5	Shallow	170	17	0.11	0.64	0.74
BB-CT-38	21-May-03	4 - 4	Subsurface	21	2	*<0.1*	<7	<2
DC-1	30-May-97	0 - 20	Subsurface	66	5.9	*<0.047*	*<0.11*	0.2
DC-2	30-May-97	0.5 - 22	Subsurface	210	13	0.41	0.49	0.82
DC-3	30-May-97	0.5 - 20	Subsurface	120	7.8	0.12	0.22	4.6
DC-4	02-Jun-97	1 - 17	Subsurface	230	7.6	0.32	0.41	0.5
DC-5	02-Jun-97	1 - 13.5	Subsurface	170	2.9	0.19	1.1	2
DC-6	02-Jun-97	1 - 20	Subsurface	190	7.1	0.072	*<0.11*	0.29
DC-7	02-Jun-97	1 - 17	Subsurface	150	8.6	0.13	*<0.11*	0.29
DC-8	02-Jun-97	0 - 15	Subsurface	330	14	0.17	*<0.11*	1
HS-02	25-Feb-10	5 - 15	Subsurface	99.2	6.5	0.50	<4.8	<2.9
OU2-01	06-Nov-19	1 - 3	Subsurface	66.8	6.23	0.0222	*<0.507*	*<1.01*
OU2-01	06-Nov-19	5 - 8.5	Subsurface	59.3	6.07	0.385	*<0.573*	*<1.15*
OU2-02	06-Nov-19	5 - 6	Subsurface	76.7	9.40	0.745	*<0.519*	*<1.04*
OU2-03	06-Nov-19	1.5 - 3.5	Subsurface	67.2	5.83	0.578	*<0.534*	*<1.07*
OU2-04	06-Nov-19	0 - 3	Subsurface	338	5.74	1.07	*<0.528*	0.3 J
SB-3-2	17-Dec-08	4 - 9	Subsurface	100	8.7	0.028	<1.5	0.28 J
TH-1	1991*	Unknown	Subsurface	22	*<2*	*<0.1*	*<0.4*	*<1*
TH-2	1991*	Unknown	Subsurface	**6600**	*<10*	*<0.1*	*<4*	*<5*
TH-3	1991*	Unknown	Subsurface	210	19	*<0.1*	*<2*	*<1*
TH-4	1991*	Unknown	Subsurface	27	*<2*	*<0.1*	*<2*	*<1*
TH-5	1991*	Unknown	Subsurface	68	4	*<0.1*	*<0.4*	*<1*
TH-8	1991*	Unknown	Subsurface	36	2	*<0.1*	*<0.4*	*<1*
TH-9	1991*	Unknown	Subsurface	38	4	*<0.1*	*<0.4*	*<1*
CTL MW-02 (TH-14)	31-Mar-11	5 - 7	Subsurface	76.8	11.4	0.017	*<5.5*	0.31
CTL MW-04 (TH-17)	31-Mar-11	5 - 5	Subsurface	132	12.3	0.16	*<5.9*	0.69
VB10220301 (Excavations 3 and 4)	22-Oct-03	0 - 5	Subsurface	140	4.5	0.052	0.83	0.56
VB10220302 (Excavation 3)	22-Oct-03	5 - 5	Subsurface	160	11	0.13	0.65	3

Table 5-2b
Other Metals Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	Barium (mg/kg)	Chromium, Total (mg/kg)	Mercury (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)
Screening Criteria	**Residential Soil RSL(mg/kg)**			**1500**	**--**	**1.1**	**39**	**39**
	Industrial Soil RSL(mg/kg)			**22000**	**--**	**4.6**	**580**	**580**
VB10220304 (Excavations 1 - 4)	22-Oct-03	0 - 5	Subsurface	150	17	0.025	0.85	0.32
VB10220305 (Excavations 5 and 6)	22-Oct-03	0 - 5	Subsurface	89	8.3	0.053	0.54	0.74
VB10220306 (Excavations 7 and 8)	22-Oct-03	0 - 5	Subsurface	120	11	0.054	0.78	1.4
HS-01	24-Feb-10	15 - 25	Deep	107	9.6	<0.11	<4.7	<2.8
HS-03	25-Feb-10	10 - 15	Deep	30.2	2.2	<0.098	<4.3	<2.6
HS-04	25-Feb-10	25 - 35	Deep	33.6	1.1	<0.11	<4.3	<2.6
HS-05	24-Feb-10	25 - 34	Deep	130	5.0	<0.12	<4.8	<2.9
HS-06	24-Feb-10	12 - 14	Deep	73.9	4.2	<0.10	<4.2	<2.5
HS-07	24-Feb-10	25 - 35	Deep	29.8	2.0	<0.095	<3.9	<2.3
HS-08	25-Feb-10	10 - 20	Deep	114	5.8	0.21	<4.2	<2.5
OU2-01	06-Nov-19	16 - 20	Deep	107	20.9	0.017	*<0.557*	*<1.11*
OU2-02	06-Nov-19	15 - 15.5	Deep	58.5	8.99	0.762	*<0.557*	*<1.11*
OU2-03	06-Nov-19	10 - 12	Deep	245	6.71	0.0297	*<0.535*	*<1.07*
OU2-03	06-Nov-19	15 - 15.5	Deep	510	15.8	0.119	0.930 J	0.325 J
OU2-04	06-Nov-19	10 - 11.5	Deep	96.0	5.18	<0.0043	*<0.546*	3.29
OU2-04	06-Nov-19	15 - 17	Deep	198	14.5	0.0204	*<0.649*	*<1.30*
SB-3-4	17-Dec-08	14 - 15	Deep	8.6	0.58 J	<0.019	<1.4	<1.1
SB-3-5	18-Dec-08	10 - 15	Deep	260 J	13 J	0.03	<1.6	1.4
SB-4-2	18-Dec-08	12 - 14	Deep	410 J	14 J	0.083	<1.9	1.4
SB-4-3	17-Dec-08	22 - 24	Deep	260	13	0.074	1.6 J	0.98 J
SB-4-4	17-Dec-08	23 - 24.5	Deep	150	5.6	0.03	<1.5	<1.2
CTL MW-01 (TH-13)	30-Mar-11	10 - 12	Deep	32.0	3.9	0.025	*<5.5*	0.16
CTL MW-06 (TH-19)	31-Mar-11	22 - 25	Deep	197	8.9	0.37	*<6.3*	0.99

Notes and Abbreviations:

Bold indicates a detection above the residential RSL.
Bold and underlined indicates a detection above the industrial RSL.
A "<" indicates the compound was not detected at concentrations above the reporting limit. If italicized it displays the method detection limit instead of the reporting limit
bgs - below ground surface
J - indicates an estimated value
mg/kg - milligrams per kilogram
RSL - USEPA Reigonal Screening Level
* - The full sample date is unknown since the original report could not be located.
The summary provided in WALSH, 1997 for this 1991 sampling only provides the year.

Table 5-2c
Other Metals Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	Aluminum (mg/kg)	Antimony (mg/kg)	Beryllium (mg/kg)	Calcium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Iron (mg/kg)	Magnesium (mg/kg)	Manganese (mg/kg)	Nickel (mg/kg)	Potassium (mg/kg)	Sodium (mg/kg)	Thallium (mg/kg)	Vanadium (mg/kg)
Screening Criteria		**Residential Soil RSL(mg/kg)**		**7700**	**3.1**	**16**	**--**	**2.3**	**310**	**5500**	**--**	**180**	**150**	**--**	**--**	**0.078**	**39**
		Industrial Soil RSL(mg/kg)		**110000**	**47**	**230**	**--**	**35**	**4700**	**82000**	**--**	**2600**	**2200**	**--**	**--**	**1.2**	**580**
BB-38-22	07-May-03	0 - 0	Shallow	4570	2 J	*<1*	1950	2	13	**7840**	1160	**242**	4	1270	128	*<5*	15
BB-BB-26	07-May-03	0 - 0	Shallow	1470	<11	*<1*	443	<10	1	3150	319	139	1	338	88	*<5*	4
BB-38-25	25-Apr-03	0 - 0	Shallow	**8850**	2 J	*<1*	6950	**4**	25	**13900**	2750	**268**	6	2360	53	**1**	22
BB-BB-27	30-Apr-03	0 - 0	Shallow	**8500**	3 J	*<1*	2010	**5**	23	**12600**	1990	**369**	7	2330	20	**2**	20
BB-CT-40	21-May-03	0 - 0	Shallow	3240	<12	*<1*	4510	2	5	**6360**	1070	127	3	942	116	<5	11
TH-18	31-Mar-11	0.58 - 0.58	Shallow	--	--	--	--	--	12.0	**8690**	--	**226**	--	--	--	--	--
BB-CT-38	21-May-03	4 - 4	Subsurface	1340	<12	*<1*	656	**4**	5	**6700**	386	56	2	307	218	<5	14
TH-1	1991*	Unknown	Subsurface	--	--	*<0.5*	--	*<2*	4	2200	--	100	*<2*	--	--	--	3
TH-2	1991*	Unknown	Subsurface	--	--	*<3*	--	**25**	**1100**	**140000**	--	**12000**	*<10*	--	--	--	**71**
TH-3	1991*	Unknown	Subsurface	--	--	0.6	--	**6**	39	**13000**	--	**240**	7	--	--	--	18
TH-4	1991*	Unknown	Subsurface	--	--	*<0.5*	--	**3**	6	3900	--	95	3	--	--	--	5
TH-5	1991*	Unknown	Subsurface	--	--	*<0.5*	--	**5**	*<2*	**7000**	--	110	5	--	--	--	12
TH-8	1991*	Unknown	Subsurface	--	--	*<0.5*	--	2	5	3400	--	150	3	--	--	--	5
TH-9	1991*	Unknown	Subsurface	--	--	*<0.5*	--	2	5	4000	--	120	2	--	--	--	7
CTL MW-02 (TH-14)	31-Mar-11	5 - 7	Subsurface	--	--	--	--	--	7.4	**10900**	--	116	--	--	--	--	--
CTL MW-04 (TH-17)	31-Mar-11	5 - 5	Subsurface	--	--	--	--	--	72.2	**17700**	--	**257**	--	--	--	--	--
CTL MW-01 (TH-13)	30-Mar-11	10 - 12	Deep	--	--	--	--	--	5.9	3410	--	55.2	--	--	--	--	--
CTL MW-06 (TH-19)	31-Mar-11	22 - 25	Deep	--	--	--	--	--	33.0	**17500**	--	174	--	--	--	--	--

Notes and Abbreviations:
Bold indicates a detection above the residential RSL.
Bold and underlined indicates a detection above the industrial RSL.
A "<" indicates the compound was not detected at concentrations above the reporting limit. If italicized it displays the method detection limit instead of the reporting limit.
bgs - below ground surface
J - indicates an estimated value
mg/kg - milligrams per kilogram
RSL - USEPA Reigonal Screening Level
* - The full sample date is unknown since the original report could not be located.
The summary provided in WALSH, 1997 for this 1991 sampling only provides the

Table 5-3
VOC Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	1,1-Dichloroethene (µg/kg)	1,2,4-Trichlorobenzene (µg/kg)	1,2,4-Trimethylbenzene (µg/kg)	1,4-Dichlorobenzene (µg/kg)	Acetone (µg/kg)	Benzene (µg/kg)	cis-1,2-Dichloroethylene (µg/kg)	Ethylbenzene (µg/kg)	Isopropyl benzene (Cumene) (µg/kg)	m,p-Xylene (Sum of isomers) (µg/kg)	Methyl ethyl ketone (2-Butanone) (µg/kg)	Methylene chloride (µg/kg)
Screening Criteria	**Residential Soil RSL (µg/kg)**			**23000**	**5800**	**30000**	**2600**	**6100000**	**1200**	**16000**	**5800**	**190000**	**--**	**2700000**	**35000**
	Industrial Soil RSL (µg/kg)			**100000**	**26000**	**180000**	**11000**	**67000000**	**5100**	**230000**	**25000**	**990000**	**--**	**19000000**	**320000**
CTL MW-05 (TH-18)	31-Mar-11	0.58 - 0.58	Shallow	*<390*	--	--	*<390*	*<1500*	*<77*	*<390*	*<150*	--	--	*<1500*	*<390*
OU2-02	06-Nov-16	0 - 1	Shallow	<2	<5	<2	<2	37.5	<2	<2	<2	<2	<4	<10	87.2
DC-3	30-May-97	0.5 - 20	Subsurface	--	--	--	--	--	<2	--	5.4	--	--	--	--
HS-02	25-Feb-10	5 - 15	Subsurface	<31	--	--	<31	96.4	<6.2	<31	<31	--	--	<120	<31
SB-3-2	17-Dec-08	4 - 9	Subsurface	0.71 J	<4.3	<4.3	<4.3	25 J	<4.3	<2.2	<4.3	<4.3	<2.2	4.9 J	<4.3
CTL MW-02 (TH-14)	31-Mar-11	5 - 7	Subsurface	*<320*	--	--	*<320*	*<1300*	*<64*	*<320*	*<130*	--	--	*<1300*	*<320*
CTL MW-04 (TH-17)	31-Mar-11	5 - 5	Subsurface	*<320*	--	--	176	*<1300*	*<63*	*<320*	163	--	--	*<1300*	*<320*
OU2-01	06-Nov-19	1 - 3	Subsurface	<2	<5	<2	<2	37.6	<2	<2	<2	<2	<4	<10	<20
OU2-01	06-Nov-19	5 - 8.5	Subsurface	<2	<5	<2	<2	31.2	<2	<2	<2	<2	<4	<10	<20
OU2-02	06-Nov-19	5 - 6	Subsurface	<2	<5	20.7	<2	47.1	<2	<2	<2	<2	<4	<10	89.6
OU2-03	06-Nov-19	1.5 - 3.5	Subsurface	<2	<5	<2	<2	51.9	<2	<2	<2	<2	<4	<10	180
OU2-04	06-Nov-19	0 - 3	Subsurface	<2	<5	<2	<2	<20	<2	<2	<2	<2	<4	<10	131
HS-01	24-Feb-10	15 - 25	Deep	<28	--	--	<28	<110	<5.7	<28	<28	--	--	<110	<28
HS-03	25-Feb-10	10 - 15	Deep	<26	--	--	<26	<100	<5.2	<26	<26	--	--	<100	<26
HS-04	25-Feb-10	25 - 35	Deep	<28	--	--	<28	<110	<5.6	<28	<28	--	--	<110	<28
HS-05	24-Feb-10	25 - 34	Deep	<30	--	--	<30	<120	<6.0	<30	<30	--	--	<120	<30
HS-06	24-Feb-10	12 - 14	Deep	<27	--	--	<27	<110	<5.4	<27	<27	--	--	<110	<27
HS-07	24-Feb-10	25 - 35	Deep	<26	--	--	<26	<100	<5.1	<26	<26	--	--	<100	<26
HS-08	25-Feb-10	10 - 20	Deep	<29	--	--	<29	102	<5.8	<29	<29	--	--	27.1	<29
OU2-01	06-Nov-19	16 - 20	Deep	<2	<5	<2	<2	93.3	<2	<2	<2	3.1	<4	24.5	<20
OU2-02	06-Nov-19	15 - 15.5	Deep	<2	<5	<2	<2	77.5	<2	<2	<2	<2	<4	<10	157
OU2-03	06-Nov-19	10 - 12	Deep	<2	<5	3.22	<2	<20	<2	<2	<2	<2	<4	<10	132
OU2-03	06-Nov-19	15 - 15.5	Deep	<2	<5	2.66	<2	<20	<2	<2	<2	<2	<4	<10	131
OU2-04	06-Nov-19	10 - 11.5	Deep	<2	<5	<2	<2	<20	<2	<2	<2	<2	<4	<10	95.6
OU2-04	06-Nov-19	15 - 17	Deep	<2	<5	<2	<2	<20	<2	<2	<2	<2	<4	<10	125
SB-3-4	17-Dec-08	14 - 15	Deep	<5.5	<5.5	<5.5	<5.5	8.5 J	<5.5	<2.8	<5.5	<5.5	<3.9	<11	1.2 J
SB-3-5	18-Dec-08	10 - 15	Deep	<6.2	<6.2	1.1 J	<6.2	22 J	<6.2	<3.1	<6.2	<6.2	<4.3	<12	<6.2
SB-4-2	18-Dec-08	12 - 14	Deep	<360	84 J	6400	<360	610 J	<360	<180	230 J	280 J	600	<720	<360
SB-4-3	17-Dec-08	22 - 24	Deep	2.8 J	<11	<11	<11	23 J	<11	<5.5	<11	<11	<5.5	<44	2.6 J
SB-4-4	17-Dec-08	23 - 24.5	Deep	<6	<6	<6	<6	8.2 J	<6	<3	<6	<6	<4.2	<12	1.7 J
SWDI-1	09-Jul-15	10 - 12	Deep	<5.7	<5.7	--	2.2 J	41	<5.7	<2.9	1.1 J	1.1 J	1.4 J	<23	2.3 J
SWDI-2	09-Jul-15	10 - 12	Deep	<5.6	<5.6	--	<5.6	74	<5.6	<2.8	<5.6	<5.6	<2.8	<22	<5.6
SWDI-3	08-Jul-15	15 - 17	Deep	<6.9	<6.9	--	<6.9	47	<6.9	<3.4	<6.9	<6.9	1.7 J	13 J	2.4 J
SWDI-4	08-Jul-15	10 - 12	Deep	<6.4	<6.4	--	<6.4	70	<6.4	<3.2	<6.4	<6.4	2.4 J	15 J	<6.4
SWDI-5	08-Jul-15	10 - 12	Deep	<6.2	<6.2	--	<6.2	42	2.1 J	3.1	1.3 J	3.1 J	3.8	<25	<6.2
SWDI-6	09-Jul-15	10 - 12	Deep	<5.4	<5.4	--	<5.4	77	0.6 J	5.2	<5.4	2.3 J	1.9 J	<22	2.7 J
SWDI-7	08-Jul-15	15 - 17	Deep	<6.6	<6.6	--	<6.6	14 J	<6.6	0.77 J	<6.6	<6.6	1.6 J	<26	<6.6
SWDI-8	09-Jul-15	10 - 12	Deep	<5.9	<5.9	--	<5.9	78	0.77 J	<3	1.4 J	3.1 J	5.3	<24	2.4 J
SWDI-10	10-Jul-15	20 - 22	Deep	<5.9	<5.9	--	<5.9	49	<5.9	<3	<5.9	<5.9	<3	<24	4.7 J
SWDI-13	13-Jul-15	10 - 12	Deep	<4.9	<4.9	--	<4.9	<20	<4.9	<2.5	<4.9	<4.9	<2.5	<20	1.9 J
SWDI-15	13-Jul-15	15 - 17	Deep	<5.9	<5.9	--	<5.9	<24	<5.9	<3	<5.9	<5.9	<3	<24	3.6 J
SWDI-16	13-Jul-15	15 - 17	Deep	<6.5	<6.5	--	<6.5	<26	<6.5	<3.3	<6.5	<6.5	<3.3	<26	<6.5
CTL MW-01 (TH-13)	30-Mar-11	10 - 12	Deep	*<300*	--	--	*<300*	*<1200*	*<59*	*<300*	*<120*	--	--	*<1200*	*<300*
CTL MW-06 (TH-19)	31-Mar-11	22 - 25	Deep	*<350*	--	--	*<350*	*<1400*	*<71*	*<350*	*<140*	--	--	*<1400*	*<350*

Table 5-3
VOC Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	Naphthalene (µg/kg)	n-Butylbenzene (µg/kg)	n-Propylbenzene (µg/kg)	o-Xylene (1,2-Dimethylbenzene) (µg/kg)	p-Cymene (P-Isopropyltoluene) (µg/kg)	sec-Butylbenzene (µg/kg)	t-Butylbenzene (µg/kg)	PCE (µg/kg)	Toluene (µg/kg)	TCE (µg/kg)	Xylenes, Total (µg/kg)
Screening Criteria	Residential Soil RSL (µg/kg)			3800	--	380000	65000	--	780000	780000	8100	490000	410	58000
	Industrial Soil RSL (µg/kg)			17000	--	2400000	280000	--	12000000	12000000	39000	4700000	1900	250000
CTL MW-05 (TH-18)	31-Mar-11	0.58 - 0.58	Shallow	--	--	--	--	--	--	--	*<390*	*<150*	*<390*	*<150*
OU2-02	06-Nov-16	0 - 1	Shallow	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
DC-3	30-May-97	0.5 - 20	Subsurface	--	--	--	--	--	--	--	--	<2	--	5.9
HS-02	25-Feb-10	5 - 15	Subsurface	--	--	--	--	--	--	--	<31	<12	<31	<31
SB-3-2	17-Dec-08	4 - 9	Subsurface	0.9 J	<4.3	<4.3	<2.2	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3
CTL MW-02 (TH-14)	31-Mar-11	5 - 7	Subsurface	--	--	--	--	--	--	--	*<320*	*<130*	*<320*	*<130*
CTL MW-04 (TH-17)	31-Mar-11	5 - 5	Subsurface	--	--	--	--	--	--	--	*<320*	86.9	*<320*	483
OU2-01	06-Nov-19	1 - 3	Subsurface	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
OU2-01	06-Nov-19	5 - 8.5	Subsurface	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
OU2-02	06-Nov-19	5 - 6	Subsurface	<10	2.26	<2	<2	3.62	3.38	<2	<2	<2	<2	--
OU2-03	06-Nov-19	1.5 - 3.5	Subsurface	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
OU2-04	06-Nov-19	0 - 3	Subsurface	11.9	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
HS-01	24-Feb-10	15 - 25	Deep	--	--	--	--	--	--	--	<28	<11	<28	<28
HS-03	25-Feb-10	10 - 15	Deep	--	--	--	--	--	--	--	<26	<10	<26	<26
HS-04	25-Feb-10	25 - 35	Deep	--	--	--	--	--	--	--	<28	<11	<28	<28
HS-05	24-Feb-10	25 - 34	Deep	--	--	--	--	--	--	--	<30	<12	<30	<30
HS-06	24-Feb-10	12 - 14	Deep	--	--	--	--	--	--	--	<27	<11	<27	<27
HS-07	24-Feb-10	25 - 35	Deep	--	--	--	--	--	--	--	<26	<10	<26	<26
HS-08	25-Feb-10	10 - 20	Deep	--	--	--	--	--	--	--	<29	<12	<29	<29
OU2-01	06-Nov-19	16 - 20	Deep	199	4.18	2.28	<2	<2	6.34	<2	<2	<2	<2	--
OU2-02	06-Nov-19	15 - 15.5	Deep	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
OU2-03	06-Nov-19	10 - 12	Deep	<10	<2	<2	2.2	<2	2.98	<2	<2	<2	<2	--
OU2-03	06-Nov-19	15 - 15.5	Deep	27600	<2	<2	2.08	<2	<2	<2	<2	2.22	<2	--
OU2-04	06-Nov-19	10 - 11.5	Deep	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
OU2-04	06-Nov-19	15 - 17	Deep	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
SB-3-4	17-Dec-08	14 - 15	Deep	1.5 J	<5.5	<5.5	<2.8	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<3.9
SB-3-5	18-Dec-08	10 - 15	Deep	1.1 J	<6.2	<6.2	<3.1	<6.2	<6.2	<6.2	0.89 J	<6.2	<6.2	<4.3
SB-4-2	18-Dec-08	12 - 14	Deep	440 J	1200	680	560	1000	1100	94 J	<360	<360	<360	1200
SB-4-3	17-Dec-08	22 - 24	Deep	1.9 J	<11	<11	<5.5	<11	<11	<11	<11	<11	<11	<11
SB-4-4	17-Dec-08	23 - 24.5	Deep	0.78 J	<6	<6	<3	<6	<6	<6	<6	<6	<6	<4.2
SWDI-1	09-Jul-15	10 - 12	Deep	--	--	--	1.5 J	--	--	--	<5.7	<5.7	<5.7	--
SWDI-2	09-Jul-15	10 - 12	Deep	--	--	--	<2.8	--	--	--	<5.6	<5.6	<5.6	--
SWDI-3	08-Jul-15	15 - 17	Deep	--	--	--	<3.4	--	--	--	<6.9	<6.9	<6.9	--
SWDI-4	08-Jul-15	10 - 12	Deep	--	--	--	1.1 J	--	--	--	<6.4	<6.4	<6.4	--
SWDI-5	08-Jul-15	10 - 12	Deep	--	--	--	2.9 J	--	--	--	<6.2	1.3 J	<6.2	--
SWDI-6	09-Jul-15	10 - 12	Deep	--	--	--	1.9 J	--	--	--	<5.4	<5.4	<5.4	--
SWDI-7	08-Jul-15	15 - 17	Deep	--	--	--	<3.3	--	--	--	<6.6	<6.6	0.36 J	--
SWDI-8	09-Jul-15	10 - 12	Deep	--	--	--	3.3	--	--	--	<5.9	<5.9	<5.9	--
SWDI-10	10-Jul-15	20 - 22	Deep	--	--	--	<3	--	--	--	<5.9	<5.9	<5.9	--
SWDI-13	13-Jul-15	10 - 12	Deep	--	--	--	<2.5	--	--	--	<4.9	<4.9	<4.9	--
SWDI-15	13-Jul-15	15 - 17	Deep	--	--	--	<3	--	--	--	<5.9	<5.9	<5.9	--
SWDI-16	13-Jul-15	15 - 17	Deep	--	--	--	<3.3	--	--	--	<6.5	<6.5	<6.5	--
CTL MW-01 (TH-13)	30-Mar-11	10 - 12	Deep	--	--	--	--	--	--	--	*<300*	*<120*	*<300*	*<120*
CTL MW-06 (TH-19)	31-Mar-11	22 - 25	Deep	--	--	--	--	--	--	--	*<350*	*<140*	*<350*	*<140*

Table 5-3
VOC Soil Data
VB/I-70 Superfund Site, OU2

Notes and Abbreviations:

A "<" indicates the compound was not detected at concentrations above the reporting limit.
If italicized it displays the method detection limit instead of the reporting limit.
bgs - below ground surface
J - indicates an estimated value
(µg/kg) - micrograms per kilogram
RSL - USEPA Reigonal Screening Level

Table 5-4
SVOC Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	1-Methyl naphthalene (µg/kg)	2-Methyl naphthalene (µg/kg)	4-Methylphenol (p-Cresol) (µg/kg)	Acenaphthene (µg/kg)	Acenaphthylene (µg/kg)	Anthracene (µg/kg)	Benzo(a) anthracene (µg/kg)	Benzo(a) pyrene (µg/kg)	Benzo(b) fluoranthene (µg/kg)	Benzo(g,h,i) perylene (µg/kg)	Benzo(k) fluoranthene (µg/kg)	bis(2-chloroisopropyl) Ether (µg/kg)
Screening Criteria		Residential Soil RSL (µg/kg)		18000	24000	630000	360000	--	1800000	1100	110	1100	--	11000	310000
		Industrial Soil RSL (µg/kg)		73000	300000	8200000	4500000	--	23000000	21000	2100	21000	--	210000	4700000
CTL MW-05 (TH-18)	31-Mar-11	0.58 - 0.58	Shallow	--	*<2300*	*<2500*	*<2300*	*<2300*	*<2300*	*<2300*	*<2300*	*<2500*	*<2300*	*<3000*	--
OU2-02	06-Nov-16	0 - 1	Shallow	*<1.16*	*<1.16*	--	*<1.16*	*<1.16*	*<1.16*	*<1.16*	*<1.16*	*<1.16*	*<1.16*	*<1.16*	--
DC-1	30-May-97	0 - 20	Subsurface	--	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
DC-2	30-May-97	0.5 - 22	Subsurface	--	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
DC-3	30-May-97	0.5 - 20	Subsurface	--	60 J	80 J	100 J	<330	200 J	300 J	**350**	200 J	200 J	300 J	<330
DC-4	02-Jun-97	1 - 17	Subsurface	--	200 J	<330	90 J	<330	200 J	300 J	**340**	350	300 J	300 J	<330
DC-5	02-Jun-97	1 - 13.5	Subsurface	--	<330	<330	<330	60 J	200 J	510	**640**	550	440	490	<330
DC-6	02-Jun-97	1 - 20	Subsurface	--	<330	<330	100 J	50 J	300 J	830	**970**	790	670	890	<330
DC-7	02-Jun-97	1 - 17	Subsurface	--	<330	<330	<330	<330	6 J	20 J	<330	<330	<330	<330	<330
DC-8	02-Jun-97	0 - 15	Subsurface	--	<330	<330	<330	<330	10 J	<330	<330	<330	<330	<330	200 J
HS-02	25-Feb-10	5 - 15	Subsurface	130	208	--	207	<410	274	698	**625**	599	395	495	--
OU2-01	06-Nov-19	1 - 3	Subsurface	8.63	<5.69	--	15.5	<5.69	<5.69	116	**124**	157	107	56.9	--
OU2-01	06-Nov-19	5 - 8.5	Subsurface	3.86	5.78	--	5.4	2.31	9.25	28.5	19.3	35.5	24.7	11.2	--
OU2-02	06-Nov-19	5 - 6	Subsurface	15.6	19.6	--	25.2	1.78	16.4	67.5	34.5	78.6	23.5	24.5	--
OU2-03	06-Nov-19	1.5 - 3.5	Subsurface	19	20.9	--	19	<6.28	24.7	87.5	83.7	116	59	39.9	--
OU2-04	06-Nov-19	0 - 3	Subsurface	20.4	26.9	--	4.49	3.11	13.8	73.5	45.2	105	31.1	28.6	--
SB-3-2	17-Dec-08	4 - 9	Subsurface	--	<380	<380	<380	<380	<380	<380	<380	<380	<380	<380	<380
CTL MW-02 (TH-14)	31-Mar-11	5 - 7	Subsurface	--	*<420*	*<460*	*<420*	*<420*	*<420*	*<420*	*<420*	*<460*	*<420*	*<540*	--
CTL MW-04 (TH-17)	31-Mar-11	5 - 5	Subsurface	--	*<2100*	*<2300*	*<2100*	*<2100*	*<2100*	*<2100*	*<2100*	*<2300*	*<2100*	*<2700*	--
HS-01	24-Feb-10	15 - 25	Deep	<7.6	<38	--	<7.6	<38	<7.6	<7.6	5.4	6.4	<7.6	6.1	--
HS-03	25-Feb-10	10 - 15	Deep	<6.9	<34	--	<6.9	<34	<6.9	<6.9	<6.9	<6.9	<6.9	<6.9	--
HS-04	25-Feb-10	25 - 35	Deep	<7.4	<37	--	<7.4	<37	<7.4	<7.4	<7.4	<7.4	<7.4	<7.4	--
HS-05	24-Feb-10	25 - 34	Deep	<8.0	<40	--	<8.0	<40	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	--
HS-06	24-Feb-10	12 - 14	Deep	<7.1	<36	--	<7.1	<36	7.5	44.1	42.3	43.1	25.9	39.2	--
HS-07	24-Feb-10	25 - 35	Deep	<6.8	<34	--	<6.8	<34	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	--
HS-08	25-Feb-10	10 - 20	Deep	242	317	--	388	<770	455	**1450**	**1650**	**1550**	1030	1430	--
OU2-01	06-Nov-19	16 - 20	Deep	142	212	--	177	<6.42	103	117	93.4	142	117	42.8	--
OU2-02	06-Nov-19	15 - 15.5	Deep	91.6	99.2	--	53.4	<12.6	<12.6	191	114	210	114	57.2	--
OU2-03	06-Nov-19	10 - 12	Deep	67.2	76.6	--	433	<6.16	207	239	**211**	289	127	101	--
OU2-03	06-Nov-19	15 - 15.5	Deep	118	230	--	314	15.6	368	586	**528**	664	386	243	--
OU2-04	06-Nov-19	10 - 11.5	Deep	*<1.23*	*<1.23*	--	*<1.23*	*<1.23*	*<1.23*	*<1.23*	*<1.23*	*<1.23*	*<1.23*	*<1.23*	--
OU2-04	06-Nov-19	15 - 17	Deep	*<1.43*	*<1.43*	--	*<1.43*	*<1.43*	*<1.43*	*<1.43*	*<1.43*	*<1.43*	*<1.43*	*<1.43*	--
SB-3-4	17-Dec-08	14 - 15	Deep	--	<370	<370	<370	<370	<370	<370	<370	<370	<370	<370	<370
SB-3-5	18-Dec-08	10 - 15	Deep	--	<410	<410	<410	<410	<410	<410	<410	<410	<410	<410	<410
SB-4-2	18-Dec-08	12 - 14	Deep	--	680	<470	<470	<470	<470	<470	<470	<470	<470	<470	<470
SB-4-3	17-Dec-08	22 - 24	Deep	--	<490	<490	<490	<490	<490	<490	<490	<490	<490	<490	<490
SB-4-4	17-Dec-08	23 - 24.5	Deep	--	<390	<390	<390	<390	<390	<390	<390	<390	<390	<390	<390
SWDI-1	09-Jul-15	10 - 12	Deep	<2000	<2000	--	<2000	<2000	160 J	330 J	**310 J**	350 J	180 J	<2000	--
SWDI-2	09-Jul-15	10 - 12	Deep	32 J	42 J	--	64 J	<370	47 J	59 J	65 J	84 J	48 J	<370	--
SWDI-3	08-Jul-15	15 - 17	Deep	28 J	29 J	--	45 J	<420	51 J	94 J	<420	130 J	40 J	<420	--
SWDI-4	08-Jul-15	10 - 12	Deep	25 J	30 J	--	22 J	25 J	43 J	130 J	<390	180 J	120 J	80 J	--
SWDI-5	08-Jul-15	10 - 12	Deep	<3800	<3800	--	<3800	<3800	<3800	<3800	<3800	<3800	<3800	<3800	--
SWDI-6	09-Jul-15	10 - 12	Deep	<1700	<1700	--	<1700	<1700	<1700	160 J	**150 J**	220 J	120 J	<1700	--
SWDI-7	08-Jul-15	15 - 17	Deep	15 J	<360	--	<360	<360	<360	<360	<360	<360	<360	<360	--
SWDI-8	09-Jul-15	10 - 12	Deep	64 J	78 J	--	36 J	26 J	65 J	140 J	**140 J**	250 J	140 J	79 J	--
SWDI-10	10-Jul-15	20 - 22	Deep	97 J	95 J	--	440	110 J	720	**1600**	**1600**	**2100**	1100	810	--
SWDI-13	13-Jul-15	10 - 12	Deep	<350	<350	--	<350	<350	<350	<350	<350	<350	<350	<350	--
SWDI-15	13-Jul-15	15 - 17	Deep	<1800	<1800	--	230 J	<1800	360 J	710 J	**720 J**	950 J	420 J	320 J	--
SWDI-16	13-Jul-15	15 - 17	Deep	<370	<370	--	<370	<370	26 J	53 J	51 J	61 J	19 J	<370	--
CTL MW-01 (TH-13)	30-Mar-11	10 - 12	Deep	--	*<40*	*<44*	*<40*	*<40*	*<40*	*<40*	*<40*	*<44*	*<40*	*<51*	--
CTL MW-06 (TH-19)	31-Mar-11	22 - 25	Deep	--	*<890*	*<970*	*<890*	*<890*	*<890*	*<890*	*<890*	*<970*	*<890*	*<1100*	--

Table 5-4
SVOC Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	bis(2-ethylhexyl) phthalate (µg/kg)	Chrysene (µg/kg)	Dibenz(a,h) anthracene (µg/kg)	Dibenzofuran (µg/kg)	Diethyl Phthalate (µg/kg)	Di-n-butyl phthalate (µg/kg)	Fluoranthene (µg/kg)	Fluorene (µg/kg)	Indeno(1,2,3-c,d) Pyrene (µg/kg)	Naphthalene (µg/kg)	Nitrobenzene (µg/kg)	Phenanthrene (µg/kg)	Pyrene (µg/kg)
Screening Criteria		Residential Soil RSL (µg/kg)		39000	110000	110	7300	5100000	630000	240000	240000	1100	3800	5100	--	180000
		Industrial Soil RSL (µg/kg)		160000	2100000	2100	100000	66000000	8200000	3000000	3000000	21000	17000	22000	--	2300000
CTL MW-05 (TH-18)	31-Mar-11	0.58 - 0.58	Shallow	*<11000*	*<3000*	*<2500*	*<2300*	*<4400*	*<2300*	*<4400*	*<2500*	*<2300*	*<4400*	*<11000*	*<4400*	*<2500*
OU2-02	06-Nov-16	0 - 1	Shallow	--	*<1.16*	*<1.16*	--	--	--	*<1.16*	*<1.16*	*<1.16*	*<1.16*	--	<1.16	<1.16
DC-1	30-May-97	0 - 20	Subsurface	<330	<330	<330	<330	<330	200 J	<330	<330	<330	<330	<330	<330	<330
DC-2	30-May-97	0.5 - 22	Subsurface	<330	<330	<330	<330	<330	<330	40 J	<330	<330	<330	<330	<330	30 J
DC-3	30-May-97	0.5 - 20	Subsurface	<330	370	<330	60 J	<330	100 J	830	100 J	200 J	100 J	<330	690	700
DC-4	02-Jun-97	1 - 17	Subsurface	100 J	360	<330	40 J	<330	80 J	960	70 J	200 J	200 J	<330	730	750
DC-5	02-Jun-97	1 - 13.5	Subsurface	<330	590	<330	<330	<330	50 J	1100	50 J	<330	<330	<330	670	1100
DC-6	02-Jun-97	1 - 20	Subsurface	<330	960	<330	60 J	<330	70 J	1900	80 J	580	40 J	20 J	1500	2000
DC-7	02-Jun-97	1 - 17	Subsurface	<330	20 J	<330	<330	<330	<330	60	<330	<330	<330	<330	30	70
DC-8	02-Jun-97	0 - 15	Subsurface	200 J	<330	<330	<330	<330	10 J	10 J	<330	<330	<330	10 J	10 J	20 J
HS-02	25-Feb-10	5 - 15	Subsurface	--	763	**155**	--	--	--	1490	224	358	517	--	1410	1700
OU2-01	06-Nov-19	1 - 3	Subsurface	--	152	29.3	--	--	--	305	<5.69	105	12.1	--	228	286
OU2-01	06-Nov-19	5 - 8.5	Subsurface	--	36.2	8.1	--	--	--	87.5	7.33	25.4	10.4	--	55.1	54.4
OU2-02	06-Nov-19	5 - 6	Subsurface	--	81.1	8.53	--	--	--	131	21.7	24.5	30.6	--	90.3	103
OU2-03	06-Nov-19	1.5 - 3.5	Subsurface	--	107	17.1	--	--	--	224	28.5	55.2	30.4	--	146	175
OU2-04	06-Nov-19	0 - 3	Subsurface	--	127	10.4	--	--	--	127	6.21	33.5	40.4	--	107	95.2
SB-3-2	17-Dec-08	4 - 9	Subsurface	<380	<380	<380	<380	<750	<380	<380	<380	<380	<380	<380	<380	<380
CTL MW-02 (TH-14)	31-Mar-11	5 - 7	Subsurface	*<1900*	*<540*	*<460*	*<420*	*<800*	*<420*	*<800*	*<460*	*<420*	*<800*	*<1900*	*<800*	*<460*
CTL MW-04 (TH-17)	31-Mar-11	5 - 5	Subsurface	*<9500*	*<2700*	*<2300*	*<2100*	*<4000*	*<2100*	*<4000*	*<2300*	*<2100*	*<4000*	*<9500*	*<4000*	*<2300*
HS-01	24-Feb-10	15 - 25	Deep	--	8.2	<7.6	--	--	--	15.0	<7.6	<7.6	<38	--	11.1	12.8
HS-03	25-Feb-10	10 - 15	Deep	--	<6.9	<6.9	--	--	--	<6.9	<6.9	<6.9	<34	--	<6.9	<6.9
HS-04	25-Feb-10	25 - 35	Deep	--	<7.4	<7.4	--	--	--	<7.4	<7.4	<7.4	<37	--	<7.4	<7.4
HS-05	24-Feb-10	25 - 34	Deep	--	<8.0	<8.0	--	--	--	<8.0	<8.0	<8.0	<40	--	<8.0	<8.0
HS-06	24-Feb-10	12 - 14	Deep	--	52.4	5.4	--	--	--	100	<7.1	23.0	<36	--	43.2	111
HS-07	24-Feb-10	25 - 35	Deep	--	<6.8	<6.8	--	--	--	<6.8	<6.8	<6.8	<34	--	<6.8	<6.8
HS-08	25-Feb-10	10 - 20	Deep	--	1500	**267**	--	--	--	2560	391	936	869	--	1940	3510
OU2-01	06-Nov-19	16 - 20	Deep	--	204	31.1	--	--	--	445	214	107	582	--	589	354
OU2-02	06-Nov-19	15 - 15.5	Deep	--	355	38.2	--	--	--	584	141	38.2	382	--	595	465
OU2-03	06-Nov-19	10 - 12	Deep	--	271	37.3	--	--	--	749	336	133	233	--	1180	536
OU2-03	06-Nov-19	15 - 15.5	Deep	--	675	107	--	--	--	1490	435	410	600	--	1670	1170
OU2-04	06-Nov-19	10 - 11.5	Deep	--	*<1.23*	*<1.23*	--	--	--	*<1.23*	*<1.23*	*<1.23*	*<1.23*	--	2.24	<1.23
OU2-04	06-Nov-19	15 - 17	Deep	--	*<1.43*	*<1.43*	--	--	--	3.9	*<1.43*	*<1.43*	*2.6*	--	5.2	3.03
SB-3-4	17-Dec-08	14 - 15	Deep	<370	<370	<370	<370	<730	<370	<370	<370	<370	<370	<370	<370	<370
SB-3-5	18-Dec-08	10 - 15	Deep	<410	<410	<410	<410	<810	<410	<410	<410	<410	<410	<410	<410	15 J
SB-4-2	18-Dec-08	12 - 14	Deep	<470	<470	<470	<470	<940	<470	300 J	250 J	<470	770	<470	440 J	180 J
SB-4-3	17-Dec-08	22 - 24	Deep	<490	<490	<490	<490	<990	<490	<490	<490	<490	<490	<490	<490	27 J
SB-4-4	17-Dec-08	23 - 24.5	Deep	<390	<390	<390	<390	<790	<390	<390	<390	<390	<390	<390	<390	<390
SWDI-1	09-Jul-15	10 - 12	Deep	--	380 J	<2000	--	--	--	620 J	<2000	140 J	<2000	--	640 J	710 J
SWDI-2	09-Jul-15	10 - 12	Deep	--	84 J	<370	--	--	--	140 J	66 J	41 J	89 J	--	230 J	160 J
SWDI-3	08-Jul-15	15 - 17	Deep	--	110 J	<420	--	--	--	190 J	48 J	61 J	<420	--	170 J	190 J
SWDI-4	08-Jul-15	10 - 12	Deep	--	170 J	<390	--	--	--	210 J	29 J	99 J	<390	--	120 J	230 J
SWDI-5	08-Jul-15	10 - 12	Deep	--	<3800	<3800	--	--	--	<3800	<3800	<3800	<3800	--	370 J	380 J
SWDI-6	09-Jul-15	10 - 12	Deep	--	290 J	<1700	--	--	--	380 J	<1700	<1700	<1700	--	390 J	410 J
SWDI-7	08-Jul-15	15 - 17	Deep	--	<360	<360	--	--	--	<360	<360	<360	<360	--	<360	13 J
SWDI-8	09-Jul-15	10 - 12	Deep	--	250 J	<350	--	--	--	380	38 J	120 J	140 J	--	330 J	420
SWDI-10	10-Jul-15	20 - 22	Deep	--	1800	**260 J**	--	--	--	3500	430	**1100**	200 J	--	3000	3700
SWDI-13	13-Jul-15	10 - 12	Deep	--	<350	<350	--	--	--	<350	<350	<350	<350	--	34 J	37 J
SWDI-15	13-Jul-15	15 - 17	Deep	--	770 J	**130 J**	--	--	--	1600 J	280 J	400 J	<1800	--	1200 J	1800
SWDI-16	13-Jul-15	15 - 17	Deep	--	57 J	<370	--	--	--	110 J	<370	26 J	<370	--	110 J	120 J
CTL MW-01 (TH-13)	30-Mar-11	10 - 12	Deep	*<180*	*<51*	*<44*	*<40*	*<77*	*<40*	*<77*	*<44*	*<40*	*<77*	*<180*	*<77*	*<44*
CTL MW-06 (TH-19)	31-Mar-11	22 - 25	Deep	*<4000*	*<1100*	*<970*	*<890*	*<1700*	*<890*	*<1700*	*<970*	*<890*	*<1700*	*<4000*	*<1700*	*<970*

Table 5-4
SVOC Soil Data
VB/I-70 Superfund Site, OU2

Notes and Abbreviations:

A "<" indicates the compound was not detected at concentrations above the reporting limit.
If italicized it displays the method detection limit instead of the reporting limit.
bgs - below ground surface
J - indicates an estimated value
(µg/kg) - micrograms per kilogram
RSL - USEPA Reigonal Screening Level

Table 5-5
TPH Soil Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Depth (feet bgs)	Depth Category	TPH as diesel fuel (mg/kg)	TPH as gasoline (mg/kg)
DC-1	30-May-97	0 - 20	Subsurface	<20	--
DC-2	30-May-97	0.5 - 22	Subsurface	<20	--
DC-3	30-May-97	0.5 - 20	Subsurface	110	--
DC-4	02-Jun-97	1 - 17	Subsurface	1400	--
DC-5	02-Jun-97	1 - 13.5	Subsurface	45	--
DC-6	02-Jun-97	1 - 20	Subsurface	50	--
DC-7	02-Jun-97	1 - 17	Subsurface	31	--
DC-8	02-Jun-97	0 - 15	Subsurface	24	--
HS-02	25-Feb-10	5 - 15	Subsurface	248	<1.2
HS-03	25-Feb-10	10 - 15	Deep	269	<1.0
HS-08	25-Feb-10	10 - 20	Deep	219	<1.2

Notes and Abbreviations:

A "<" indicates the compound was not detected at concentrations above the reporting limit.
bgs - below ground surface
J - indicates an estimated value
mg/kg - milligrams per kilogram
TPH - total petroleum hydrocarbons

Table 5-6
PCB Soils Data
VB/I-70 Superfund Site, OU2

Location Identification Field Sample Identification Date Collected Depth (feet) Analyte (Units)	HS-02 HS-02 2/25/2010 5 - 15	HS-03 HS-03 2/25/2010 10 - 15	HS-08 HS-08 2/25/2010 10 - 20
Polychlorinated Biphenyls (PCBs) (µg/kg)			
PCB, Total	<100	<17	<96
PCB-1016 (Arochlor 1016)	<100	<17	<96
PCB-1221 (Arochlor 1221)	<100	<17	<96
PCB-1232 (Arochlor 1232)	<100	<17	<96
PCB-1242 (Arochlor 1242)	<100	<17	<96
PCB-1248 (Arochlor 1248)	<100	<17	<96
PCB-1254 (Arochlor 1254)	<100	<17	<96
PCB-1260 (Arochlor 1260)	<100	<17	<96

Notes and Abbreviations:

A "<" indicates the compound was not detected at concentrations above the reporting limit.
The reporting limit is provided after for reference.
PCB - Polychlorinated Biphenyls
µg/kg - micrograms per kilogram

Table 5-7
Pesticide Soils Data
VB/I-70 Superfund Site, OU2

Location Identification Date Collected Depth (feet) Analyte (Units)	HS-02 2/25/2010 5 - 15	HS-03 2/25/2010 10 - 15	HS-08 2/25/2010 10 - 20	Residential RSL	Industrial RSL
Pesticides (µg/kg)					
Aldrin	<4.1	<0.69	<3.8	39	180
alpha BHC (alpha Hexachlorocyclohexane)	<4.1	<0.69	<3.8	86	360
alpha Endosulfan	<4.1	<0.69	<3.8	--	--
alpha-Chlordane	<4.1	<0.69	<3.8	--	--
beta BHC (beta Hexachlorocyclohexane)	<4.1	<0.69	<3.8	300	1300
beta Endosulfan	<4.1	<0.69	<3.8	--	--
Chlordane	<100	<17	<96	--	--
delta BHC (delta Hexachlorocyclohexane)	<4.1	<0.69	<3.8	--	--
Dieldrin	<4.1	<0.69	<3.8	34	140
Endosulfan sulfate	<12	<2.1	<12	--	--
Endrin	<4.1	<0.69	<3.8	1900	25000
Endrin aldehyde	<4.1	<0.69	<3.8	--	--
Endrin ketone	<4.1	<0.69	<3.8	--	--
gamma BHC (Lindane)	<4.1	<0.69	<3.8	570	2500
gamma-Chlordane	<4.1	<0.69	7.8	--	--
Heptachlor	<4.1	<0.69	<3.8	130	630
Heptachlor epoxide	<41	<0.69	<38	70	330
Methoxychlor	<25	<2.1	<23	32000	410000
p,p'-DDD	10.1	<0.69	30.8	190.00	2500.0
p,p'-DDE	<4.1	<0.69	9	2000	9300.0
p,p'-DDT	<8.3	<0.69	<7.7	1900	8500
Toxaphene	<210	<34	<190	--	--

Notes and Abbreviations:

A "<" indicates the compound was not detected at concentrations above the reporting limit. The reporting limit is provided after for reference.
(µg/kg) - micrograms per kilogram
RSL - USEPA Reigonal Screening Level

Table 5-8
Historical Dissolved Metal Groundwater Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium Total (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Magnesium (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
Screening Criteria	CO Reg 41 GSL (µg/L)	5000	6	10	2000	4	5	--	100	50	50	300	50	--	50	2	100	50	50	2	100	5000
DC-2	05-Jun-97	--	--	**10**	94	--	1	--	0.9 J	--	--	--	<1	--	--	0.45	--	43	*<1*	--	--	--
DC-3	05-Jun-97	--	--	**42**	670	--	**5**	--	2.2	--	--	--	5.9	--	--	**5.8**	--	**59**	*<1*	--	--	--
DC-4	05-Jun-97	--	--	**27**	510	--	1	--	2.2	--	--	--	3.1	--	--	0.39	--	**68**	*<1*	--	--	--
MW-01	02-Nov-05	--	--	2.3 J	--	--	0.25 J	--	--	--	3.7	--	<1 J	--	--	--	--	--	--	--	--	13 J
MW-01	24-Jan-06	--	--	2 J	--	--	0.23 J	--	--	--	2.9	--	<1	--	--	--	--	--	--	--	--	12
MW-01	12-Apr-06	--	--	2.3 J	--	--	0.2 J	--	--	--	3.1	--	<1	--	--	--	--	--	--	--	--	14 J
MW-01	12-Jul-06	--	--	2 J	--	--	0.2 J	--	--	--	2.7	--	<1	--	--	--	--	--	--	--	--	13
MW-02	18-Aug-05	<100	**8.6 J**	**63**	970	<5	<5	130000	<10	--	<10	28 J	<3	73000	**1200**	<0.2	<40	<15	<10	<10	--	14 J
MW-02	02-Nov-05	--	--	**150**	--	--	.066 J	--	--	--	1.1 J	--	2.6 J	--	--	--	--	--	--	--	--	140 J
MW-02	24-Jan-06	--	--	**120**	--	--	.088 J	--	--	--	<2	--	2.1	--	--	--	--	--	--	--	--	150
MW-02	12-Apr-06	--	--	**100**	--	--	0.14 J	--	--	--	<2	--	1.9 J	--	--	--	--	--	--	--	--	140 J
MW-02	12-Jul-06	--	--	**120**	--	--	0.071 J	--	--	--	7.6	--	1.6	--	--	--	--	--	--	--	--	150
MW-03	18-Aug-05	<100	<10	**22**	760	<5	<1	150000	0.93 J	--	<10	**21000**	<3	52000	**500**	<0.2	3.5 J	<5	<100	<10	--	12
MW-03	02-Nov-05	--	--	9.8	--	--	<1	--	--	--	<2	--	.41 J	--	--	--	--	--	--	--	--	32 J
MW-03	24-Jan-06	--	--	6.6	--	--	<1	--	--	--	<2	--	.28 J	--	--	--	--	--	--	--	--	28
MW-03	12-Apr-06	--	--	9.5	--	--	<1	--	--	--	<2	--	.11 J	--	--	--	--	--	--	--	--	40 J
MW-03	12-Jul-06	--	--	7.1	--	--	<1	--	--	--	<2	--	<1	--	--	--	--	--	--	--	--	30
MW-05	02-Nov-05	--	--	1.5 J	--	--	<1	--	--	--	2.1	--	.2 J	--	--	--	--	--	--	--	--	5.4 J
MW-05	24-Jan-06	--	--	1.5 J	--	--	<1	--	--	--	2.4	--	<1	--	--	--	--	--	--	--	--	4.4 J
MW-05	12-Apr-06	--	--	1.5 J	--	--	<1	--	--	--	2.6	--	<1	--	--	--	--	--	--	--	--	5.8 J
MW-05	12-Jul-06	--	--	1.5 J	--	--	<1	--	--	--	3.1	--	.44 J	--	--	--	--	--	--	--	--	8.2 J
MW-06	02-Nov-05	--	--	1.2 J	--	--	0.05 J	--	--	--	2.8	--	.16 J	--	--	--	--	--	--	--	--	5.7 J
MW-06	24-Jan-06	--	--	1.3 J	--	--	<1	--	--	--	2	--	<1	--	--	--	--	--	--	--	--	4.2 J
MW-06	12-Apr-06	--	--	1.6 J	--	--	<1	--	--	--	1.8 J	--	.18 J	--	--	--	--	--	--	--	--	6 J
MW-06	12-Jul-06	--	--	3.6 J	--	--	0.11 J	--	--	--	14	--	6	--	--	--	--	--	--	--	--	37
QUAD-1	25-May-01	--	--	1.1 J	--	--	<1.0	--	1.5 J	--	13.9	<100	0.34 J	--	1.7	--	3.1	2.8 J	<1.0	--	--	82.1
QUAD-2	25-May-01	--	--	1.3 J	--	--	0.32 J	--	1.9 J	--	8.3	<100	0.24 J	--	0.19 J	--	2.8	3.1 J	0.97 J	--	--	40.7
QUAD-3	25-May-01	--	--	2.1 J	--	--	0.78 J	--	2.4	--	8.9	<100	0.48 J	--	0.16 J	--	3.7	4.4 J	0.31 J	--	--	33.6
QUAD-4	25-May-01	--	--	2.3 J	--	--	0.18 J	--	2.3	--	8.7	<100	0.53 J	--	0.18 J	--	3.5	4.4 J	0.15 J	--	--	46.8
TH-1	26-May-98	--	--	*<2*	50	*<5*	*<10*	--	*<20*	*<20*	*<20*	*<20*	<2	--	**60**	*<.4*	*<20*	*<2*	*<10*	--	*<20*	*<20*
TH-2	01-Jan-91	--	--	*<8*	90	*<5*	*<10*	--	*<20*	*<20*	*<20*	*<20*	<2	--	**500**	*<.4*	*<20*	*<8*	*<10*	--	*<20*	20
TH-3	01-Jan-91	--	--	*<8*	260	*<5*	*<10*	--	*<20*	*<20*	*<20*	*<20*	<2	--	**1400**	*<.4*	*<20*	*<2*	*<10*	--	*<20*	*<20*
TH-4	01-Jan-91	--	--	*<2*	130	*<5*	*<10*	--	*<20*	*<20*	*<20*	*<20*	<2	--	**1100**	*<.4*	*<20*	*<2*	*<10*	--	*<20*	110
TH-5	01-Jan-91	--	--	*<4*	270	*<5*	*<10*	--	*<20*	*<20*	*<20*	360	<2	--	**1500**	*<.4*	*<20*	*<2*	*<10*	--	*<20*	30
TH-8	01-Jan-91	--	--	*<2*	50	*<5*	*<10*	--	*<20*	*<20*	*<20*	*<20*	<2	--	20	*<.4*	*<20*	*<4*	*<10*	--	*<20*	*<20*
TH-9	01-Jan-91	--	--	*<2*	60	*<5*	*<10*	--	*<20*	*<20*	*<20*	*<20*	<2	--	*<10*	*<.4*	*<20*	*<8*	*<10*	--	*<20*	*<20*

Notes and Abbreviations:

A "<" indicates the compound was not detected at concentrations above the reporting limit.
If italicized it displays the method detection limit instead of the reporting limit.
Bold indicates a detection above the GSL
J - indicates an estimated value
µg/L - micrograms per liter
GSL - groundwater screening level

Table 5-9
Recent Dissovled Groundwater Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium III (µg/L)	Chromium, Hexavalent (µg/L)	Chromium, Total (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Magnesium (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Nickel (µg/L)	Potassium (µg/L)	Selenium (µg/L)	Silver (µg/L)
Screening Criteria	CO Reg 41 GSL (µg/L)	5000	6	10	2000	4	5	--	--	--	100	50	50	300	50	--	50	2	100	--	50	50
CTL MW-01	05-Apr-11	--	--	<5.9	54.5	--	<0.62	--	--	<10	1.0 J	--	--	17.9 J	1.8U	--	26.5	0.022 J	--	--	<5.7	<0.56
CTL MW-01	30-Jan-14	2.3 J	0.68 J	0.81 J	65.2	1	1	177000 J	--	--	0.78 J	0.16 J	1.4 J	80.7 J	1	27400	0.73 J	0.2	0.59 J	5980	4.5 J	1
CTL MW-02	05-Apr-11	--	--	7.2 J	113	--	<0.62	--	--	<10	1.1 J	--	--	27.3 J	1.8U	--	2.2 J	0.041 J	--	--	5.9 J	<0.56
CTL MW-02	30-Jan-14	67.7 J	<2 J	0.72 J	140 J	<1 J	<1 J	179000 J	--	--	1.2 J	0.24 J	1.6 J	174 J	<1 J	30600 J	32.9 J	<0.2 J	1.7 J	5450 J	3.8 J	<1 J
CTL MW-03	05-Apr-11	--	--	5.9 J	49.4	--	**264**	--	--	<10	1.3 J	--	--	12.5 J	1.8U	--	**92.7**	0.18	--	--	<5.7	<0.56
CTL MW-04	05-Apr-11	--	--	**15.5 J**	121	--	1.9 J	--	--	<10	0.8 J	--	8.3	28.6 J	3.1 J	--	**2140**	<0.014	--	--	<5.7	<0.56
CTL MW-04	18-Feb-14	9 J	1.2 J	**48.7 J**	187 J	<1 J	<1 J	186000 J	--	--	1.1 J	11.3 J	4.2 J	**6630 J**	0.29 J	68000 J	**2540 J**	<0.2 J	38.2 J	7960 J	5.2 J	<1 J
CTL MW-05	05-Apr-11	--	--	7.6 J	548	--	0.90 J	--	--	<50	0.60 J	--	--	**23300**	11.7 J	--	**775**	<0.014	--	--	<5.7	<0.56
CTL MW-05	18-Feb-14	17.2 J	0.43 J	4.3 J	847 J	2 J	<1 J	192000 J	--	--	4 J	2.4 J	2.2 J	**32400 J**	0.87 J	67000 J	**631 J**	<0.2 J	1.5 J	96300 J	1.9 J	<1 J
CTL MW-06	05-Apr-11	--	--	**11.7 J**	591	--	<0.62	--	--	<10	1.7 J	--	--	**1000**	4.6 J	--	**3370**	0.030 J	--	--	5.7 J	<0.56
CTL MW-06	30-Jan-14	4.6 J	0.76 J	**11.5**	718	1	1	139000	--	--	1.9 J	11.6	3	**22100**	0.31 J	71600	**316**	0.2	6	52400	17.8	1
CTL MW-06	15-Jul-15	--	--	--	--	--	<1	--	<20	<20	--	--	<2	26 J	<1	--	**350**	--	3.0	--	1.1 J	<5
HS-01	24-Feb-10	--	--	<25	113	--	<10	--	--	--	<10	--	--	--	<50	--	--	<0.10	--	--	<50	<30
HS-02	25-Feb-10	--	--	<25	93.7	--	<10	--	--	--	<10	--	--	--	<50	--	--	<0.10	--	--	<50	<30
HS-03	25-Feb-10	--	--	<25	56.5	--	**18.2**	--	--	--	<10	--	--	--	<50	--	--	<0.10	--	--	<50	<30
HS-04	25-Feb-10	--	--	<25	53.1	--	**109**	--	--	--	<10	--	--	--	<50	--	--	<0.10	--	--	<50	<30
HS-05	24-Feb-10	--	--	<25	55.5	--	<10	--	--	--	<10	--	--	--	<50	--	--	<0.10	--	--	<50	<30
HS-07	25-Feb-10	--	--	<25	61.5	--	<10	--	--	--	<10	--	--	--	<50	--	--	<0.10	--	--	<50	<30
HS-08	25-Feb-10	--	--	<25	309	--	<10	--	--	--	<10	--	--	--	<50	--	--	<0.10	--	--	<50	<30
MW-01	21-Mar-12	21.2 J	0.29 J	2.4 J	102 J	<1 J	0.55 J	160000 J	--	--	0.23 J	2.4 J	2.7 J	**1070 J**	0.055 J	31200 J	**910 J**	<0.2 J	5.8 J	11100 J	5.3 J	<1 J
MW-01	30-May-12	4.9 J	0.24 J	2.4	108	<1	0.47 J	155000 J	--	--	0.31 J	1.8	3.6	**556**	0.66 J	30100	**608**	0.099 J	4.8	11100	5.3	<1
MW-01	06-Sep-12	48.1 J	0.16 J	2.1 J	86.6 J	<1	1.1 J	133000 J	--	--	0.54 J	0.69 J	4.3 J	**643 J**	0.57 J	25700 J	**182 J**	<0.2	5.1 J	9970 J	5.4 J	<1
MW-01	04-Dec-12	4.3 J	0.2 J	2.5	102	<1	0.56 J	169000 J	--	--	<2	0.81 J	2.7	11.6 J	0.11 J	31900	**595 J**	<0.2	4.5	11300	4.2 J	1 J
MW-01	11-Feb-14	2030 J	**109 J**	1.9 J	106 J	**49.5 J**	0.42 J	174000 J	--	--	<2 J	0.85 J	2.9 J	110 J	<1 J	31600 J	**841 J**	<0.2 J	**450 J**	10900 J	4.2 J	<1 J
MW-02	21-Mar-12	<20 J	3.7 J	**99.7 J**	885 J	<1 J	<1 J	141000 J	--	--	0.33 J	2.2 J	3.2 J	**9130 J**	0.28 J	81600 J	**1180 J**	<0.2 J	2.8 J	61600 J	2.9 J	<1 J
MW-02	30-May-12	6 J	4.8	**125**	987	<1	0.18 J	132000 J	--	--	0.32 J	2.5	1 J	**9240**	0.62 J	82300	**1210**	0.087 J	2.5	66500 J	1.9 J	<1
MW-02	06-Sep-12	34.7 J	**6.2**	**95.3 J**	882 J	<1	0.17 J	114000 J	--	--	1.2 J	2.2 J	1.3 J	**5780 J**	4.3 J	68500 J	**966 J**	<0.2	3.6 J	64800 J	1.6 J	0.038 J
MW-02	04-Dec-12	2.2 J	**6.7**	**141**	1020	<1	<1	145000 J	--	--	0.65 J	2.3 J	0.66 J	**8420**	0.45 J	85800	**1190 J**	<0.2	1.9	75900	<5	1 J
MW-02	11-Feb-14	7.3 J	4.9 J	**117 J**	952 J	<1 J	0.38 J	139000 J	--	--	1.1 J	2.2 J	1.5 J	**8640 J**	0.67 J	82000 J	**1070 J**	<0.2 J	1.8 J	64400 J	1.4 J	<1 J
MW-03	22-Mar-12	6.4 J	0.087 J	2.5 J	500 J	<1 J	<1 J	165000 J	--	--	0.91 J	2.2 J	0.68 J	**21200 J**	0.13 J	50200 J	**502 J**	<0.2 J	3.4 J	67600 J	2.7 J	<1 J
MW-03	31-May-12	5.7 J	0.11 J	2.6	529	<1	0.17 J	159000 J	--	--	0.94 J	2.4	0.94 J	**21900**	0.083 J	49100	**518**	0.083 J	2.2	70200 J	1.9 J	<1
MW-03	06-Sep-12	145 J	0.21 J	3.6 J	492 J	<1	0.84 J	145000 J	--	--	2.2	2.5 J	3.7 J	**20400 J**	18.4 J	43000 J	**461 J**	<0.2	3.8 J	69900 J	2.2 J	0.032 J
MW-03	05-Dec-12	10 J	0.099 J	3.2	584	<1	<1	157000 J	--	--	1.1 J	2.5 J	0.82 J	**20700**	0.53 J	53300	**484 J**	<0.2	1.6	80600	<5	1 J
MW-03	18-Feb-14	6.3 J	0.49 J	3.3 J	554 J	<1 J	0.86 J	165000 J	--	--	0.69 J	2.2 J	1.2 J	**19600 J**	8.4 J	49600 J	**458 J**	<0.2 J	1.2 J	66900 J	1.3 J	<1 J

Table 5-9
Recent Dissovled Groundwater Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Aluminum (µg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium III (µg/L)	Chromium, Hexavalent (µg/L)	Chromium, Total (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Magnesium (µg/L)	Manganese (µg/L)	Mercury (µg/L)	Nickel (µg/L)	Potassium (µg/L)	Selenium (µg/L)	Silver (µg/L)
Screening Criteria	CO Reg 41 GSL (µg/L)	5000	6	10	2000	4	5	--	--	--	100	50	50	300	50	--	50	2	100	--	50	50
MW-05	20-Mar-12	<20 J	0.14 J	0.94 J	60.1	0.037 J	0.022 J	162000 J	--	--	1 J	0.35 J	0.99 J	**1050 J**	0.012 J	36800	0.13 J	<0.2	2.6 J	4880	4.1 J	<1
MW-05	29-May-12	21.9	0.13 J	0.88 J	65.1	<1 J	0.08 J	155000 J	--	--	1.3 J	0.24 J	1.4 J	**553**	0.16 J	35600	0.57 J	0.12 J	1.8	4980	4 J	<1
MW-05	05-Sep-12	47 J	0.19 J	0.96 J	57.3 J	<1	1 J	134000 J	--	--	1.3 J	0.27 J	1.5 J	**605 J**	0.34 J	33100 J	5.3 J	<0.2	2.7 J	4530 J	3.9 J	<1
MW-05	03-Dec-12	7.1 J	0.11 J	0.58 J	63.1	<1	<1	166000 J	--	--	0.81 J	0.18 J	0.93 J	22.3 J	<1	39400	<1	<0.2	1.5	5450	2.4 J	1 J
MW-05	29-Jan-14	554 J	**110 J**	**40.8 J**	61.9 J	**45.6 J**	**51.5 J**	172000 J	--	--	**189 J**	**463 J**	**218 J**	**447 J**	20.6 J	35400 J	**472 J**	0.98 J	1.6 J	5100 J	**96 J**	47.6 J
MW-06	26-Feb-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.1	--	--	--	--
MW-06	20-Mar-12	8.2 J	0.13 J	1	53.3	<1	<1	169000 J	--	--	1.3 J	0.34 J	1.1 J	**1140 J**	<1	30400	0.83 J	<0.2	2.6 J	5280	4.5 J	<1
MW-06	29-May-12	7.8 J	0.085 J	1.2	62.9	<1	<1	167000 J	--	--	1.6 J	0.27 J	1.7 J	**609**	1.2	31400	1.5	0.1 J	2.3	5720	5.4	<1
MW-06	04-Sep-12	6.3 J	<2	0.97 J	47.6 J	<1	1 J	133000 J	--	--	1.4 J	0.21 J	1.3 J	**560 J**	0.22 J	24500 J	2.5 J	<0.2	2.6 J	4470 J	4.5 J	<1
MW-06	03-Dec-12	130	0.099 J	0.68 J	55.6	<1	<1	166000 J	--	--	0.94 J	0.19 J	2.4	98.6 J	0.079 J	30500	2.4	<0.2	1.5	5820	3.6 J	1 J
MW-06	29-Jan-14	3.3 J	0.37 J	0.53 J	57.4 J	<1 J	<1 J	174000 J	--	--	1.4 J	0.18 J	1.8 J	<200 J	<1 J	28600 J	28.8 J	<0.2 J	0.91 J	5600 J	3.4 J	<1 J
PW-2 MIDDLE	06-Jul-16	--	--	--	--	--	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	4.2	--
PW-2 START	05-Jul-16	--	--	--	--	--	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	4.3	--
SWDI-1	13-Jul-15	--	--	--	--	--	**6.9**	--	<20	<40	--	--	3.1	210	2.3	--	**860**	--	14	--	<5	<5
SWDI-2	13-Jul-15	--	--	--	--	--	0.59 J	--	<20	<20	--	--	0.87 J	160	1.7	--	**3300**	--	5.9	--	3.1 J	<5
SWDI-3	13-Jul-15	--	--	--	--	--	<1	--	55	5.9 J	--	--	0.97 J	**4300**	2.2	--	**2800**	--	3.3	--	<5	<5
SWDI-4	14-Jul-15	--	--	--	--	--	<1	--	<20	<20	--	--	<2	<100	2.0	--	**3800**	--	2.9	--	1.5 J	<5
SWDI-5	13-Jul-15	--	--	--	--	--	<1	--	22 J	<40 J	--	--	<2	28 J	3.1	--	**3100**	--	9.2	--	<5	<5
SWDI-6	14-Jul-15	--	--	--	--	--	<1	--	<20	<20	--	--	0.67 J	**12000**	3.0	--	**1200**	--	4.7	--	<5	0.052 J
SWDI-7	14-Jul-15	--	--	--	--	--	<1	--	<20 J	<20 J	--	--	<2	61 J	0.20 J	--	**1800**	--	4.9	--	<5	<5
SWDI-8	14-Jul-15	--	--	--	--	--	<1	--	47 J	<20 J	--	--	<2	31 J	0.29 J	--	**4200**	--	4.4	--	<5	<5
SWDI-10	14-Jul-15	--	--	--	--	--	<1	--	32	<20	--	--	0.62 J	**3300**	1.6	--	**6000**	--	9.7	--	1.7 J	0.038 J
SWDI-12	14-Jul-15	--	--	--	--	--	<1	--	37	<20	--	--	3.4 J	**480**	22	--	**740**	--	8.3	--	3.5 J	0.077 J
SWDI-13	15-Jul-15	--	--	--	--	--	1.2	--	86	<20	--	--	2.6	<100	<1	--	**1700**	--	8.3	--	1.1 J	0.17 J
SWDI-14	15-Jul-15	--	--	--	--	--	<1	--	35	<20	--	--	0.86 J	<100	<1	--	**750**	--	3.6	--	2.1 J	0.093 J
SWDI-15	14-Jul-15	--	--	--	--	--	1.5	--	72	<20	--	--	3.8 J	**4000**	6.5	--	**790**	--	5.8	--	4.2 J	0.050 J
SWDI-16	15-Jul-15	--	--	--	--	--	0.69 J	--	210	<20	--	--	4.4	68 J	<1	--	**550**	--	20	--	1.8 J	<5
TH-45	19-Jan-16	--	--	--	--	--	0.27	--	20	4	--	--	0.56	22	0.18	--	**98**	--	1.1 J	--	5	0.066 J
TH-46	19-Jan-16	--	--	--	--	--	0.43 J	--	20	4	--	--	--	22	--	--	--	--	--	--	--	0.033
TH-47	19-Jan-16	--	--	--	--	--	0.86 J	--	20	4	--	--	0.79 J	22	0.18	--	**370**	--	2.5	--	3.3 J	0.033
TH-47D	19-Jan-16	--	--	--	--	--	0.58 J	--	20	4	--	--	0.56	22	0.18	--	**380**	--	2.7	--	3.4 J	0.033
TH-48	19-Jan-16	--	--	--	--	--	0.27 J	--	20	4	--	--	2.2	22	0.2 J	--	**120**	--	2	--	5.4	0.033
TH-52	19-Jan-16	--	--	--	--	--	0.35 J	--	20	5.4 J	--	--	0.56	22	--	--	--	--	--	--	--	--
OU2-01	06-Nov-19	--	--	1.5	--	--	0.099	--	<45	<45	--	--	1.7	155	1.2	--	**519**	--	1.9	--	0.93	<0.016
OU2-02	06-Nov-19	--	--	3.8	--	--	<0.084	--	<45	<45	--	--	2.2	**521**	0.59	--	**588**	--	1.3	--	0.73	<0.016
OU2-03	06-Nov-19	--	--	2.0	--	--	<0.084	--	<45	<45	--	--	2.4	**700**	1.7	--	**426**	--	1.4	--	0.64	<0.016
OU2-04	06-Nov-19	--	--	0.96	--	--	0.65	--	<9.1	<9	--	--	1.9	52.2	0.15	--	**73.4**	--	2.8	--	4.7	<0.016

Table 5-9
Recent Dissovled Groundwater Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Sodium (µg/L)	Thallium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
Screening Criteria	CO Reg 41 GSL (µg/L)	--	2	30	100	5000
CTL MW-01	05-Apr-11	--	--	--	--	1.4 J
CTL MW-01	30-Jan-14	145000	1	--	2.1 J	1.2 J
CTL MW-02	05-Apr-11	--	--	--	--	<1.4
CTL MW-02	30-Jan-14	139000 J	<1 J	--	2 J	2
CTL MW-03	05-Apr-11	--	--	--	--	31.5
CTL MW-04	05-Apr-11	--	--	--	--	121
CTL MW-04	18-Feb-14	640000 J	<1 J	--	2.5 J	31.3 J
CTL MW-05	05-Apr-11	--	--	--	--	53.3
CTL MW-05	18-Feb-14	344000 J	<1 J	--	10 J	3.7 J
CTL MW-06	05-Apr-11	--	--	--	--	10.6 J
CTL MW-06	30-Jan-14	498000 J	1	--	5	7.6
CTL MW-06	15-Jul-15	--	--	--	--	4.0 J
HS-01	24-Feb-10	--	--	--	--	--
HS-02	25-Feb-10	--	--	--	--	--
HS-03	25-Feb-10	--	--	--	--	--
HS-04	25-Feb-10	--	--	--	--	--
HS-05	24-Feb-10	--	--	--	--	--
HS-07	25-Feb-10	--	--	--	--	--
HS-08	25-Feb-10	--	--	--	--	--
MW-01	21-Mar-12	166000 J	<1 J	--	2.2 J	5.4 J
MW-01	30-May-12	172000 J	<1	--	2.4 J	67 J
MW-01	06-Sep-12	142000 J	<1	--	2.2 J	11.1 J
MW-01	04-Dec-12	166000 J	0.022 J	--	2.6 J	5.6
MW-01	11-Feb-14	174000 J	**52.5 J**	--	**514 J**	466 J
MW-02	21-Mar-12	169000 J	<1 J	--	<5 J	76.4 J
MW-02	30-May-12	169000 J	<1	--	0.33 J	129 J
MW-02	06-Sep-12	152000 J	0.05 J	--	1.1 J	88.4 J
MW-02	04-Dec-12	172000 J	<1	--	<5	107
MW-02	11-Feb-14	182000 J	<1 J	--	<5 J	98.8 J
MW-03	22-Mar-12	195000 J	<1 J	--	<5 J	1.9 J
MW-03	31-May-12	196000 J	<1	--	0.53 J	13.9 J
MW-03	06-Sep-12	186000 J	<1	--	1.4 J	27.7 J
MW-03	05-Dec-12	186000 J	<1	--	1.5 J	0.87 J
MW-03	18-Feb-14	198000 J	<1 J	--	<5 J	0.8 J

Table 5-9
Recent Dissovled Groundwater Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	Sodium (µg/L)	Thallium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
Screening Criteria	CO Reg 41 GSL (µg/L)	--	2	30	100	5000
MW-05	20-Mar-12	139000 J	<1	--	2.2 J	1.6 J
MW-05	29-May-12	143000 J	<1	--	2.5 J	23.2 J
MW-05	05-Sep-12	123000 J	<1	--	2.4 J	5.9 J
MW-05	03-Dec-12	140000 J	0.018 J	--	2.8 J	<2
MW-05	29-Jan-14	141000 J	**52.5 J**	--	3 J	452 J
MW-06	26-Feb-10	--	--	--	--	--
MW-06	20-Mar-12	134000 J	<1	--	2 J	0.98 J
MW-06	29-May-12	140000 J	<1	--	2.3 J	10.3 J
MW-06	04-Sep-12	115000 J	<1	--	2 J	4.5 J
MW-06	03-Dec-12	132000 J	<1	--	2.2 J	1.1 J
MW-06	29-Jan-14	130000 J	<1 J	--	1.9 J	1.5 J
PW-2 MIDDLE	06-Jul-16	--	--	--	--	--
PW-2 START	05-Jul-16	--	--	--	--	--
SWDI-1	13-Jul-15	--	--	--	--	53
SWDI-2	13-Jul-15	--	--	--	--	15
SWDI-3	13-Jul-15	--	--	--	--	4.6 J
SWDI-4	14-Jul-15	--	--	--	--	28
SWDI-5	13-Jul-15	--	--	--	--	16
SWDI-6	14-Jul-15	--	--	--	--	39
SWDI-7	14-Jul-15	--	--	--	--	7.5 J
SWDI-8	14-Jul-15	--	--	--	--	4.7 J
SWDI-10	14-Jul-15	--	--	--	--	6.7 J
SWDI-12	14-Jul-15	--	--	--	--	23
SWDI-13	15-Jul-15	--	--	--	--	45
SWDI-14	15-Jul-15	--	--	--	--	11
SWDI-15	14-Jul-15	--	--	--	--	14
SWDI-16	15-Jul-15	--	--	--	--	42
TH-45	19-Jan-16	--	--	**31**	--	2 J
TH-46	19-Jan-16	--	--	29	--	2 J
TH-47	19-Jan-16	--	--	**30**	--	2.9 J
TH-47D	19-Jan-16	--	--	**41**	--	3.8 J
TH-48	19-Jan-16	--	--	**33**	--	3.6 J
TH-52	19-Jan-16	--	--	28	--	4.6 J
OU2-01	06-Nov-19	--	0.058	0.56	--	3.6
OU2-02	06-Nov-19	--	0.058	0.16	--	2.9
OU2-03	06-Nov-19	--	0.012	0.17	--	3.9
OU2-04	06-Nov-19	--	<0.010	27.0	--	11.1

Notes and Abbreviations:

A "<" indicates the compound was not detected at concentrations above the reporting limit.
If italicized it displays the method detection limit instead of the reporting limit.
Bold indicates a detection above the GSL
J - indicates an estimated value
µg/L - micrograms per liter
GSL - groundwater screening level

Table 5-10
Historical VOC and SVOC Groundwater Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	SVOCs				
		Acenaphthene (µg/L)	Di-n-butyl phthalate (µg/L)	Naphthalene (µg/L)	Phenanthrene (µg/L)	Phenol (µg/L)
Screening Criteria CO Reg 41 GW SL (µg/L)		**420**	**700**	**140**	**–**	**2100**
DC-2	05-Jun-97	<10	<10 J	<10	<10	<10
DC-3	05-Jun-97	3 J	<10 J	40 J	3 J	7 J
DC-4	05-Jun-97	<10	<10 J	4 J	<10	<10
MW-02	18-Aug-05	<10	<10	<10	<10	<10
MW-03	18-Aug-05	<10	<10	1.8 J	<10	<10

Table 5-10
Historical VOC and SVOC Groundwater Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	VOCs				
		1,2,4-Trimethylbenzene (µg/L)	1,4-Dichlorobenzene (µg/L)	Benzene (µg/L)	Chlorobenzene (µg/L)	Chloroform (µg/L)
Screening Criteria CO Reg 41 GW SL (µg/L)		**70**	**75**	**5**	**100**	**3.5**
DC-2	05-Jun-97	<5	<10	<5	<5	<5
DC-3	05-Jun-97	<5	<10	<5	<5	<5
DC-4	05-Jun-97	<5	<10	<5	<5	<5
MW-02	18-Aug-05	<1.0	<10	<1	<1.0	<1.0
MW-03	18-Aug-05	0.26 J	2 J	1.3	25	<1. J

Table 5-10
Historical VOC and SVOC Groundwater Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	VOCs				
		cis-1,2-Dichloroethylene (µg/L)	Isopropylbenzene (Cumene) (µg/L)	Methylene chloride (µg/L)	sec-Butylbenzene (µg/L)	tert-Butyl methyl ether (µg/L)
Screening Criteria CO Reg 41 GW SL (µg/L)		**70**	**--**	**5**	**--**	**--**
DC-2	05-Jun-97	<5	<5	<5	<5	--
DC-3	05-Jun-97	<5	<5	<5	<5	--
DC-4	05-Jun-97	<5	<5	<5	<5	--
MW-02	18-Aug-05	0.15 J	<1.0	0.33 J	<1.0	<5.0
MW-03	18-Aug-05	0.4 J	0.23 J	<5	0.34 J	0.69 J

Table 5-10
Historical VOC and SVOC Groundwater Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	VOCs	
		Total 1,2-Dichloroethene (µg/L)	Benzoic acid (µg/L)
Screening Criteria CO Reg 41 GW SL (µg/L)		--	--
DC-2	05-Jun-97	--	<50
DC-3	05-Jun-97	--	20 J
DC-4	05-Jun-97	--	5 J
MW-02	18-Aug-05	0.15 J	--
MW-03	18-Aug-05	0.4 J	--

Notes and Abbreviations:

A "<" indicates the compound was not detected at concentrations above the reporting limit.
The reporting limit is provided after for reference.
J - indicates an estimated value
µg/L - micrograms per liter
SVOC - semi-volatile organic compound
VOC - volatile organic compound

Table 5-11
Recent VOC and SVOC Groundwater Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	SVOCs														
		1-Methyl naphthalene (µg/L)	2,4-Dinitrotoluene (µg/L)	2-Chlorophenol (µg/L)	2-Methyl naphthalene (µg/L)	4-Nitrophenol (µg/L)	Acenaphthene (µg/L)	Benzaldehyde (µg/L)	bis(2-ethylhexyl) Phthalate (µg/L)	Caprolactam (µg/L)	Diethyl Phthalate (µg/L)	Di-n-butyl phthalate (µg/L)	Naphthalene (µg/L)	Phenanthrene (µg/L)	Phenol (µg/L)	Pyrene (µg/L)
CO Reg 41 GSL (µg/L)		--	0.11	35	--	56	420	--	6	--	5600	700	140	--	2100	210
CTL MW-01	05-Apr-11	--	<1.9	<3.8	<9.5	<3.8	<1.9	--	<3.8	--	<9.5	<3.8	<1.9	<9.5	<9.5	<1.9
CTL MW-01	30-Jan-14	--	<5	<5	<5	<10	<5	<5	5 J	<5	<5	<5	<5	<5	<5	<5
CTL MW-01	10-Mar-14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CTL MW-02	05-Apr-11	--	<0.95	<1.9	<4.7	<1.9	<0.95	--	<1.9	--	<4.7	<1.9	<0.95	<4.7	<4.7	<0.95
CTL MW-02	30-Jan-14	--	<5	<5	<5	<10	<5	<5	5 J	<5	<5	<5	<5	<5 J	<5	<5
CTL MW-03	05-Apr-11	--	<0.95	<1.9	<4.7	<1.9	<0.95	--	<1.9	--	<4.7	<1.9	<0.95	<4.7	<4.7	<0.95
CTL MW-04	05-Apr-11	--	<1.2	<2.5	<6.1	<2.5	<1.2	--	<2.5	--	<6.1	<2.5	<1.2	<6.1	<6.1	<1.2
CTL MW-04	18-Feb-14	--	<5	<5	<5	<10	<5	0.81 J	5 J	<5	0.49 J	<5	<5	<5	<5	<5
CTL MW-05	05-Apr-11	--	<0.95	<1.9	<4.7	<1.9	<0.95	--	<1.9	--	<4.7	<1.9	<0.95	<4.7	<4.7	<0.95
CTL MW-05	18-Feb-14	--	<5	<5	<5	<10	<5	0.46 J	5 J	<5	<5	<5	<5	<5	<5	<5
CTL MW-06	05-Apr-11	--	<1.2	<2.5	<6.1	<2.5	<1.2	--	<2.5	--	<6.1	<2.5	1.2	<6.1	<6.1	<1.2
CTL MW-06	30-Jan-14	--	<50	<50	<110	<100	<50	<110	<50	<110	<110	<110	<110	<110	<50	<50
CTL MW-06	10-Mar-14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CTL MW-06	15-Jul-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HS-01	24-Feb-10	<0.30	--	--	<0.30	--	<0.30	--	--	--	--	--	<0.30	<0.30	--	<0.30
HS-02	25-Feb-10	<0.30	--	--	<0.30	--	<0.30	--	--	--	--	--	<0.30	<0.30	--	<0.30
HS-03	25-Feb-10	<0.30	--	--	<0.30	--	<0.30	--	--	--	--	--	<0.30	<0.30	--	<0.30
HS-04	25-Feb-10	<0.30	--	--	<0.30	--	<0.30	--	--	--	--	--	<0.30	<0.30	--	<0.30
HS-05	24-Feb-10	<0.30	--	--	<0.30	--	<0.30	--	--	--	--	--	<0.30	<0.30	--	<0.30
HS-07	25-Feb-10	<0.30	--	--	<0.30	--	<0.30	--	--	--	--	--	<0.30	<0.30	--	<0.30
HS-08	25-Feb-10	0.57	--	--	0.40	--	0.36	--	--	--	--	--	3.8	<0.30	--	<0.30
MW-01	26-Feb-10	<0.30	--	--	<0.30	--	<0.30	--	--	--	--	--	<0.30	<0.30	--	<0.30
MW-01	21-Mar-12	--	<5	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MW-01	30-May-12	--	<5	<5	<5	<10	<5	<5	1.5 J	<5	<5	<5	<5	<5	<5	<5
MW-01	06-Sep-12	--	<5	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MW-01	04-Dec-12	--	<5	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MW-01	11-Feb-14	--	<5	<5	<5	<10	<5	<5	5 J	<5	<5	<5	<5	<5	<5	<5
MW-02	21-Mar-12	--	<5	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MW-02	30-May-12	--	<5	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MW-02	06-Sep-12	--	<5	<5	<5	<10	<5	<5	<5	1.3 J	<5	<5	<5	<5	<5	<5
MW-02	04-Dec-12	--	<5	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MW-02	11-Feb-14	--	<15	<15	<15	<30	<15	<15	<15	2 J	<15	<15	<15	<15	<15	<15
MW-03	22-Mar-12	--	<5	1.4 J	<5	<10	<5	<5	<5	<5	<5	<5	1.7 J	<5	<5	<5
MW-03	31-May-12	--	<5	1.5 J	<5	<10	<5	<5	<5	<5	<5	<5	2.5 J	<5	<5	<5
MW-03	06-Sep-12	--	<5	1.2 J	<5	<10	<5	<5	<5	<5	<5	<5	1.4 J	<5	<5	<5
MW-03	05-Dec-12	--	<5	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MW-03	18-Feb-14	--	<5	1.6 J	<5	<10	<5	0.52 J	<5	<5	0.51 J	<5	1.2 J	<5	<5	<5
MW-05	20-Mar-12	--	<4.6	<4.6	<4.6	<9.3	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
MW-05	29-May-12	--	<5	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MW-05	05-Sep-12	--	<5	<5	<5	<10	<5	<5	<5	<5	<5	2.6 J	<5	<5	<5	<5

Table 5-11
Recent VOC and SVOC Groundwater Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	SVOCs														
		1-Methyl naphthalene (µg/L)	2,4-Dinitrotoluene (µg/L)	2-Chlorophenol (µg/L)	2-Methyl naphthalene (µg/L)	4-Nitrophenol (µg/L)	Acenaphthene (µg/L)	Benzaldehyde (µg/L)	bis(2-ethylhexyl) Phthalate (µg/L)	Caprolactam (µg/L)	Diethyl Phthalate (µg/L)	Di-n-butyl phthalate (µg/L)	Naphthalene (µg/L)	Phenanthrene (µg/L)	Phenol (µg/L)	Pyrene (µg/L)
CO Reg 41 GSL (µg/L)		**--**	**0.11**	**35**	**--**	**56**	**420**	**--**	**6**	**--**	**5600**	**700**	**140**	**--**	**2100**	**210**
MW-05	03-Dec-12	--	<5	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MW-05	29-Jan-14	--	<5	<5	<5	<10	<5	<5	5 J	<5	<5	1.4 J	<5	<5	<5	<5
MW-06	26-Feb-10	<0.30	--	--	<0.30	--	<0.30	--	--	--	--	--	<0.30	<0.30	--	<0.30
MW-06	20-Mar-12	--	<5	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MW-06	04-Sep-12	--	<5	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MW-06	03-Dec-12	--	<5	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MW-06	29-Jan-14	--	<5	<5	<5	<10	<5	<5	5 J	<5	<5	1.5 J	<5	<5	<5	<5
QUAD 1	13-May-15	--	*<1.6 J*	*<1.9 J*	*<0.28 J*	*<1.2 J*	*<0.27 J*	*<1.9 J*	*<0.53 J*	*<4.8 J*	*<0.36 J*	*<1.1 J*	*<0.28 J*	*<0.25 J*	*<1.9 J*	*<0.35 J*
QUAD 2	10-Jun-15	--	*<1.6*	*<1.9*	*<0.28*	*<1.2*	*<0.27*	*<1.9*	3.3	6.2	*<0.36*	*<1.1*	*<0.28*	*<0.25*	*<1.9*	*<0.35*
QUAD 3	05-Jun-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
QUAD 4	04-Jun-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SWDI-1	13-Jul-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SWDI-2	13-Jul-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SWDI-3	13-Jul-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SWDI-4	14-Jul-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SWDI-5	13-Jul-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SWDI-6	14-Jul-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SWDI-7	14-Jul-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SWDI-8	14-Jul-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SWDI-10	14-Jul-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SWDI-12	14-Jul-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SWDI-13	15-Jul-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SWDI-14	15-Jul-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SWDI-15	14-Jul-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SWDI-16	15-Jul-15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TH-45	19-Jan-16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TH-46	19-Jan-16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TH-47	19-Jan-16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TH-47D	19-Jan-16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TH-48	19-Jan-16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TH-52	19-Jan-16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OU2-01	06-Nov-19	<0.305	<3.05	<3.05	<0.305	<3.05	0.417	--	1.32	--	<0.305	<0.305	0.417	0.589	<3.05	0.376
OU2-02	07-Nov-19	<0.286	<2.86	<2.86	<0.286	<2.86	<0.286	--	1.79	--	<0.286	<0.286	0.820	0.362	<2.86	<0.286
OU2-03	08-Nov-19	3.26	<2.91	<2.91	4.10	<2.91	4.50	--	0.484	--	<0.291	<0.291	26.4	8.13	7.73	2.32
OU2-04	09-Nov-19	<0.283	<2.83	<2.83	<0.283	<2.83	<0.283	--	0.283	--	<0.283	<0.283	0.510	0.736	<2.83	<0.283

Table 5-11
Recent VOC and SVOC Groundwater Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	VOCs														
		1,1,1-Trichloroethane (µg/L)	1,1,2-Trichloro-1,2,2-trifluoroethane (µg/L)	1,1-Dichloro ethene (µg/L)	1,2,4-Trichloro benzene (µg/L)	1,2-Dichloro ethane (µg/L)	1,3-Dichloro benzene (µg/L)	1,4-Dichloro benzene (µg/L)	2,3,4,6-Tetrachlorophenol (µg/L)	Acetone (µg/L)	Benzene (µg/L)	Bromodichloro methane (µg/L)	Carbon disulfide (µg/L)	Chlorobenzene (µg/L)	Chloroform (µg/L)	cis-1,2-Dichloro ethylene (µg/L)
CO Reg 41 GSL (µg/L)		200	--	7	70	5	500	75	--	6300	5	0.56	--	100	3.5	70
CTL-MW-01	05-Apr-11	<2	--	<2	<9.5	<2	<2	<2	--	<10	<1	<2	<2	<2	**4.1**	<2
CTL-MW-01	30-Jan-14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	1.4	4.2
CTL-MW-01	10-Mar-14	<0.5	<0.5	4.6	<0.5	<0.5	<0.5	<0.5	--	<5	4.5	<0.5	<0.5	4.4	1.5	4.9
CTL-MW-02	05-Apr-11	<2	--	<2	<4.7	<2	<2	<2	--	<10	<1	<2	<2	<2	1.1 J	<2
CTL-MW-02	30-Jan-14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	3	0.5
CTL-MW-03	05-Apr-11	<2	--	<2	<4.7	<2	<2	<2	--	<10	<1	<2	<2	<2	2.6	<2
CTL-MW-04	05-Apr-11	<2	--	<2	<6.1	<2	<2	<2	--	<10	<1	<2	<2	<2	<2	0.46 J
CTL-MW-04	18-Feb-14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	3.1
CTL-MW-05	05-Apr-11	<2	--	<2	<4.7	<2	<2	<2	--	<10	<1	<2	<2	<2	<2	<2
CTL-MW-05	18-Feb-14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	0.14 J	<0.5	0.5
CTL-MW-06	05-Apr-11	<2	--	<2	<6.1	<2	<2	<2	--	<10	<1	<2	<2	<2	<2	31.6
CTL-MW-06	30-Jan-14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<110	1.2 J	<0.5	<0.5	<0.5	<0.5	<0.5	8.7
CTL-MW-06	10-Mar-14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	5 J	<0.5	<0.5	<0.5	<0.5	<0.5	16
CTL-MW-06	15-Jul-15	<1	--	<1	--	<1	--	--	--	--	<1	--	--	<1	<1	--
HS-01	24-Feb-10	<2.0	--	<2.0	--	<2.0	<2.0	<2.0	--	<10	<1.0	<2.0	<2.0	<2.0	<2.0	10.4
HS-02	25-Feb-10	<2.0	--	<2.0	--	<2.0	<2.0	<2.0	--	<10	<1.0	<2.0	<2.0	<2.0	1.1	<2.0
HS-03	25-Feb-10	<2.0	--	<2.0	--	<2.0	<2.0	<2.0	--	<10	<1.0	<2.0	<2.0	<2.0	3.1	<2.0
HS-04	25-Feb-10	<2.0	--	<2.0	--	<2.0	<2.0	<2.0	--	<10	<1.0	<2.0	<2.0	<2.0	**6.0**	<2.0
HS-05	24-Feb-10	<2.0	--	<2.0	--	<2.0	<2.0	<2.0	--	<10	<1.0	<2.0	<2.0	<2.0	2.9	<2.0
HS-07	25-Feb-10	<2.0	--	<2.0	--	<2.0	<2.0	<2.0	--	4.1	<1.0	<2.0	<2.0	<2.0	0.73	<2.0
HS-08	25-Feb-10	<2.0	--	<2.0	--	<2.0	<2.0	<2.0	--	<10	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0
MW-01	26-Feb-10	<2.0	--	<2.0	--	<2.0	<2.0	<2.0	--	5.1	<1.0	<2.0	<2.0	<2.0	<2.0	12.2
MW-01	21-Mar-12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	0.13 J	50 J
MW-01	30-May-12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	54 J
MW-01	06-Sep-12	<0.5	0.32 J	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	0.33 J	55 J
MW-01	04-Dec-12	<0.5	<0.5	<0.5	2 J	<0.5	2 J	2 J	<5	<5	<0.5	<0.5	<0.5	<0.5 J	<0.5	49 J
MW-01	11-Feb-14	<0.5	<5	<5	<5	<0.5	<5	<5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	69 J
MW-02	21-Mar-12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-02	30-May-12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5 J	<0.5	<0.5	<0.5	<0.5
MW-02	06-Sep-12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	0.2 J
MW-02	04-Dec-12	<0.5	<0.5	<0.5	<0.5	0.15 J	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	0.17 J
MW-02	11-Feb-14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<15	<5	<0.5	<0.5	<0.5	<0.5	<0.5	0.16 J
MW-03	22-Mar-12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	8.7	<5	<5	2.6	<0.5	<0.5	99 J	<0.5	<0.5
MW-03	31-May-12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	6.5	<5	<5	1.7	<0.5	<0.5	73 J	<0.5	<0.5
MW-03	06-Sep-12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	7.3	<5	<5	1.9	<0.5	<0.5	85 J	<0.5	0.17 J
MW-03	05-Dec-12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5.4	<5	2.6 J	1.6	<0.5	<0.5	58 J	<0.5	0.13 J
MW-03	18-Feb-14	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	**2.5**	<0.5	<0.5	**130 J**	<0.5	0.13 J
MW-05	20-Mar-12	0.036 J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<4.6	<5	<0.5	<0.5	<0.5	<0.5	1	<0.5
MW-05	29-May-12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	1	<0.5
MW-05	05-Sep-12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5

Table 5-11
Recent VOC and SVOC Groundwater Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	VOCs														
		1,1,1-Trichloroethane (µg/L)	1,1,2-Trichloro-1,2,2-trifluoroethane (µg/L)	1,1-Dichloro ethene (µg/L)	1,2,4-Trichloro benzene (µg/L)	1,2-Dichloro ethane (µg/L)	1,3-Dichloro benzene (µg/L)	1,4-Dichloro benzene (µg/L)	2,3,4,6-Tetrachlorop henol (µg/L)	Acetone (µg/L)	Benzene (µg/L)	Bromodichloro methane (µg/L)	Carbon disulfide (µg/L)	Chlorobenzene (µg/L)	Chloroform (µg/L)	cis-1,2-Dichloro ethylene (µg/L)
CO Reg 41 GSL (µg/L)		200	--	7	70	5	500	75	--	6300	5	0.56	--	100	3.5	70
MW-05	03-Dec-12	<0.5	<0.5	<0.5	0.5 J	<0.5	0.5 J	0.5 J	<5	<5	<0.5	<0.5	<0.5	<0.5 J	<0.5	<0.5
MW-05	29-Jan-14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	0.74	0.5
MW-06	26-Feb-10	<2.0	--	<2.0	--	<2.0	<2.0	<2.0	--	<10	<1.0	<2.0	<2.0	<2.0	2.1	<2.0
MW-06	20-Mar-12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	3.2	<0.5
MW-06	04-Sep-12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	**4.7**	<0.5
MW-06	03-Dec-12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	0.11 J	<0.5	<0.5	**4**	<0.5
MW-06	29-Jan-14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<0.5	**4.8**	<0.5
QUAD 1	13-May-15	*<0.16 J*	*<0.42 J*	*<0.23 J*	*<0.27 J*	*<0.13 J*	*<0.29 J*	*<0.3 J*	*<1.9 J*	*<1.9 J*	*<0.16 J*	*<0.17 J*	*<0.45 J*	*<0.17 J*	0.37 J	*<0.15 J*
QUAD 2	10-Jun-15	*<0.16*	*<0.42*	*<0.23*	*<0.27*	*<0.13*	*<0.29*	*<0.31*	*<1.9*	3	*<0.16*	*<0.17*	*<0.45*	*<0.17*	0.6	*<0.15*
QUAD 3	05-Jun-15	*<0.16*	*<0.42*	*<0.23*	*<0.21*	*<0.13*	*<0.13*	*<0.16*	--	*<1.9*	*<0.16*	*<0.17*	*<0.45*	*<0.17*	**5.9**	*<0.15*
QUAD 4	04-Jun-15	*<0.16*	*<0.42*	*<0.23*	*<0.21*	*<0.13*	*<0.13*	*<0.16*	--	*<1.9*	*<0.16*	*<0.17*	1.3	*<0.17*	**5.3**	*<0.15*
SWDI-1	13-Jul-15	<1	--	<1	--	<1	--	--	--	--	**6**	--	--	11	<1	--
SWDI-2	13-Jul-15	<1	--	<1	--	<1	--	--	--	--	<1	--	--	<1	0.49 J	--
SWDI-3	13-Jul-15	<1	--	<1	--	<1	--	--	--	--	0.78 J	--	--	<1	<1	--
SWDI-4	14-Jul-15	<1	--	<1	--	<1	--	--	--	--	<1	--	--	<1	<1	--
SWDI-5	13-Jul-15	<1	--	<1	--	<1	--	--	--	--	<1	--	--	<1	<1	--
SWDI-6	14-Jul-15	<1	--	<1	--	<1	--	--	--	--	0.25 J	--	--	<1	<1	--
SWDI-7	14-Jul-15	<1	--	<1	--	<1	--	--	--	--	0.27 J	--	--	0.21 J	<1	--
SWDI-8	14-Jul-15	<1	--	<1	--	<1	--	--	--	--	<1	--	--	<1	<1	--
SWDI-10	14-Jul-15	<1	--	<1	--	<1	--	--	--	--	<1	--	--	<1	<1	--
SWDI-12	14-Jul-15	<1	--	<1	--	<1	--	--	--	--	<1	--	--	<1	0.56 J	--
SWDI-13	15-Jul-15	<1	--	<1	--	<1	--	--	--	--	<1	--	--	<1	0.18 J	--
SWDI-14	15-Jul-15	<1	--	<1	--	<1	--	--	--	--	<1	--	--	<1	0.36 J	--
SWDI-15	14-Jul-15	<1	--	<1	--	<1	--	--	--	--	<1	--	--	<1	0.22 J	--
SWDI-16	15-Jul-15	<1	--	<1	--	<1	--	--	--	--	<1	--	--	<1	<1	--
TH-45	19-Jan-16	*<0.16*	--	*<0.23*	--	*<0.13*	--	--	--	--	*<0.16*	--	--	*<0.17*	1.1	--
TH-46	19-Jan-16	*<0.16*	--	*<0.23*	--	*<0.13*	--	--	--	--	*<0.16*	--	--	*<0.17*	1.8	--
TH-47	19-Jan-16	*<0.16*	--	*<0.23*	--	*<0.13*	--	--	--	--	*<0.16*	--	--	*<0.17*	1.9	--
TH-47D	19-Jan-16	*<0.16*	--	*<0.23*	--	*<0.13*	--	--	--	--	*<0.16*	--	--	*<0.17*	1.9	--
TH-48	19-Jan-16	*<0.16*	--	*<0.23*	--	*<0.13*	--	--	--	--	*<0.16*	--	--	*<0.17*	0.45 J	--
TH-52	19-Jan-16	*<0.16*	--	*<0.23*	--	*<0.13*	--	--	--	--	*<0.16*	--	--	*<0.17*	0.36 J	--
OU2-01	06-Nov-19	<1.00	--	<1.00	<3.05	<1.00	<3.05	<3.05	--	<8.00	<1.00	<1.00	<5.00	<1.00	<1.00	<1.00
OU2-02	07-Nov-19	<1.00	--	<1.00	<2.86	<1.00	<2.86	<2.86	--	<8.00	<1.00	<1.00	<5.00	<1.00	<1.00	<1.00
OU2-03	08-Nov-19	<1.00	--	<1.00	<2.91	<1.00	<2.91	<2.91	--	<8.00	<1.00	<1.00	<5.00	<1.00	<1.00	<1.00
OU2-04	09-Nov-19	<1.00	--	<1.00	<2.83	<1.00	<2.83	<2.83	--	<8.00	<1.00	<1.00	<5.00	<1.00	5.18	<1.00

Table 5-11
Recent VOC and SVOC Groundwater Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	VOCs													
		Cyclohexane (µg/L)	Ethyl benzene (µg/L)	Isopropyl benzene (µg/L)	m,p-Xylene (µg/L)	Methyl ethyl ketone (µg/L)	Methyl cyclohexane (µg/L)	Methylene chloride (µg/L)	o-Xylene (µg/L)	tert-Butyl methyl ether (µg/L)	PCE (µg/L)	Toluene (µg/L)	TCE (µg/L)	Vinyl chloride (µg/L)	Xylenes, Total (µg/L)
CO Reg 41 GSL (µg/L)		--	700	--	--	--	--	5	--	--	5	1000	5	2	10000
CTL-MW-01	05-Apr-11	--	<2	--	--	<10	--	<5	--	<2	1.1	<2	<2	<2	0.99
CTL-MW-01	30-Jan-14	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	**18**	<0.5	2.7	<0.5	--
CTL-MW-01	10-Mar-14	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	**20**	4.6	**7.4**	<0.5	--
CTL-MW-02	05-Apr-11	--	<2	--	--	<10	--	<5	--	<2	<2	<2	<2	<2	0.61 J
CTL-MW-02	30-Jan-14	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	0.25 J	<0.5	<0.5	<0.5	--
CTL-MW-03	05-Apr-11	--	<2	--	--	<10	--	<5	--	<2	<2	<2	<2	<2	0.73 J
CTL-MW-04	05-Apr-11	--	<2	--	--	<10	--	<5	--	<2	1.2 J	<2	<2	<2	0.75 J
CTL-MW-04	18-Feb-14	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	1.7	<0.5	0.96	<0.5	--
CTL-MW-05	05-Apr-11	--	<2	--	--	<10	--	<5	--	<2	<2	<2	<2	<2	<2
CTL-MW-05	18-Feb-14	<0.5	<0.5	0.21 J	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
CTL-MW-06	05-Apr-11	--	0.39 J	--	--	<10	--	<5	--	<2	**26.3**	<2	**10**	<2	0.71 J
CTL-MW-06	30-Jan-14	<0.5	<0.5	0.23 J	<0.5	<5	<0.5	<0.5	<0.5	<0.5	0.35 J	0.5	0.65	<0.5	--
CTL-MW-06	10-Mar-14	<0.5	<0.5	0.13 J	<0.5	<5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	2.6	<0.5	--
CTL-MW-06	15-Jul-15	--	<1	--	--	--	--	--	--	--	3	<1	1.7	<1	--
HS-01	24-Feb-10	--	<2.0	--	--	<5.0	--	<5.0	--	--	**24.8**	<2.0	**5.8**	<2.0	<4.0
HS-02	25-Feb-10	--	<2.0	--	--	<5.0	--	<5.0	--	--	1.0	<2.0	<2.0	<2.0	<4.0
HS-03	25-Feb-10	--	<2.0	--	--	<5.0	--	<5.0	--	--	2.8	<2.0	<2.0	<2.0	<4.0
HS-04	25-Feb-10	--	<2.0	--	--	<5.0	--	<5.0	--	--	<2.0	<2.0	<2.0	<2.0	<4.0
HS-05	24-Feb-10	--	<2.0	--	--	<5.0	--	<5.0	--	--	<2.0	<2.0	<2.0	<2.0	<4.0
HS-07	25-Feb-10	--	<2.0	--	--	<5.0	--	<5.0	--	--	<2.0	<2.0	<2.0	<2.0	<4.0
HS-08	25-Feb-10	--	<2.0	--	--	<5.0	--	<5.0	--	--	<2.0	<2.0	<2.0	<2.0	<4.0
MW-01	26-Feb-10	--	<2.0	--	--	<5.0	--	<5.0	--	--	**12.7**	<2.0	4.6	<2.0	<4.0
MW-01	21-Mar-12	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	**44 J**	0.12 J	**15**	<0.5	--
MW-01	30-May-12	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	**38 J**	<0.5	**13**	<0.5	--
MW-01	06-Sep-12	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	**52 J**	<0.5	**17**	<0.5	--
MW-01	04-Dec-12	<0.5	<0.5	<0.5	<0.5	<5	<0.5	0.14 J	<0.5	<0.5	**34 J**	<0.5	**12**	<0.5	--
MW-01	11-Feb-14	<5	<0.5	<0.5	<5	50	<5	<0.5	<5	<5	**41 J**	<0.5	**19**	<0.5	--
MW-02	21-Mar-12	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	0.5	<0.5	0.088 J	<0.5	<0.5	--
MW-02	30-May-12	<0.5 J	<0.5	<0.5	<0.5	<5	<0.5 J	<0.5	<0.5	0.44 J	<0.5	<0.5	<0.5	<0.5	--
MW-02	06-Sep-12	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	0.4 J	<0.5	<0.5	<0.5	<0.5	--
MW-02	04-Dec-12	<0.5	<0.5	<0.5	<0.5	<5	<0.5	0.13 J	<0.5	0.33 J	<0.5	<0.5	<0.5	<0.5	--
MW-02	11-Feb-14	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	0.4 J	<0.5	<0.5	<0.5	<0.5	--
MW-03	22-Mar-12	1.2	<0.5	1.5	0.1 J	<5	<0.5	<0.5	0.12 J	0.81	<0.5	0.15 J	<0.5	<0.5	--
MW-03	31-May-12	0.83	<0.5	1.2	<0.5	<5	0.6	<0.5	<0.5	0.62	<0.5	<0.5	<0.5	<0.5	--
MW-03	06-Sep-12	1.1	<0.5	1.4	<0.5	<5	0.69	<0.5	<0.5	0.64	<0.5	<0.5	<0.5	0.13 J	--
MW-03	05-Dec-12	0.62	<0.5	1	<0.5	<5	0.37 J	<0.5	<0.5	0.5 J	<0.5	0.13 J	<0.5	<0.5	--
MW-03	18-Feb-14	0.73	<5	1.1	<0.5	<5	0.55	<5	<0.5	0.59	<0.5	<0.5	**5.3**	<0.5	--
MW-05	20-Mar-12	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	0.46 J	0.12 J	0.15 J	<0.5	--
MW-05	29-May-12	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	0.37 J	<0.5	<0.5	<0.5	--
MW-05	05-Sep-12	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	0.43 J	<0.5	0.25 J	<0.5	--

Table 5-11
Recent VOC and SVOC Groundwater Data
VB/I-70 Superfund Site, OU2

Location Identification	Sample Date	VOCs													
		Cyclohexane (µg/L)	Ethyl benzene (µg/L)	Isopropyl benzene (µg/L)	m,p-Xylene (µg/L)	Methyl ethyl ketone (µg/L)	Methyl cyclohexane (µg/L)	Methylene chloride (µg/L)	o-Xylene (µg/L)	tert-Butyl methyl ether (µg/L)	PCE (µg/L)	Toluene (µg/L)	TCE (µg/L)	Vinyl chloride (µg/L)	Xylenes, Total (µg/L)
CO Reg 41 GSL (µg/L)		--	700	--	--	--	--	5	--	--	5	1000	5	2	10000
MW-05	03-Dec-12	<0.5	<0.5	<0.5	<0.5	<5	<0.5	0.16 J	<0.5	<0.5	0.33 J	<0.5	0.14 J	<0.5	--
MW-05	29-Jan-14	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	0.25 J	<0.5	<0.5	<0.5	--
MW-06	26-Feb-10	--	<2.0	--	--	<5.0	--	<5.0	--	--	<2.0	<2.0	<2.0	<2.0	<4.0
MW-06	20-Mar-12	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	0.17 J	0.11 J	<0.5	<0.5	--
MW-06	04-Sep-12	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	0.27 J	<0.5	<0.5	<0.5	--
MW-06	03-Dec-12	<0.5	<0.5	<0.5	<0.5	<5	<0.5	0.14 J	<0.5	<0.5	0.2 J	<0.5	<0.5	<0.5	--
MW-06	29-Jan-14	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	0.26 J	<0.5	0.5	<0.5	--
QUAD 1	13-May-15	*<0.28 J*	*<0.16 J*	*<0.19 J*	*<0.34 J*	*<2 J*	*<0.36 J*	*<0.32 J*	*<0.19 J*	*<0.25 J*	0.27 J	*<0.17 J*	*<0.16 J*	*<0.1 J*	--
QUAD 2	10-Jun-15	*<0.28*	*<0.16*	*<0.19*	*<0.34*	*<2*	*<0.36*	*<0.32*	*<0.19*	*<0.25*	0.21	*<0.17*	*<0.16*	*<0.1*	--
QUAD 3	05-Jun-15	*<0.28*	*<0.16*	*<0.19*	*<0.34*	*<2*	*<0.36*	*<0.32*	*<0.19*	*<0.25*	0.54	*<0.17*	*<0.16*	*<0.1*	--
QUAD 4	04-Jun-15	*<0.28*	*<0.16*	*<0.19*	*<0.34*	*<2*	*<0.36*	*<0.32*	*<0.19*	*<0.25*	0.34	*<0.17*	*<0.16*	*<0.1*	--
SWDI-1	13-Jul-15	--	2.9	--	--	--	--	--	--	--	0.47 J	0.5 J	<1	0.42 J	--
SWDI-2	13-Jul-15	--	<1	--	--	--	--	--	--	--	**13**	0.2 J	**7.9**	<1	--
SWDI-3	13-Jul-15	--	<1	--	--	--	--	--	--	--	0.92 J	0.41 J	0.41 J	<1	--
SWDI-4	14-Jul-15	--	<1	--	--	--	--	--	--	--	**19**	<1	**8.3**	<1	--
SWDI-5	13-Jul-15	--	<1	--	--	--	--	--	--	--	1.4 J	0.18 J	0.31 J	<1	--
SWDI-6	14-Jul-15	--	<1	--	--	--	--	--	--	--	<1	0.3 J	<1	<1	--
SWDI-7	14-Jul-15	--	<1	--	--	--	--	--	--	--	**5.2 J**	<1	3 J	**2.4 J**	--
SWDI-8	14-Jul-15	--	<1	--	--	--	--	--	--	--	2.2	<1	**6.2**	0.58 J	--
SWDI-10	14-Jul-15	--	<1	--	--	--	--	--	--	--	1.1	<1	0.46 J	<1	--
SWDI-12	14-Jul-15	--	<1	--	--	--	--	--	--	--	**11**	<1	5	<1	--
SWDI-13	15-Jul-15	--	<1	--	--	--	--	--	--	--	2.1	<1	1	<1	--
SWDI-14	15-Jul-15	--	<1	--	--	--	--	--	--	--	**7.1**	0.18 J	2.4	<1	--
SWDI-15	14-Jul-15	--	<1	--	--	--	--	--	--	--	**5.2**	<1	2.3	<1	--
SWDI-16	15-Jul-15	--	<1	--	--	--	--	--	--	--	**12**	<1	**5.7**	<1	--
TH-45	19-Jan-16	--	*<0.16*	--	--	--	--	--	--	--	**6**	*<0.17*	1.3	*<0.1*	--
TH-46	19-Jan-16	--	*<0.16*	--	--	--	--	--	--	--	**6.6**	*<0.17*	0.95 J	*<0.1*	--
TH-47	19-Jan-16	--	*<0.16*	--	--	--	--	--	--	--	**8.8**	*<0.17*	1.9	*<0.1*	--
TH-47D	19-Jan-16	--	*<0.16*	--	--	--	--	--	--	--	**8.8**	*<0.17*	1.9	*<0.1*	--
TH-48	19-Jan-16	--	*<0.16*	--	--	--	--	--	--	--	**13**	*<0.17*	**9**	*<0.1*	--
TH-52	19-Jan-16	--	*<0.16*	--	--	--	--	--	--	--	**21**	*<0.17*	**10**	*<0.1*	--
OU2-01	06-Nov-19	--	<1.00	<1.00	<2.00	<5.00	--	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	--
OU2-02	07-Nov-19	--	<1.00	<1.00	<2.00	<5.00	--	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	--
OU2-03	08-Nov-19	--	<1.00	<1.00	<2.00	<5.00	--	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	--
OU2-04	09-Nov-19	--	<1.00	<1.00	<2.00	<5.00	--	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	--

Notes and Abbreviations:

A "<" indicates the compound was not detected at concentrations above the reporting limit. The reporting limit is provided after for reference.
If italicized it displays the method detection limit instead of the reporting limit.
Bold indicates a detection above the GSL
J - indicates an estimated value
µg/L - micrograms per liter
SVOC - semi-volatile organic compound
VOC - volatile organic compound

Table 5-12
Surface Water and Sediment Data
VB/I-70 Superfund Site, OU2

Location Identification	Surface Water Dissolved Metals (µg/L)						Sediment (mg/kg)					
	N43			N46			N43			N46		
Sample ID												
Analyte	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
Metals												
Arsenic	0.65	1.1	1.6	0.73	1.2	1.7	1.0	1.4	1.9	0.5	1.3	2.7
Cadmium	0.095	0.13	0.16	0.05	0.1	0.16	0.46	0.9	3	0.29	1.1	6.0
Copper	0.93	3.0	4.0	1.2	3.4	6.2	15	17	20	9.5	14	19
Lead	0.19	0.27	0.35	0.08	1.0	4.9	27	149	550	20	29	68
Zinc	5.0	19	30	6.9	22	30	83	101	130	70	127	438

Abbreviations:

µg/L - micrograms per liter
Avg - average of the detected results
Max - maximum detected result
mg/kg - milligrams per kilogram
Min - minimum detected result

FIGURES

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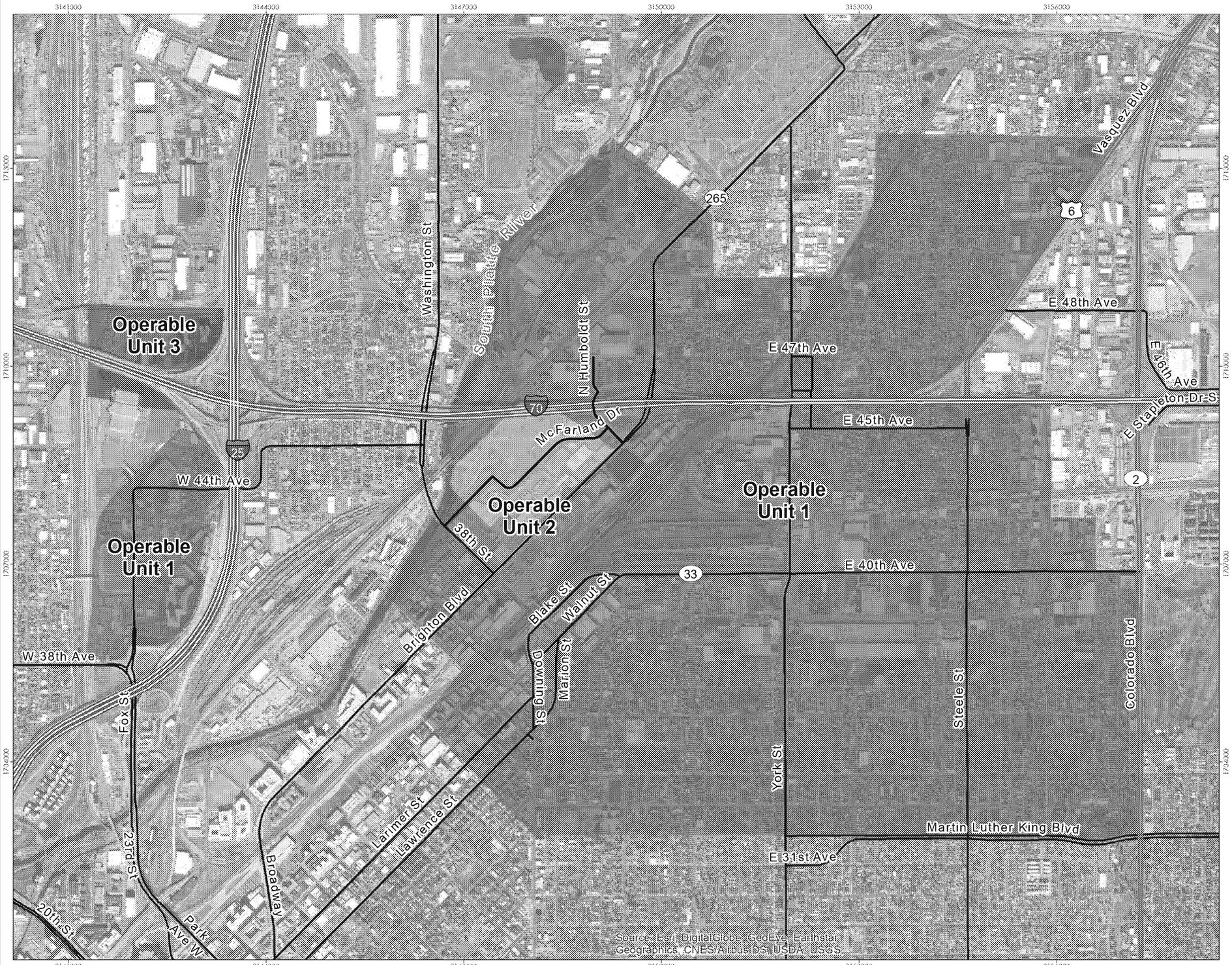


Stantec

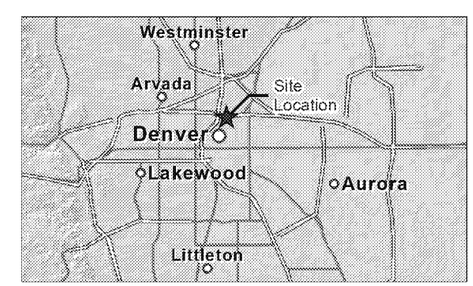
DENVER
THE MILE HIGH CITY

Interstate
Highway
Major Road
Operable Unit 1 (OU1)
Operable Unit 2 (OU2)
Operable Unit 3 (OU3)

N

0 1,500 3,000 Feet
1:18,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base Image: ESRI World Imagery Service - DigitalGlobe (4/22/2018)



Project Location
T3N, R68W, S23
Denver County, CO

Review
Prepared by CBB on 2020-03-20
Technical Review by NC on 2020-03-20

Client/Project
City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.
1

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Title
Site Location

Figure 1

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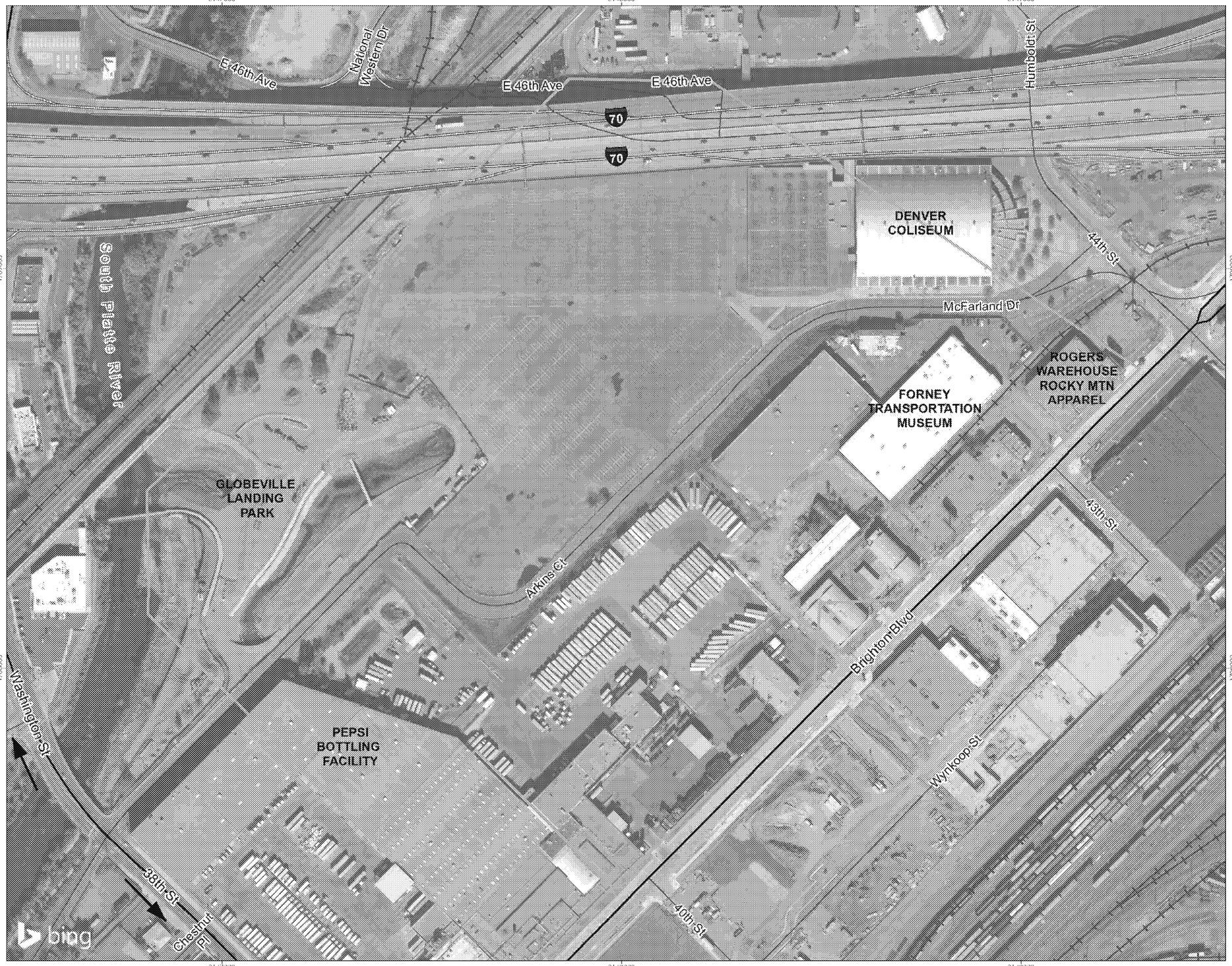

Stantec

DENVER
THE MILE HIGH CITY

Interstate
Major Road
Local Street
Railroad
Operable Unit 2 (OU2)

N

0 250 500 Feet
1:3,000 (At original document size of 11x17)

Notes
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2. Base Image: BING Imagery Service

Project Location
T3N, R68W, S23
Denver County, CO

Review
Prepared by CBB on 2020-03-20
Technical Review by NC on 2020-03-20

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City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.
2

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Title
OU2 Site Features

Figure 2

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DENVER
THE MILE HIGH CITY

Operable Unit 2 (OU2)

Land Ownership

- Parcel Boundary and Number
- Bottling Group LLC
- Brighton Annex LLC
- City & County of Denver
- Forney Museum
- HDP One Brighton LLC
- Union Pacific RR Co
- Westfield-Amen LLLP

N

0 250 500 Feet

1:3,000 (At original document size of 11x17)

Notes
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2. Base Image: BING Imagery Service

Project Location
T3N, R68W, S23
Denver County, CO

Review
Prepared by CBB on 2020-03-20
Technical Review by TL on 2020-03-20

Client/Project
City and County of Denver
VB/I-70 Remedial Investigation

Figure No.
3

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Title
OU2 Site Ownership

Figure 3

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DENVER
THE MILE HIGH CITY

- Globeville Landing Park Soil Sampling [1]
- Barn Excavations [2]
- Cooling Water Wells
- Brighton Blvd [9]
- I-70 [10, 11, 12]
- Pepsi [4, 5, 6, 7, 8]
- RI Boreholes [3]
- Surface Water / Sediment
- ASARCO
- ASARCO - Approximate Limit of Unpaved Areas for Shallow Surface Soil Sampling
- Operable Unit 2 (OU2)

References

1 - CH2MHill, 2002. Globeville Landing Park Soil Sampling Plan & Results. October.
2 - CH2MHill, 2004. Denver Coliseum Barn Soil Excavations and Stockpile Summary Report, Air Monitoring Results, Soil Sampling Results, and Removal Summary. February.
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6 - Transportation & Industrial Services, Inc., 2001c. Soil Testing for Lead & Arsenic, Plastic Bottle Line Project Utility Trenches, for the Pepsi Bottling Group. November 4.
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N

0 300 600 Feet

1:3,600 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base Image: BING Imagery Service

Project Location
T3N, R68W, S23
Denver County, CO

Review
Prepared by CBB on 2020-03-20
Technical Review by NC on 2020-03-20

Client/Project
City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.
4

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Title
Sample Locations from Pre-RI and 2009 RI

Figure 4

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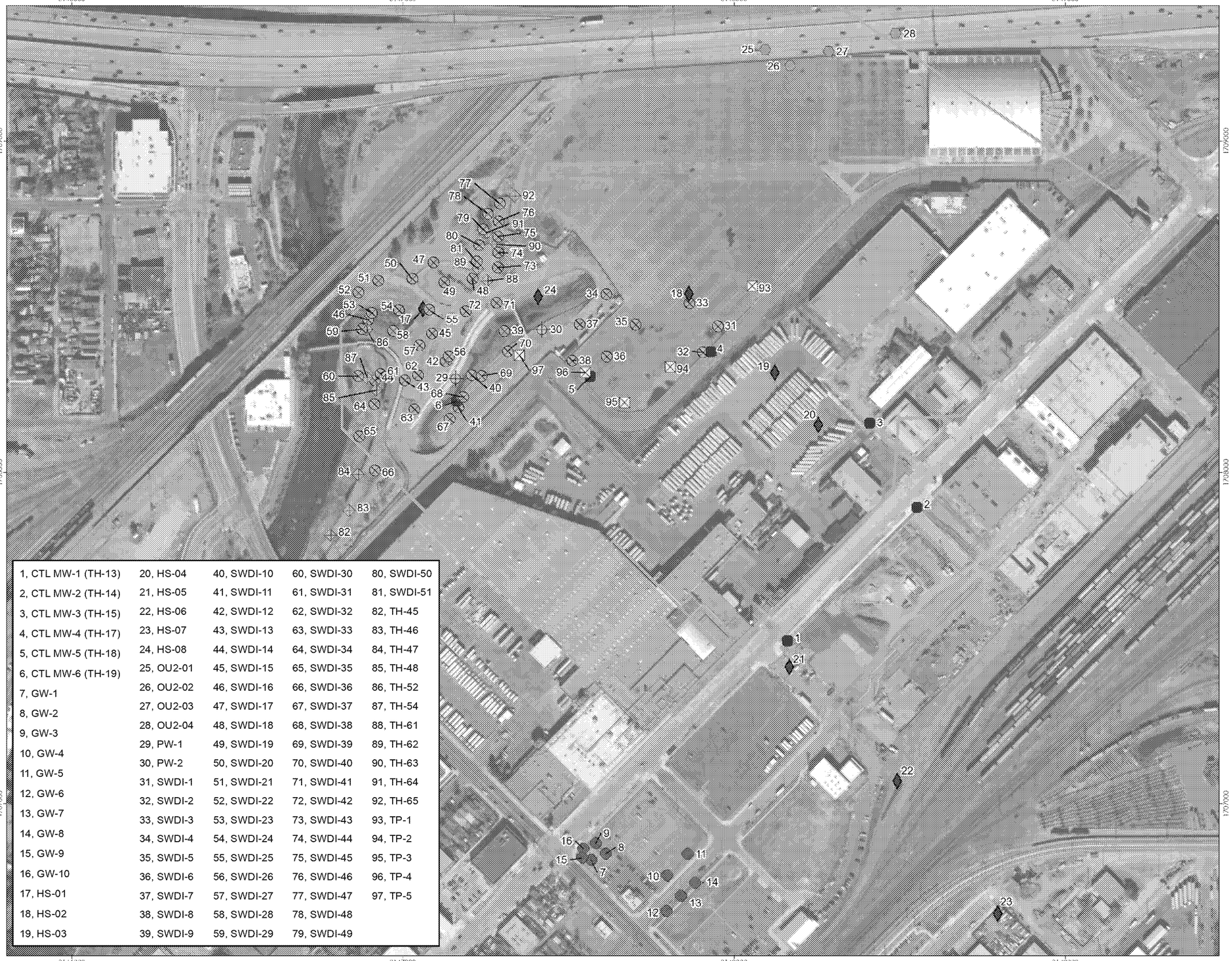

1, CTL MW-1 (TH-13)	20, HS-04	40, SWDI-10	60, SWDI-30	80, SWDI-50
2, CTL MW-2 (TH-14)	21, HS-05	41, SWDI-11	61, SWDI-31	81, SWDI-51
3, CTL MW-3 (TH-15)	22, HS-06	42, SWDI-12	62, SWDI-32	82, TH-45
4, CTL MW-4 (TH-17)	23, HS-07	43, SWDI-13	63, SWDI-33	83, TH-46
5, CTL MW-5 (TH-18)	24, HS-08	44, SWDI-14	64, SWDI-34	84, TH-47
6, CTL MW-6 (TH-19)	25, OU2-01	45, SWDI-15	65, SWDI-35	85, TH-48
7, GW-1	26, OU2-02	46, SWDI-16	66, SWDI-36	86, TH-52
8, GW-2	27, OU2-03	47, SWDI-17	67, SWDI-37	87, TH-54
9, GW-3	28, OU2-04	48, SWDI-18	68, SWDI-38	88, TH-61
10, GW-4	29, PW-1	49, SWDI-19	69, SWDI-39	89, TH-62
11, GW-5	30, PW-2	50, SWDI-20	70, SWDI-40	90, TH-63
12, GW-6	31, SWDI-1	51, SWDI-21	71, SWDI-41	91, TH-64
13, GW-7	32, SWDI-2	52, SWDI-22	72, SWDI-42	92, TH-65
14, GW-8	33, SWDI-3	53, SWDI-23	73, SWDI-43	93, TP-1
15, GW-9	34, SWDI-4	54, SWDI-24	74, SWDI-44	94, TP-2
16, GW-10	35, SWDI-5	55, SWDI-25	75, SWDI-45	95, TP-3
17, HS-01	36, SWDI-6	56, SWDI-26	76, SWDI-46	96, TP-4
18, HS-02	37, SWDI-7	57, SWDI-27	77, SWDI-47	97, TP-5
19, HS-03	38, SWDI-8	58, SWDI-28	78, SWDI-48	
	39, SWDI-9	59, SWDI-29	79, SWDI-49	

Stantec

DENVER
THE MILE HIGH CITY

- 2010 High Street [1]
- 2013 Limited Phase II [2]
- CTL Wells [3]
- 2015 / 2016 Environmental Conditions Investigations [5]
- 2015 / 2016 Surface Water Design Investigation [4, 5, 7, 8]
- 2015 / 2016 Surface Water Design Investigation - Pump Test Wells [6]
- Central 70 Project [9]
- 2019 Pepsi GW Sampling [10]
- Operable Unit 2 (OU2)

References

1. Brown and Caldwell, 2010. High Street Limited Subsurface Investigation. May 28
2. CTL Thompson, 2013. Limited Phase II Environmental Site Assessment, 40th Street Outfall. June.
3. CTL Thompson, 2011. Limited Phase II Environmental Site Assessment, 40th Street Outfall, South Platte River to Blake Street, Denver, Colorado. May 10.
4. EMSI, 2015. Data Summary Report, Environmental Conditions Investigation High Street Outfall and 40th Avenue, Storm Sewer System. September 18.
5. EMSI, 2016a. Addendum 1 Data Summary Report Environmental Conditions Investigation, High Street Outfall and 40th Avenue, Storm Sewer System, Vasquez Boulevard/Interstate 70 Site, Operable Unit #2 Removal Action. March 15.
6. EMSI, 2016b. Addendum 1 Final Design Report, Environmental Components for Globeville Landing Outfall Project. August 15.
7. EMSI, 2016c. Addendum 2 Final Design Report, Environmental Components for Globeville Landing Outfall Project. November 28.
8. CTL Thompson, 2016b. Lead and Arsenic Soil Sample Results, Globeville Landing Park Outfall, Phase 1B, Northeast of 38th Street and Arkins Court, Denver, Colorado. October 19.
9. Iron Woman Construction and Environmental Services LLC, 2020. Limited Subsurface Investigation Findings Report, Operable Unit #2 within Central 70 Project, Denver County, CO. February.
10. Professional Service Industries, Inc. (PSI), 2019a. Limited Environmental Site Investigation Report, Parking Lots 38th Street and Brighton Boulevard, Denver, CO. May 1.
PSI, 2019b. Additional Limited Environmental Site Investigation Report, Parking Lots 38th Street and Brighton Boulevard, Denver, CO. June 10.

N

0 300 600 Feet

1:3,600 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base Image: BING Imagery Service

Project Location
T3N, R68W, S23
Denver County, CO

Review
Prepared by CBB on 2020-03-18
Technical Review by NC on 2020-03-19

Client/Project
City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.
5

DRAFT

Title
Post-Remedial Investigation Environmental Sample Locations

Figure 5

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DENVER
THE MILE HIGH CITY

SWDI-1 (10 ft) Sample ID / Apparent Landfill Waste Thickness (ft)

- 2010 High Street
- 2011 CTL Wells (Borings)
- 2013 CTL Geotech Investigation[1]
- ASARCO
- Central 70 Project
- I-70
- RI Boreholes
- Supplemental Geotech Investigation[2]
- 2015 / 2016 Surface Water Design Investigations
- Approximate Landfill Extent (from 2009 Report)[1]
- Operable Unit 2 (OU2)

References

1. CTL Thompson, 2013. Supplemental Geotechnical Investigation, 40th Street Outfall, Northwest of 40th and Blake Streets to Globeville Landing Park, Rev 1. February 21.
2. CTL Thompson, 2016. Supplemental Geotechnical Investigation, 40th Street Outfall, February 25.

N

0 250 500 Feet

1:3,000 (At original document size of 11x17)

Notes

1. The Landfill/Waste Material boundary displayed is the depiction provided in the 2009 Remedial Investigation Report (EMSI, 2009); however, subsequent investigations have contributed additional data that should be considered. The borings that suggest the extent of the Landfill Waste material should be adjusted are shown on the figure.
2. Coordinate System: NAD 1983 HARN State Plane Colorado Central
3. Base Image: BING Imagery Service

Project Location
T3N, R68W, S23
Denver County, CO

Review
Prepared by CBB on 2020-03-17
Technical Review by NC on 2020-03-18

Client/Project
City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.
6

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Title
Estimated Extent of Landfill / Waste Material

Figure 6

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1, A3-1	69, DC-1	137, SWDI-23
2, A3-2	70, DC-2	138, SWDI-25
3, A3-3	71, DC-3	139, SWDI-27
4, A3-4	72, DC-4	140, SWDI-28
5, A3-5	73, DC-5	141, SWDI-32
6, A3-6	74, DC-6	142, SWDI-33
7, A3-7	75, DC-7	143, SWDI-34
8, A3-8	76, DC-8	144, SWDI-35
9, A3-10	77, HS-01	145, SWDI-36
10, A3-11	78, HS-02	146, SWDI-37
11, A3-12	79, HS-03	147, SWDI-38
12, A3-13	80, HS-04	148, SWDI-39
13, A3-14	81, HS-05	149, SWDI-40
14, A3-15	82, HS-06	150, SWDI-41
15, A3-16	83, HS-07	151, SWDI-43
16, A3-17	84, HS-08	152, SWDI-44
17, A3-18	85, MW-01	153, SWDI-45
18, A3-20	86, MW-02	154, SWDI-46
19, A4-1	87, MW-03	155, SWDI-47
20, A4-2	88, MW-05	156, SWDI-48
21, A4-3	89, MW-06	157, SWDI-49
22, A4-4	90, OU2-01	158, TH-1
23, A4-5	91, OU2-02	159, TH-2
24, A4-6	92, OU2-03	160, TH-3
25, A4-7	93, OU2-04	161, TH-4
26, A4-8	94, SB-01	162, TH-5
27, A4-9	95, SB-02	163, TH-8
28, A4-10	96, SB-03	164, TH-63
29, A4-11	97, SB-04	165, TH-65
30, A4-12	98, SB-12	166, UT-1
31, A4-13	99, SB-13	167, UT-2
32, A4-14	100, SB-14	168, UT-3
33, A4-15	101, SB-2-1	169, UT-4
34, A4-16	102, SB-2-2	170, UT-5
35, A6-1	103, SB-2-3	171, UT-6
36, A6-2	104, SB-2-4	172, UT-7
37, A6-3	105, SB-22	173, UT-8
38, A6-4	106, SB-29	174, UT-9
39, A6-5	107, SB-3-1	175, UT-10
40, A6-6	108, SB-3-2	176, UT-11
41, A7-1	109, SB-3-3	177, UT-12
42, A7-2	110, SB-3-4	178, UT-13
43, A7-3	111, SB-3-5	179, UT-14
44, A7-4	112, SB-30	180, 1
45, A7-5	113, SB-31	181, 2
46, A7-6	114, SB-32	182, 3
47, A7-7	115, SB-4-1	183, 4
48, A7-8	116, SB-4-2	184, 5
49, A7-9	117, SB-4-3	185, 6
50, A7-10	118, SB-4-4	186, 7
51, BB-38-22	119, SB-4-5	187, 8
52, BB-38-25	120, SS-3-1	
53, BB-BB-26	121, SWDI-1	
54, BB-BB-27	122, SWDI-2	
55, BB-CT-38	123, SWDI-3	
56, BB-CT-40	124, SWDI-4	
57, BH-01	125, SWDI-5	
58, BH-02	126, SWDI-6	
59, BH-03	127, SWDI-7	
60, BH-04	128, SWDI-8	
61, BH-05	129, SWDI-10	
62, BH-06	130, SWDI-13	
63, BH-07	131, SWDI-15	
64, CTL MW-1 (TH-13)	132, SWDI-16	
65, CTL MW-2 (TH-14)	133, SWDI-17	
66, CTL MW-4 (TH-17)	134, SWDI-18	
67, CTL MW-5 (TH-18)	135, SWDI-19	
68, CTL MW-6 (TH-19)	136, SWDI-20	

Stantec

DENVER
THE MILE HIGH CITY

- 2010 High Street
- ASARCO
- Barn Excavations
- Brighton Blvd
- Central 70 Project
- CTL Wells
- Environmental Conditions Investigations
- I-70
- Pepsi
- RI Boreholes
- SWDI
- ASARCO - Approximate Limit of Unpaved Areas for Shallow Surface Soil Sampling
- Stormwater Conduit and Globeville Landing Park Excavation Area

N

0 350 700 Feet
1:4,200 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base Image: BING Imagery Service

Project Location
T3N, R68W, S23
Denver County, CO

Review
Prepared by CBB on 2020-03-17
Technical Review by NC on 2020-03-18

Client/Project
City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.
7

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Title
Relevant City and County of Denver Soil Sample Locations

Figure 7

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DENVER
THE MILE HIGH CITY

- Not detected above the reporting limit (ND)
- Detection > Residential, < Industrial and Background
- Detection > Residential and Industrial, < Background
- Detection > Residential, Industrial, and Background
- Operable Unit 2 (OU2)

N

0 300 600 Feet
1:3,600 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base Image: BING Imagery Service
3. RSL: USEPA Regional Screening Level

Project Location
T3N, R68W, S23
Denver County, CO

Review
Prepared by CBB on 2020-03-17
Technical Review by NC on 2020-03-18

Client/Project
City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.
8a

DRAFT

Title
Arsenic Concentration in Shallow Soil

Figure 8a

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DENVER
THE MILE HIGH CITY

- Not detected above the reporting limit (ND)
- Detection below all screening levels
- Detection > Residential, < Industrial and Background
- Detection > Residential and Industrial, < Background
- Detection > Residential, Industrial, and Background
- Operable Unit 2 (OU2)

N

0 250 500 Feet

1:3,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base Image: BING Imagery Service
3. RSL: USEPA Regional Screening Level

Project Location

T3N, R68W, S23
Denver County, CO

Review

Prepared by CBB on 2020-03-17
Technical Review by NC on 2020-03-18

Client/Project

City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.

8b

DRAFT

Title

Arsenic Concentration in Subsurface Soil

Figure 8b

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Stantec

DENVER
THE MILE HIGH CITY

- Not detected above the reporting limit (ND)
- Detection > Residential, < Industrial and Background
- Detection > Residential and Industrial, < Background
- Detection > Residential, Industrial, and Background
- Operable Unit 2 (OU2)

N

0 200 400 Feet
1:3,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base image: BING Imagery Service
3. RSL: USEPA Regional Screening Level

Project Location
T3N, R68W, S23
Denver County, CO

Review
Prepared by CBB on 2020-03-17
Technical Review by NC on 2020-03-18

Client/Project
City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.
8c

DRAFT

Title
Arsenic Concentration in Deep Soil

Figure 8c

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Stantec

DENVER
THE MILE HIGH CITY

- Detection below all screening levels
- Detection > Residential, < Industrial
- Detection > Residential and Industrial
- Operable Unit 2 (OU2)

N

0 300 600 Feet

1:3,600 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base image: BING Imagery Service
3. SL: USEPA Residential Screening Level

Project Location	Review
T3N, R68W, S23 Denver County, CO	Prepared by CBB on 2020-03-17 Technical Review by NC on 2020-03-18

Client/Project

City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.
9a

DRAFT

Title

Lead Concentration in Shallow Soil

Figure 9a

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Stantec

DENVER
THE MILE HIGH CITY

- Detection below all screening levels
- Detection > Residential, < Industrial
- Detection > Residential and Industrial
- Operable Unit 2 (OU2)

N

0 250 500 Feet
1:3,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base Image: BING Imagery Service
3. SL: USEPA Residential Screening Level

Project Location
T3N, R68W, S23
Denver County, CO

Review
Prepared by CBB on 2020-03-17
Technical Review by NC on 2020-03-18

Client/Project
City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.
9b

DRAFT

Title
Lead Concentration in Subsurface Soil

Figure 9b

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Stantec

DENVER
THE MILE HIGH CITY

- Not detected above the reporting limit (ND)
- Detection below all screening levels
- Detection > Residential, < Industrial
- Detection > Residential and Industrial
- Operable Unit 2 (OU2)

N

0 300 600 Feet

1:3,600 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base Image: BING Imagery Service
3. SL: USEPA Residential Screening Level

Project Location
T3N, R68W, S23
Denver County, CO

Review
Prepared by CBB on 2020-03-17
Technical Review by TL on 2020-03-18

Client/Project
City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.
9c

DRAFT

Title
Lead Concentration in Deep Soil

Figure 9c

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DENVER
THE MILE HIGH CITY

- 2010 High Street
- ASARCO
- Central 70 Project
- CTL Wells
- Cooling Water Wells
- Supplemental Geotech Investigation
- I-70
- 2018 Piezometers
- SWDI
- 2015 / 2016 Surface Water Design Investigation - Pump Test Wells
- 2019 Pepsi GW Sampling
- Operable Unit 2 (OU2)

Well Status

- Confirmed Existing Site Well
- Abandoned*

* It was unknown at the time of this report whether GW-1 through GW-10 and OU2-01 through OU2-04 are abandoned

N

0 300 600 Feet

1:3,600 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base Image: BING Imagery Service

Project Location
T3N, R68W, S23
Denver County, CO

Review
Prepared by CBB on 2020-03-18
Technical Review by NC on 2020-03-18

Client/Project
City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.
10

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Title
Abandoned and Existing Groundwater Sampling Locations

Figure 10

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Stantec

DENVER
THE MILE HIGH CITY

- ASARCO
- Central 70 Project
- Cooling Water Wells
- CTL Wells
- I-70
- SWDI
- 2019 Pepsi GW Sampling
- Operable Unit 2 (OU2)

Well Status

- Confirmed Existing Site Well
- Abandoned

N

0 300 600 Feet
1:3,600 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base Image: BING Imagery Service

Project Location
T3N, R68W, S23
Denver County, CO

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Prepared by CBB on 2020-03-18
Technical Review by NC on 2020-03-18

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City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.
11

DRAFT

Title
Recent TCE and PCE Groundwater Results

Figure 11

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DENVER
THE MILE HIGH CITY

Surface Water and Sediment Sample Location

Operable Unit 2 (OU2)

N

0 300 600 Feet

1:3,600 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base Image: ESRI World Imagery Service - DigitalGlobe (6/19/2017)

Project Location
T3N, R68W, S23
Denver County, CO

Review
Prepared by CBB on 2018-07-06
Technical Review by TL on 2018-07-13

Client/Project
City and County of Denver
VB/I-70 OU2 Remedial Investigation

Figure No.
12

DRAFT

Title
Surface Water and Sediment Sample Locations

Figure 12

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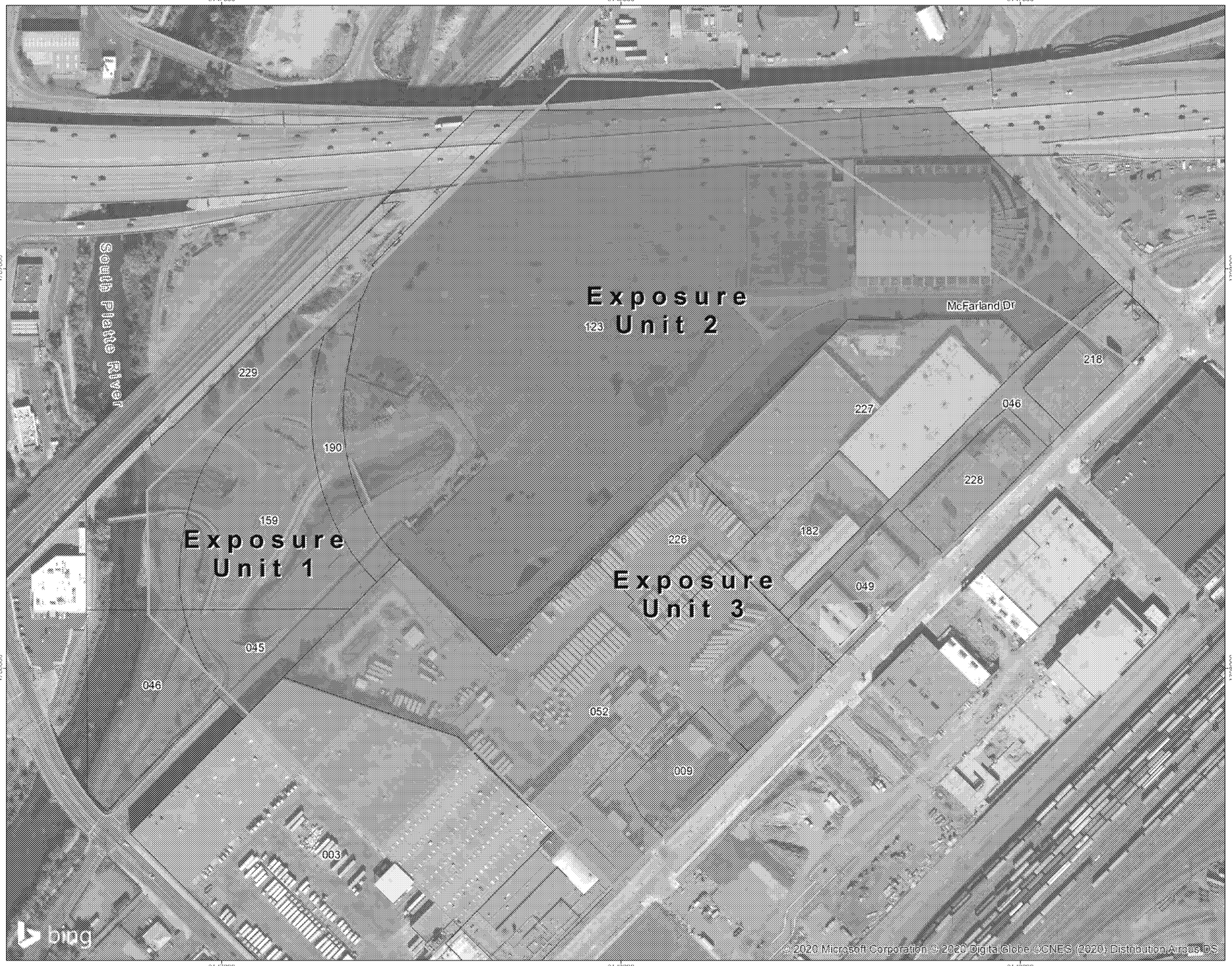

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DENVER
THE MILE HIGH CITY

Operable Unit 2 (OU2)

Parcel Boundary and Number

Exposure Unit 1

Exposure Unit 2

Exposure Unit 3

N

0 250 500 Feet

1:3,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 HARN State Plane Colorado Central
2. Base Image: BING Imagery Service
3. Exposure Units are defined by existing physical boundaries (i.e., streets, rail lines, the South Platte River) that correspond with the known or likely current and future land use.

Project Location

T3N, R68W, S23
Denver County, CO

Review

Prepared by CBB on 2020-03-20
Technical Review by NC on 2020-03-20

Client/Project

City and County of Denver
VB/I-70 Remedial Investigation

Figure No.

13

DRAFT

Title

OU2 Exposure Units

Figure 13

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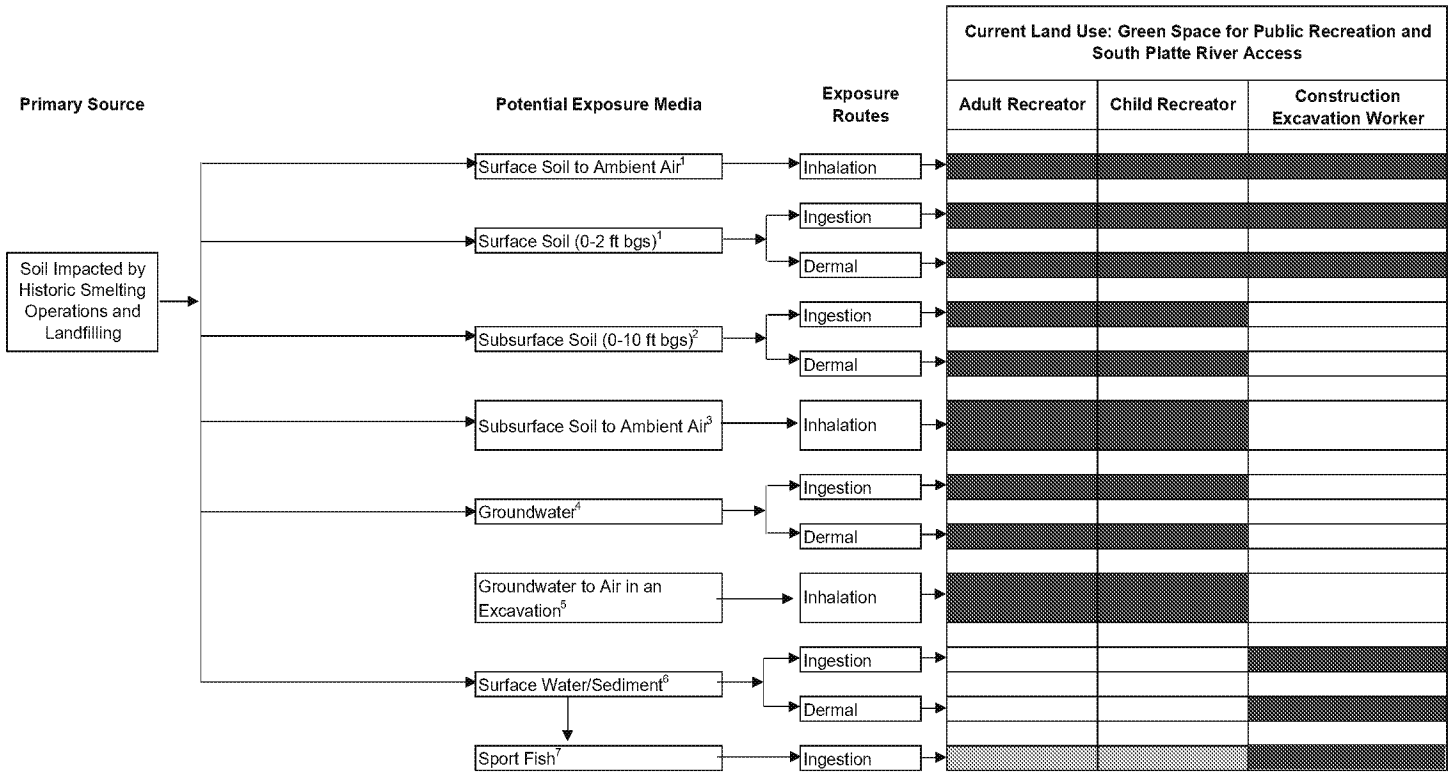
Figure 14. CSM for Exposure Unit 1 - Globeville Landing Park



LEGEND

Exposure pathway is complete or potentially complete. Pathway evaluated quantitatively.

Exposure pathway is potentially complete but contributes little to risk.

Exposure pathway is incomplete.

Globeville Landing Park provides enhanced green space for public recreation and access to the South Platte River.

1 - Surface soil was delisted by USEPA and is not a pathway of exposure to COPCs.

2 - Potential exposures to COPCs in subsurface soil (0 to 10 ft. bgs) applies only to construction or excavation workers.

3 - Inhalation of COPCs adsorbed to soil particles or vapors released to ambient air by mechanical disturbance of subsurface soil during excavation or construction

4 - Groundwater is not used as a source of drinking water, but may discharge to the South Platte River.

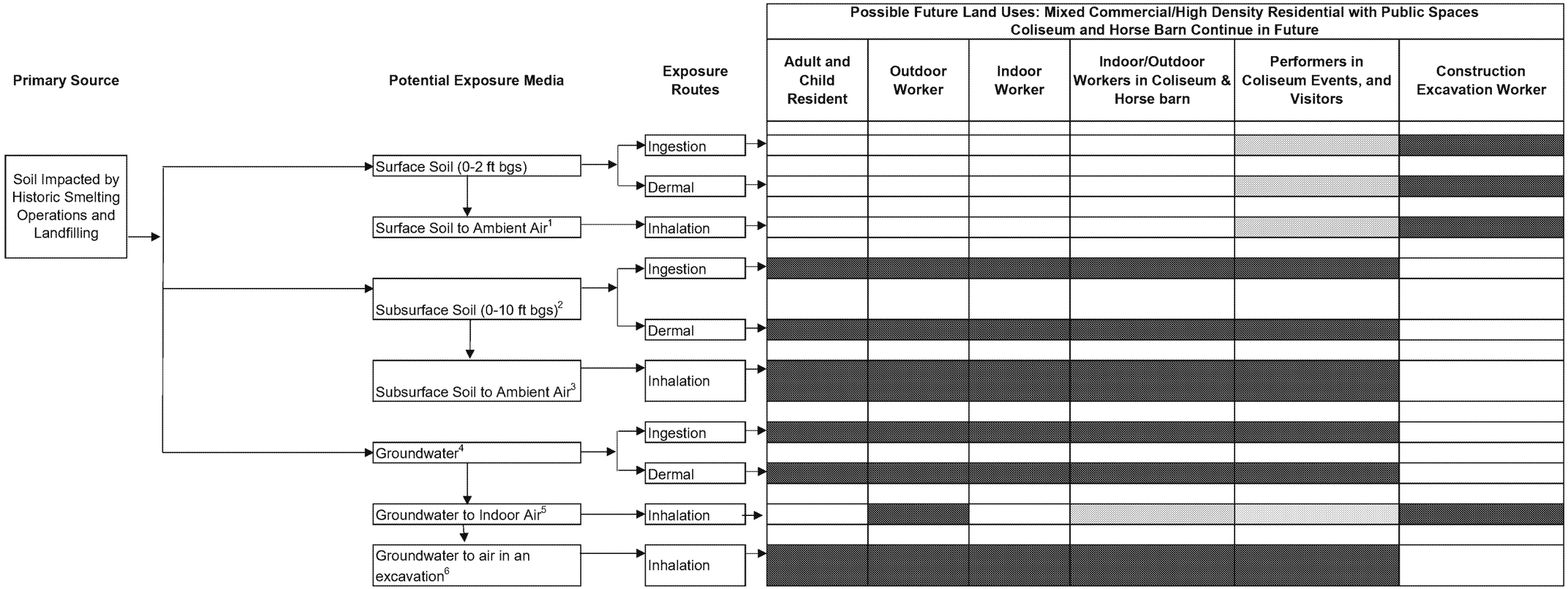
5 - If present in a location where intrusive activity is occurring, volatile COPCs may accumulate in air inside an excavation.

6 - Recreational visitors to Globeville Landing Park may have direct contact with surface water and sediments in the South Platte River while wading, swimming, canoeing/kayaking, and fishing.

7 - People are known to fish in the South Platte River. Ingestion of fish taken at Globeville Landing Park is a potentially complete, but likely insignificant pathway of exposure to COPCs.

DRAFT

Figure 15. CSM for Exposure Unit 2 - Denver Coliseum and Parking Lot



LEGEND

Exposure pathway is complete or potentially complete. Pathway evaluated quantitatively.

Exposure pathway is potentially complete but contributes little to risk.

Exposure pathway is incomplete.

1 - Inhalation of COPCs adsorbed to soil particles or vapors released to ambient air by wind and mechanical disturbance of surface soil (0 to 2 ft. bgs)

2 - Potential exposures to COPCs in subsurface soil (0 to 10 ft. bgs) applies only to construction or excavation workers.

3 - Inhalation of COPCs adsorbed to soil particles or vapors released to ambient air from subsurface soil by mechanical disturbance during construction or excavation.

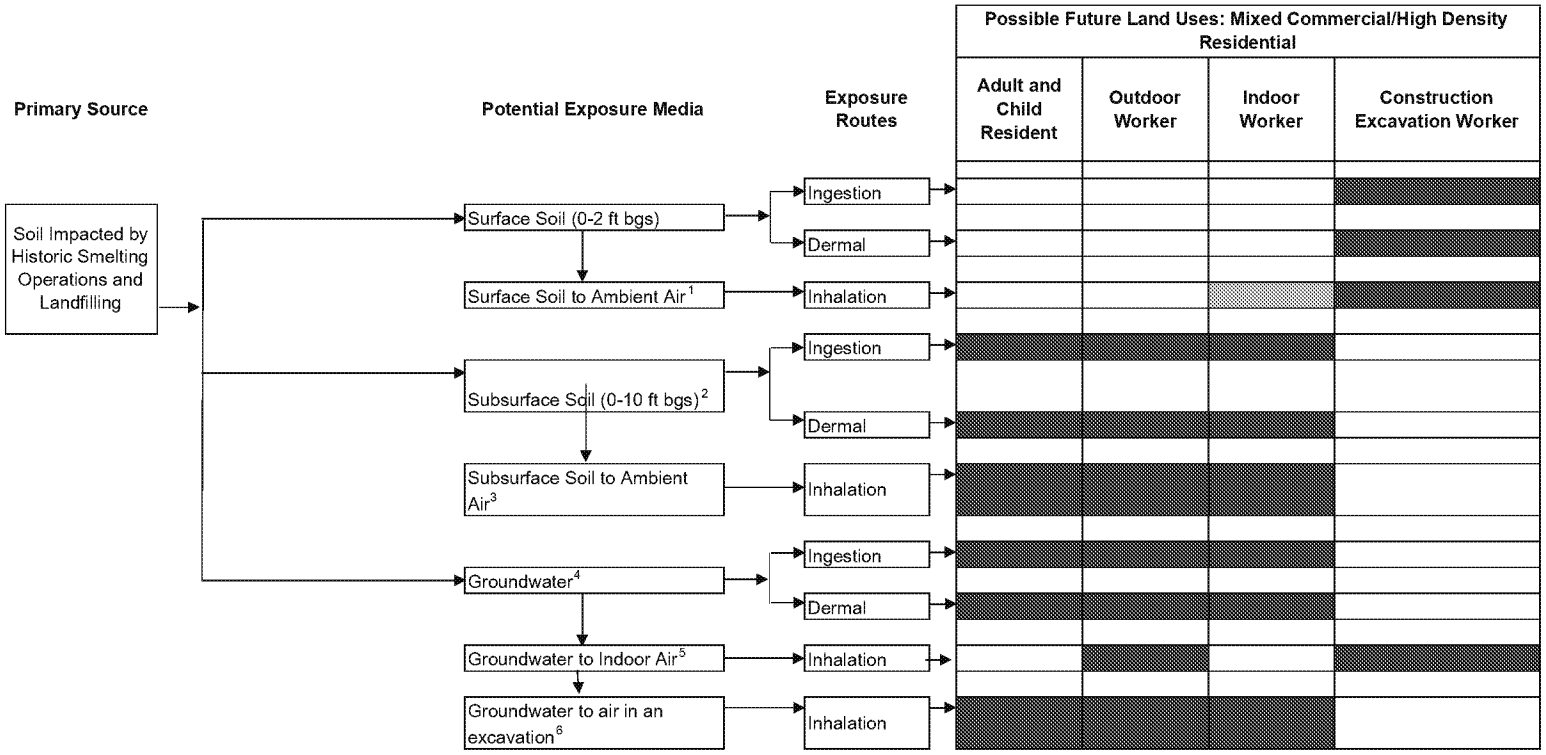
4 - Groundwater is not used as a drinking water source. Construction or excavation worker may have incidental contact with COPCs in groundwater in an excavation.

5 - If present beneath a building, VOCs in groundwater may migrate into indoor air (vapor intrusion).

6 - If present in a location where intrusive activity is occurring, volatile COPCs may accumulate in air inside an excavation.

DRAFT

Figure 16. Commercial and Industrial Properties



LEGEND

Exposure pathway is complete or potentially complete. Pathway evaluated quantitatively.

Exposure pathway is complete or potentially complete. Pathway evaluated quantitatively.

Exposure pathway is incomplete.

1 - Inhalation of COPCs adsorbed to soil particles or vapors released to ambient air by wind and mechanical disturbance of surface soil (0 to 2 ft. bgs)

2 - Potential exposures to COPCs in subsurface soil (0 to 10 ft. bgs) applies only to construction or excavation workers.

3 - Inhalation of COPCs adsorbed to soil particles or vapors released to ambient air from subsurface soil by mechanical disturbance during construction excavation.

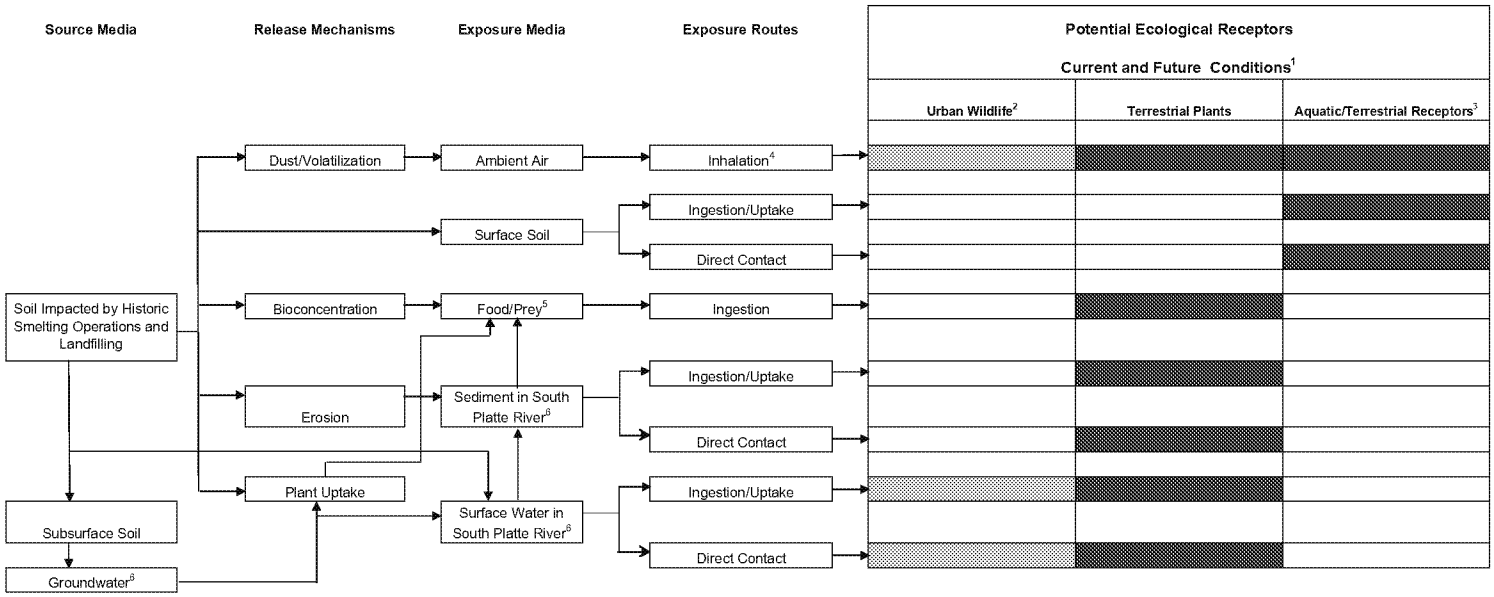
4 - Groundwater is not used as a drinking water source. Construction or excavation worker may have incidental contact with COPCs in an excavation.

5 - If present beneath a building, VOCs in groundwater may migrate into indoor air (vapor intrusion).

6 - If present in a location where intrusive activity is occurring, volatile COPCs may accumulate in air inside an excavation.

DRAFT

Figure 17. Ecological CSM for VB/I-70 OU2



LEGEND

Exposure pathway is complete or potentially complete.

Exposure pathway is potentially complete but likely contributes little to risk.

Exposure pathway is incomplete.

1 - Under current conditions most of the ground surface in OU2 is capped with buildings, asphalt or concrete. There are limited areas of open ground within the Globeville Landing Park and along the bank of the South Platte River. Although future development may include landscaping, it is unlikely that mauch usable habitat will be created other than enhancing what currently exists along the River.

2 - Urban wildlife are species adapted to disturbed landscape with limited habitat and food resources (e.g sparrows, squirrels, small rodents, common avian species), and omnivorous foragers such as raccoons and opossums.

3 - Aquatic receptors associated with the South Platte River include representatives of the aquatic/terrestrial food web (i.e. sediment macroinvertebrates, fish, piscivorous birds and mammals, ducks, and omnivorous shore-line foragers including raccoons and opossums).

4 - Inhalation of COPECs released from surface soil to ambient air through wind disturbance and/or volatilization is a potentially complete pathway of exposure for urban wildlife, but contributes little to hazard.

5- Potential bioconcentration of COPECs in soil macroinvertebrates (i.e. earthworms, insects) that are prey items for terrestrial urban wildlife; and sediment macroinvertebrates that are prey items for terrestrial and aquatic wildlife associated with the South Platte River.

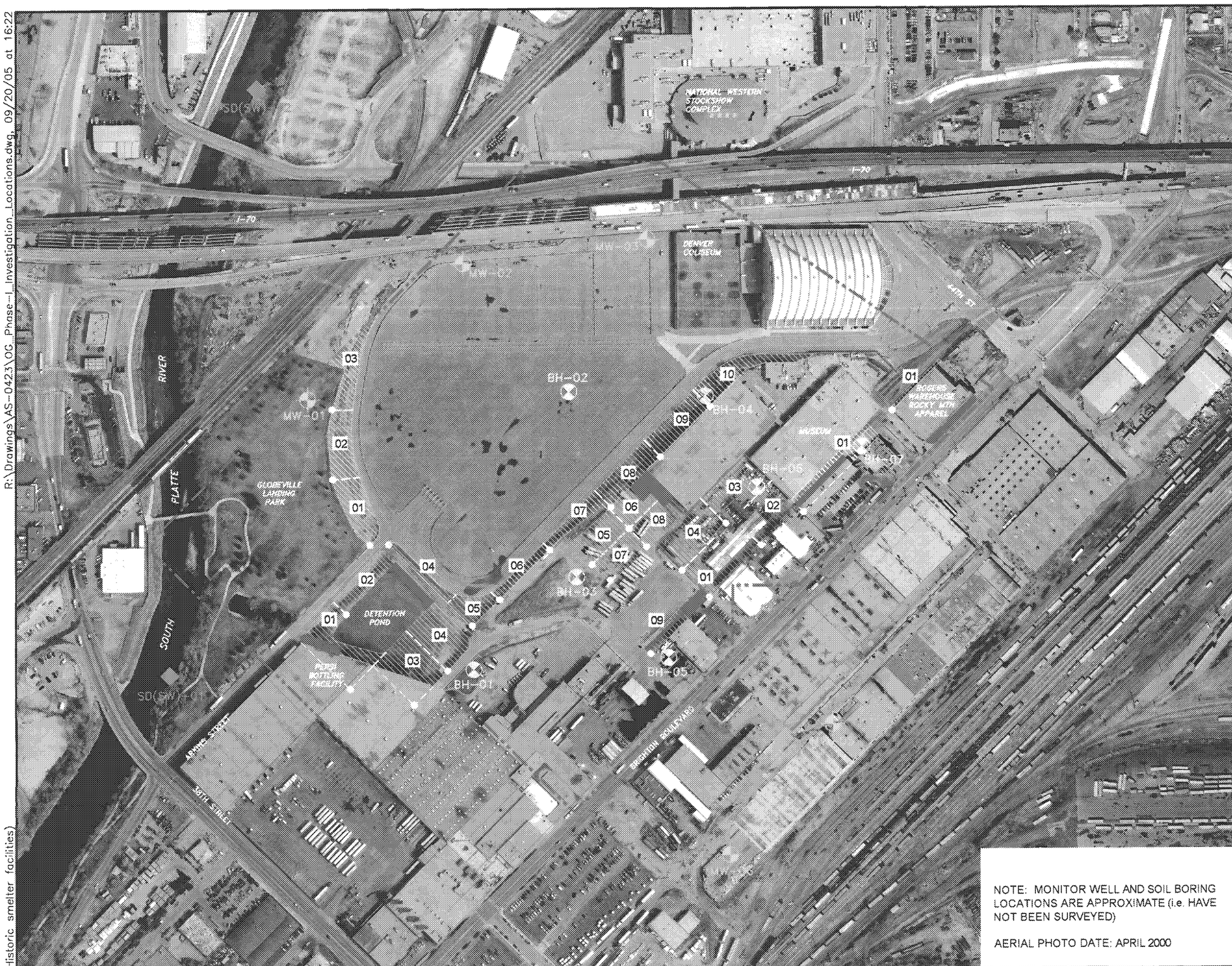
6 - Groundwater (shallow) beneath OU2 flows towards the South Platte River. Aquatic/terrestrial receptors in and associated with the River may be exposed to COPECs originating in groundwater and migrating to sediments and surface water.

DRAFT

APPENDIX A

2004 and 2005 Soil and Groundwater Phase I Investigations Figure

R:\Drawings\AS-0423\OG_Phase-I_Investigation_Locations.dwg, 09/20/05 at 16:22



LEGEND

FORMER OMAHA & GRANT SMELTER ON-FACILITY SITE BOUNDARY (OPERABLE UNIT 2)

GROUNDWATER MONITORING WELL

SOIL BORING

SD(SW)-01 PROPOSED SEDIMENT / SURFACE WATER SAMPLING LOCATION

APPROXIMATE LIMIT OF UNPAVED AREAS FOR SHALLOW SURFACE SOIL SAMPLING:

3801 BRIGHTON BOULEVARD

4201 BRIGHTON BOULEVARD

4301 BRIGHTON BOULEVARD

4375 BRIGHTON BOULEVARD

4600 HUMBOLT STREET

01 SECTOR ID

SECTOR CORNER FOR SUBSAMPLE DISTANCE MEASUREMENT (PROJECTED AS NEEDED)

CONCRETE/PAVEMENT/ STRUCTURE LOCATION (AREA COULD NOT BE SAMPLED)

N

0 150 300 450
SCALE IN FEET

NOTE: MONITOR WELL AND SOIL BORING LOCATIONS ARE APPROXIMATE (i.e. HAVE NOT BEEN SURVEYED)

AERIAL PHOTO DATE: APRIL 2000

VB/I-70 OU2
Denver, Colorado

PHASE I INVESTIGATION LOCATIONS

EnviroGroup Limited
Centennial, Colorado

FIGURE 1	SEPT 2005
AS-0423	

(Historic smelter facilities)

APPENDIX B

OU2 GLO Project Excavation Drawings

CITY AND COUNTY OF DENVER

DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION

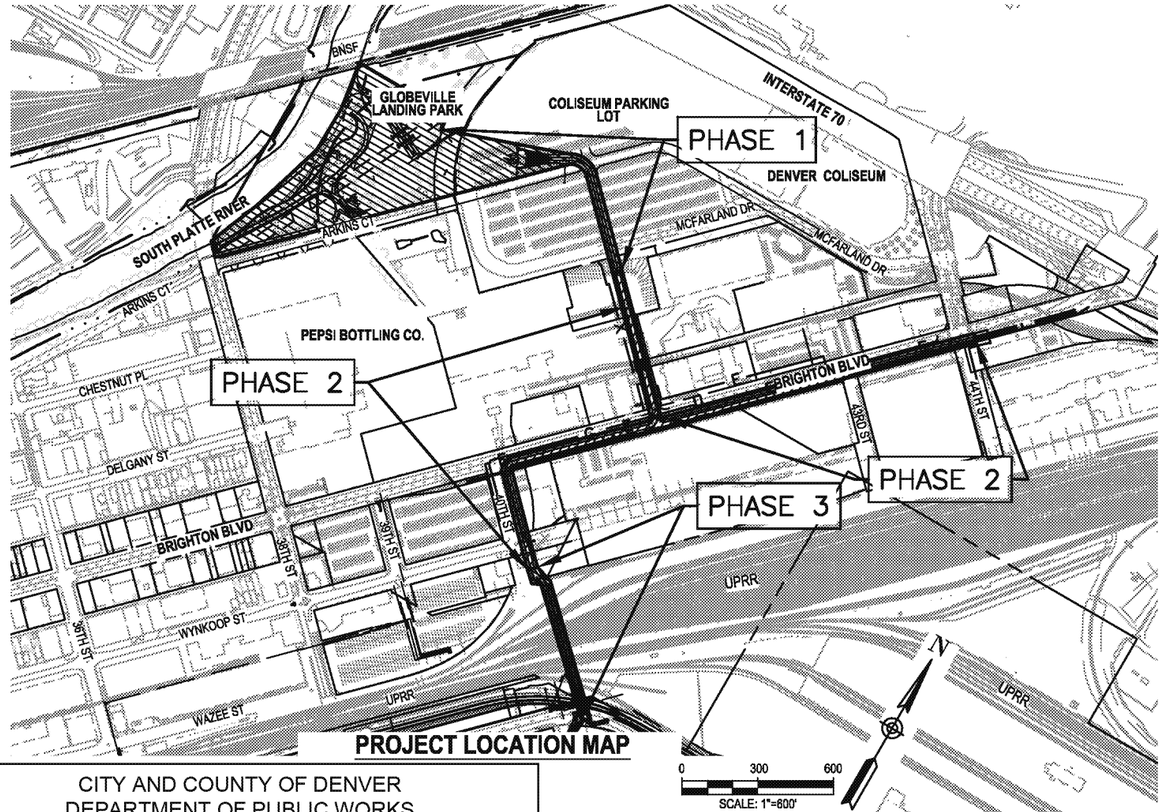
URBAN DRAINAGE AND FLOOD CONTROL DISTRICT

UDFCD PROJECT NO. 14-10.11, DENVER MASTER PROJECT NO. 2015-PROJMSTR-0000638

GLOBEVILLE LANDING OUTFALL PROJECT

PHASE 2 - CONSTRUCTION PLANS

FINAL CONSTRUCTION
PLAN SUBMITTAL
FOR REVIEW ONLY



PROJECT LOCATION MAP

Sheet List Table

Sheet Number	Sheet Title
1	COVER SHEET
2	GENERAL NOTES
3	GENERAL NOTES
4	GENERAL NOTES
5	GENERAL NOTES
6	DRAWING LEGEND
7	DENVER STANDARD DRAWING LIST
8	PLAN & PROFILE, MCFARLAND DR. TO BRIGHTON BLVD
9	PLAN AND PROFILE, BRIGHTON BLVD TO 40TH ST
10	PLAN AND PROFILE, 40TH ST TO UPRR
11	PLAN AND PROFILE, 41ST ST TO 43RD ST
12	PLAN AND PROFILE, 43RD ST TO 44TH ST
13	PLAN AND PROFILE, 44TH ST TO I-70
14	ENLARGED PLAN – PEPSI BOTTLING CO. & CVJ AXLES
15	ENLARGED PLAN – 40TH STREET
16	TYPICAL SECTION, PEPSI BOTTLING CO.–15' x 12' RCB
17	TYPICAL SECTION, BRIGHTON BLVD–14' x 12' RCB
18	TYPICAL SECTION, BRIGHTON BLVD.–8' x 8' RCB
19	SUBGRADE STABILIZATION DETAILS
20	TRENCHING AND PAVING DETAILS
21	STORM SEWER DETAILS
22	PRECAST RCB JOINT DETAIL
23	GAS VENTING DETAILS
24	SANITARY SEWER AND STORM SEWER RELOCATION PLAN AND PROFILE
25	TRANSITION STRUCTURE NO. 2
26	SURVEY CONTROL DIAGRAM
27	HORIZONTAL CONTROL PLAN
28	HORIZONTAL CONTROL PLAN
29	OVERALL OWNERSHIP MAP
30	OVERALL OWNERSHIP MAP
31	FORESTRY DETAILS
S1	GENERAL STRUCTURAL NOTES AND ABBREVIATIONS
S2	OVERALL STRUCTURAL LAYOUT PLAN
S3	15' X 12' CIP BOX CULVERT–TYPICAL SECTION
S4	15' X 12' CIP BOX CULVERT–SECTION AT RR SPUR
S5	15' X 12' CIP BOX CULVERT–SECTION ADJACENT TO RR SPUR
S6	TRANSITION STRUCTURE NO. 2–BASE SLAB PLAN
S7	TRANSITION STRUCTURE NO. 2–TOP SLAB PLAN
S8	TRANSITION STRUCTURE NO. 2–LONGITUDINAL SECTION
S9	TRANSITION STRUCTURE NO. 2–DOWNSTREAM SECTION
S10	TRANSITION STRUCTURE NO. 2–UPSTREAM SECTION
S11	TRANSITION STRUCTURE NO. 2–UPSTREAM ELEVATION
S12	TRANSITION STRUCTURE NO. 2–MISC. DETAILS
S13	8' X 8' CIP BOX CULVERT BEND–PLAN
S14	8' X 8' CIP BOX CULVERT BEND–SECTION
S15	14' X 12' CIP BOX CULVERT BENDS–PLAN
S16	14' X 12' CIP BOX CULVERT BENDS–SECTION
S17	14' X 12' CIP BOX CULVERT–TYPICAL SECTION
S18	MISCELLANEOUS SECTIONS AND DETAILS

CITY AND COUNTY OF DENVER
DEPARTMENT OF PUBLIC WORKS

APPROVED:

EXECUTIVE DIRECTOR OF PUBLIC WORKS — SIGNATURE DATE

CITY ENGINEER — SIGNATURE DATE

DIRECTOR OF ENGINEERING CAPITAL PROJECTS — SIGNATURE DATE

CITY TRAFFIC ENGINEER — SIGNATURE DATE

APPROVED: URBAN DRAINAGE & FLOOD CONTROL DISTRICT

EXECUTIVE DIRECTOR

MANAGER OF DESIGN, CONSTRUCTION AND MAINTENANCE PROGRAM

SENIOR PROJECT ENGINEER OF DESIGN, CONSTRUCTION AND MAINTENANCE PROGRAM

PRELIMINARY
NOT FOR CONSTRUCTION

811 Know what's below. Call before you dig.

Q:\DEN\Projects\8594-00 40th Street Outfall\Design\CDs\Globeville\8594-CS-Phase II.dwg 4/21/2016 7:32 AM

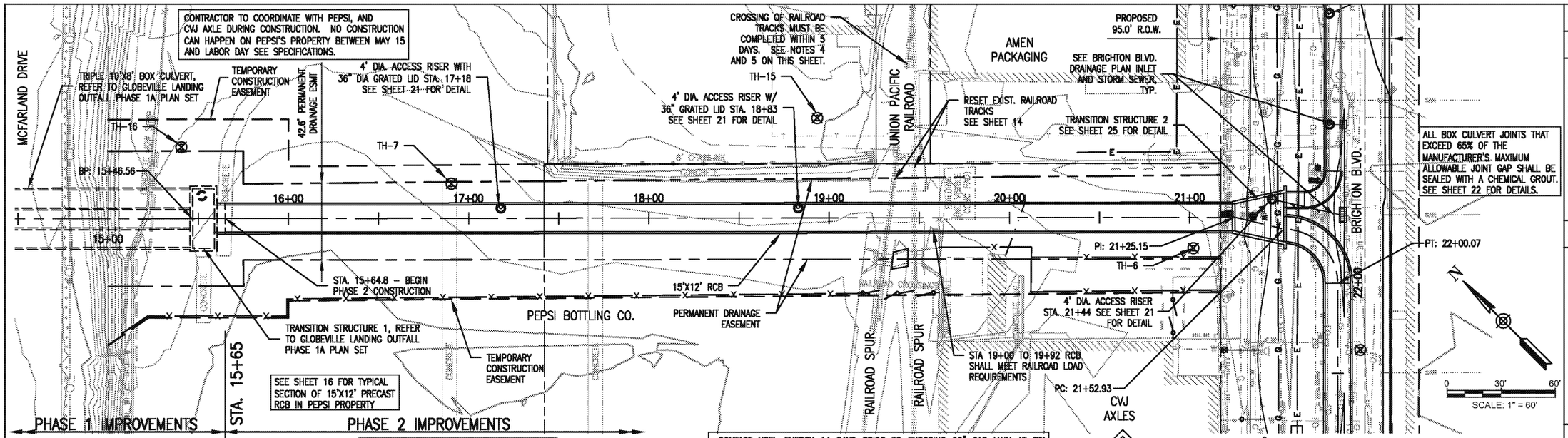
NO.	DESCRIPTION OF REVISIONS	DATE	BY

MERRICK & COMPANY
Merrick & Company
2420 Alcott Street
Denver, CO 80211
(303) 964-3333

DENVER THE MILE HIGH CITY
DEPARTMENT OF PUBLIC WORKS
201 WEST COLFAX AVENUE
DENVER, CO 80202
PHONE: (720) 913-4501
FAX: (720) 913-4544

GLOBEVILLE LANDING OUTFALL PROJECT - PHASE 2
MASTER PROJECT NO: 2015-PROJMSTR-0000638
COVER SHEET

DRAWN BY: -
DESIGNED BY: -
APPROVED BY: -
DRAWING NAME: 8594-CS-PHASE II
DATE: APRIL 20, 2016
SHEET NO.: 1 OF 31



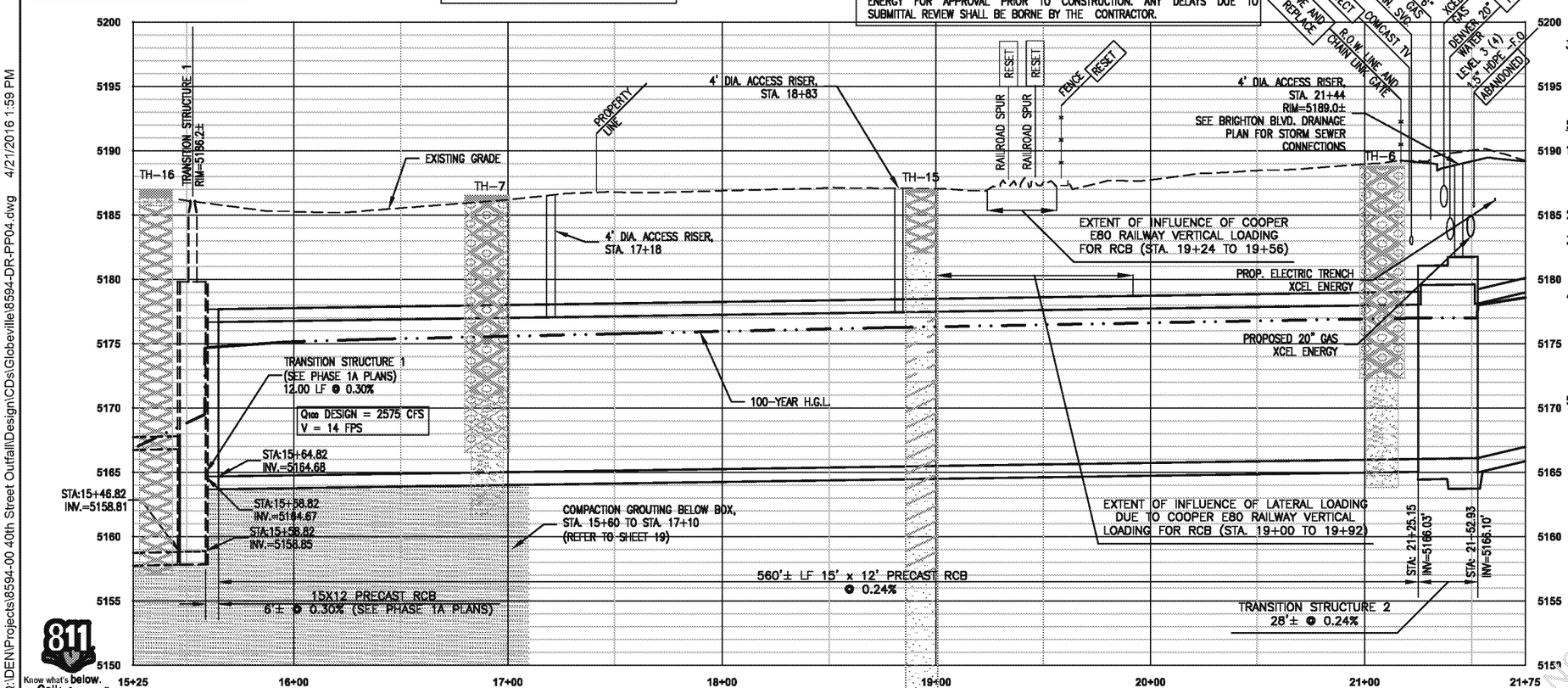
INSTALL TEMPORARY 6' HIGH CHAIN LINK FENCE WITH FABRIC SCREEN MATERIAL AROUND ALL WORK INVOLVING REMOVAL OF ASBESTOS CONTAINING SOIL.

SEE SHEET 23 FOR BOX CULVERT LANDFILL GAS VENTING SYSTEM DETAILS, STA. 15+58.2 TO STA. 18+60.

SEE SHEET 14 FOR PEPSI BOTTLING CO. AND CVJ AXLES ENLARGED PLANS

ONLY PEPSI PRODUCTS WILL BE ALLOWED ON PEPSI BOTTLING CO. PROPERTY DURING CONSTRUCTION

CONTACT XCEL ENERGY 14 DAYS PRIOR TO EXPOSING 20" GAS MAIN AT STA 21+36. XCEL ENERGY SHALL INSPECT GAS MAIN AND WELD STEEL BONNET AROUND ANY EXISTING DRESSER COUPLINGS, PRIOR TO CONTRACTOR TRENCHING FOR BOX CULVERT INSTALLATION.
CONTRACTOR SHALL SUBMIT HIS PLAN FOR SUPPORTING 20" GAS MAIN TO XCEL ENERGY FOR APPROVAL PRIOR TO CONSTRUCTION. ANY DELAYS DUE TO SUBMITTAL REVIEW SHALL BE BORNE BY THE CONTRACTOR.



COMPACTION GROUTING NOTES:

1. COMPACTION GROUTING SHALL BE DONE WHERE 15' X 12' RCB IS CONSTRUCTED OVER EXISTING LANDFILL.
2. COMPACTION GROUTING SHALL EXTEND FROM BEDROCK OR DEPTH OF REFUSAL WHEN INSTALLING PIPE CASING, UP TO BOX CULVERT SUBGRADE (6" BELOW BOTTOM OF 15' X' 12' RCB).
3. IF DRILLING DURING COMPACTION GROUTING INDICATES LANDFILL MATERIAL UNDER THE BOX CULVERT EXTENDS FURTHER DOWNSTREAM, OR UPSTREAM, OF LIMITS SHOWN ON THE PLANS, THEN THE LIMITS OF COMPACTION GROUTING SHALL BE ADJUSTED ACCORDINGLY.

SCHEDULING/COORDINATION WITH PEPSI AND CVJ AXLES

1. WORK WITHIN PEPSI BOTTLING CO. PROPERTY WILL NOT BE ALLOWED DURING THE SUMMER MONTHS. ALL CONSTRUCTION WITHIN PEPSI BOTTLING CO. AND CVJ AXLES MUST BE PERFORMED, AND 100% COMPLETED, BETWEEN LABOR DAY AND MAY 15.
2. NOTIFY PEPSI AND CVJ AXLES 45 DAYS PRIOR TO BEGINNING WORK WITHIN THEIR PROPERTIES.
3. PROVIDE OFF-SITE PARKING FOR TRUCKS. NUMBER OF PARKING STALLS SHALL EQUAL THE NUMBER OF STALLS UNAVAILABLE TO PEPSI DURING CONSTRUCTION (33 STALLS).
4. COORDINATE WITH UNION PACIFIC RAILROAD (UPRR) AND PEPSI FOR THE CROSSING OF THE RAILROAD SPUR LINES. ALL WORK INVOLVING REMOVAL OF RAILROAD TRACKS, INSTALLATION OF 15' X 12' RCB, AND REPLACEMENT OF RAILROAD TRACKS MUST BE COMPLETED WITHIN 5 DAYS. A UPRR FLAGMAN WILL BE REQUIRED TO BE ON SITE AT ALL TIMES DURING CONSTRUCTION WITHIN 25 FEET OF THE RAILROAD TRACKS.
5. ALL COSTS FOR REIMBURSEMENT TO PEPSI FOR ANY DELAYS BEYOND THE 5 DAYS ALLOWED FOR REMOVAL AND REPLACEMENT OF RAILROAD TRACKS SHALL BE PAID BY CONTRACTOR.

PRELIMINARY NOT FOR CONSTRUCTION

NO.	DESCRIPTION OF REVISIONS	DATE	BY

MERRICK & COMPANY
Merrick & Company
2420 Alcott Street
Denver, CO 80211
(303) 964-3333

DEPARTMENT OF PUBLIC WORKS
201 WEST COLFAX AVENUE
DENVER, CO 80202
PHONE: (720) 913-4501
FAX: (720) 913-4544

DENVER THE MILE HIGH CITY

GLOBEVILLE LANDING OUTFALL PROJECT - PHASE 2

MASTER PROJECT NO: 2015-PROJMSTR-0000638

PLAN & PROFILE, MCFARLAND DR. TO BRIGHTON BLVD

DRAWN BY: -
DESIGNED BY: -
APPROVED BY: -
DRAWING NAME: 8594-DR-PP04
DATE: APRIL 20, 2016
SHEET NO.: 8 OF 31

Q:\DEN\Projects\8594-00 40th Street Outfall\Design\CDs\Globeville\8594-DR-PP04.dwg 4/21/2016 1:59 PM
811 Know what's below. Call before you dig.
ED_002842B_00000702-00148

APPENDIX C

Previous Potentiometric Surface Depictions
EMSI, 2016 and Apex, 2020

M:\clients\EMSI\VB-I70\2015\Design Investigation\50percent DSR\Fig1-July-Potentiometric.dwg 4/14/2015

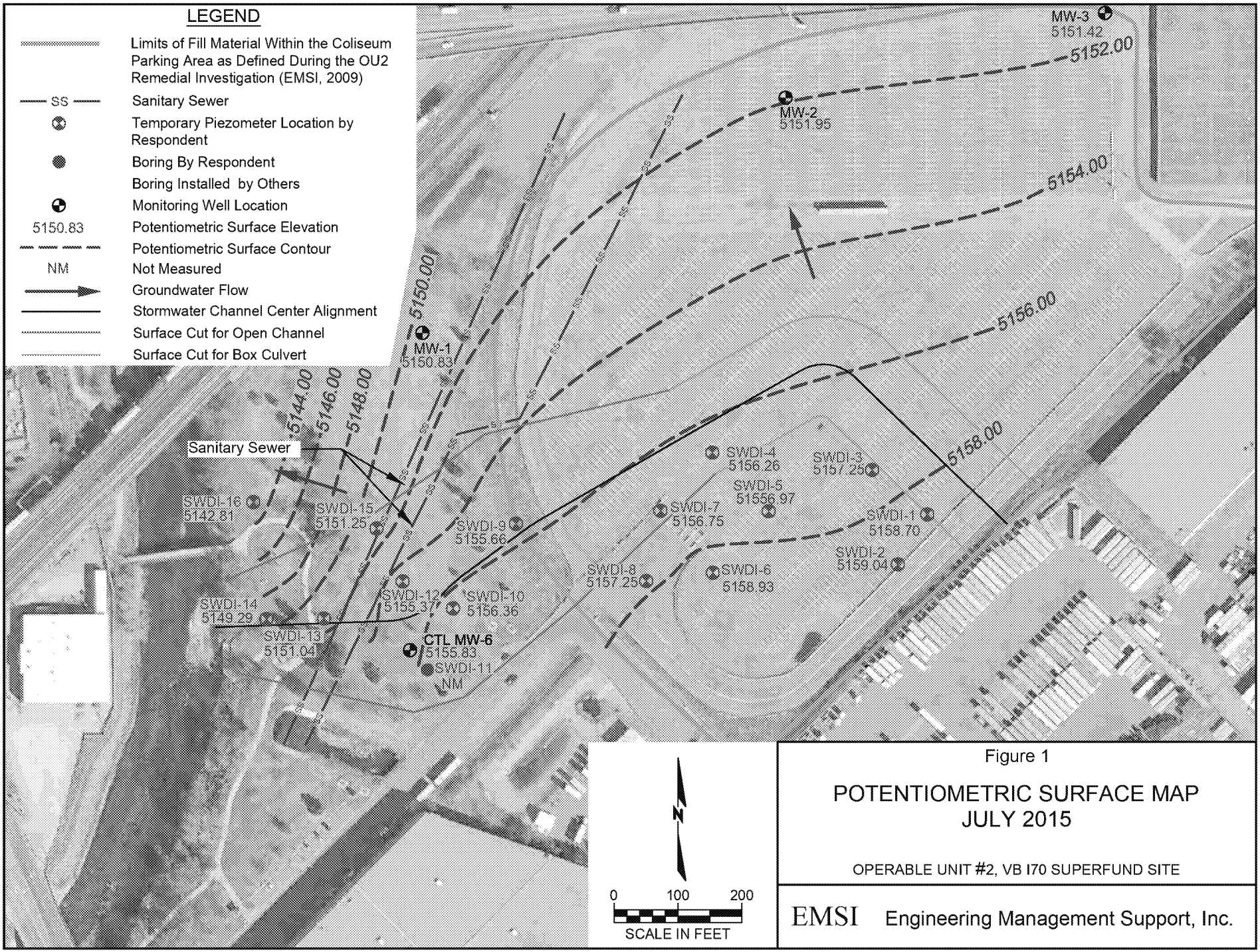
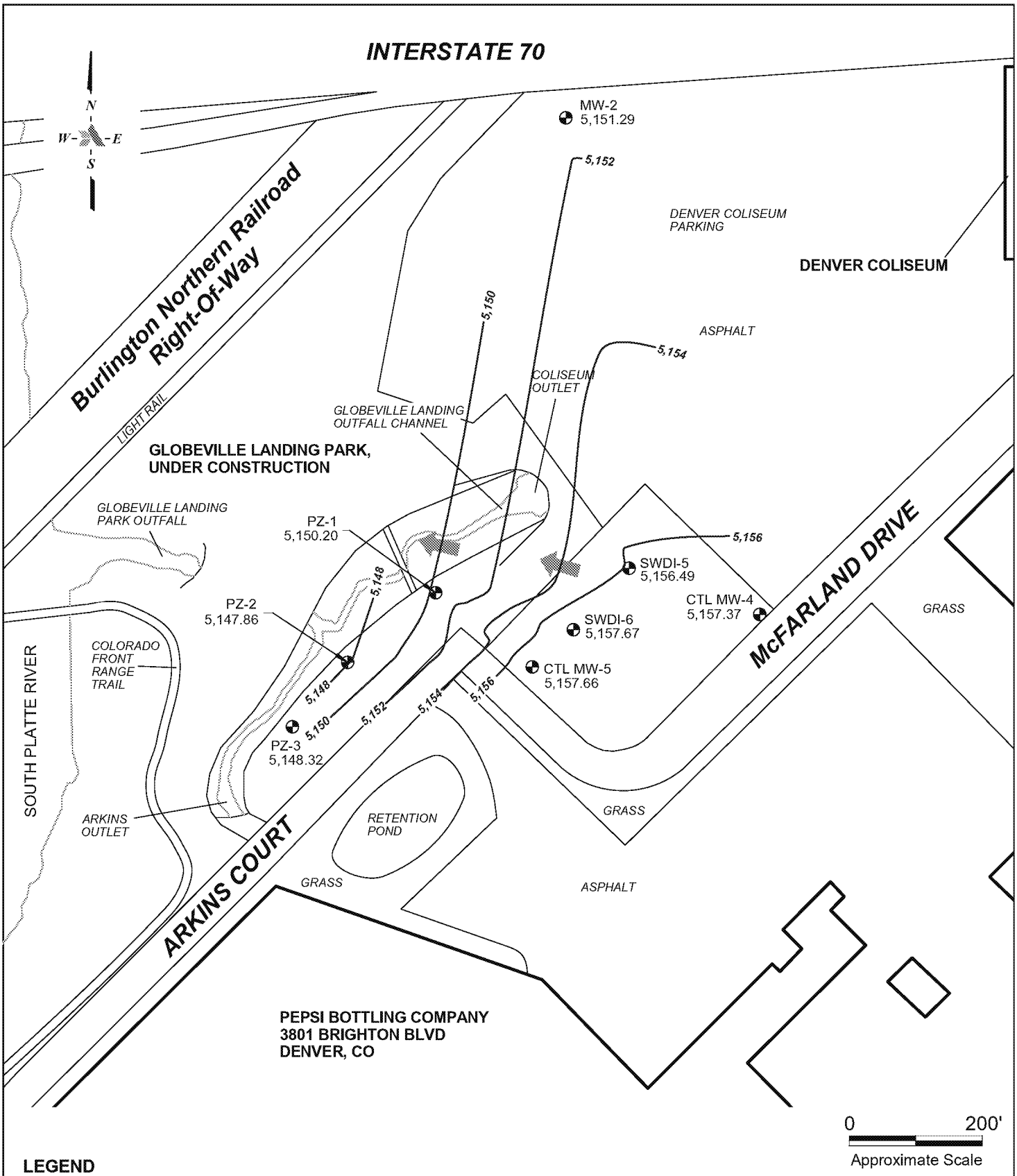


Figure 1

POTENTIOMETRIC SURFACE MAP
JULY 2015

OPERABLE UNIT #2, VB I70 SUPERFUND SITE

EMSI Engineering Management Support, Inc.



LEGEND

PZ-1 5,150.20 — Piezometer location and groundwater elevation

5,154 — Inferred groundwater elevation contour and flow direction. Contour interval = 2.0 feet

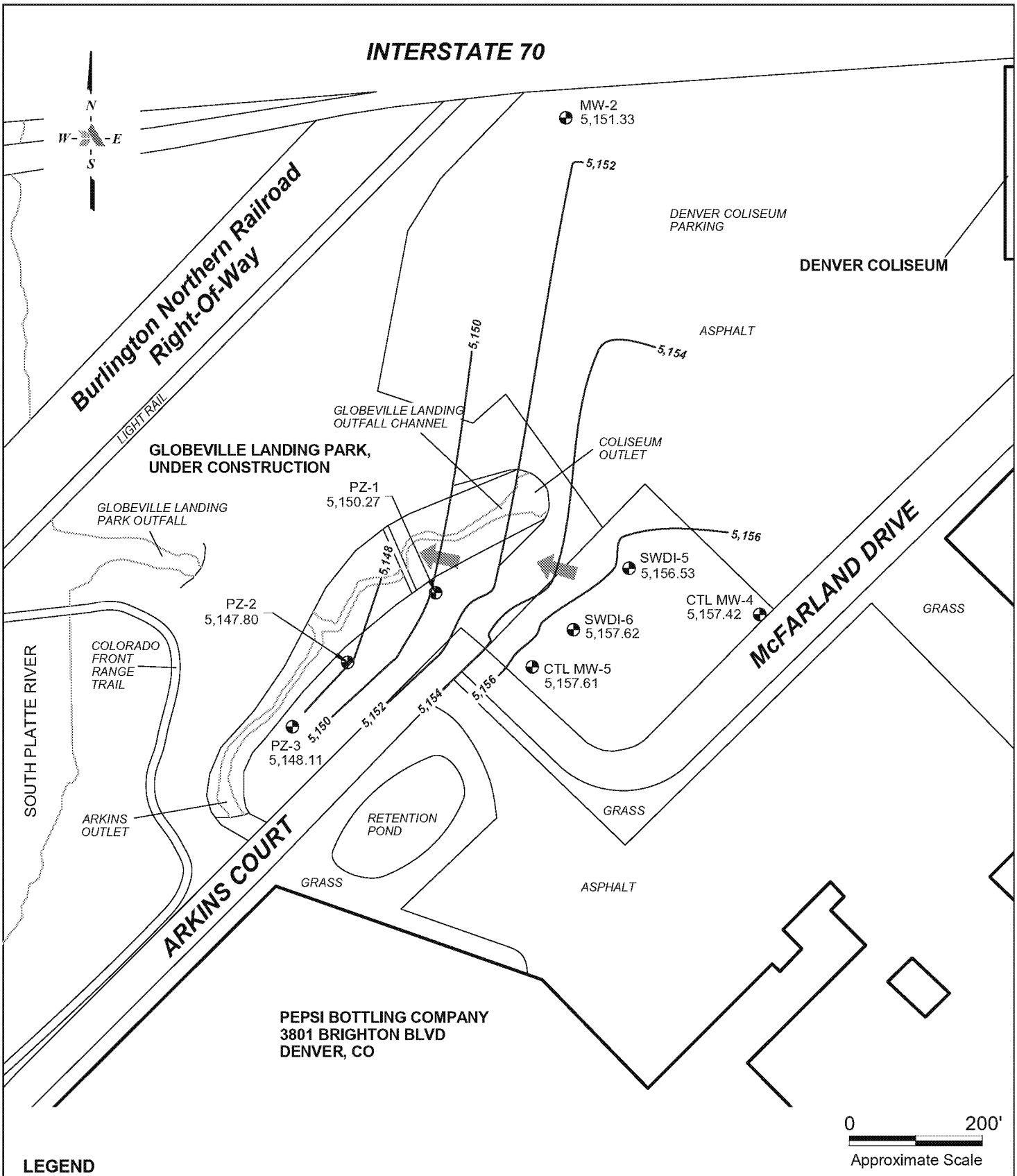
FIGURE 3 - Groundwater Elevations (2/27/2019)

Vasquez Boulevard / Interstate 70 Superfund Site Operable Unit 2, Denver, CO

Apex Job No. 5622

DATE - 11/6/19 (DP)
FILE - 5622 - F3.dc

APEX



LEGEND

PZ-1 5,150.27 — Piezometer location and groundwater elevation

5,154 — Inferred groundwater elevation contour and flow direction. Contour interval = 2.0 feet

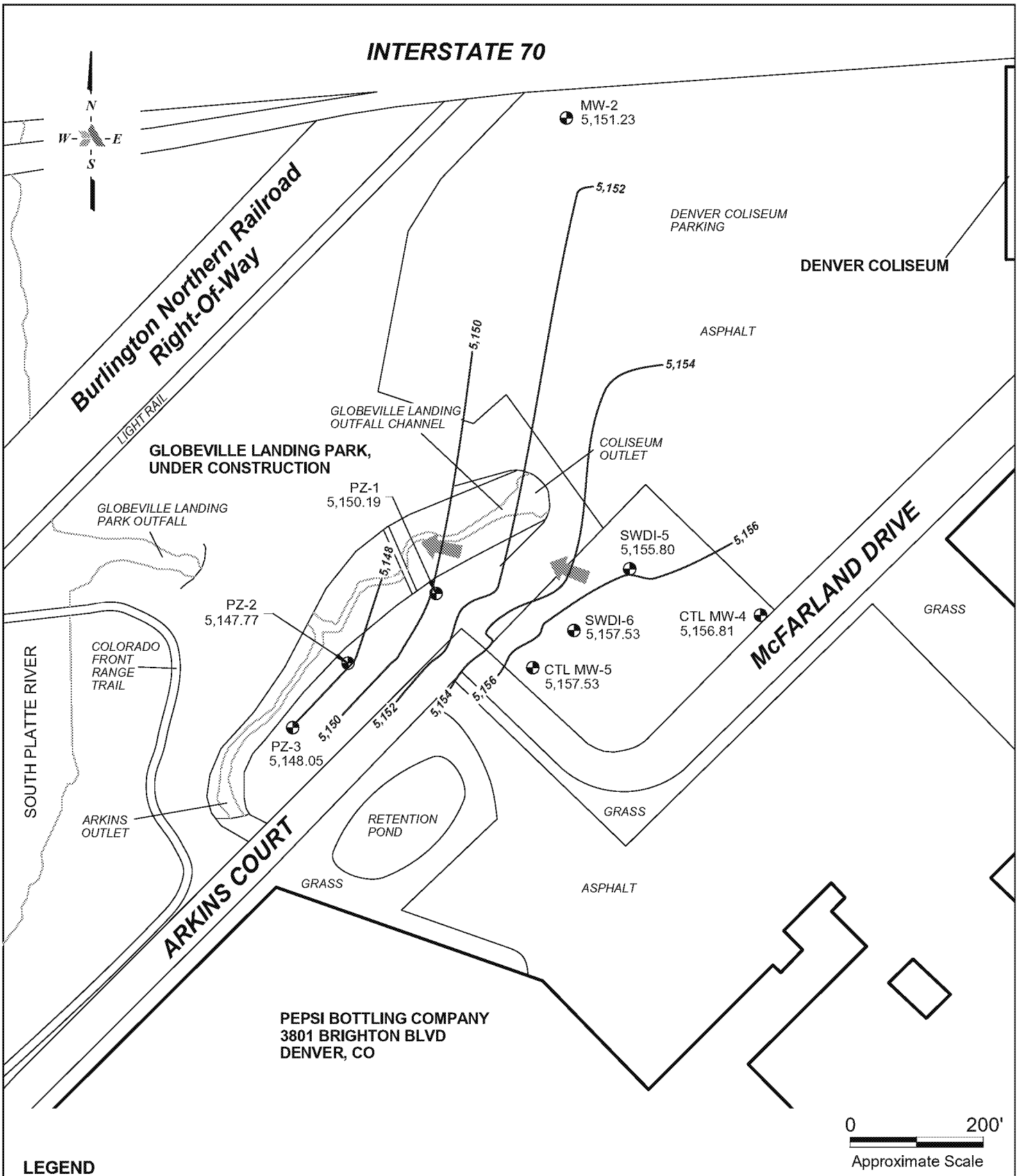
FIGURE 4 - Groundwater Elevations (5/6/2019)

Vasquez Boulevard / Interstate 70 Superfund Site Operable Unit 2, Denver, CO

Apex Job No. 5622

DATE - 11/6/19 (DP)
FILE - 5622 - F4.dc

APEX



LEGEND

PZ-1 5,150.19 — Piezometer location and groundwater elevation

5,154 — Inferred groundwater elevation contour and flow direction. Contour interval = 2.0 feet

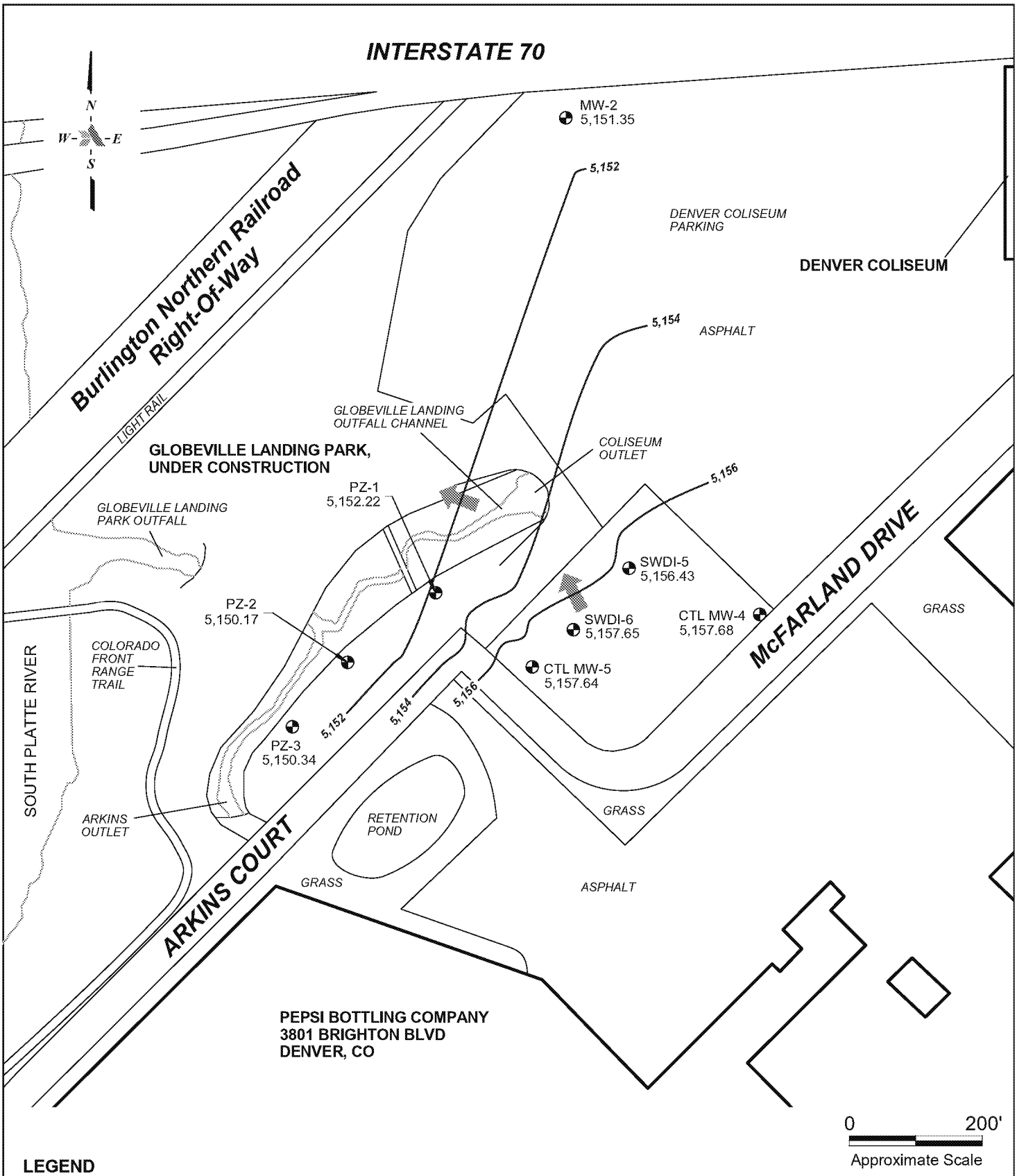
FIGURE 5 - Groundwater Elevations (7/12/2019)

Vasquez Boulevard / Interstate 70 Superfund Site Operable Unit 2, Denver, CO

Apex Job No. 5622

DATE - 11/6/19 (DP)
FILE - 5622 - F5.dc

APEX



LEGEND

PZ-1 5,152.22 — Piezometer location and groundwater elevation

5,152 — Inferred groundwater elevation contour and flow direction. Contour interval = 2.0 feet

FIGURE 6 - Groundwater Elevations (10/21/2019)

Vasquez Boulevard / Interstate 70 Superfund Site Operable Unit 2, Denver, CO

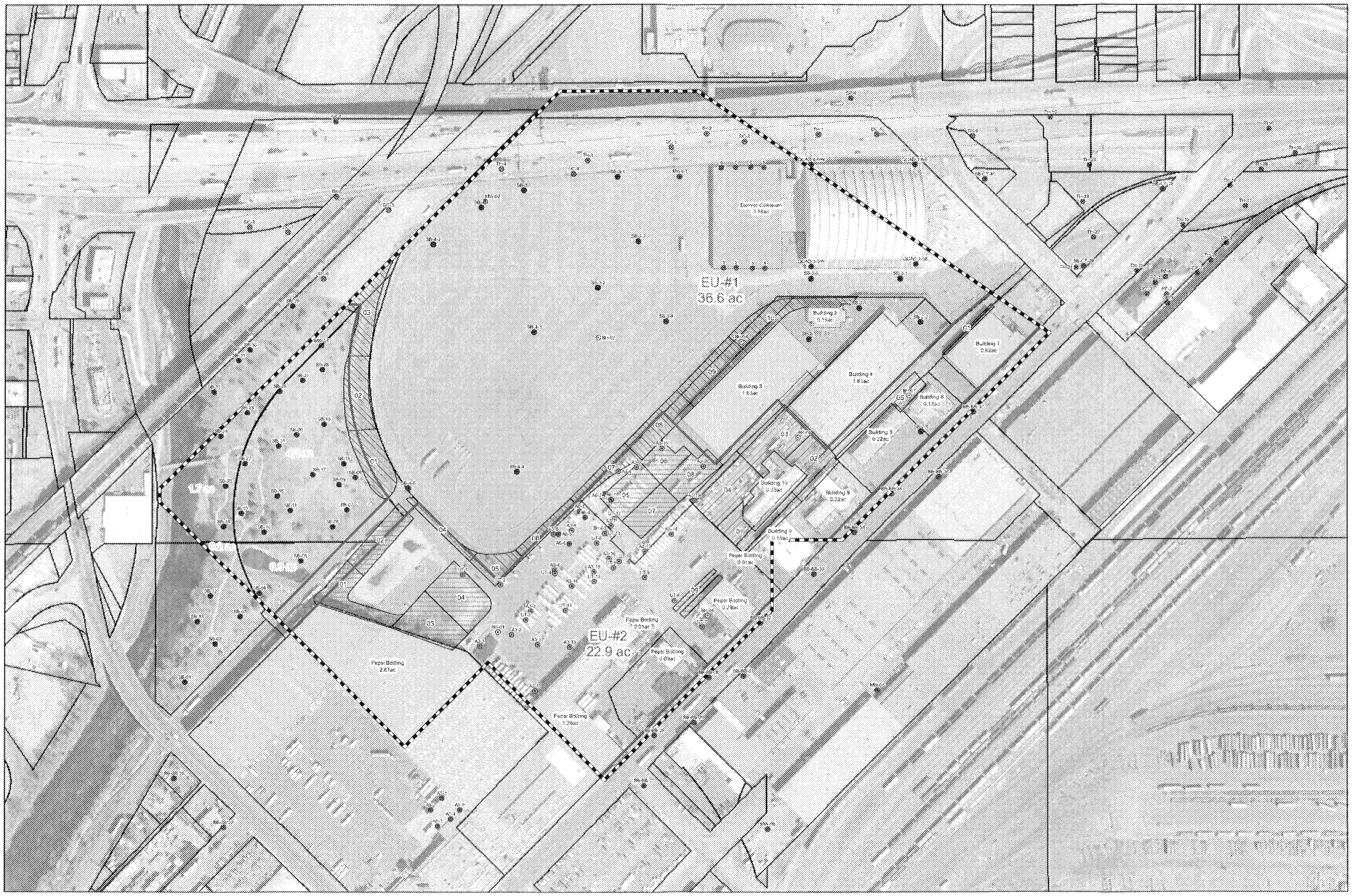
Apex Job No. 5622

DATE - 11/6/19 (DP)
FILE - 5622 - F6.dc

APEX

APPENDIX D

2009 HHRA Figures 3-4 and 3-5



Legend

- 2008 Drilling
- Other CDOT Holes
- Barn Samples
- Pepsi Area 3 Soil Samples
- Pepsi Area 5 Soil Samples
- Pepsi Area 6 Soil Samples
- BB-BB-xx Holes
- BH Soil Samples
- MW Holes
- QUAD Samples
- SB Soil Samples
- CDOT Holes
- Pepsi UT (Utility Trenches) Soil Locations
- 3801 Brighton Blvd
- 4201 Brighton Blvd
- 4301 Brighton Blvd
- 4375 Brighton Blvd
- 4600 Humbolt Blvd
- OU2 Boundary

OU-#2 - Total Area = 67.4 ac

	Total Area	Total Area of Buildings	Total Open Area
EU-#1	36.6 ac	6.6 ac	30.0 ac
EU-#2	22.9 ac	6.0 ac	16.9 ac

Total Area of Buildings = 12.6 ac

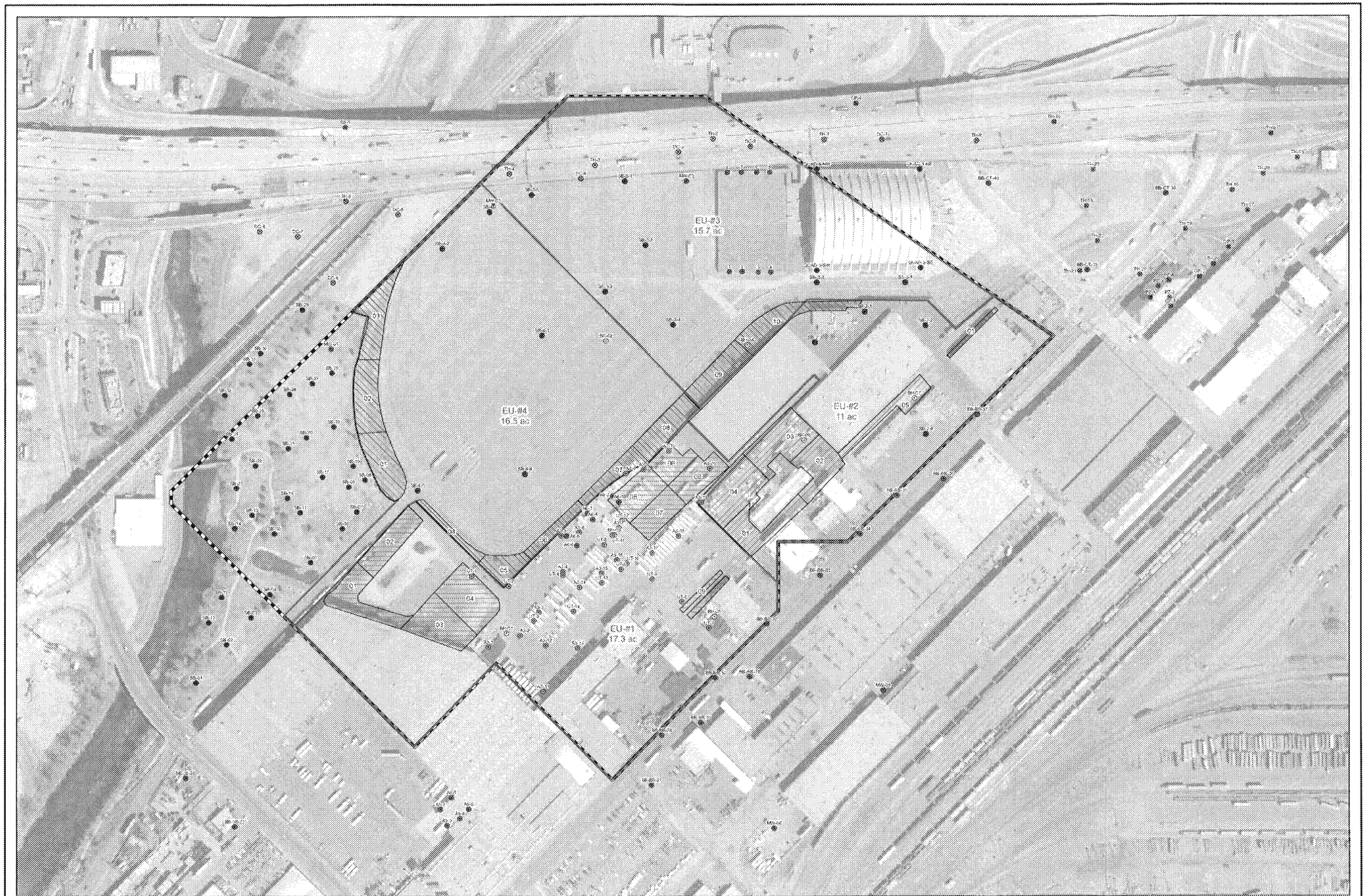
Number of Sample Locations
EU-#1 = 12
EU-#2 = 75

0 87.5 175 350 525 700
Feet
1 inch = 175 feet

N

Figure 3-4
Exposure Units Commercial/Industrial
VB I70 Study

EMSI Engineering Support Management, Inc.



Legend

- 2005 Drilling
- Other CDOT Holes
- Barn Samples
- Pepsi Area 3 Soil Samples
- Pepsi Area 5 Soil Samples
- Pepsi Area 6 Soil Samples
- BB-BB-xx Holes
- BH Soil Samples
- MW Holes
- QUAD Samples
- SB Soil Samples
- CDOT Holes
- Pepsi UT (Utility Trenches) Soil Locations
- 3801 Brighton Blvd
- 4201 Brighton Blvd
- 4301 Brighton Blvd
- 4375 Brighton Blvd
- 4500 Humbolt Blvd
- Exposure Unit Boundary
- OU2 Boundary

OU-#2 - Total Area = 67.4 ac

	Total Area	Total Area of Buildings	Total Open Area
EU-#1 --	17.3 ac	4.3 ac	13.0 ac
EU-#2 --	11.0 ac	5.1 ac	5.9 ac
EU-#3 --	16.0 ac	3.2 ac	12.8 ac
EU-#4 --	16.2 ac	0.0 ac	16.2 ac

Total Area of Buildings = 12.6 ac

Number of Sample Locations
EU-#1 = ~70
EU-#2 = ~ 5
EU-#3 = 10
EU-#4 = ~ 2

0 87.5 175 350 525 700
Feet
1 inch = 175 feet

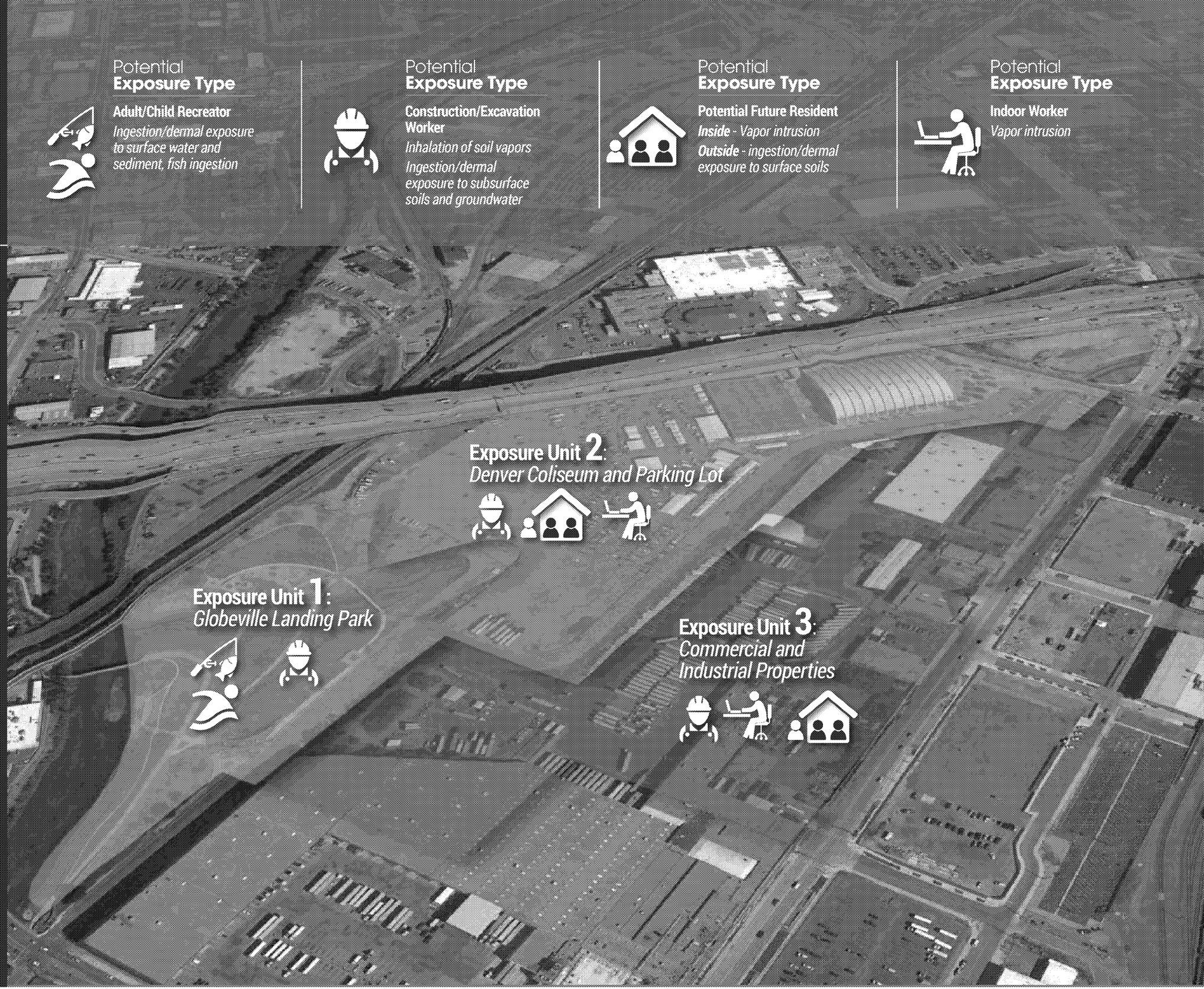
Figure 3-5
Exposure Units Locations
for Multi-Family/Residential
VB I70 Study

EMSI Engineering Support Management, Inc.

ATTACHMENT 3
Conceptual Site Model Pictorial

VB/I70 OU2
CSM Schematic

This pictorial provides a conceptual site model (CSM) of Operable Unit 2 (OU2) at the Vasquez Boulevard & Interstate 70 (VB/I 70) Superfund site located in northeast Denver, Colorado. OU2 consists of approximately 60 acres of the VB/I70 Superfund site formerly occupied by the Omaha & Grant smelter facility which operated from 1882 to 1903. Currently OU2 includes a portion of the Globeville Landing Park, the Denver Coliseum, and surrounding industrial and business sites. This pictorial depicts the potential exposure pathways at OU2 based on knowledge of historical operations and environmental data collected to date; however, environmental investigations and completion of a risk assessment is still underway. As such, the potential exposures indicated in this pictorial are conceptual in nature and subject to change pending completion of the remedial investigation and human health risk assessment.



ATTACHMENT 4
Uranium and Thorium Background Review

Attachment 4

Uranium and Thorium Background Concentration Review

Introduction

Radionuclides are found as trace elements in most soils, rock, and groundwater and are formed principally by the radioactive decay of uranium-238 and thorium-232. The Community Advisory Group (CAG) for the Vasquez Boulevard Interstate 70 Superfund Site requested inclusion of uranium and thorium in the additional analysis of groundwater at Operable Unit 2 (OU2). As a follow-up to the request from the CAG, EPA requested a literature search and analysis of background levels of uranium and thorium in the Denver Basin aquifer in their comment letter provided to the City and County of Denver (CCoD) on July 15, 2019 (EPA, 2019). Stantec has conducted a literature review and the findings are summarized by each element below.

Uranium

The EPA drinking-water standard for uranium is 30 micrograms per liter (µg/L) (US EPA 2001; CDPHE, 2016). Groundwater sampling conducted in 2016 from temporary piezometers installed in the Globeville Landing Park (i.e., TH-45, -46, -47, -48, -52) showed concentrations at or slightly above the EPA screening level of 30 µg/L at four locations (30 to 41 µg/L) and just below the screening level at two of the locations (28 and 29 µg/L). A literature review of regional aquifer data was conducted to evalute how naturally occurring values compare to the uranium concentrations in groundwater at OU2. OU2 is within the Denver Basin aquifer system, where uranium is a common element naturally present in the rocks and minerals within the aquifer soils and sediments.

United States Geological Survey (USGS) documents were searched and reviewed for information regarding uranium levels in the Denver Basin aquifer. The *USGS Circular 1357: Water Quality in the Denver Basin Aquifer System, Colorado* (USGS report) provided some insight into the presence of uranium within the Denver Basin (Bauch et. al, 2014). The USGS report summarizes the major findings of a regional assessment of water quality in the Denver Basin aquifer system conducted as part of the USGS National Water-Quality Assessment (NAWQA) Program. The report documents the geology of the aquifer and describes how the rocks and minerals of the Denver Basin soils and aquifer sediments are natual geologic sources of uranium as well as arsenic, manganese, radon, and selenium. The quality of the shallow groundwater underlying agricultural and urban areas was also evaluated and summarized using groundwater data collected under the NAWQA Program. Samples were collected at 60 monitoring wells installed as part of the NAWQA Program. Exhibit 1 below shows a screen capture of Figure 2-1 and Table 2-1 from the USGS report for reference of the wells that were sampled as part of the water quality assessment of the aquifer.

DRAFT

Attachment 4

Uranium and Thorium Background Concentration Review

Exhibit 1: Screen Capture from USGS Circular 1357: Water Quality in the Denver Basin Aquifer System, Colorado showing the monitoring network used in the NAWQA Program.

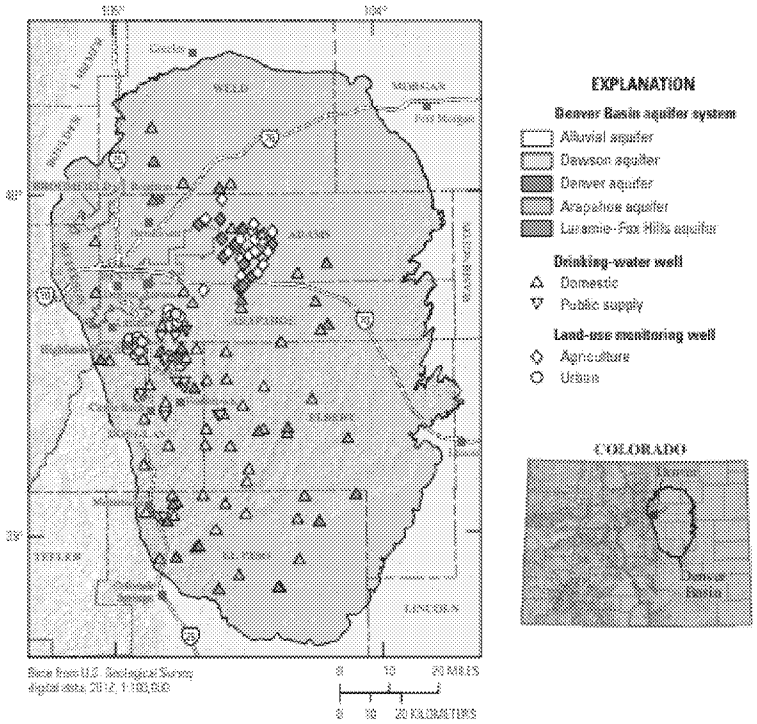


Figure 2–1. The wells sampled by the NAWQA Program for the study of groundwater quality in the Denver Basin were deep drinking-water wells used for domestic and public supply in rural and urban settings or shallow monitoring wells near the water table underlying agricultural and urban areas.

Table 2–1. The objectives of the different studies determined the types of wells sampled in the Denver Basin. Some studies focused on sampling wells screened at deeper depths that represent the part of the aquifers used for drinking water, whereas others (termed land-use studies) focused on sampling water from monitoring wells screened just below the water table to assess the quality of shallow groundwater underlying agricultural and urban areas.

Resource targeted	Number of wells			Well depth range, in feet below land surface	Aquifer
	Domestic supply	Public supply	Monitoring		
Drinking water	75	15	0	130–2,149	Dawson, Denver, Arapahoe, Laramie–Fox Hills
Shallow groundwater in agricultural areas	0	0	31	18–113	Alluvial, Denver
Shallow groundwater in urban areas	0	0	29	18–82	Alluvial, Dawson
Total	**75**	**15**	**60**	**8–2,149**	**Alluvial, Dawson, Denver, Arapahoe, Laramie–Fox Hills**

Attachment 4

Uranium and Thorium Background Concentration Review

The USGS report notes the following with regards to uranium in the Denver Basin aquifer system:

Page 46: "*Two factors control concentrations of uranium in Denver Basin groundwater: (1) whether the soils and aquifer sediments contain uranium and (2) whether the groundwater contains dissolved oxygen. Irrigation in agricultural and urban areas has increased the volume of oxic* [conditions were free molecular oxygen is available for biogeochemical processes] *recharge water that can react with shallow uranium-rich materials in the subsurface, leading to elevated concentrations of uranium in shallow groundwater.*"

"The reaction between uranium-rich aquifer sediments and oxic recharge water causes uranium, a radionuclide, to be released into groundwater. As a result, high concentrations (greater than 30 µg/L) in the Denver Basin aquifer system were detected about 25 times more frequently in samples of shallow groundwater than in samples from deeper groundwater used for drinking-water supply (fig. 6–1)."

"Samples from the shallow aquifer system contained concentrations of dissolved uranium as high as ***941 µg/L*** *(the maximum concentration measured in all Denver Basin groundwater samples), and almost all of the samples were oxic. In contrast, concentrations of uranium in groundwater samples collected from deeper parts of the aquifer system typically were low and only one contained uranium at a concentration exceeding the MCL; most of these samples were anoxic."*

As summarized in the USGS report, recharge of oxic irrigation water can mobilize uranium from geologic sources present in aquifer materials. The geology of the Denver Basin aquifer combined with the recharge of oxic water from irrigation has led to levels of uranium in the shallow groundwater above the EPA screening level. As such, the uranium concentrations observed in the shallow groundwater sampling conducted at the OU2 are not considered elevated relative to the general aquifer conditions summarized in the USGS report and additional sampling and analysis of uranium at OU2 is not recommended.

Thorium

The groundwater comparison standard for the most prevalent naturally occurring isotope thorium 232 is 60 picocuries per liter (pCi/L) (CDPHE, 2016). Groundwater from OU2 wells at the four corners of the Coliseum (QUAD-1 through QUAD-4) was sampled and analyzed for total thorium in 2015. Concentrations of total thorium ranged from 0.16 to 1.2 µg/L. The groundwater concentrations of 0.16 and 1.2 µg/L are equivalent to 0.018 and 0.13 pCi/L for thorium 232.

No specific background concentration information for the Denver Basin aquifer system was identified for thorium. However, since thorium concentrations from groundwater sampling conducted in 2015 are well below the groundwater comparison standard of 60 pCi/L and thorium is a naturally occurring compound, no additional sampling for thorium in groundwater at OU2 is recommended.

References

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