BERKELEY LAB

Environment / Health / Safety
DIVISION

August 7, 2013

Ref. No.: ES-13-115a

Mr. Jacinto Soto
Department of Toxic Substances Control
700 Heinz Ave., Suite 200
Berkeley, CA 94710-2737

Subject: Submittal of Lawrence Berkeley National Laboratory Semiannual Progress Report, First and Second Quarters Fiscal Year 2013

Dear Mr. Soto:

Enclosed please find Lawrence Berkeley National Laboratory's (LBNL) *Semiannual Progress Report, First and Second Quarters Fiscal Year 2013*. The report summarizes the environmental restoration activities conducted at LBNL from October 1, 2012 to March 31, 2013 as part of the RCRA Corrective Action Program.

Please contact David Baskin at (510) 486-5684 or Ron Pauer at (510) 486-7614 if you have any questions or require additional information.

Sincerely,

Jim Floyd
Division Director
Environment / Health / Safety
Lawrence Berkeley National Laboratory

Aundra Richards
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enclosure:

LBNL Semiannual Progress Report, First and Second Quarters Fiscal Year 2013

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Lawrence Berkeley National Laboratory
Environmental Services Group
Environmental Restoration Program

Semiannual Progress Report
First and Second Quarters Fiscal Year 2013
(October 1, 2012 to March 31, 2013)

August 2013

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SEMIANNUAL PROGRESS REPORT

FIRST AND SECOND QUARTERS FISCAL YEAR 2013
(October 1, 2012 to March 31, 2013)

for the
Lawrence Berkeley National Laboratory
Hazardous Waste Facility Permit

Environment/Health/Safety Division
Lawrence Berkeley National Laboratory
Berkeley, CA 94720

August 2013

Owner: United States Department of Energy
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SEMIANNUAL PROGRESS REPORT
FIRST AND SECOND QUARTERS FISCAL YEAR 2013
(October 1, 2012 to March 31, 2013)

for the
Lawrence Berkeley National Laboratory
Hazardous Waste Facility Permit

August 2013

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ABBREVIATIONS

BC	BC Laboratories, Inc.
Cal-EPA	California Environmental Protection Agency
CAP	Corrective Action Program
CCV	Continuing Calibration Verification
CDPH	California Department of Public Health
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
COC	Chemical of Concern
C&T	Curtis and Tompkins Laboratories
DCA	Dichloroethane
DCE	Dichloroethene
DO	Dissolved Oxygen
DOE	U.S. Department of Energy
DTSC	Cal-EPA Department of Toxic Substances Control
EBMUD	East Bay Municipal Utility District
E/H/S	Environment/Health/Safety Division
EML	LBNL Environmental Measurement Laboratory
ERP	Environmental Restoration Program
FY	Fiscal Year (October 1 to September 30)
GAC	Granular Activated Carbon
HRC	Hydrogen Release Compound®
HWHF	Hazardous Waste Handling Facility
HQ	Hazard Quotient
ICM	Interim Corrective Measure
ICV	Initial Calibration Verification
ILCR	Incremental Lifetime Cancer Risk
LBNL	Lawrence Berkeley National Laboratory
MCL	Maximum Contaminant Level
MCS	Media Cleanup Standard
MDA	Minimum Detectable Activity
mg/kg	milligrams per kilogram
MIPS	Membrane Interface Probe System
MNA	Monitored Natural Attenuation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
µg/L	micrograms per liter (10^{-6} grams per liter)
NA	Not Analyzed
ND	Not Detected
NTLF	National Tritium Labeling Facility
PCBs	Polychlorinated Biphenyls
PCA	Tetrachloroethane
PCE	Tetrachloroethene (Perchloroethene)
pCi/L	picocuries per liter (10^{-12} curies per liter)

PQL	Practical Quantitation Limit
QA	Quality Assurance
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RL	Reporting Limit
SVE	Soil Vapor Extraction
SWRCB	State Water Resources Control Board
TCE	Trichloroethene
TPH	Total Petroleum Hydrocarbons
TPH-D	Total Petroleum Hydrocarbons-Diesel Range
TRBMCS	Target Risk-Based Media Cleanup Standard
UC	University of California
USEPA	U. S. Environmental Protection Agency
UST	underground storage tank
VFA	Volatile Fatty Acid
VOC	Volatile Organic Compound
Water Board	San Francisco Bay Regional Water Quality Control Board

EXECUTIVE SUMMARY

This semiannual progress report describes the Resource Conservation and Recovery Act (RCRA) Corrective Action Program (CAP) activities conducted by Lawrence Berkeley National Laboratory (LBNL) during the first and second quarters of fiscal year 2013 (FY13) (October 1, 2012 to March 31, 2013), the current reporting period. These activities consist primarily of continued operation of the corrective measures approved by the California Environmental Protection Agency Department of Toxic Substances Control (DTSC) to clean up contaminated groundwater as well as monitoring groundwater quality to assess progress towards achieving the required groundwater cleanup levels. The groundwater monitoring data indicate that the corrective measures continue to be effective in reducing concentrations of contaminants in the groundwater, the groundwater plumes are stable or attenuating, and contaminants are not migrating offsite. In addition to discussing the RCRA CAP-required activities, this report describes the results of environmental investigations conducted in compliance with LBNL's standard practice of evaluating potential impacts to human health or the environment at demolition and construction sites.

LBNL is currently in the Corrective Measures Implementation (CMI) phase of the CAP. The corrective measures required for contaminated soil were all completed by the end of 2006. The corrective measures required for groundwater have been implemented and are currently in the operation, maintenance, and monitoring stage. The groundwater cleanup measures consist of *in situ* soil flushing and groundwater capture, subsurface injection of Hydrogen Release Compound® (HRC), Soil Vapor Extraction (SVE), and Monitored Natural Attenuation (MNA). A listing of the measures is provided in the summary on the following page.

Volatile organic compounds (VOCs) are the Chemicals of Concern (COCs) in groundwater at LBNL. Cleanup of the groundwater to the DTSC-approved target risk-based Media Cleanup Standards (TRBMCSs) is the short-term goal for areas of LBNL where groundwater is not considered a potential drinking water source (i.e., does not meet State Water Resources Control Board [SWRCB] well yield criteria of at least 200 gallons per day). For areas where groundwater does meet the SWRCB well yield criteria, cleanup to regulatory-based MCSs

Summary of DTSC Approved Corrective Measures for Groundwater

Groundwater Unit	Ongoing Corrective Measure
Building 71B Groundwater Solvent Plume	• *In situ* soil flushing/HRC injection in the source area • Capture and treatment of contaminated Building 51 area hydrauger effluent
Building 51/64 Groundwater Solvent Plume	• *In situ* soil flushing in the source area • MNA in the downgradient plume area[a] • Extraction and treatment of groundwater from the Building 51 subfloor drainage system • Extraction of groundwater from EW51-07-1 and EW51-07-2 to control migration of contaminated groundwater southward under Building 51 • Extraction of groundwater from EW51B-07-1 and EW51B-07-2 to control potential downgradient migration
Building 51L Groundwater Solvent Plume	• Extraction and treatment of groundwater from EW51L-06-1 and EW51A-06-1 • Extraction and treatment of subdrain effluent from the concrete sump installed inside Building 51A
Building 7 Lobe Old Town Groundwater Solvent Plume	• *In situ* soil flushing in the source area (Building 7 Groundwater Collection Trench) downgradient of the former Building 7 sump location • In situ soil flushing in the core area downgradient from the Building 7 Groundwater Collection Trench • Operation of the Building 58 West and Building 58 Southeast Groundwater Collection Trenches and groundwater extraction well EW58-07-1 to control plume migration • Dual-phase (groundwater and soil vapor) extraction on the Building 53/58 slope • Extraction and treatment of water from a concrete sump (SB58-98-4) • MNA for contaminants in the peripheral plume areas
Building 52 Lobe Old Town Groundwater Solvent Plume	• *In situ* soil flushing in the source area • Collection and treatment of groundwater from the Building 46 subdrain at the downgradient lobe margin • Injection of treated water into IW53-09-1 and IW53-09-2 to prevent migration of Building 7 lobe groundwater contaminants into the Building 52 lobe area
Building 25A Lobe Old Town Groundwater Solvent Plume	• *In situ* soil flushing (infiltration bed and extraction trench) west of Building 25A in the source area • *In situ* soil flushing south of Building 25 • Extraction and treatment of water from electrical utility manhole EMH-133
Building 69 Area	• MNA in the source area[a]

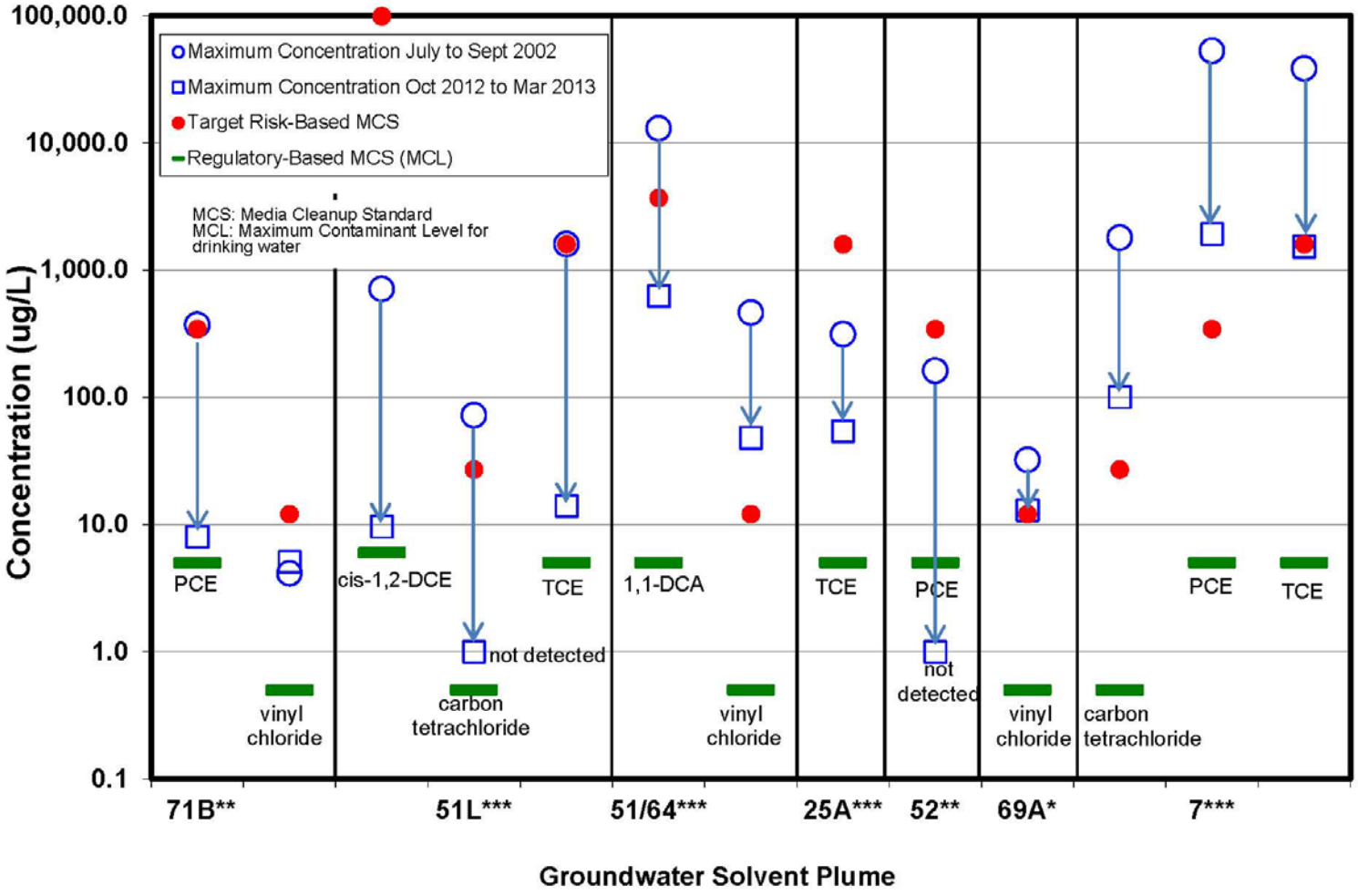
[a]HRC has been injected into the groundwater to enhance natural biodegradation.

(Maximum Contaminant Levels [MCLs] for drinking water) is the short-term goal. However, since the SWRCB designates all groundwater in California potentially suitable for domestic supply unless it has been formally de-designated, the overall long-term goal for all groundwater at LBNL is the reduction of groundwater concentrations to MCLs, if practicable. The groundwater at LBNL is not used for domestic, irrigation, or industrial purposes; drinking water is supplied by the East Bay Municipal Utility District (EBMUD).

The progress of corrective measures is illustrated on the graph on the following page. The graph shows that where corrective measures are required, the maximum concentrations of the primary COCs have been substantially reduced since the start of the Corrective Measures Study (CMS) phase of the CAP in 2002. Similar reductions have been observed in most of the other COCs detected at each groundwater unit. The slight increase in the concentration of vinyl chloride observed in the Building 71B plume is likely the result of the biodegradation of other chlorinated compounds by reductive dechlorination.

Seventeen wells are used to monitor the potential migration of contaminated groundwater beyond the developed areas of the LBNL site. One well has not been sampled since 2010 because it has been dry. Except for MWP-7, no VOCs were detected in the 16 perimeter wells sampled during the current reporting period. Concentrations of VOCs detected in MWP-7, located well within the site perimeter, have been below MCLs for drinking water since February 2000.

The Building 75 Tritium Plume extends southwards from the Corporation Yard (the area between Buildings 69 and 75) toward Chicken Creek. Concentrations of tritium detected in wells monitoring the plume have continued to decline since closure of the National Tritium Labelling Facility (NTLF) in December 2001, with a concurrent reduction in the lateral extent of the plume. Detected concentrations of tritium in the groundwater have been below the MCL for drinking water (20,000 pCi/L) since February 2005, with a maximum detected concentration of 12,000 pCi/L during the current reporting period. Tritium has also been sporadically detected in groundwater near Building 71B, with concentrations also declining since closure of the NTLF.



*MCLs are the long-term goal but are not a required MCS for this plume.
**MCLs are the required MCS for this plume.
***MCLs are the required MCS for only part of this plume but are a long- term goal for the entire plume.

Cleanup Progress for Principal Contaminants at Groundwater Units Where Corrective Measures are Required

Selected groundwater samples were analyzed for petroleum hydrocarbons and polychlorinated biphenyls (PCBs) during the current reporting period. Low concentrations of petroleum hydrocarbons in the diesel range (TPH-D) were detected at one of the two former underground storage tank (UST) sites where samples were collected. The results are consistent with the historical data in which relatively low concentrations of petroleum hydrocarbons (e.g. diesel or kerosene) have occasionally been detected at three former UST sites, but no aromatic VOCs (e.g. benzene, toluene, etc.) have been detected. PCBs were detected in one of two groundwater samples collected beneath the area of the former Building 51 Motor Generator Room Basement. The results are consistent with historical data in which low concentrations of PCBs have been detected in the groundwater beneath the basement.

Groundwater samples are collected annually in the areas where MNA is a component of the approved corrective measure and analyzed for VOC concentrations and hydrochemical parameters indicative of the potential for biodegradation. The analytical results continue to indicate that conditions are favorable for reductive dechlorination of halogenated VOCs.

Semiannual surface water samples were collected from seven creeks that carry runoff from LBNL and analyzed for VOCs and metals. Samples were also collected from two of the creeks and analyzed for tritium. No VOCS were detected. Detected metals concentrations were consistent with historical results and are likely naturally occurring. Tritium was not detected in the North Fork of Strawberry Creek, but was detected in Chicken Creek (440 pCi/L). The detected concentration is well below the MCL for drinking water of 20,000 pCi/L. The occasional detection of low concentrations of tritium in Chicken Creek is consistent with historical results, with concentrations showing a declining trend since closure of the NTLF.

As a component of the *in situ* soil flushing corrective measure, VOC-contaminated groundwater is extracted and treated using granular activated carbon (GAC) filters. During the current reporting period more than 7 million gallons of water were treated, with more than 147 million gallons treated to date. Most of the treated water is injected into the subsurface for *in situ* soil flushing purposes. The remainder is discharged to the sanitary sewer in accordance with the provisions of LBNL's EBMUD Wastewater Discharge Permit for groundwater treatment system discharges.

Between September 2010 and February 2012, LBNL investigated potential subsurface contamination beneath the Building 51 Demolition Project area. During these investigations, VOC-contaminated soil and groundwater were detected in two discrete areas: 1) under the former Building 51 Vacuum Pump Room area and 2) beneath the former location of Building 51A. During the current reporting period, additional soil samples were collected from borings in the former Building 51A area to more accurately delineate the extent of soil contamination that might require remedial action. Additional soil samples were also collected in the former Building 51 Vacuum Pump Room area to help delineate the lateral and vertical extent of contamination in the area where the highest concentrations of VOCs had previously been detected in the soil.

Modification of the Building 25A *in situ* soil flushing system was required due to the demolition of Buildings 25A and 25 and construction of the Solar Energy Research Center (SERC) at the former Building 25A location. The modifications, which had begun during the previous reporting period, were completed during the current reporting period with the construction of two replacement groundwater monitoring wells.

1. INTRODUCTION

1.1 PURPOSE AND SCOPE

This semiannual progress report describes Resource Conservation and Recovery Act (RCRA) Corrective Action Program (CAP) activities conducted at Lawrence Berkeley National Laboratory (LBNL) from October 1, 2012 to March 31**,** 2013 (first and second quarters of fiscal year 2013 [FY13]), the current reporting period. The primary purpose of this report is to document the progress of the corrective measures implemented by LBNL toward achieving the required RCRA CAP groundwater cleanup levels (Media Cleanup Standards [MCSs]). An additional purpose is to document the status of site groundwater plumes.

From August 1993 to February 2012, progress reports were submitted to the California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC) on a quarterly basis (LBNL, 1993-2012). In February 2012, DTSC approved a revision in the progress report submission schedule that changed the reporting period from quarterly to semiannually. The semiannual reports are currently submitted to DTSC at the end of August (for the first and second quarters of the fiscal year [October through March]) and the end of February (for the third and fourth quarters of the fiscal year [April through September]) (LBNL, 2012-2013). In contrast to the August progress report, which includes data only for the semiannual reporting period, the progress report submitted in February provides comprehensive tables of historical data for volatile organic compounds (VOCs) in groundwater and a four-quarter tabulation of concentrations for other analytes in groundwater. The February report also provides a more complete discussion of the status of the implemented corrective measures, including graphs showing groundwater contaminant concentration trends.

The progress reports also provide the results of environmental investigations conducted in compliance with LBNL's standard practice of evaluating potential impacts to human health or the environment at demolition/construction sites.

1.2 BACKGROUND

The LBNL Hazardous Waste Handling Facility (HWHF) operates under a RCRA Part B Hazardous Waste Facility Permit issued by the DTSC. The Permit requires LBNL to investigate and address all releases of hazardous waste and hazardous constituents that may have occurred at the site, in accordance with RCRA requirements. These activities have been the responsibility of the LBNL Environmental Restoration Program (ERP), which is a program of the Environmental Services Group of the LBNL Environment, Health, Safety Division (E/H/S).

On April 2, 2007, LBNL submitted its *RCRA Corrective Measures Implementation (CMI) Report* to the DTSC (LBNL, 2007). The CMI Report provided a consolidated record of the construction and implementation of the approved corrective measures. The DTSC-approved corrective measures required for contaminated soil were all completed by the end of 2006. The DTSC-approved corrective measures for groundwater are in the long-term operation, maintenance, and monitoring stage. These measures include *in situ* soil flushing and groundwater capture systems, subsurface injection of Hydrogen Release Compound® (HRC), Soil Vapor Extraction (SVE), and Monitored Natural Attenuation (MNA).

1.3 SITE DESCRIPTION

LBNL is a multi-program scientific research campus operated by the University of California (UC) for the United States Department of Energy (DOE). From an initial emphasis on nuclear physics research in the 1940s, LBNL has grown into a multi-program scientific research facility that supports research in the physical, energy, life, and environmental sciences, and in high performance computing. It is located on a 202-acre parcel of UC Regents' land in the Berkeley/Oakland Hills in Alameda County, California (Figure 1). The western portion of LBNL is in the City of Berkeley and the eastern portion is in Oakland. A map of the site showing the locations of site creeks and the surface topography is included as Figure 2.

For reporting purposes, the RCRA Facility Assessment (RFA) (LBNL, 1992) subdivided LBNL into 15 study areas. The subsequent RCRA Facility Investigation (RFI) consolidated the 15 RFA areas into 4 areas (Bevalac, Old Town, Support Services, and Outlying) based on the locations of groundwater plumes, the direction of groundwater flow, and potential contaminant

migration pathways (LBNL, 2000). Note that the Outlying Areas consists of three geographically discrete subareas (Northeastern, Southeastern, and Western). Figures and tables presented in this report are organized based on these four areas. The locations of the four Module areas and the 15 RFA Areas are shown on Figure 3.

1.4 TERMINOLOGY

Groundwater contaminant plumes presented in this report are described using the terminology listed in Table 1-1 below to refer to relative directions and zones within each plume.

Table 1-1 Groundwater Plume Terminology

Term	Definition
Plume	A volume of contaminated groundwater that extends outward in the direction of contaminant migration (primarily the groundwater flow direction) from a source of contamination.
Upgradient	In the direction from which groundwater flows (direction toward greater hydraulic head).
Downgradient	In the direction of groundwater flow (direction toward lesser hydraulic head).
Crossgradient	In the direction perpendicular to groundwater flow.
Source	The location where the contaminant was released to the environment.
Core	The area of relatively high contaminant concentrations extending downgradient from the source.
Plume-Periphery	Downgradient or crossgradient from the core near the plume margins.
Background	Upgradient or crossgradient from the plume where wells are not affected by contamination.
Offsite	Outside the property boundary.

2. ENVIRONMENTAL ACTIVITIES CONDUCTED DURING THE CURRENT REPORTING PERIOD

2.1 GROUNDWATER MONITORING

2.1.1 Groundwater Monitoring Program Summary

The primary purpose of groundwater sampling during the CMI phase of the CAP is to monitor the effectiveness of the implemented corrective measures toward achieving the required groundwater MCSs. The data are also used to demonstrate that site groundwater plumes are stable or attenuating and that the plumes are not migrating offsite. To accomplish these objectives, groundwater samples are collected from groundwater monitoring wells and analyzed for VOCs in accordance with the schedule (LBNL, 2005a) approved by the San Francisco Regional Water Quality Control Board (Water Board) and the DTSC (Water Board, 2005). In addition, groundwater samples collected from temporary groundwater sampling points and groundwater extraction wells are analyzed for VOCs to obtain supplemental data to support these objectives.

Selected groundwater samples are also analyzed for metals, polychlorinated biphenyls (PCBs), total petroleum hydrocarbons (TPH), and tritium to obtain additional information on groundwater quality. Samples for metals analysis are collected in accordance with a schedule (LBNL, 2005a) approved by the Water Board and DTSC. Tritium samples are collected in accordance with a DOE-approved schedule (LBNL, 2012a). Radionuclides, including tritium at LBNL, are not regulated under RCRA, but are addressed under the oversight of the DOE. Although not regulated under RCRA, radionuclide data have been included in these progress reports in order to provide a comprehensive evaluation of the status of site contaminants.

Groundwater samples are also periodically collected from slope stability wells and hydraugers (subhorizontal hillside drains). Slope stability wells and hydraugers, although not installed for groundwater monitoring purposes, provide supplemental information that is useful in helping to assess plume geometry.

Samples from selected monitoring wells and temporary groundwater sampling points have also been analyzed annually (second quarter) for hydrochemical parameters (e.g. dissolved

oxygen, nitrate, etc.) indicative of the potential for biodegradation. The purpose of this sampling is to provide the data necessary to assess the potential effectiveness of MNA and/or enhanced bioremediation for achieving the required MCSs.

The locations of slope stability wells are shown on Figure 4. The locations of groundwater monitoring wells, temporary groundwater sampling points, groundwater extraction wells, and hydraugers are shown on Figure 5 and Figures 6a through 6h. The complete list of VOC (Method 8260) analytes and quantitation limits (assuming no sample dilution) for each laboratory utilized during the current reporting period is provided in Table 1. A listing of analytical methods used for groundwater sampling at each of the sampling locations during the current reporting period is presented in Table 2. Groundwater elevation data are presented in Table 3. Groundwater monitoring well construction details are presented in Table 4. Groundwater analytical results for each of the site areas and types of sampling locations are provided in the tables listed in the index in Table 2-1 below.

Table 2-1 Groundwater Analytical Results Index

		Table Number			
Analyte	**Area**	**Groundwater Monitoring Wells**	**Temporary Groundwater Sampling Points**	**Groundwater Extraction Wells**	**Hydraugers**
Volatile Organic Compounds (VOCs)	Bevalac	5-1	5-2, 5-4[b], and 10	5-3	9
	Old Town	6-1	6-2	6-3	–
	Support Services	7-1	7-2	–	–
	Outlying	8	–	–	–
Tritium[a]	Support Services and Bevalac	12	12	–	–
Petroleum Hydrocarbons	Support Services and Outlying	13	13	–	–
Polychlorinated Biphenyls (PCBs)	Bevalac		14		
Hydrochemical Indicator Parameters	Sitewide	17	17		

(a) Includes results for four quarters.
(b) Table 5-4 provides results of samples collected from temporary groundwater sampling points installed to investigate subsurface contamination in the Building 51 and Bevatron Demolition Project area.

Each of the tables listing VOC concentrations is subdivided into halogenated non-aromatic compounds, which are primarily derived from solvents, and aromatic or nonhalogenated compounds, which are primarily derived from petroleum products. In order to simplify the reporting tables, the VOC result tables only list the principal VOCs historically detected at the site and not all the analytes. Additional analytes detected during the current reporting period are listed in Table 10.

2.1.2 Monitoring the Implemented Corrective Measures (Halogenated Volatile Organic Compounds)

2.1.2.1 Corrective Measures Requirements

The *Corrective Measures Study (CMS) Report* (LBNL, 2005b) recommended that corrective measures be implemented in seven areas of solvent-contaminated groundwater. These seven areas are listed in Table 2-2 below, which also lists the corresponding figure numbers for the groundwater elevation maps and isoconcentration contour maps of total halogenated hydrocarbons in groundwater for the current reporting period. The locations of the seven areas are shown on Figure 7.

Table 2-2 Groundwater Monitoring Figure Index Locations Where Corrective Measures are Required

	Figure Number	
Plume or Area of Groundwater Contamination	**Isoconcentration Contour Map Total Halogenated Hydrocarbons**	**Water Level Elevation Map**
Bevalac Area		11
Building 71B Solvent Plume	8	
Building 51/64 Solvent Plume	8 &9	
Building 51L Solvent Plume	8 & 10b	
Old Town Area		14
Old Town Solvent Plume Building 7 Lobe	12,13	
Old Town Solvent Plume Building 52 Lobe	12	
Old Town Solvent Plume Building 25A Lobe	12	
Support Services Area		16
Building 69A Area of Groundwater Contamination	15	

The primary objective of the corrective measures for these seven areas is to reduce concentrations below either risk-based or regulatory-based MCSs, as applicable. Regulatory-

based MCSs (i.e. Maximum Contaminant Levels [MCLs] for drinking water) are applicable to the areas where groundwater characteristics (i.e. yields) meet State Water Resources Control Board (SWRCB) criteria for potential sources of drinking water, as defined by SWRCB Resolution 88-63. Less stringent risk-based MCSs are applicable for the areas that do not constitute potential sources of drinking water. The overall long-term goal for all groundwater at LBNL is to reduce contaminant concentrations to MCLs for drinking water, if practicable (LBNL, 2005b). However, it should be noted that groundwater at LBNL is not used for domestic, irrigation, or industrial purposes and drinking water is supplied by the East Bay Municipal Utility District (EBMUD).

Two sets of risk-based MCSs were developed in the *Corrective Measures Study (CMS) Report* (LBNL, 2005b): 1) target risk-based MCSs (TRBMCSs) and 2) upper-limit risk-based MCSs. The TRBMCSs were based on a theoretical Incremental Lifetime Cancer Risks (ILCR) of 10^{-6} (the lower bound of the United States Environmental Protection Agency [USEPA] risk management range) and a non-cancer Hazard Quotient (HQ) of 1.0. Since the TRBMCSs may not be achievable at some groundwater units due to technical impracticability, upper-limit risk-based MCSs were also developed that represent the upper bound of the risk management range (i.e. a theoretical ILCR of 10^{-4}).

In addition to monitoring groundwater in the seven areas listed above, LBNL monitors groundwater in three other areas where solvent-contaminated groundwater is present. Corrective measures were not required in these areas because the areas do not constitute potential sources of drinking water (SWRCB Resolution 88-63) and concentrations of VOCs in groundwater were below applicable cleanup levels (risk-based MCSs). However, LBNL continues to monitor the groundwater in these areas because VOC concentrations exceed the long-term cleanup goal (MCLs) for all site groundwater. Table 2-3 lists the figure numbers for the isoconcentration contour map of total halogenated hydrocarbons and groundwater elevation maps for the three areas for the current reporting period, and their locations are shown on Figure 7.

Table 2-3 Groundwater Monitoring Figure Index Locations Where Corrective Measures are NOT Required

Plume or Area of Groundwater Contamination	Figure Number: Isoconcentration Contour Map Total Halogenated Hydrocarbons	Figure Number: Water Level Elevation Map
Support Services Area		16
Building 76 Solvent Plume	15	
Building 75/75A Area of Groundwater Contamination	15	
Building 77 Area of Groundwater Contamination[(a)]	15	

[(a)] Concentrations of all VOCs have been below MCLs since 2008.

Two additional areas of groundwater contamination were discovered during investigation conducted in 2011 and 2012 as part of the Building 51 and Bevatron Demolition Project. The report describing the results of the investigation was submitted to the DTSC in August 2012 (LBNL, 2012b). However, the scope and schedule for any further monitoring and/or final corrective actions that might be required have not yet been established. Table 2-4 below lists the figure numbers of the isoconcentration contour maps of total halogenated hydrocarbons and groundwater elevation maps for the two areas for the current reporting period, and their locations are shown on Figure 7.

Table 2-4 Groundwater Monitoring Figure Index for Recently Discovered Areas of Groundwater Contamination

Area of Groundwater Contamination	Figure Number: Isoconcentration Contour Map Total Halogenated Hydrocarbons	Figure Number: Water Level Elevation Map
Bevalac Area		11
Building 51 Vacuum Pump Room Area of Groundwater Contamination	8 & 10a	
Building 51A Area of Groundwater Contamination	8 & 10b	

2.1.2.2 Corrective Measures Effectiveness

The groundwater monitoring data collected at LBNL continue to indicate that: 1) the implemented corrective measures have been effective in reducing contaminant concentrations in the groundwater; 2) the groundwater plumes are stable or attenuating; and, 3) VOCs are not migrating offsite in the groundwater.

To illustrate the effectiveness of the groundwater cleanup measures, comparisons of groundwater plume VOC concentrations between the current reporting period and 1999 are provided on Figures 17, 18, and 19, which show the areal extent of total VOC concentrations exceeding 10 µg/L, 100 µg/L, and 1,000 µg/L, respectively. These comparisons indicate that significant reductions in concentrations of VOCs in groundwater have occurred since 1999. The reductions are the result of both Interim Corrective Measures (ICMs) implemented during the RFI, and the subsequently implemented approved corrective measures.

The extent of groundwater contamination where concentrations of halogenated VOCs exceeded MCLs during the current reporting period is shown on Figure 20. Concentrations of all VOCs that exceeded MCLs for drinking water during the current reporting period, and the specific sampling locations where MCLs and TRBMCSs were exceeded, are listed in Table 11. The maximum concentrations of halogenated VOCs detected above MCLs in each of the twelve areas of solvent-contaminated groundwater discussed above are listed in Table 2-5 below, with concentrations exceeding the TRBMCSs in boldface type.

Seventeen wells monitor for potential migration of contaminated groundwater beyond the developed areas of the site, including one well located outside the site boundary. The locations of these perimeter wells and concentrations of VOCs detected are shown on Figure 21. One of the wells, MW88-93-11A, has not been sampled since 2010 because it has been dry. Except for MWP-7, no VOCs were detected in the 16 perimeter wells sampled during the current reporting period. Trichloroethene (TCE) (at low concentrations of 2.1 µg/L or less) has been the only VOC detected in MWP-7 since 2006, and concentrations of all detected VOCs in the well have been below MCLs for drinking water since February 2000. TCE was detected at a concentration of 2.1 µg/L during the current reporting period.

Table 2-5 Maximum Concentrations (µg/L) of Halogenated VOCs Detected Above MCLs during the First and Second Quarters of FY13

Area	Groundwater Unit	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	VC	CT	1,1,2,2 PCA	Chlor	MC	1,1,1-TCA
	MCL	5	0.5	6	6	10	5	5	0.5	0.5	1	80	5	200
	TRBMCS	3,663	1,030	28,873	98,405	94,405	343	1,594	12	27	NS	1,206	10,381	$1.5x10^6$
Bevalac	Building 71B Lobe				27		8	14	5.1					
	Building 51/64 Plume	624	5.2	60	183	14	53	130	**48**		1.9			
	Building 51L Plume				9.6			14	6.2					
	Former Building 51A[(a)]				36		209	**8,040**	2.1	**1,870**		301	6.9	
	Building 51 Vacuum Pump Room[(a)]	105		22	152			**9,740**	3.1	25				337
Old Town	Old Town Plume													
	Building 7 Lobe			13	61		**1,920**	1,530	5.4	**100**				
	Building 25A Lobe				8.9		5.8	54						
	Building 52 Lobe													
Support Services	Building 69A Area				7.7				**13**					
	Building 75/75A Area				180			11	**45**					
	Building 76 Area							14						
	Building 77 Area[(b)]													

DCA: dichloroethane PCE: tetrachloroethene DCE: dichloroethene PCA: tetrachloroethane
TCE: trichloroethene CT: carbon tetrachloride VC: vinyl chloride TCA: trichloroethane
MC: methylene chloride Chlor: chloroform
TRBMCS: target risk-based Media Cleanup Standard MCL: Maximum Contaminant Level for drinking water
NS: not specified-TRBMCS has not been determined.
Note: Boldface type indicates that the concentration exceeds the TRBMCS.

(a) Recently discovered area of contamination where corrective action requirements have not yet been evaluated.

(b) Concentrations of VOCs have been below MCLs since 2008.

2.1.3 Monitoring Other Chemicals in the Groundwater

2.1.3.1 Aromatic or Non-Halogenated Hydrocarbons

Wells in which aromatic or non-halogenated hydrocarbons were detected during the current reporting period are listed in Table 2-6 below. Results were consistent with previously reported concentrations. Except for benzene in three wells, concentrations of aromatic or non-halogenated hydrocarbons did not exceed MCLs for drinking water.

Table 2-6 Aromatic or Non-Halogenated Hydrocarbons Detected in Groundwater During the First and Second Quarters of FY13

Chemical	MCL (µg/L)	Well Number	Maximum Concentration (µg/L)
Benzene	1	SB51-11-3	4.0
		SB69A-99-1	1.1
		SB75A-09-2	1.0
		MW51-96-16	3.0
		EW30-12-3	1.0
		EW51A-06-1	1.0
n-propylbenzene	no MCL	SB64-02-1	1.3
Toluene	150	SB64-02-1	1.9
		SB64-02-2	1.4
Chlorobenzene	no MCL	SB75A-09-1	2.0
		SB75A-09-2	2.5

2.1.3.2 Tritium

The Building 75 Tritium Plume extends from the Corporation Yard (the area between Buildings 69 and 75) southwards toward Chicken Creek (Figure 22). The source of the plume was the former National Tritium Labeling Facility (NTLF), which operated inside Building 75 for almost 20 years until December 2001. Tritium has also been detected in two other localized areas, near Building 71B and under the central area of former Building 51. Concentrations in these two areas are substantially less than tritium concentrations detected in the Building 75 area.

Concentrations of tritium detected in groundwater from April 2012 through March 2013 are listed in Table 12. An isoconcentration map of the Building 75 area showing the distribution of tritium in groundwater for the current reporting period is shown on Figure 22. Tritium concentrations have declined significantly in almost all wells monitoring the plume since closure

of the NTLF, with a concurrent reduction in the lateral extent of the plume. Concentrations have been below the MCL for drinking water (20,000 pCi/L) in all wells since February 2005, with a maximum detected concentration of 12,000 pCi/L during the current reporting period.

Tritium concentrations in the groundwater near Building 71B have also been declining, with concentrations in the three wells monitoring the area (MW71-95-9, MW71B-98-13, and MW71B-99-3R) below the reporting limit most times the wells have been sampled since closure of the NTLF. Tritium was detected at a maximum concentration of 350 pCi/L in the Building 71B area during the current reporting period.

As reported previously, tritium was detected in groundwater samples collected under the former central Bevatron area (4,040 pCi/L maximum). Groundwater samples collected during the second quarter of FY11 from 29 wells downgradient and crossgradient from the area where the tritium was detected did not contain detectable levels of tritium (<300 pCi/L). Based on the extensive sampling that was conducted, it was determined that the tritium contamination was limited to a small area at the eastern portion of the former Bevatron wind tunnel area, with lower levels of contamination extending along the area of the former subdrain around the wind tunnel periphery. The limited extent of the contamination was the result of the very low groundwater flow rates through the relatively impermeable Orinda Formation bedrock that underlies the former wind tunnel area. As part of the Bevatron Demolition Project, all soil with concentrations of tritium above the Minimum Detectable Activity (MDA) was excavated and disposed of offsite as low-level radioactive waste at a permitted facility. Tritium was not detected during the current reporting period in groundwater samples collected from three temporary groundwater sampling points that are downgradient and crossgradient from this area (SB51-11-1R, SB51-11-3, and SB51-11-4). The locations of these temporary groundwater sampling points are shown on Figure 6g.

2.1.3.3 Petroleum Hydrocarbons

Corrective measures are not required at any present or former LBNL underground storage tank (UST) sites. Nevertheless, LBNL has been monitoring the groundwater at three former UST sites where petroleum hydrocarbons have been detected in the groundwater (Building 74 Former Diesel UST, Building 76 Former Diesel and Gasoline USTs, and Former Building 7E Diesel/Kerosene UST). Wells at two of the former UST sites (Building 74 and Building 76) were

sampled for TPH in the diesel range (TPH-D) during the current reporting period. Low concentrations of TPH-D (79 µg/L maximum) were detected in all three wells sampled at the Building 74 site but not in the two wells sampled at the Building 76 site (Table 13). Aromatic hydrocarbons (i.e. benzene, toluene, xylenes, ethylbenzene, naphthalene, etc.) are generally found as constituents of petroleum hydrocarbons. No aromatic hydrocarbons were detected in the three wells in which the TPH-D was detected. The results are consistent with the historical data in which relatively low concentrations of petroleum hydrocarbons (but not individual VOCs) have occasionally been detected at all three former UST sites.

2.1.3.4 PCBs

During the current reporting period, groundwater samples were collected from two temporary groundwater sampling points (SB51-98-2 and SB51-98-6) beneath the area of the former Building 51 Motor Generator Room Basement and analyzed for PCBs (Table 14). The locations of these sampling points are shown on Figure 6g. PCBs were detected in SB51-98-2 at a concentration of 5.3 µg/L. The MCL for PCBs is 0.5 µg/L. The detection is consistent with previous results in which low concentrations of PCBs have been detected in the groundwater beneath the basement.

2.2 SURFACE WATER SAMPLING

On February 20, 2013, semiannual surface water samples were collected from seven creeks flowing from LBNL and analyzed for VOCs and dissolved metals (Table 15a). One creek that is included on the semiannual sampling schedule, Ten-Inch Creek, could not be sampled due to insufficient flow. Surface water sampling locations are shown on Figure 2. No VOCs were detected. The only metals detected were antimony (5.7 µg/L maximum), arsenic (2.3 µg/L maximum), barium (110 µg/L maximum), and zinc (18 µg/L maximum). Detected metals concentrations were consistent with historical results and are likely naturally occurring.

Samples were collected from two of the creeks on February 2, 2013 and analyzed for tritium (Table 15b). Tritium was not detected in the sample from North Fork Strawberry Creek, but was detected in both the primary (440 pCi/L) and duplicate (244 pCi/L) samples collected from Chicken Creek. The detected concentration is well below the MCL for drinking water of 20,000 pCi/L. The occasional detection of low concentrations of tritium in Chicken Creek is

consistent with historical results, with an overall declining trend in concentrations since closure of the NTLF in December 2001.

2.3 ENVIRONMENTAL INVESTIGATION IN THE BUILDING 51 DEMOLITION AREA

The Building 51 and Bevatron Demolition Project began in 2010 and was completed in February 2012. Between September 2010 and February 2012, LBNL investigated potential subsurface contamination beneath the Building 51 Demolition Project area. During these investigations, VOC-contaminated soil and groundwater were detected in two discrete areas: 1) under the former Building 51 Vacuum Pump Room area and 2) beneath the former location of Building 51A. The locations of these two areas are shown on Figures 10a and 10b, respectively. The *Report of Environmental Investigations in the Building 51A and Vacuum Pump Room Areas for the Building 51 and Bevatron Demolition Project* (LBNL, 2012b) was submitted to the DTSC on August 6, 2012 during the previous reporting period, with copies provided to the Water Board and the City of Berkeley.

2.3.1 Building 51A Area

During the current reporting period, sixteen soil samples were collected from eight soil borings (SB51A-12-29 through -36) in the former Building 51A area. The samples were collected to more accurately delineate the extent of soil contamination that might require remedial action. Concentrations of VOCs detected in these samples are provided in Table 16a. The locations of Building 51A area soil borings and concentrations of VOCs detected are shown on Figure 23, which includes historical boring locations and soil analytical results. Concentrations of VOCs that exceed the DTSC-approved TRBMCSs (LBNL, 2005b) are highlighted on the figure. As shown on the figure, TCE, PCE, and/or carbon tetrachloride exceed the TRBMCS in a relatively narrow band centered on an abandoned storm drain segment that has been identified as the likely source of the contamination.

Seven of the soil borings (SB51A-12-1 through -7) located along the abandoned storm drain segment in the former Building 51A area were previously converted to temporary groundwater sampling points (Figure 10b). Since development of the sampling points, the maximum concentration of total VOCs detected in the groundwater has been 10,363 µg/L

(SB51A-12-1 in November 2012). TCE and carbon tetrachloride have been the primary contaminants detected, with cis-1,2-DCE, PCE, chloroform, methylene chloride, and vinyl chloride also detected at concentrations above MCLs during the current reporting period (Table 5-4). TCE and carbon tetrachloride also exceeded TRBMCSs. The distribution of total VOCs in groundwater in this area during the current reporting period is shown on the Bevalac Area groundwater isoconcentration contour maps (Figures 8 and 10b).

2.3.2 Building 51 Vacuum Pump Room Area

During the current reporting period, eighteen soil samples were collected from three soil borings (SB51-12-1 to SB51-12-3) in the former Building 51 Vacuum Pump Room area. The samples were collected to help delineate the lateral and vertical extent of contamination in the area where the highest concentrations of VOCs had previously been detected in the soil. The borings were drilled approximately 2 to 3 feet north, west, and south of SB51-11-9; the location where TCE had previously been detected at concentrations of 230 mg/kg, 63 mg/kg, and 47 mg/kg at depths of 12, 15, and 20 feet, respectively. Concentrations of VOCs detected in soil samples collected from the three new borings were considerably lower, with the maximum detected concentration of TCE (6.6 mg/kg) in the boring installed to the west (SB51-12-2). No VOCs were detected in the boring to the north (SB51-12-3). Only relatively low concentrations of VOCs (0.69 mg/kg maximum of TCE at a depth of 16 feet) had previously been detected in SB51-11-32 located approximately 5 feet to the east of SB51-11-9.

Concentrations of VOCs detected in the soil samples collected during the current reporting period are provided in Table 16b. The locations of Vacuum Pump Room area soil borings and concentrations of VOCs detected are shown on Figures 24a and 24b, which include historical boring locations and soil analytical results. Concentrations of VOCs exceeding the DTSC-approved TRBMCSs (LBNL, 2005b) are highlighted on the figures. The area in which concentrations of VOCs exceed TRBMCSs is indicated on Figure 25. TCE and PCE exceed their respective MCS in a relatively limited area that is located primarily in the backfill adjacent to the Vacuum Pump Room and Air Duct retaining walls. The distribution of the contaminants is likely the result of preferential migration within the relatively permeable retaining wall backfill material in comparison to the relatively impermeable underlying and adjacent Orinda Formation bedrock.

Six soil borings located in the former Vacuum Pump Room and adjacent Cooling Tower areas were previously converted to temporary groundwater sampling points (SB51-11-9, -10, -11, -17, -18, and -19). An observation well (OC51-11-1) that was installed to monitor water levels in the backfilled Bevatron Air Duct shafts has also been sampled to assess VOC concentrations in groundwater within the backfill. The locations of these temporary groundwater sampling points, the observation well, and a downgradient temporary groundwater sampling point (SB51-11-3) are shown on Figure 8 and in detail on Figure 10a. Since development of the sampling points, the maximum concentration of total VOCs detected has been 10,026 µg/L (SB51A-11-9 in December 2012). TCE has been the primary contaminant detected, with cis-1,2-DCE, 1,1-DCE, 1,1,1-TCA, 1,1-DCA, and carbon tetrachloride also detected at concentrations above MCLs during the current reporting period (see Table 5-4). TCE also exceeded its TRBMCS. The distribution of total VOCs in groundwater in this area during the current reporting period is shown on the Bevalac area groundwater isoconcentration contour maps (Figures 8 and 10a).

2.4 DOCUMENTS

The following documents were submitted to the regulatory agencies during the current reporting period:

- On November 6, 2012, LBNL submitted the semiannual self-monitoring report for treated water discharged to the sanitary sewer to EBMUD.
- On November 15, 2012, LBNL submitted a permit application to the City of Berkeley to install two replacement groundwater monitoring wells at the SERC site.
- On February 22, 2013 LBNL submitted the Semiannual Progress Report and Annual Status Summary for the third and fourth quarters of FY12 to the DTSC.

3. STATUS OF CORRECTIVE MEASURES

Corrective measures are required at seven groundwater units. Three of the units are located in the Bevalac Area (Building 71B plume, Building 51/64 plume, and Building 51L plume), three in the Old Town Area (Building 7 lobe, Building 52 lobe, and Building 25A lobe), and one in the Support Services Area (Building 69A Area of Groundwater Contamination). For the locations of the units, see Figure 7. This section provides a listing of the ongoing corrective measures that have been implemented at these seven units (see the summary on the following page) and information on new findings or modifications to the existing measures. More detailed information on the implementation of the measures is provided in the RCRA Corrective Measures Implementation (CMI) Report (LBNL, 2007). Also as noted previously, the progress reports submitted to DTSC in February provide a more comprehensive discussion of the status of the implemented corrective measures, including graphs showing groundwater contaminant concentration trends.

3.1 MONITORED NATURAL ATTENUATION (MNA) AND ENHANCED BIOREMEDIATION

Monitored natural attenuation (MNA) is a component of the approved corrective measures at the following three groundwater units:

1. Downgradient core area of the Building 51/64 Groundwater Solvent Plume
2. Peripheral area of the Building 7 Lobe of the Old Town Groundwater Solvent Plume
3. Building 69A Area of Groundwater Contamination

HRC has been injected into the groundwater at two of these units (Building 51/64 and Building 69) and at a fourth unit, the Building 71B plume source area, to enhance natural biodegradation processes. A number of hydrochemical parameters indicative of the potential for biodegradation are being monitored at these four units to document whether subsurface conditions are favorable for biodegradation. These include five field-measured parameters (dissolved oxygen [DO], dissolved carbon dioxide [CO_2], pH, temperature, and ferrous iron [Fe^{2+}]) and the following laboratory-measured parameters: nitrate (NO_3); nitrite (NO_2); sulfide (as hydrogen sulfide [H_2S]); sulfate (SO_4^{2-}); volatile fatty acids (VFAs); and methane (CH_4),

Summary of DTSC Approved Corrective Measures for Groundwater

Groundwater Unit	Ongoing Corrective Measure
Building 71B Groundwater Solvent Plume	• *In situ* soil flushing/HRC injection in the source area • Capture and treatment of contaminated Building 51 area hydrauger effluent
Building 51/64 Groundwater Solvent Plume	• *In situ* soil flushing in the source area • MNA in the downgradient plume area[(a)] • Extraction and treatment of groundwater from the Building 51 subfloor drainage system • Extraction of groundwater from EW51-07-1 and EW51-07-2 to control migration of contaminated groundwater southward under Building 51 • Extraction of groundwater from EW51B-07-1 and EW51B-07-2 to control potential downgradient migration
Building 51L Groundwater Solvent Plume	• Extraction and treatment of groundwater from EW51L-06-1 and EW51A-06-1 • Extraction and treatment of subdrain effluent from the concrete sump installed inside Building 51A
Building 7 Lobe Old Town Groundwater Solvent Plume	• *In situ* soil flushing in the source area (Building 7 Groundwater Collection Trench) downgradient from the former Building 7 sump location • *In situ* soil flushing in the core area downgradient from the Building 7 Groundwater Collection Trench • Operation of the Building 58 West and Building 58 Southeast Groundwater Collection Trenches and groundwater extraction well EW58-07-1 to control plume migration • Dual-phase (groundwater and soil vapor) extraction on the Building 53/58 slope. • Extraction and treatment of water from a concrete sump (SB58-98-4) • MNA for contaminants in the peripheral plume areas
Building 52 Lobe Old Town Groundwater Solvent Plume	• *In situ* soil flushing (injection and extraction wells) in the source area • Collection and treatment of groundwater from the Building 46 subdrain at the downgradient lobe margin • Injection of treated water into IW53-09-1 and IW53-09-2 to prevent migration of Building 7 lobe groundwater contaminants into the Building 52 lobe area
Building 25A Lobe Old Town Groundwater Solvent Plume	• *In situ* soil flushing (infiltration bed and extraction trench) west of Building 25A in the source area. • *In situ* soil flushing south of Building 25 • Extraction and treatment of water from electrical utility manhole EMH-133
Building 69 Area	• MNA in the source area[(a)]

(a) HRC has been injected into the groundwater to enhance natural biodegradation

ethane (C_2H_6), and ethene (C_2H_4). Hydrochemical parameter sampling results for the current as reporting period are provided in Table 17. The results indicate conditions generally favorable for biodegradation at all four units monitored. In particular, the relatively high concentrations of methane, VFAs, and ferrous iron; the low levels of DO, nitrate, and sulfate; and the presence of degradation products such as vinyl chloride and cis-1,2-DCE in many of the wells monitored is evidence of the reductive dechlorination of halogenated VOCs.

3.2 GROUNDWATER TREATMENT SYSTEMS

Extracted groundwater from the *in situ* soil flushing systems and contaminated effluent from drain lines and hydraugers is treated to non-detectable levels of VOCs by granular activated carbon (GAC) treatment systems. During the current reporting period more than 7 million gallons of water were extracted and treated, with more than 147 million gallons treated to date. Most of the treated water is recirculated by injection into the subsurface for soil flushing purposes. Any remainder not needed for flushing is discharged to the sanitary sewer in accordance with the provisions of LBNL's Wastewater Discharge Permit issued by EBMUD. Table 3-1 summarizes the volumes of water treated at each GAC system and the disposition of the treated water.

Table 3-1 Summary of GAC Groundwater Treatment Systems

Treatment System	Volume Treated (gallons) First & Second Quarters FY13	Volume Treated (gallons) Total to Date	Disposition
Building 6 Bioventing[(a)]	309,558	6,993,532	Recirculated
Building 7 Trench[(a)]	2,098,778	35,485,414	Recirculated or sanitary sewer
Building 25	113,115	1,941,845	Recirculated
Building 25A[(a)]	33,085	5,661,271	Recirculated
Building 37*	0	1,818,711	
Building 46 [(a)]	1,367,371	33,913,133	Recirculated or sanitary sewer
Building 51 Firetrail [(a)]	1,139,147	21,256,012	Recirculated or sanitary sewer
Building 51 Hydraugers**	0	9,482,665	
Building 51 MGR Basement[(a)]	377,208	7,609,937	Recirculated or sanitary sewer
Building 51L [(a)]	106,785	2,826,772	Recirculated or sanitary sewer
Building 53	561,406	10,163,500	Recirculated
Building 64	1,003,937	9,299,030	Recirculated
Building 71B	157,291	1,019,634	Recirculated
Total Volume Treated	7,267,681	147,471,456	

(a) The system is permitted for discharge of treated water to the sanitary sewer by EBMUD
* System was dismantled in June 2006.
** System no longer operational. Hydrauger effluent is now treated at Building 51 Firetrail Treatment System.

3.3 BUILDING 25A IN SITU SOIL FLUSHING SYSTEM

Modifications of the Building 25A *in situ* soil flushing system were required due to the demolition of Buildings 25A and 25 and construction of the Solar Energy Research Center (SERC) at the former Building 25A location. A workplan for the required modifications was submitted to, and approved by, the DTSC in September 2011 (LBNL, 2011). The modifications included: the proper destruction of six wells; the installation of two replacement groundwater monitoring wells; the replacement of the groundwater extraction well in the groundwater collection trench with an injection well; and the installation of three new groundwater extraction wells. The modifications should enhance the effectiveness of the soil flushing system by addressing the area of elevated concentrations (>100 μg/L) of halogenated VOCs in the groundwater near the northwest end of the former Building 25 location.

During the previous reporting period, proper destruction of the six wells was completed, the injection well was installed, and the three new groundwater extraction wells (EW30-12-1, -2,

and -3) were constructed. Groundwater extraction was started from the three extraction wells during the current reporting period: from EW30-12-2 and EW30-12-3 in October 2012 and from EW30-2-1 in November 2012. On January 31, 2013, the two replacement groundwater monitoring wells were installed. The locations of the wells are shown on Figure 6a and construction details are provided in Table 3-2 below.

Table 3-2 Monitoring Well Construction Details

Well Number	Completion Date	Casing[a] Diameter (inches)	Borehole Diameter (inches)	Total Depth (feet)	Screen[b] interval (feet below ground surface)
MW30-13-1	1/31/2013	2	8.25	27.5	12-27
MW30-12-2	1/31/2013	2	8.25	27.5	12-27

a Schedule 40 PVC
b 0.01-inch slot size

4. SUMMARY OF PROBLEMS ENCOUNTERED

4.1 DEFINITIONS

Problems are defined herein as follows:

1. Quality Assurance and Quality Control (QA/QC) problems that would result in failure to meet data quality objectives.
2. Findings that indicate the presence of contamination that could impact human health or the environment, and for which activities are not specified in existing workplans to either further evaluate or remediate the contamination.

4.2 QUALITY ASSURANCE / QUALITY CONTROL

4.2.1 Field Quality Control

Eighteen groundwater field (equipment/rinse) blanks and sixteen groundwater trip blanks were analyzed for VOCs during the current reporting period (Table 18). In addition, three groundwater field (equipment rinse) blanks were analyzed for tritium (Table 12), one surface water field (equipment rinse) blank was analyzed for metals (Table 15a), and one surface water field (equipment rinse) blank was analyzed for tritium (Table 15b). No analytes were detected in the blanks.

Thirteen duplicate water samples were analyzed for VOCs and two for tritium during the current reporting period. Results of all primary and duplicate samples were consistent.

4.2.2 Laboratory Quality Control

All laboratories used by the LBNL ERP for determining contaminant concentrations in environmental samples are certified by the California Department of Public Health (CDPH) under the California Environmental Laboratory Accreditation Program. Laboratory quality control procedures include the analysis of method blanks and spike samples in accordance with protocols established for specific USEPA analytical methods.

Samples collected during the current reporting period were analyzed by the laboratories indicated in Table 4-1.

Table 4-1 Analytical Methods and Laboratories for the Current Reporting Period

Analytical Method	Analytical Laboratory		
	Groundwater	**Soil**	**Surface Water**
Volatile Organic Compounds (VOCs) (EPA 8260)	EML/BC/C&T	C&T	EML/C&T
Total Petroleum Hydrocarbon (EPA Modified 8015) Diesel (TPH-D)	BC		
Polychlorinated Biphenyls (PCBs) (EPA 608)	BC		
Title 22 metals (EPA 6000 & 7000 series)			BC/C&T
Anions (nitrate, sulfate, sulfide, and nitrite)	BC		
Volatile Fatty Acids (VFA) (AM23G) Light Hydrocarbon Gases (LHG) (Methane, Ethane, Ethene) (AM20GAX)	Microseeps		
Tritium (EPA 906)	Eberline/ALS		GEL/ALS

ALS: ALS Environmental
BC: BC Laboratories, Inc.
C&T: Curtis and Tompkins Laboratories
EML: LBNL Environmental Measurement Laboratory
GEL: GEL Laboratories LLC

Laboratory QA/QC problems identified in the laboratory data packages that could potentially affect data validity are noted in Table 4-2. The data validation review indicated that the identified laboratory QA/QC problems were not sufficient to invalidate any data.

Table 4-2 Analytical Laboratory Deficiencies

Matrix	Laboratory	Chain of Custody Number	Problem
Soil	C&T	7656	Matrix Spikes (MS) were not performed due to insufficient sample volume. High surrogate recoveries were observed for toluene-d8, 1,2-dichloroethane-d4, and bromofluorobenzene.
Surface water	BC	7768	Accuracy and precision requirements were not met for dissolved arsenic.
Groundwater	BC	7654	Initial Calibration Verification (ICV) was outside control limit for bromomethane.
	C&T	7709	High surrogate recovery was observed for bromofluorobenzene.
	BC	7711 7717	ICV was outside control limit for acrolein.
	EML	7731 7732	Matrix Spike Duplicate (MSD) recoveries were out of historical control limits for toluene and tetrachloroethene, but within the site restoration limits (75-125%).
	BC	7730	Laboratory Control Sample (LCS) surrogate recovery was outside control limit for tetrasocane.
	BC	7748	MS was out of accuracy and precision requirement for 1,1-DCE.
	EML	7751 7755	MS/MSD recovery was outside control limits for 1,1-DCA.
	BC	7759	Continuing Calibration Verification (CCV) recovery was outside control limit for decachlorobiphenyl.
	BC	7782	Samples were reanalyzed past holding time for confirmation due to matrix interference.
	BC	7793	The surrogate recoveries for 4-bromofluorobenzene were low due to matrix interference.

BC: BC Laboratories, Inc.
C&T: Curtis and Tompkins Laboratories
EML: LBNL Environmental Measurement Laboratory

5. ACTIVITIES FOR UPCOMING REPORTING PERIODS

This section describes activities already completed or planned for the upcoming reporting period, which is the third and fourth quarters of FY13 (April 1 through September 30, 2013). Results of these activities will be reported in the next Semiannual Progress Report, scheduled for submittal to DTSC in February 2014.

5.1 GROUNDWATER MONITORING

- Conduct third and fourth quarter FY13 quarterly groundwater sampling and continue depth-to-water measurements.

5.2 SURFACE WATER SAMPLING

- Collect semiannual surface water samples for analysis of VOCs and metals from creeks flowing from LBNL.
- Analyze samples from Chicken Creek and North Fork Strawberry Creek for tritium.

5.3 CORRECTIVE MEASURES

- Continue the corrective measures for groundwater described in Section 3.
- Begin rebound testing in the Old Town Groundwater Plume Building 52 Lobe and Building 25 Subplume. The purpose of the testing is to help assess whether contaminant concentrations can be maintained in either area at levels less than the DTSC required MCSs in the absence of continued *in situ* soil flushing.
- Implement the DTSC-approved ICM to control the migration of contaminated groundwater from the former Vacuum Pump Room area of the Bevatron. Extraction of groundwater from Observation Well OC51-11-1 began on July 29, 2013.

5.4 DOCUMENTS AND MEETINGS

- Submit Semiannual Progress Report, First and Second Quarters FY13 to DTSC.
- Submit the semi-annual self-monitoring report for treated water discharged to the sanitary sewer to the East Bay Municipal Utility District (EBMUD).

- On April 11, 2013 LBNL representatives met with DTSC to discuss rebound testing of the Old Town Groundwater Plume Building 52 Lobe and Building 25 Subplume. On April 24, 2013, LBNL submitted the *Workplan for Rebound Testing of Old Town Groundwater Plume Building 52 Lobe and Building 25 Subplume* to the DTSC (LBNL 2013a). DTSC approved the Workplan on June 25, 2013.

- On April 23, 2013, the DTSC approved the *Interim Corrective Measures Workplan to Control Migration of Contaminated Groundwater at the Bevatron Demolition Project Site*, dated August 2012. On July 2, 2013 after a 30 day public comment period (May 7 to June 7, 2013), DTSC approved implementation of the ICM. On July 12, 2013, LBNL provided DTSC with a copy of the final ICM Workplan. As requested in DTSC's July 2 letter, the final document dated July 2013 includes 1) the Draft *Interim Corrective Measures Workplan to Control Migration of Contaminated Groundwater at the Bevatron Demolition Project Site,* 2) the DTSC's Addendum to the Tiered Negative Declaration, and 3) the DTSC's Responsiveness Summary (LBNL 2013b). On July 15, 2013, LBNL representatives provided a presentation on the proposed ICM to the public at the Community Advisory Group (CAG) meeting.

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MW25-95-5	Groundwater monitoring well
MW90-6	Properly destroyed monitoring well
T SB76-97-3	Temporary groundwater sampling point
T SB64-98-16	Properly destroyed sampling point
	Angled boring
EW	Groundwater extraction well
IW	Groundwater injection well
DP	Dual phase extraction well
SSW-31.63	Slope stability well
OW6-98	Observation well
SI-3.63	Slope indicator well
71-95-10	Vadose zone monitoring well
	Shallow soil sampling location
	Soil boring
PZ51-92-3	Piezometer
	Spring
700	Topographic contour line (elevation in ft above mean sea level)
620	Groundwater elevation contour line (elevation in ft above mean sea level)

ND (or <)	Not detected
51-01-10	Hydrauger
	Sanitary sewer line
	Storm drain line
	Surface creek
	LBNL site boundary
	Fence
17	Surface structure (e.g. buildings, etc.)
51B	Former building location
90K	Building under construction
	Groundwater collection trench
GAC GAC	Granular activated carbon (GAC) treatment system

NOTES:
All other symbols used are explained on the figures.
Not all symbols may be included on the attached figures for the current reporting period.

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Key to Symbols Used on Figures.

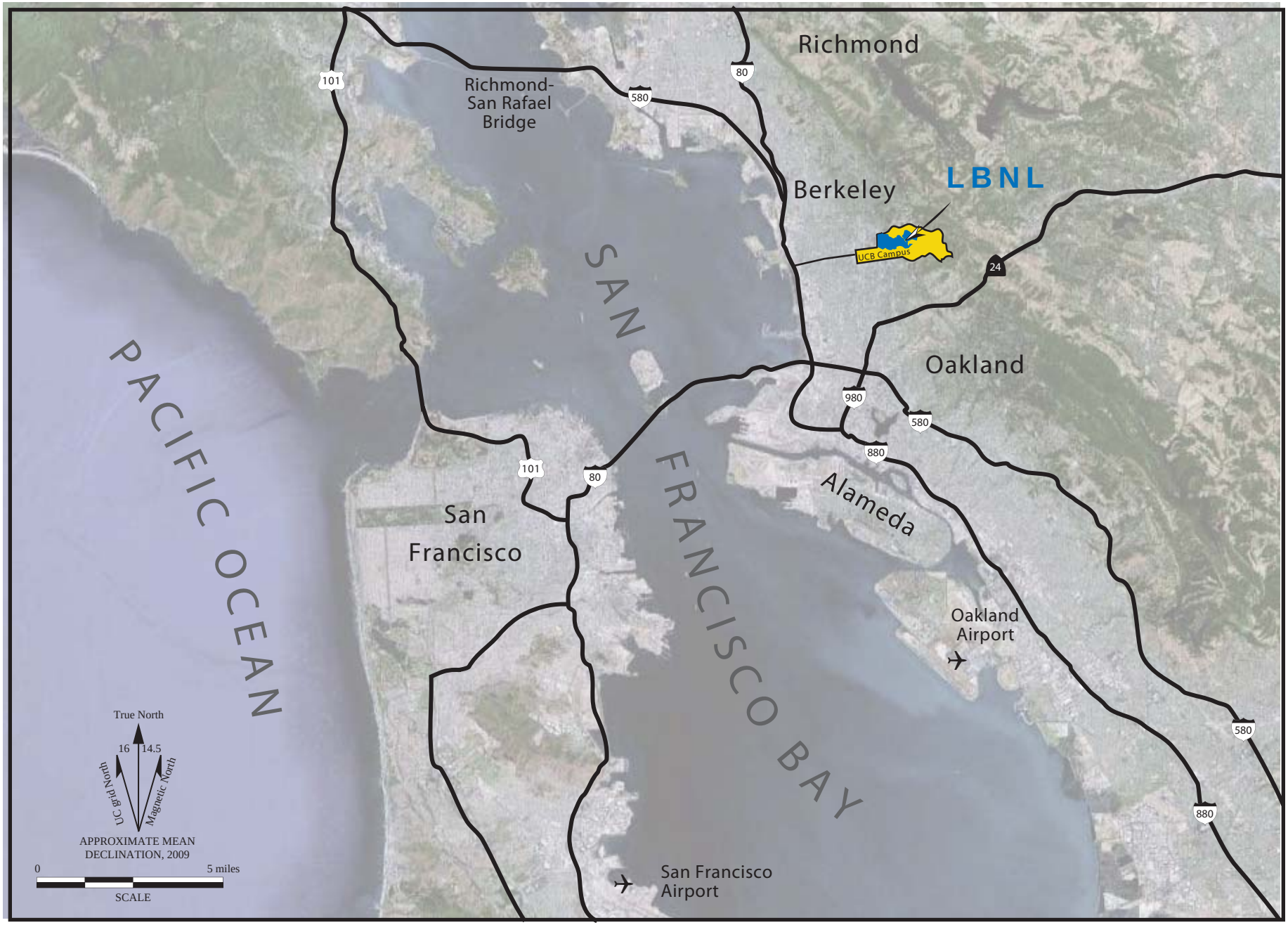

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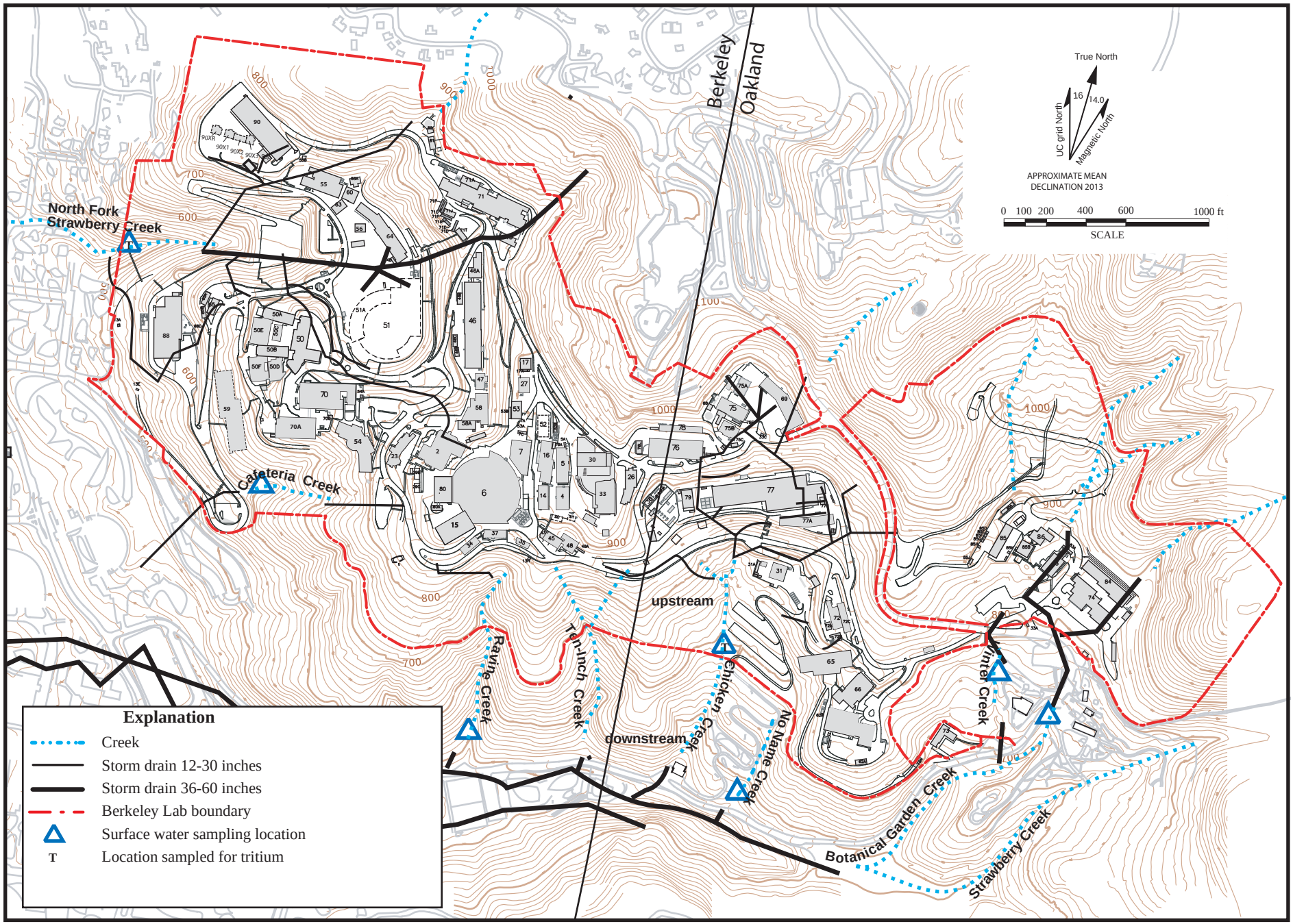
Figure 1. Regional Setting of the Lawrence Berkeley National Laboratory.



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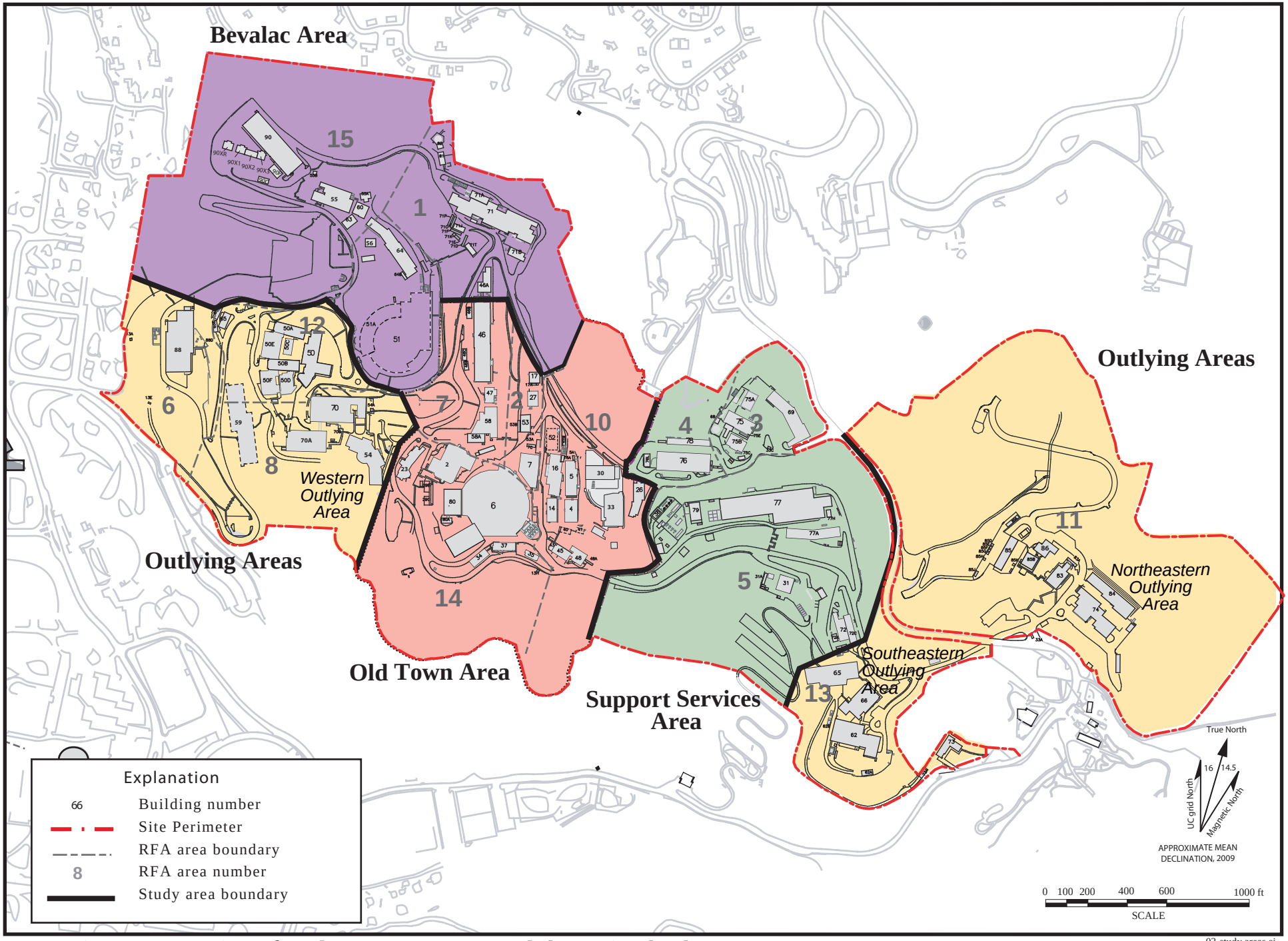

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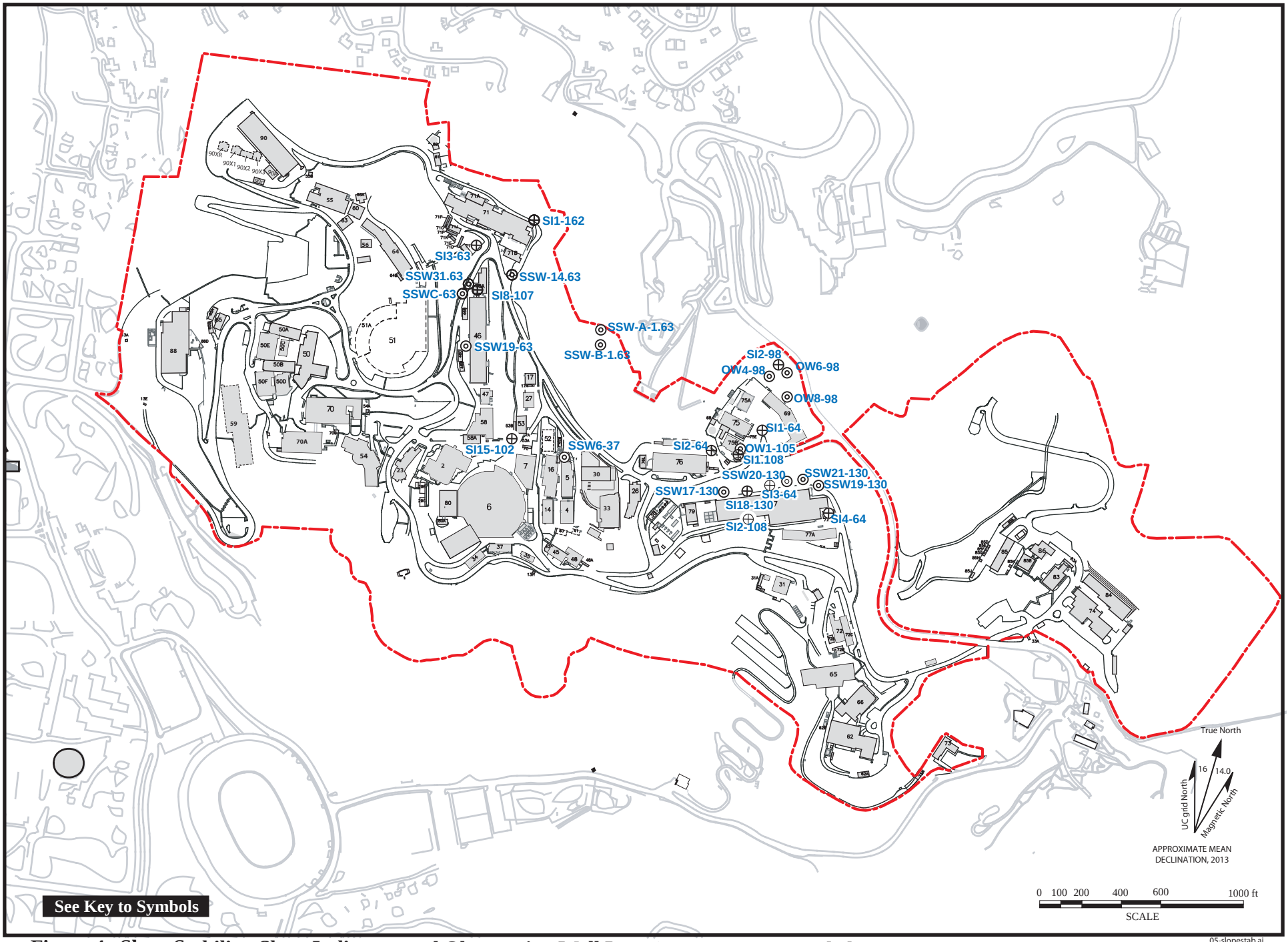

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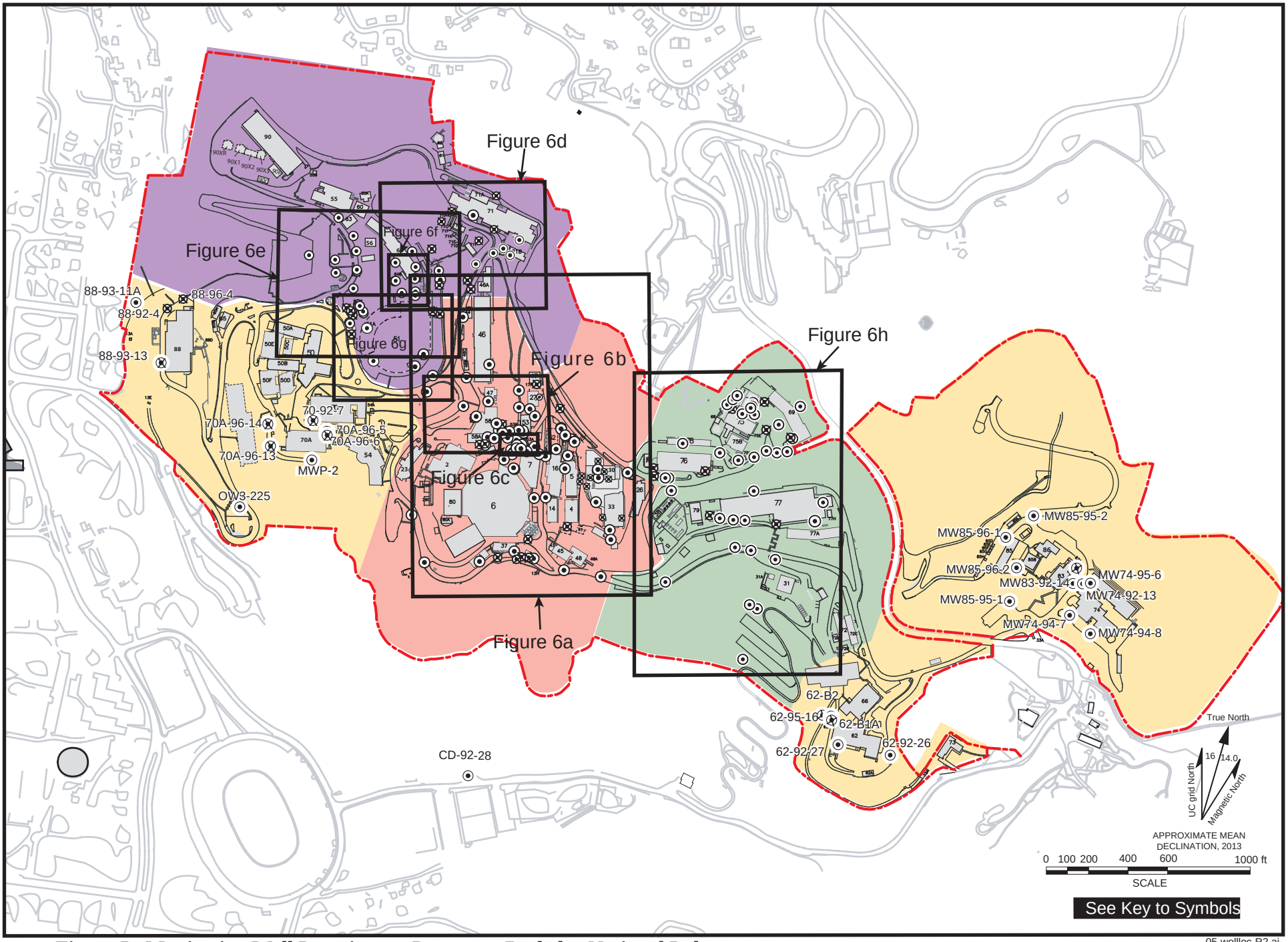

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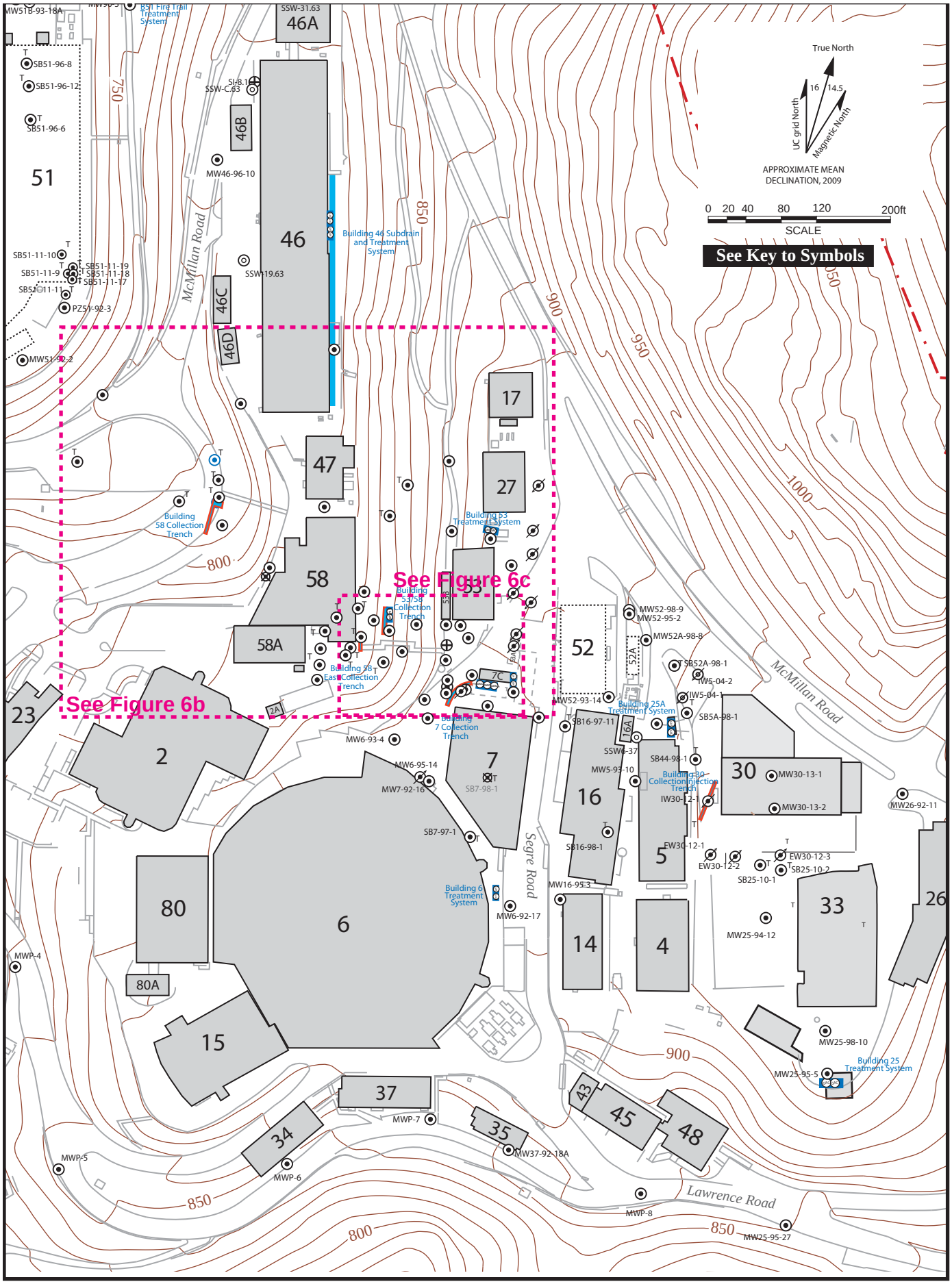

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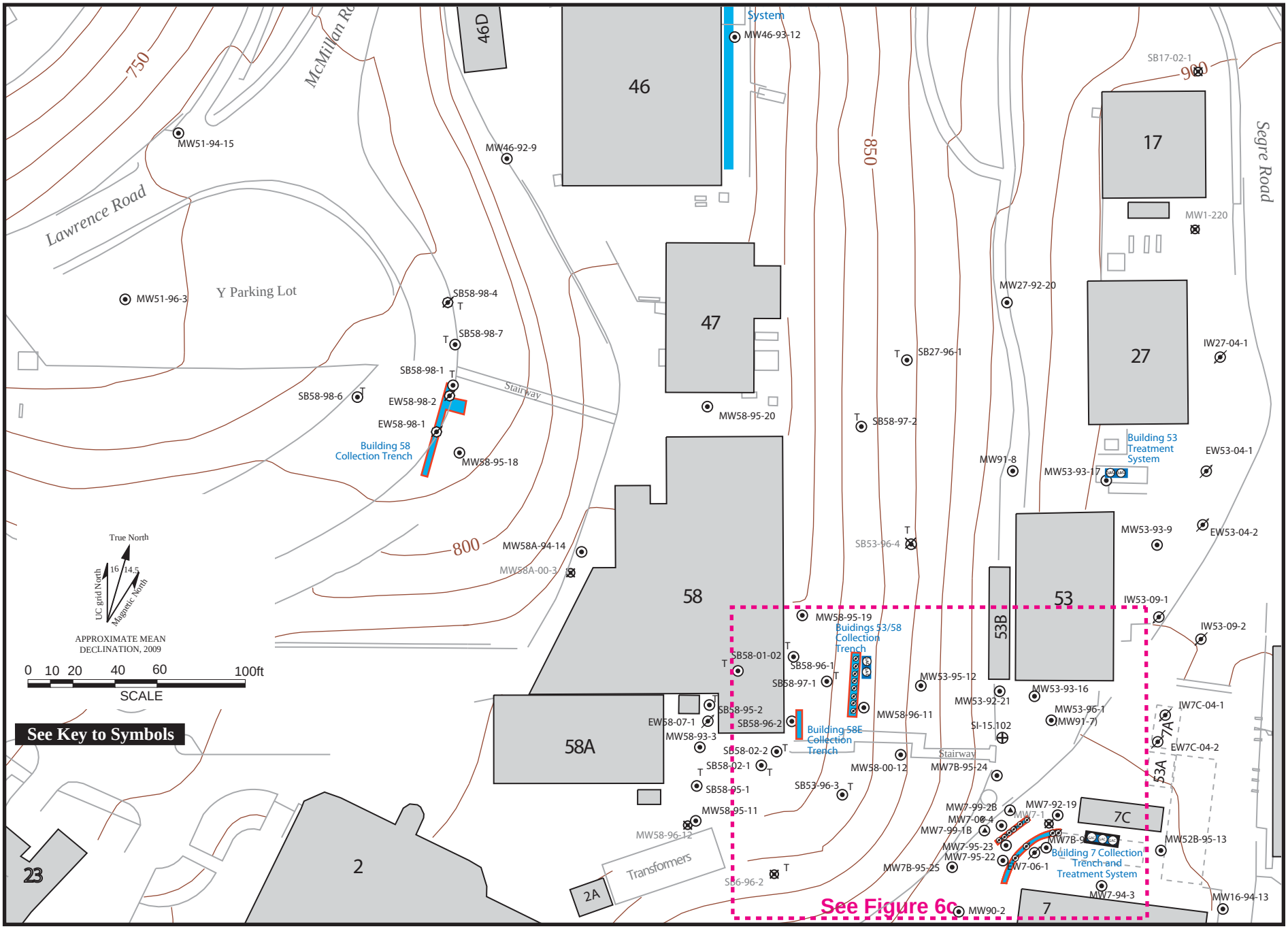

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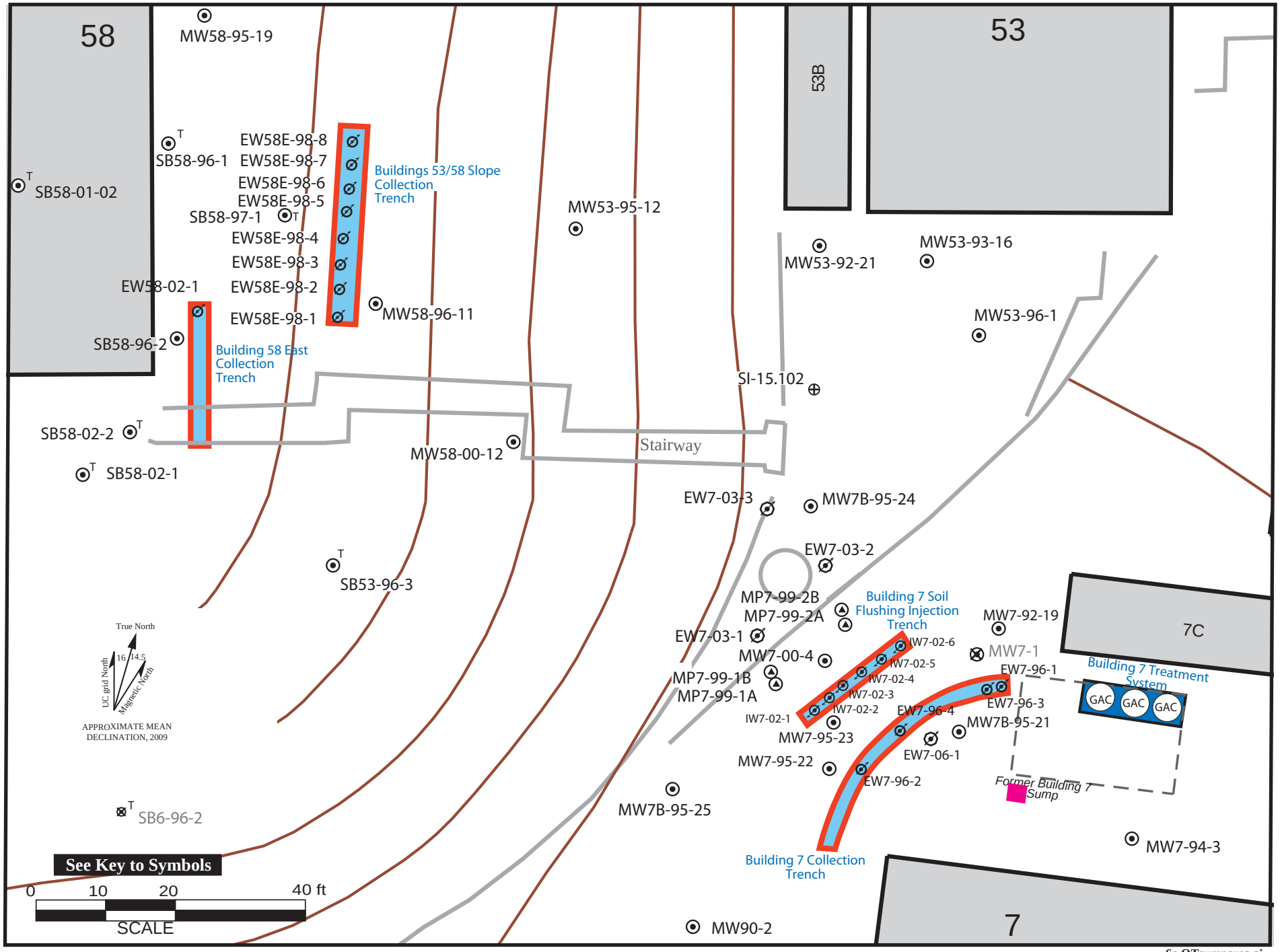

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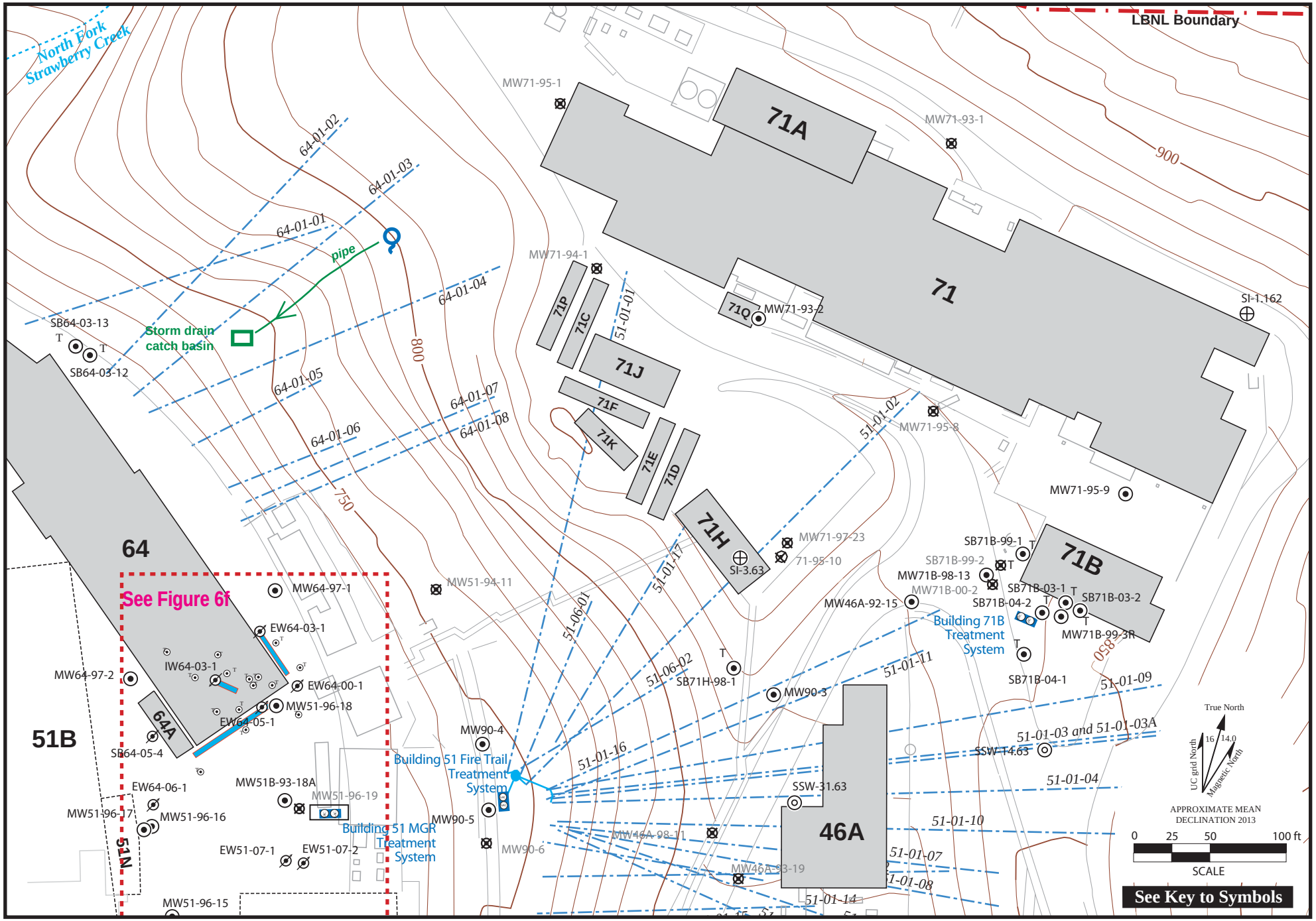

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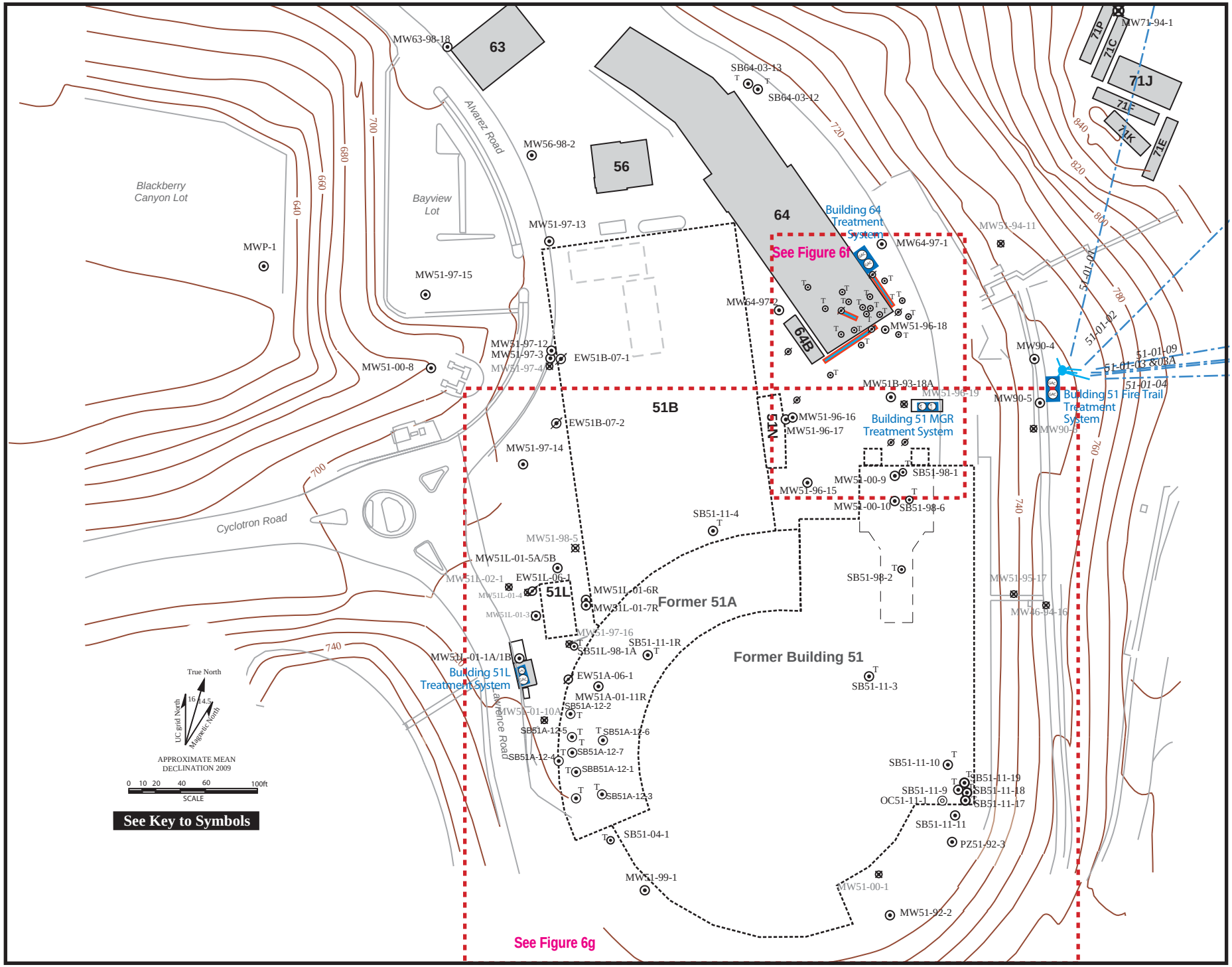

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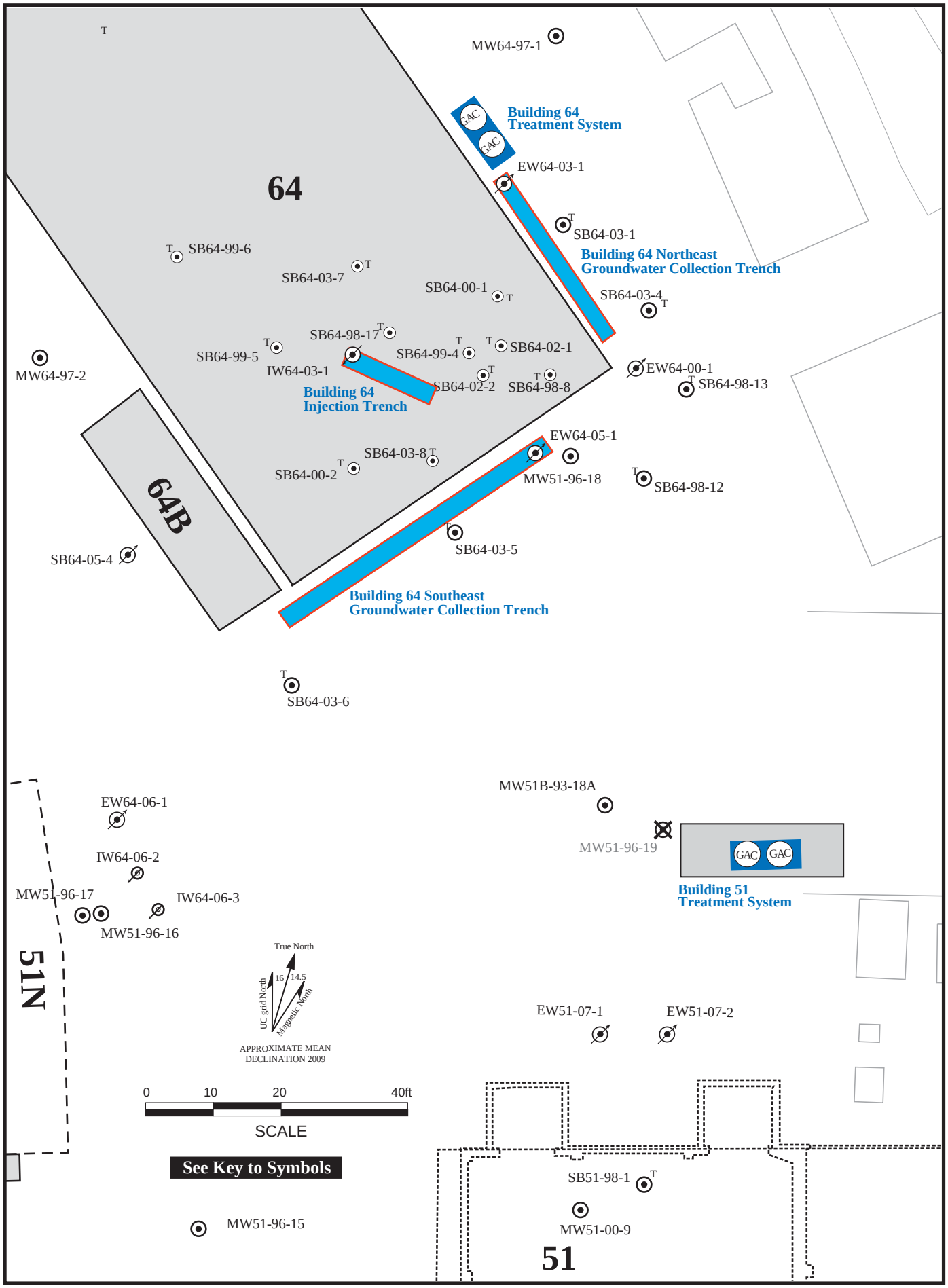

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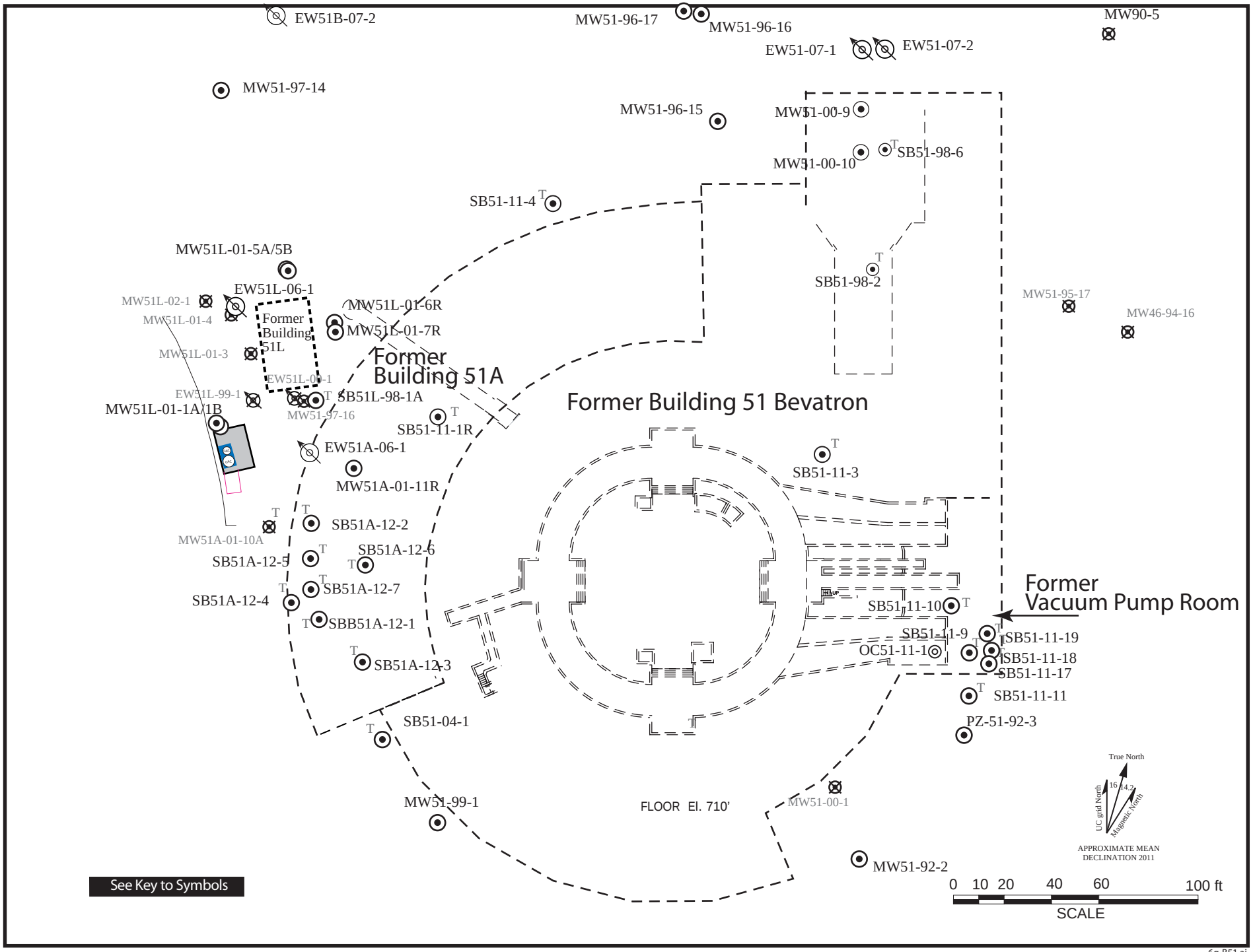

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Figure 6g. Well Location Map of the Former Building 51 Bevatron Area, Lawrence Berkeley National Laboratory.

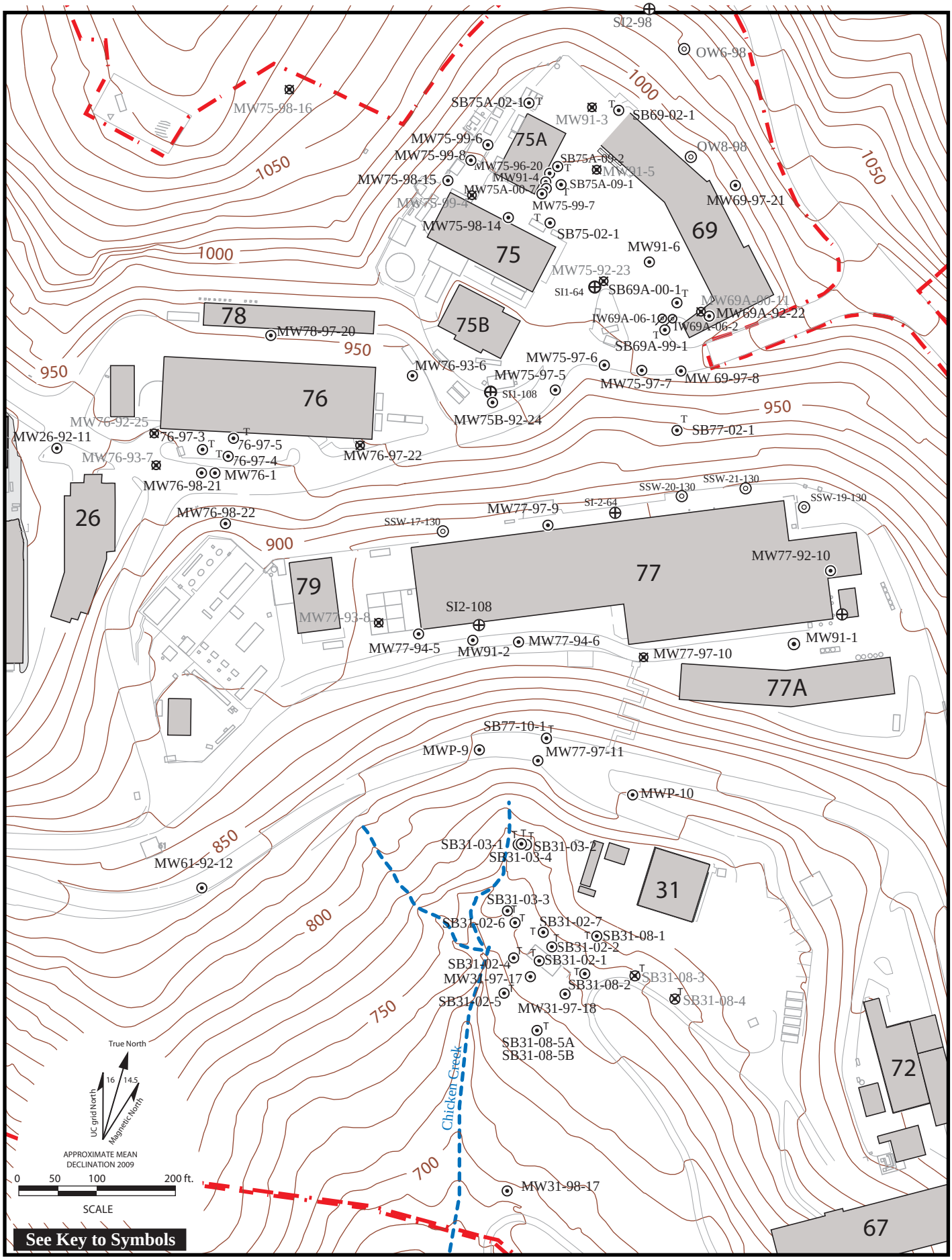

Figure 6h. Well Location Map of the Corporation Yard Area, Lawrence Berkeley National Laboratory.

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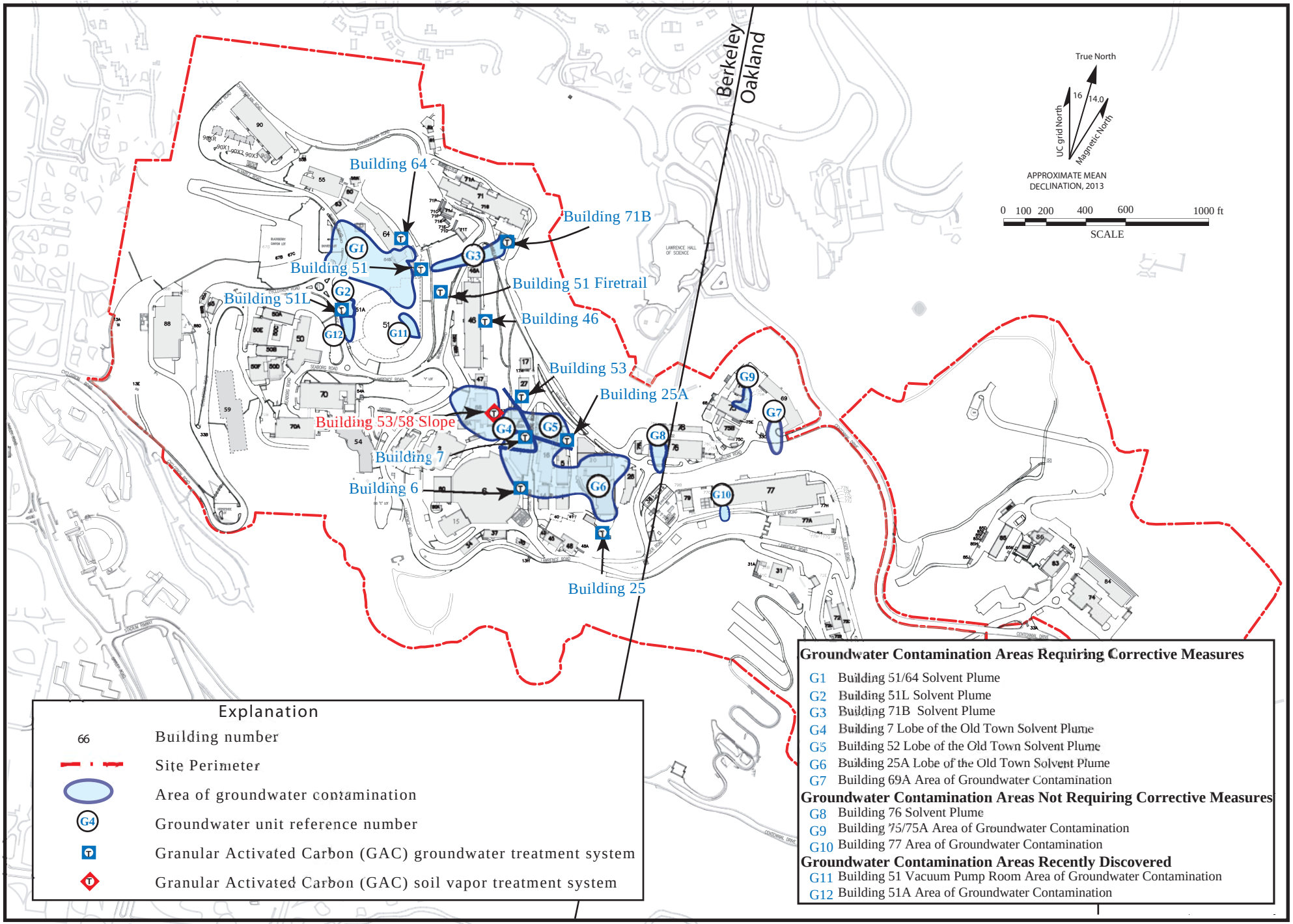

Figure 7. Locations of Areas of Groundwater Contamination, Lawrence Berkeley National Laboratory.

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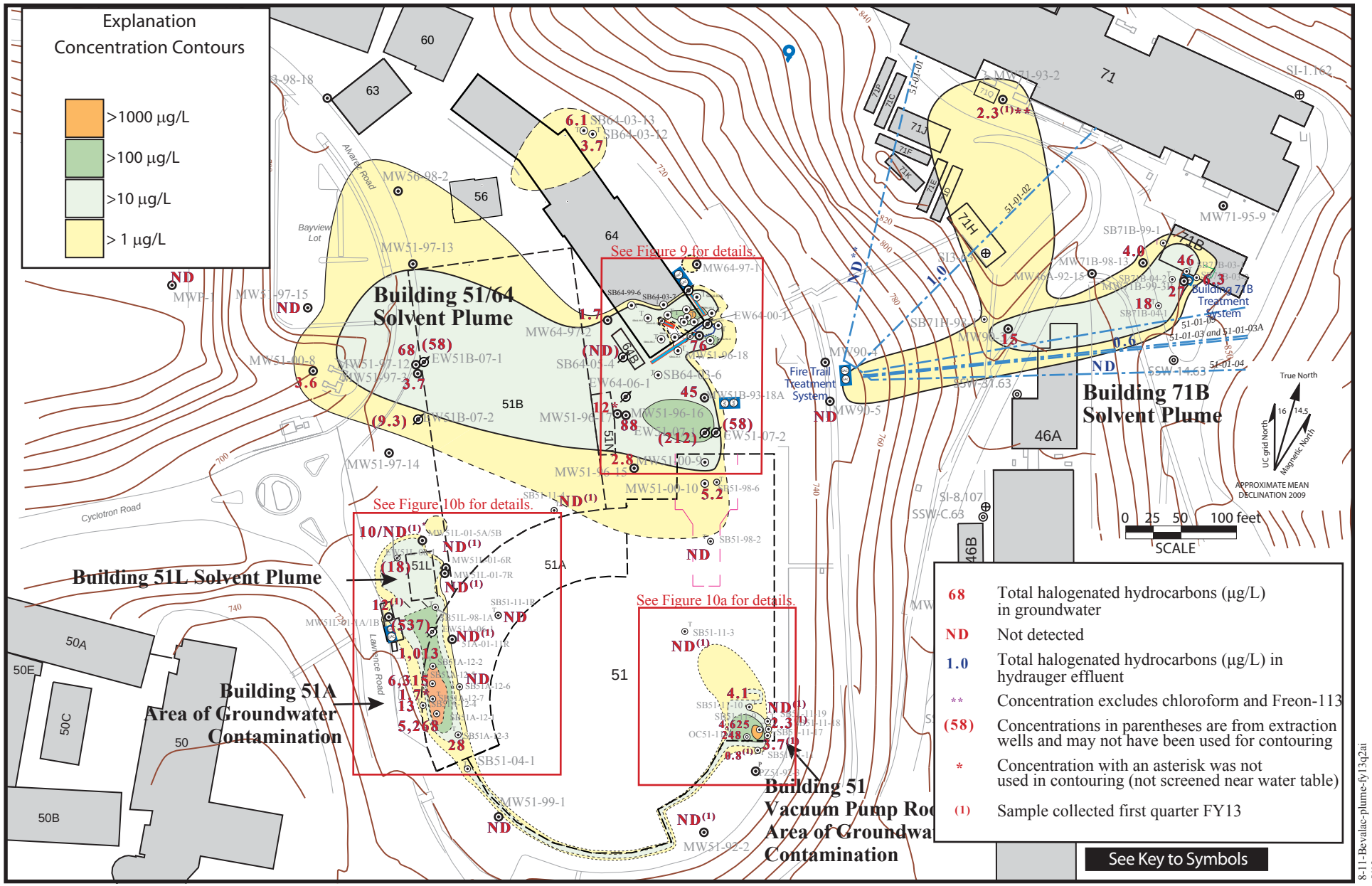

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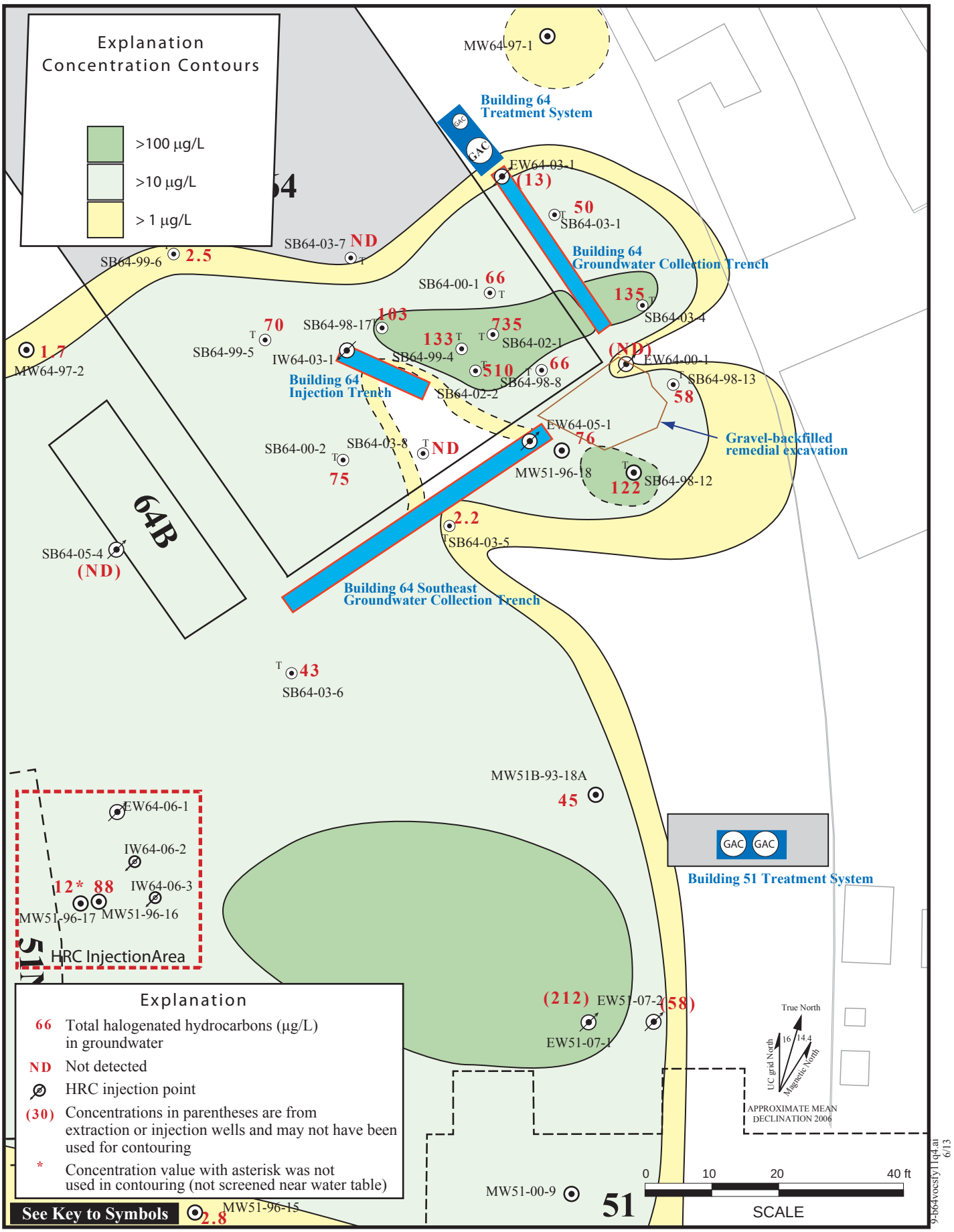

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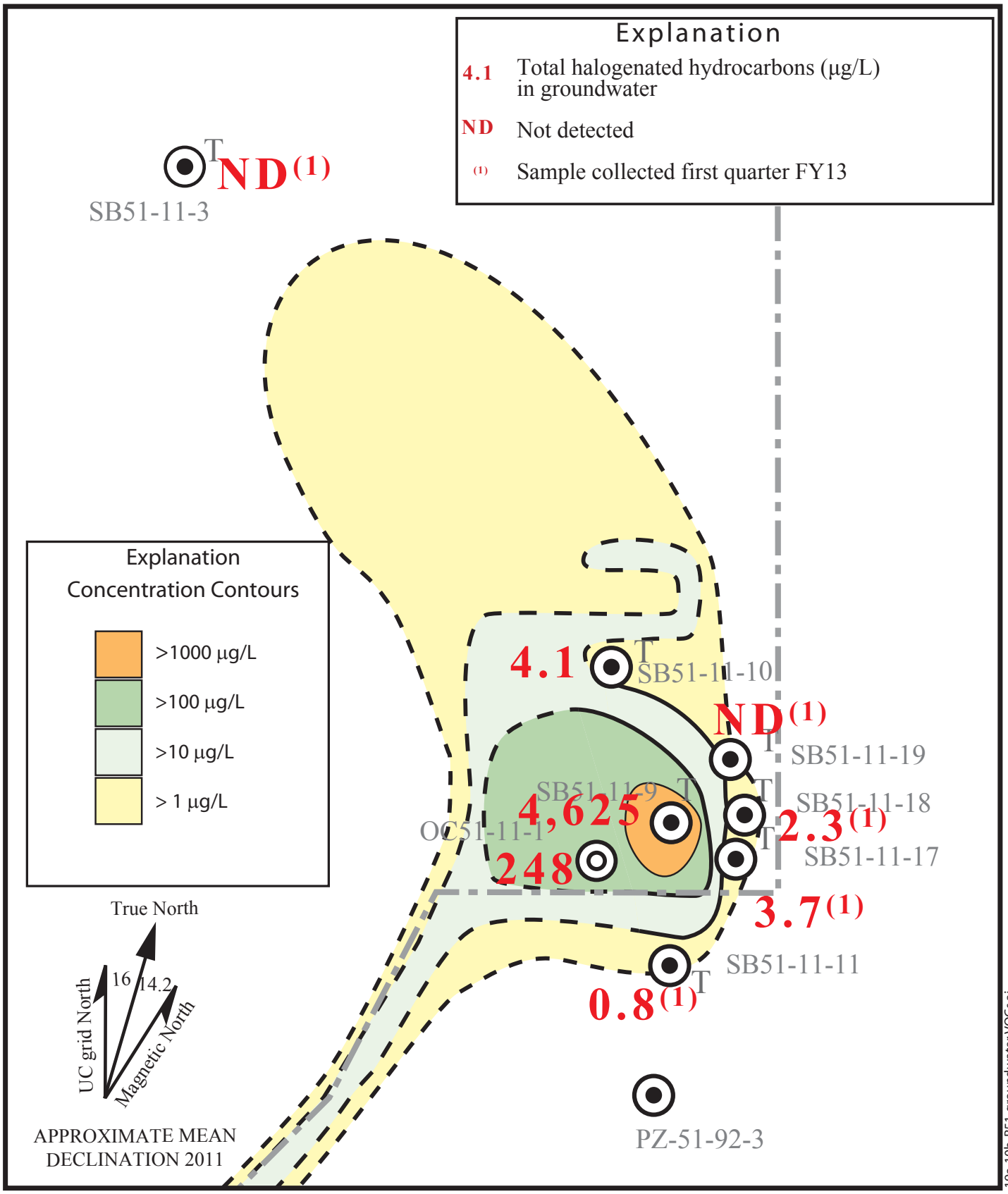

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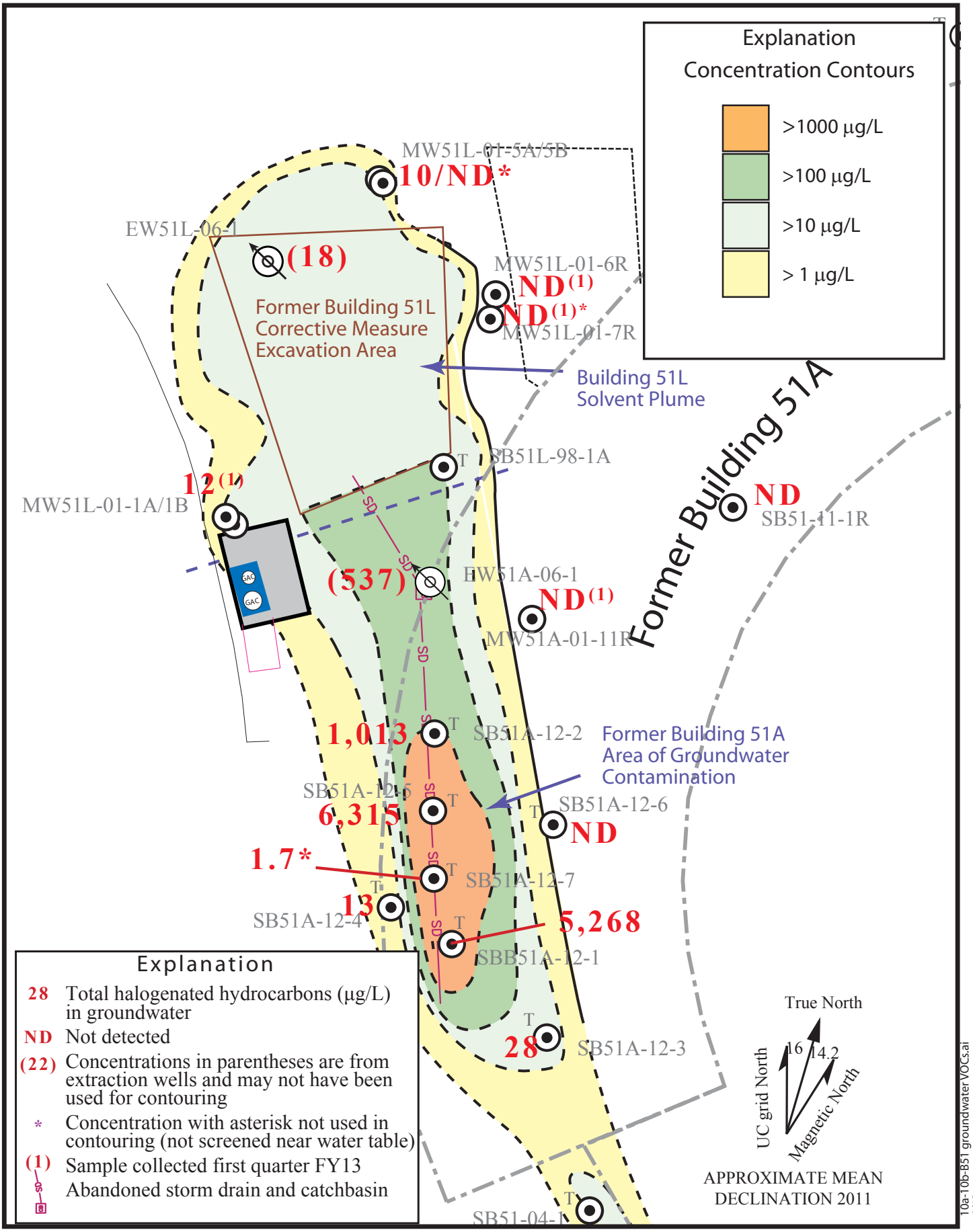

Figure 10b. Isoconcentration Contour Map, Total Halogenated Hydrocarbons in Groundwater (µg/L) in the Former Building 51A Area, Second Quarter FY13.

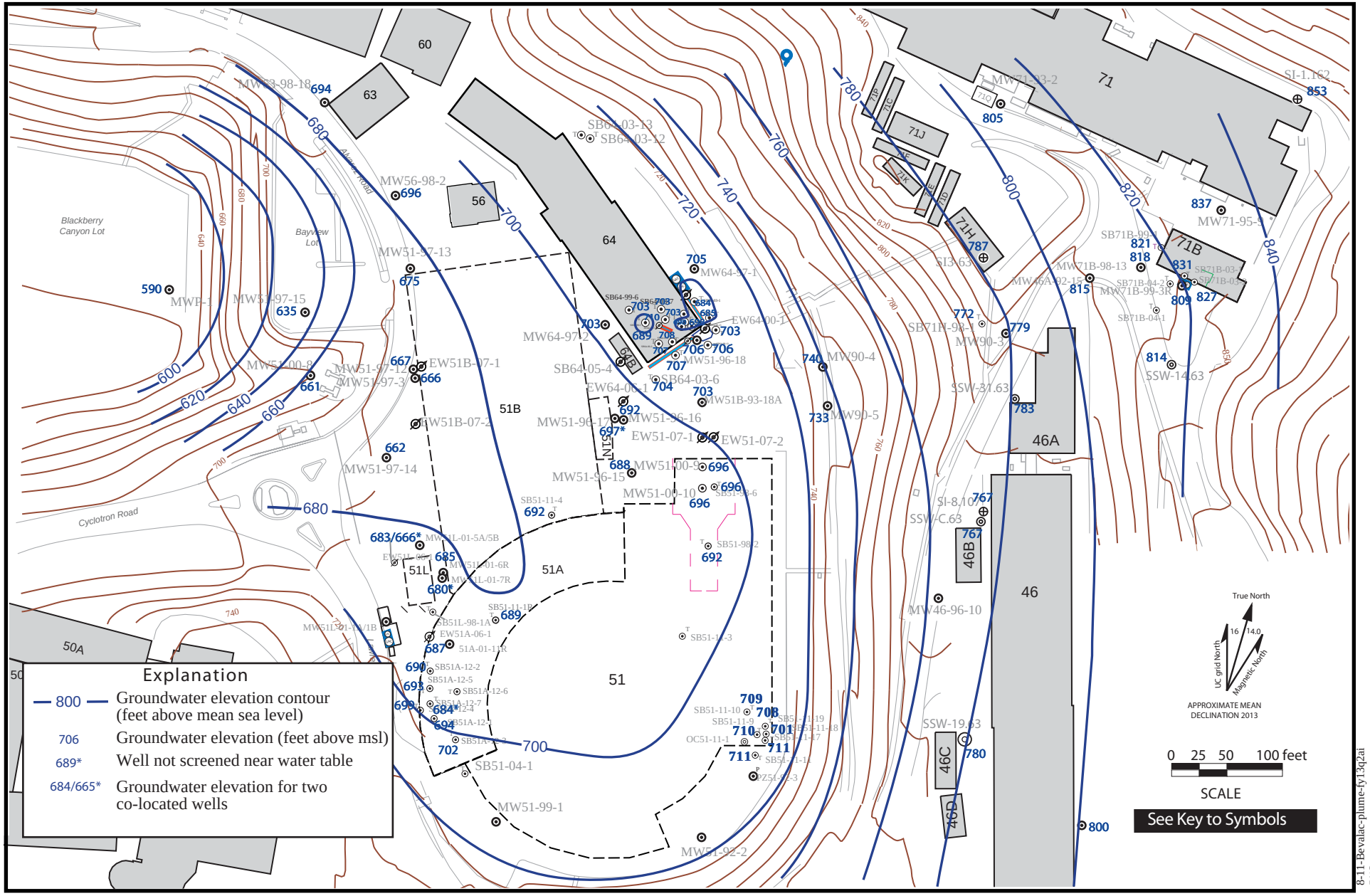

Figure 11. Water Level Elevation Map in the Bevalac Area, February 2013.

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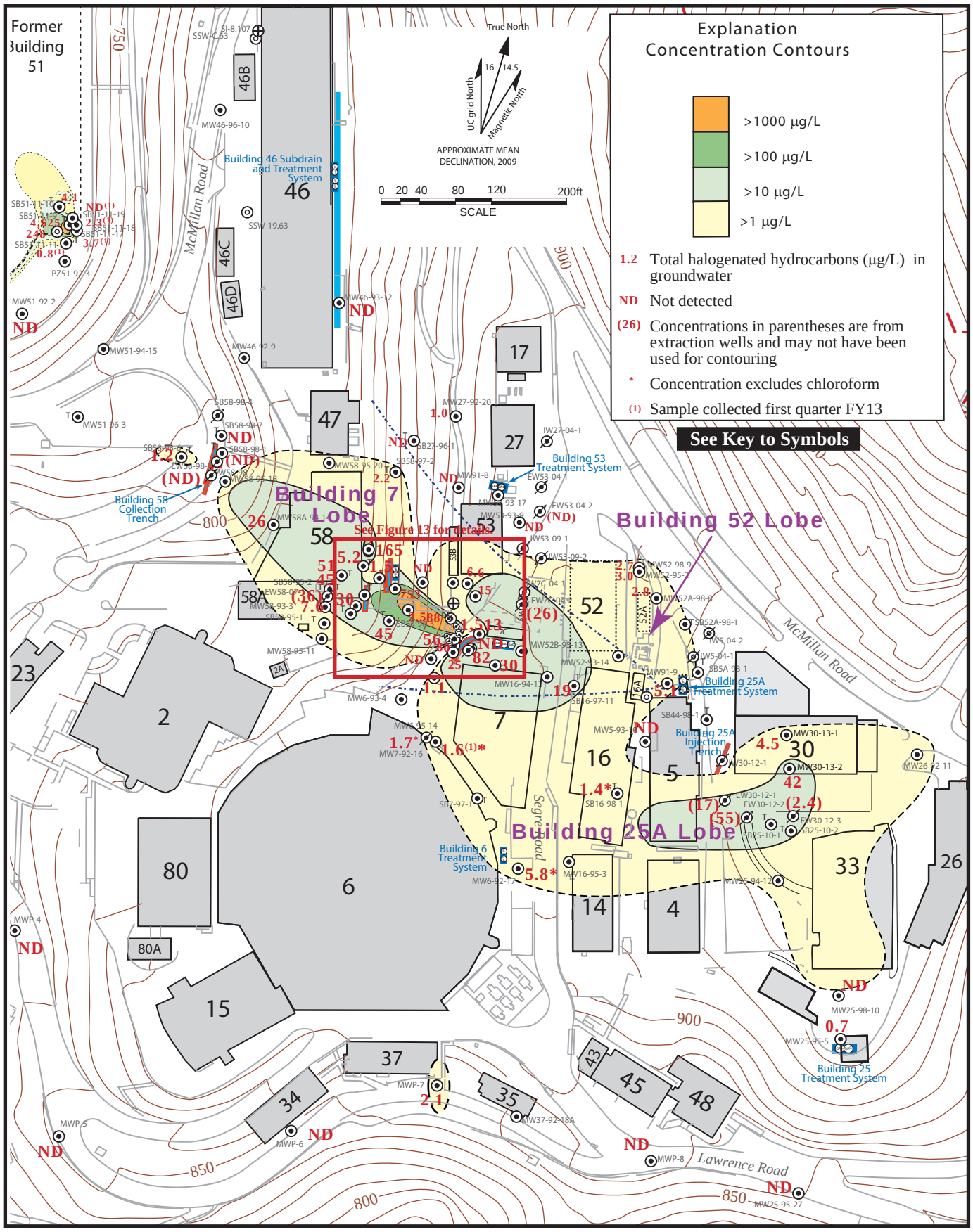

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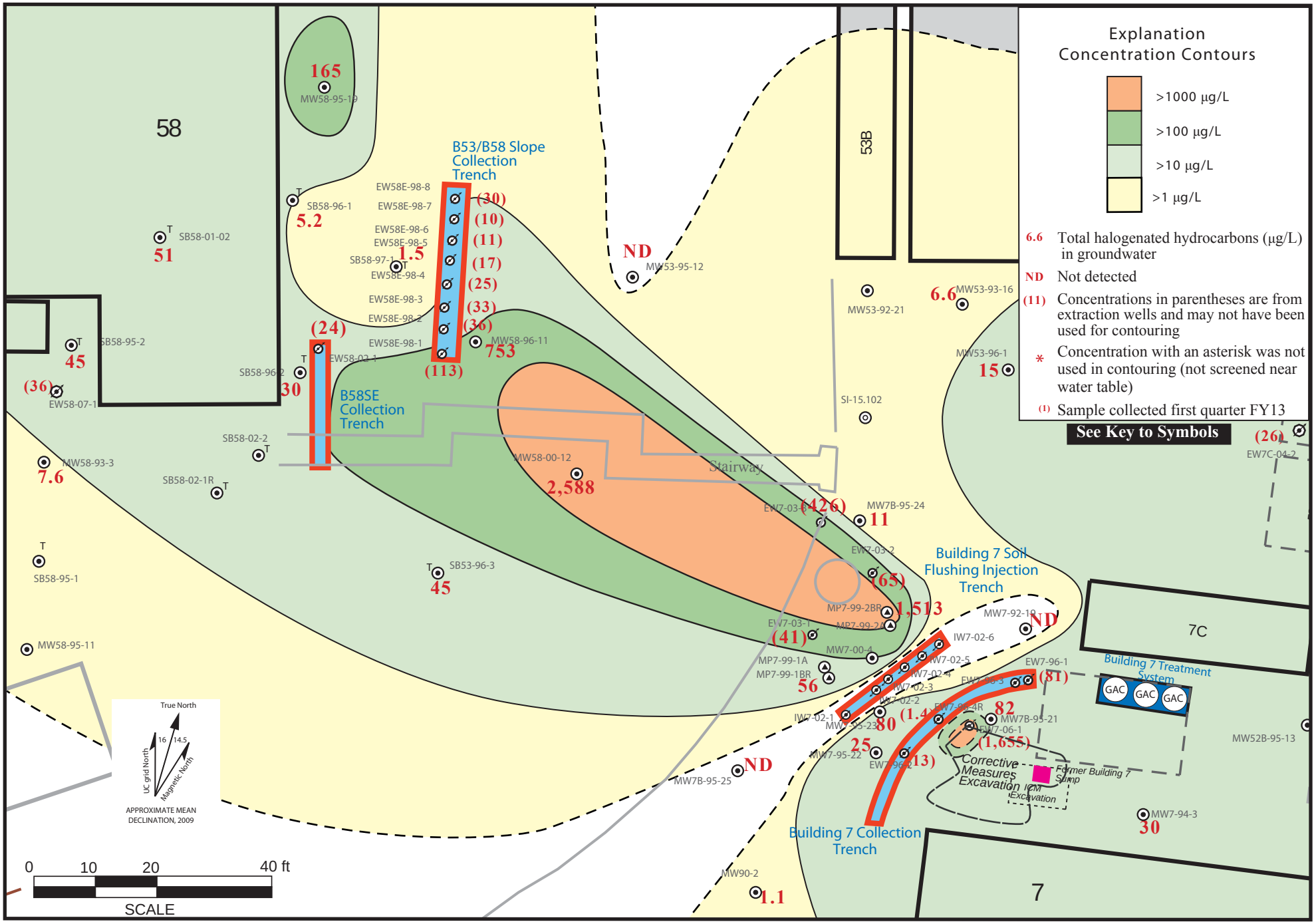

Figure 13. Isoconcentration Contour Map, Total Halogenated Hydrocarbons in Groundwater (µg/L) in the Source Area of the Old Town Solvent Plume, Second Quarter FY13.

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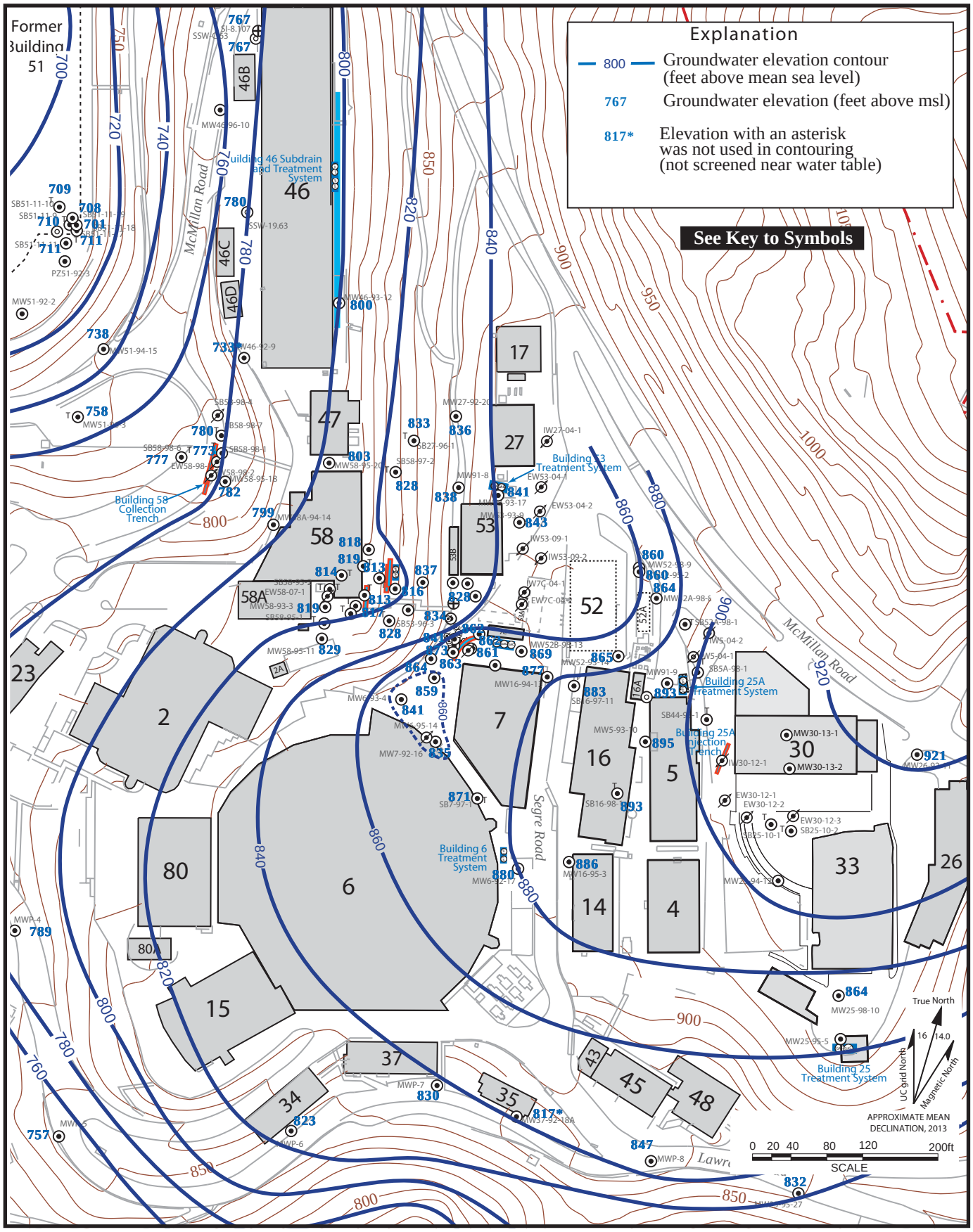

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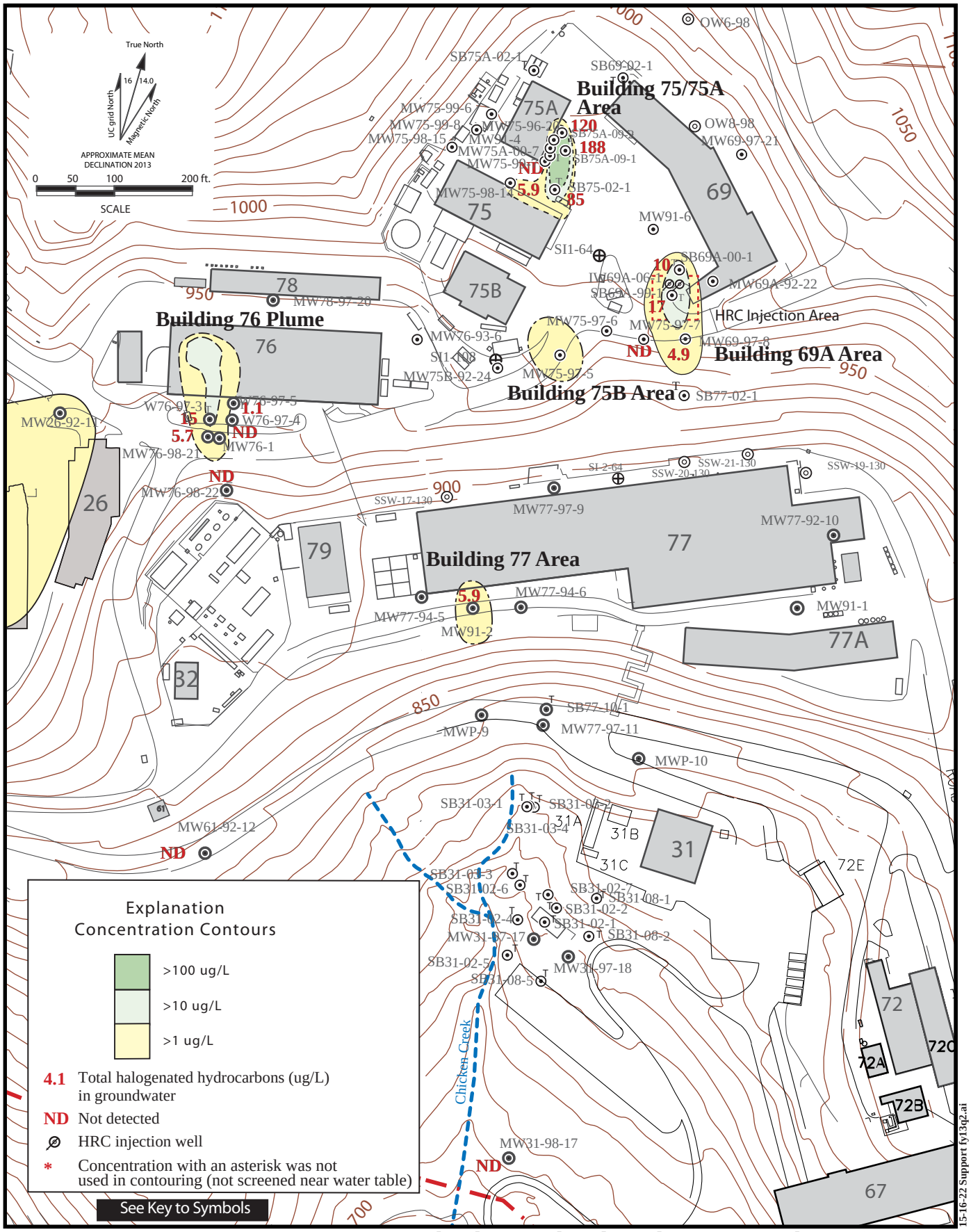

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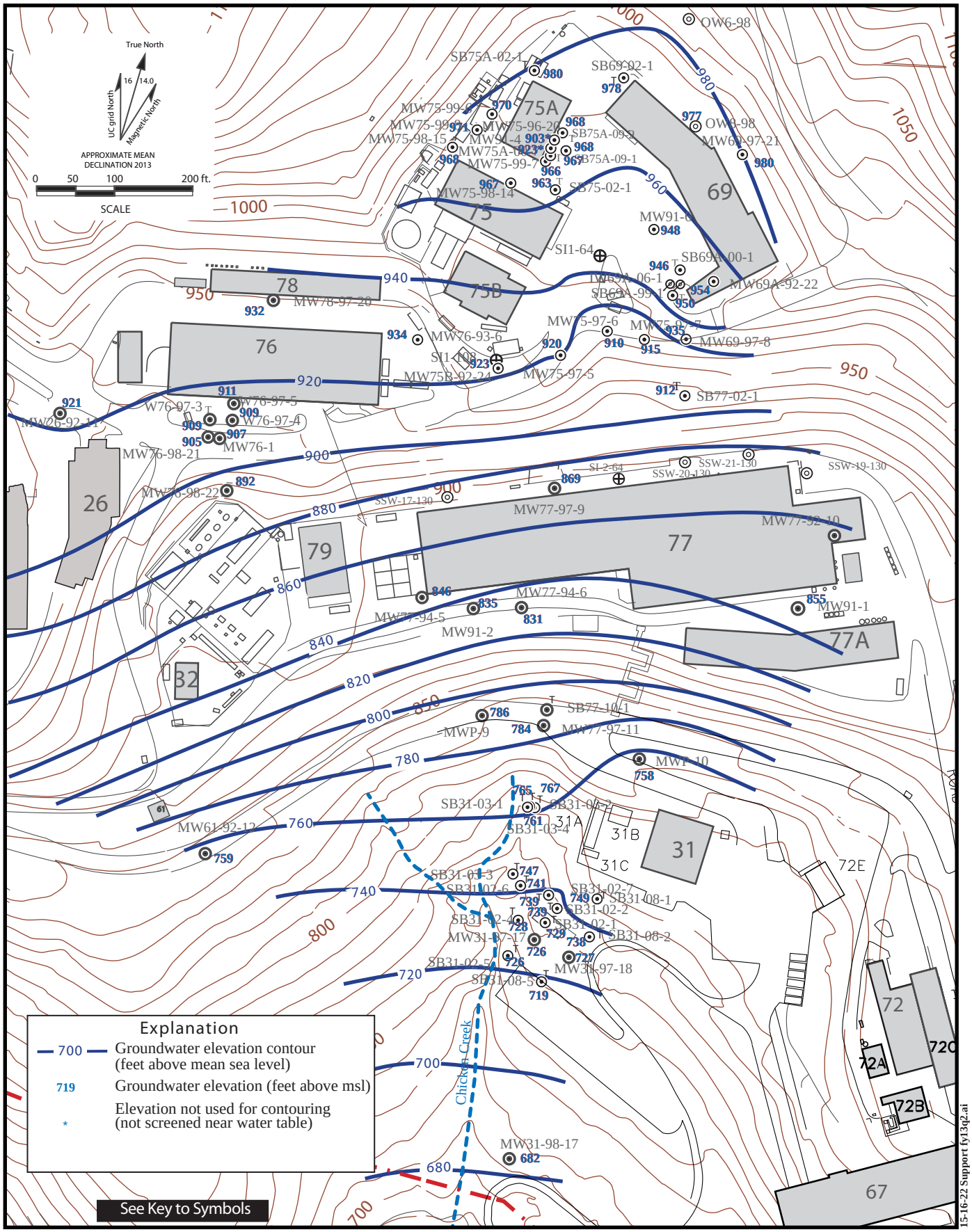

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Figure 16. Water Level Elevation Map of the Support Services Area, February 2013.

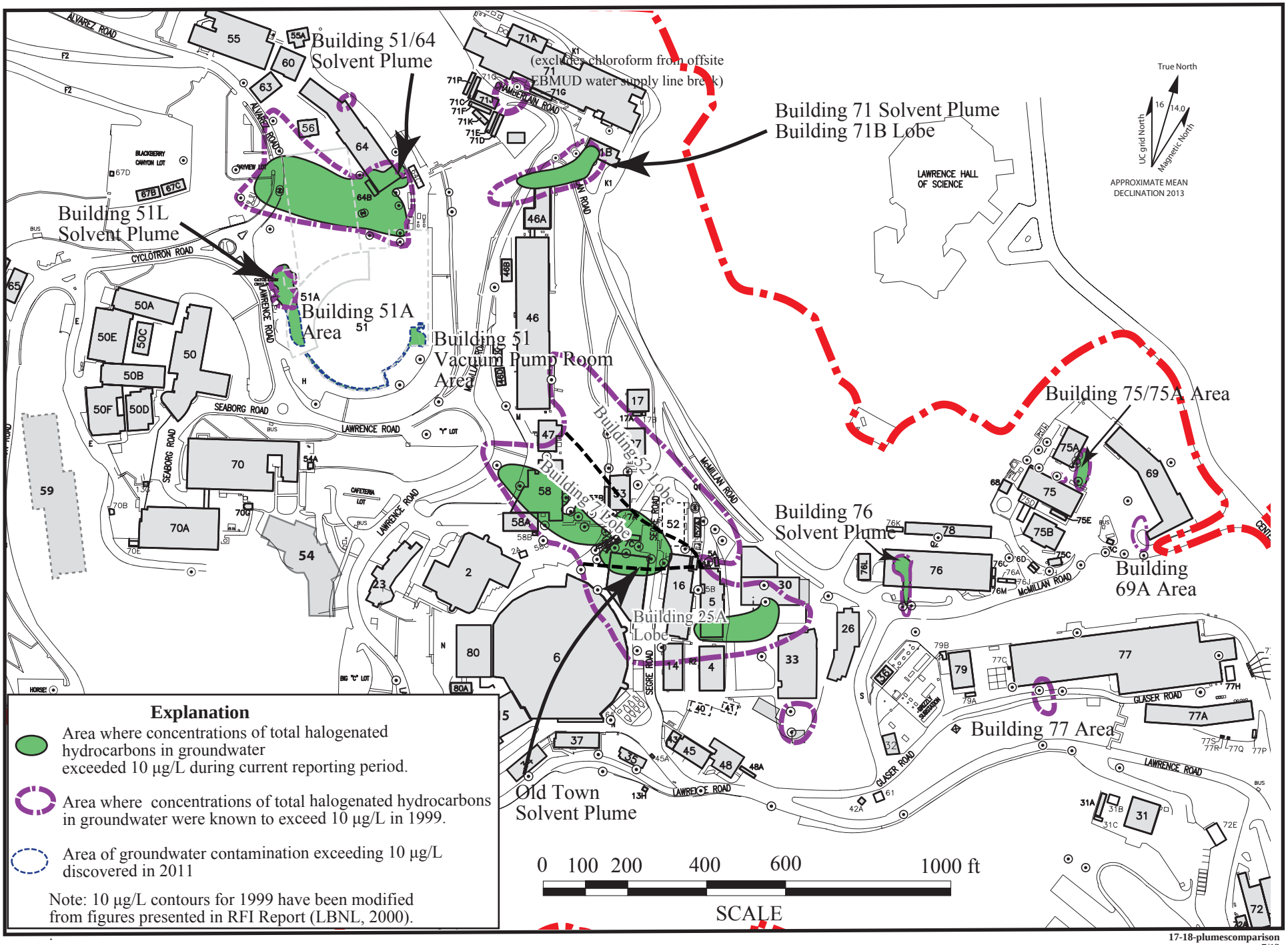
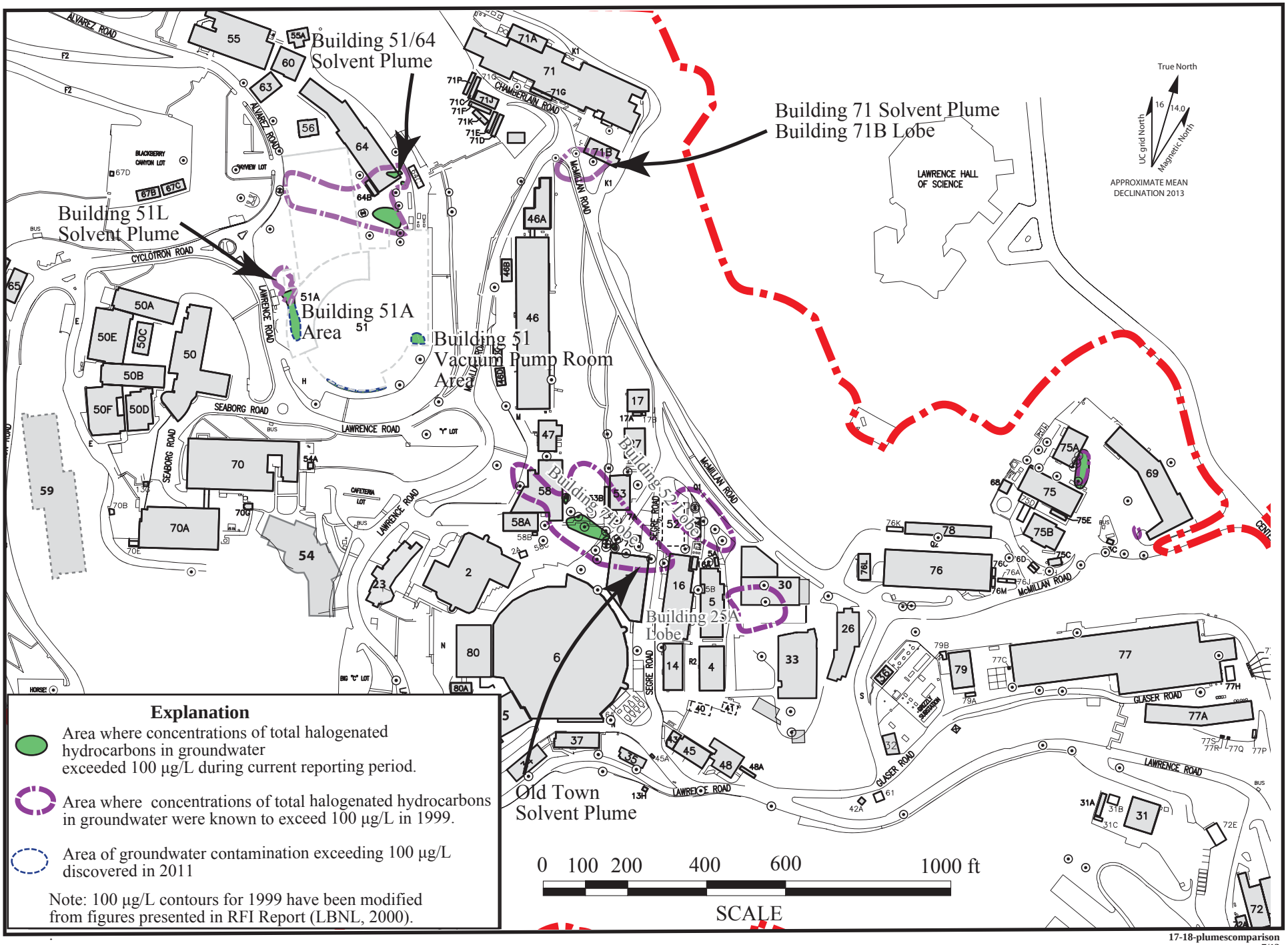


Figure 17. Extent of Groundwater Contamination (Total VOCs > 10 µg/L) Second Quarter FY13 Compared to Extent Known in 1999.



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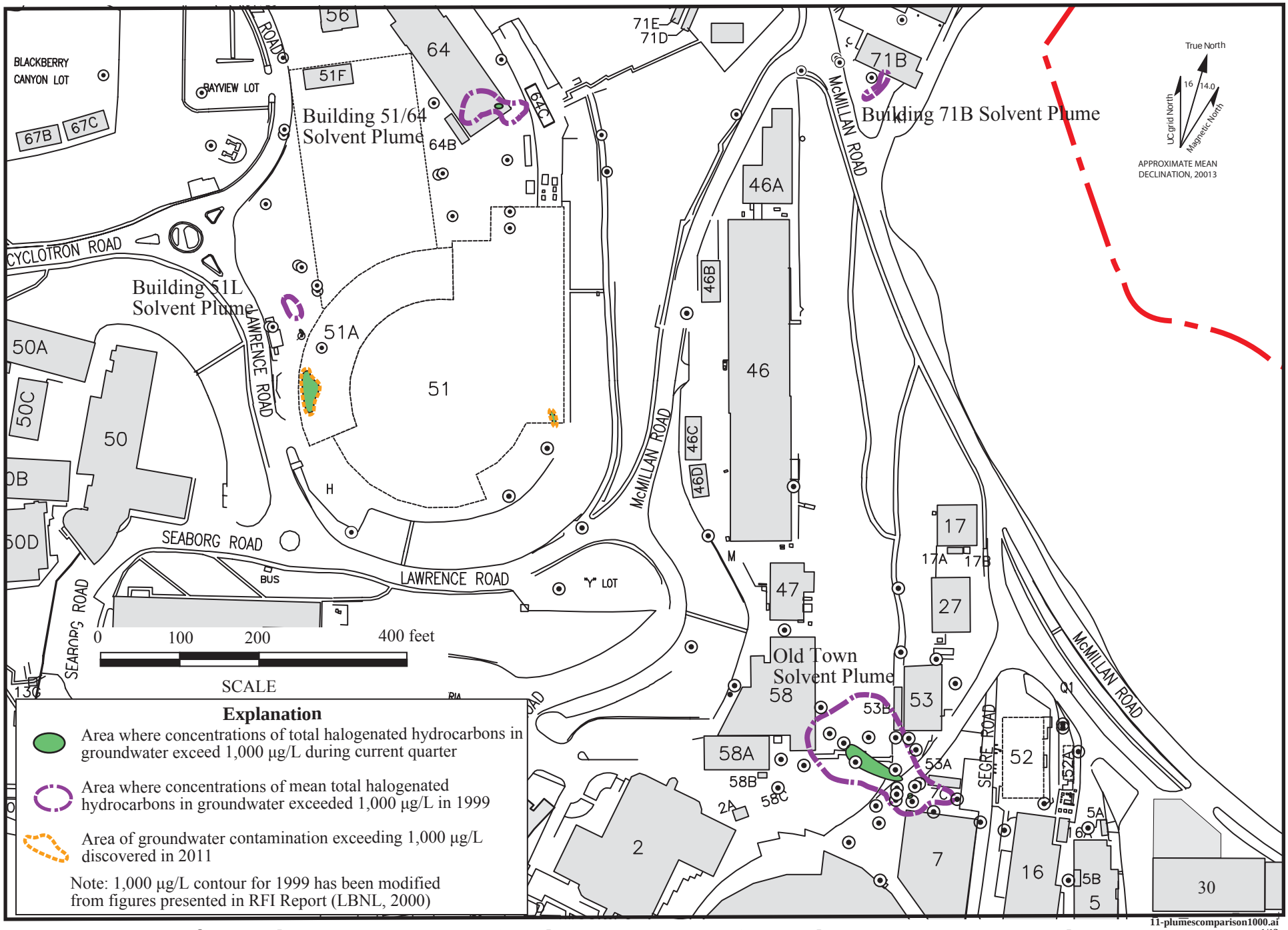

Figure 19. Extent of Groundwater Contamination (Total VOCs > 1,000 µg/L) Second Quarter FY13 Compared to 1999.

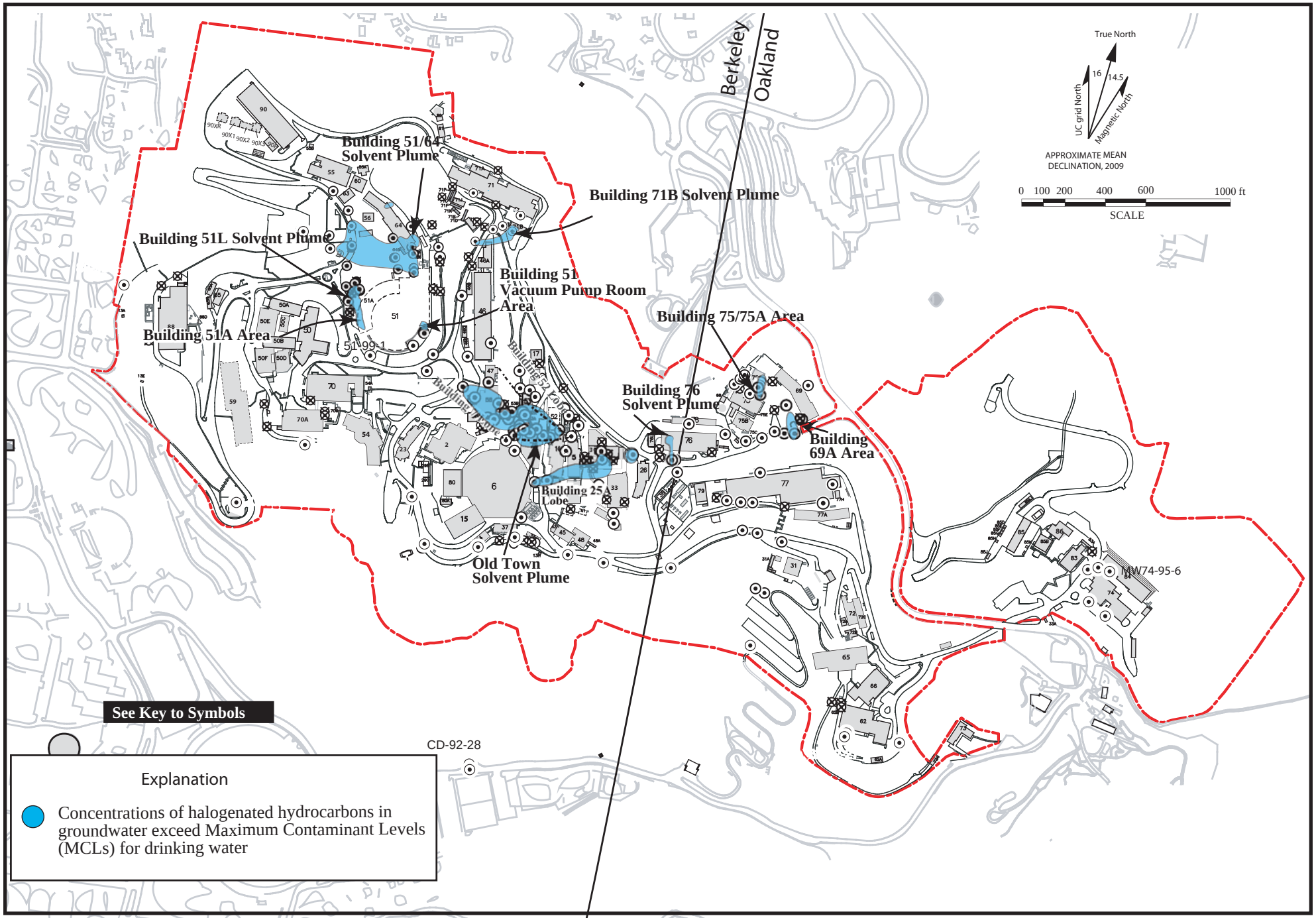

Figure 20. Extent of Halogenated Hydrocarbons in Groundwater Above MCLs, Second Quarter FY13.

20-MCLs q2-13.ai
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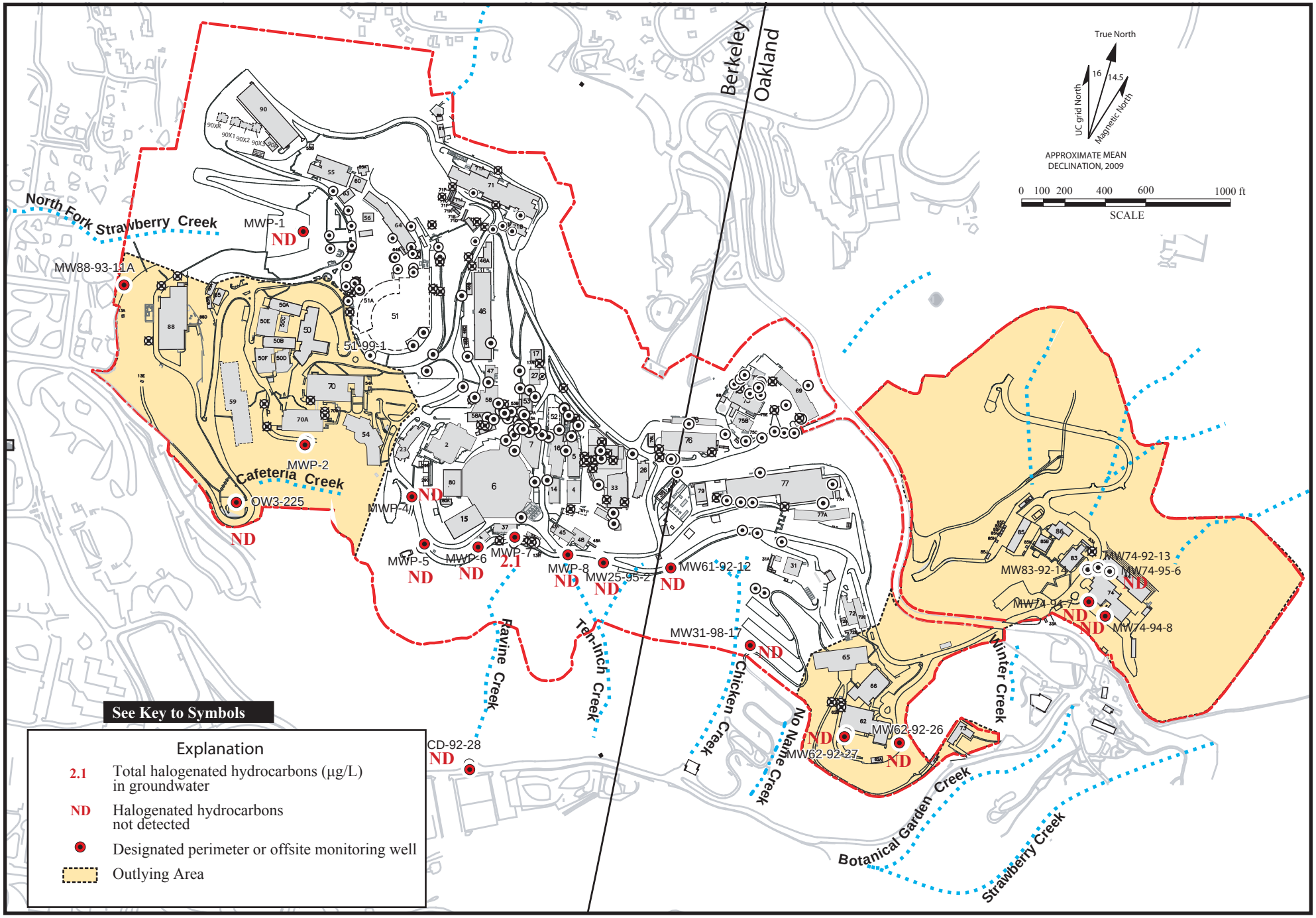

Figure 21. Total Halogenated Hydrocarbons in Groundwater (µg/L) in the Outlying Areas and Perimeter Monitoring Wells, Second Quarter FY13.

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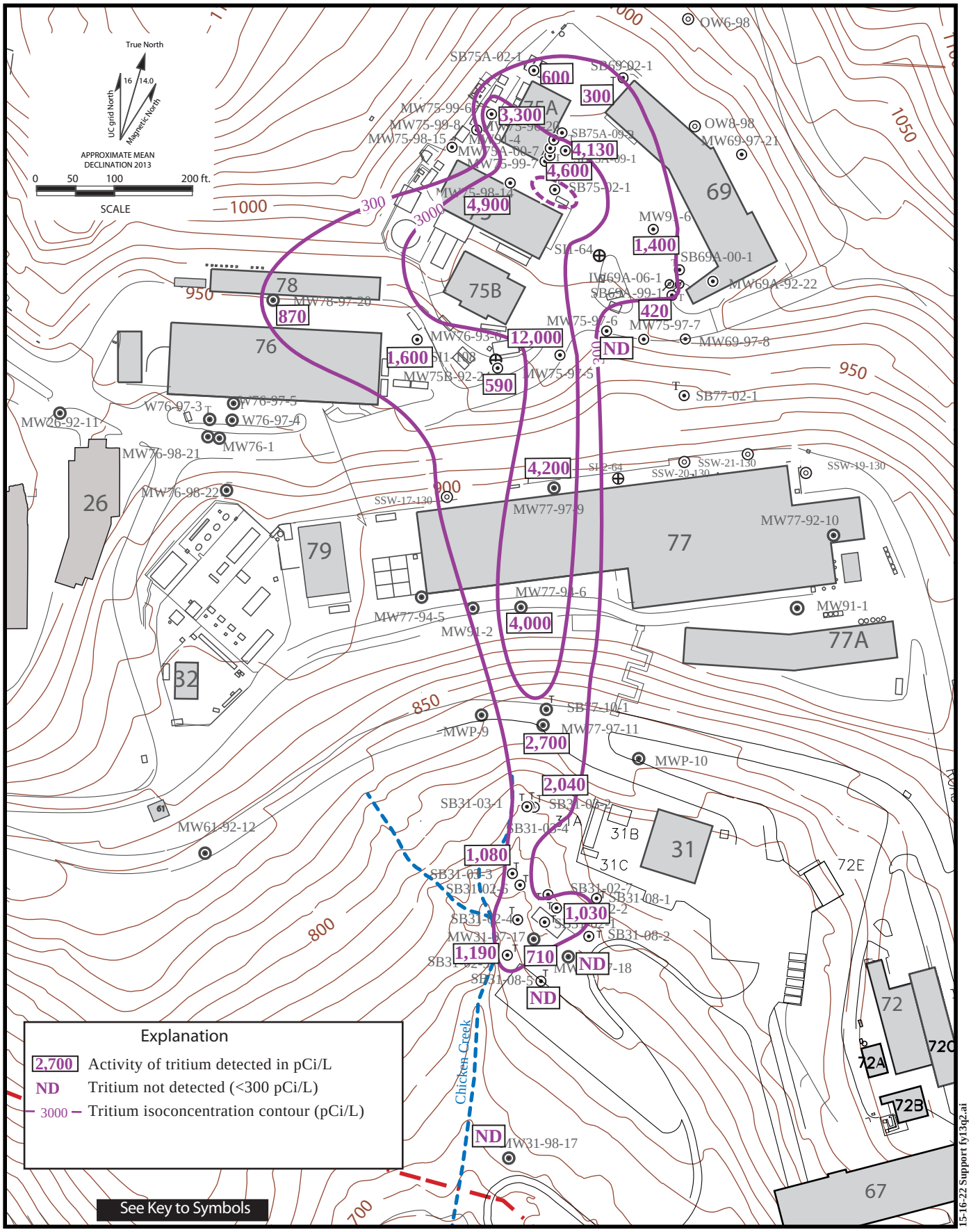

Figure 22. Tritium Activities in Groundwater (pCi/L) in Corporation Yard Area, First and Second Quarters FY13.

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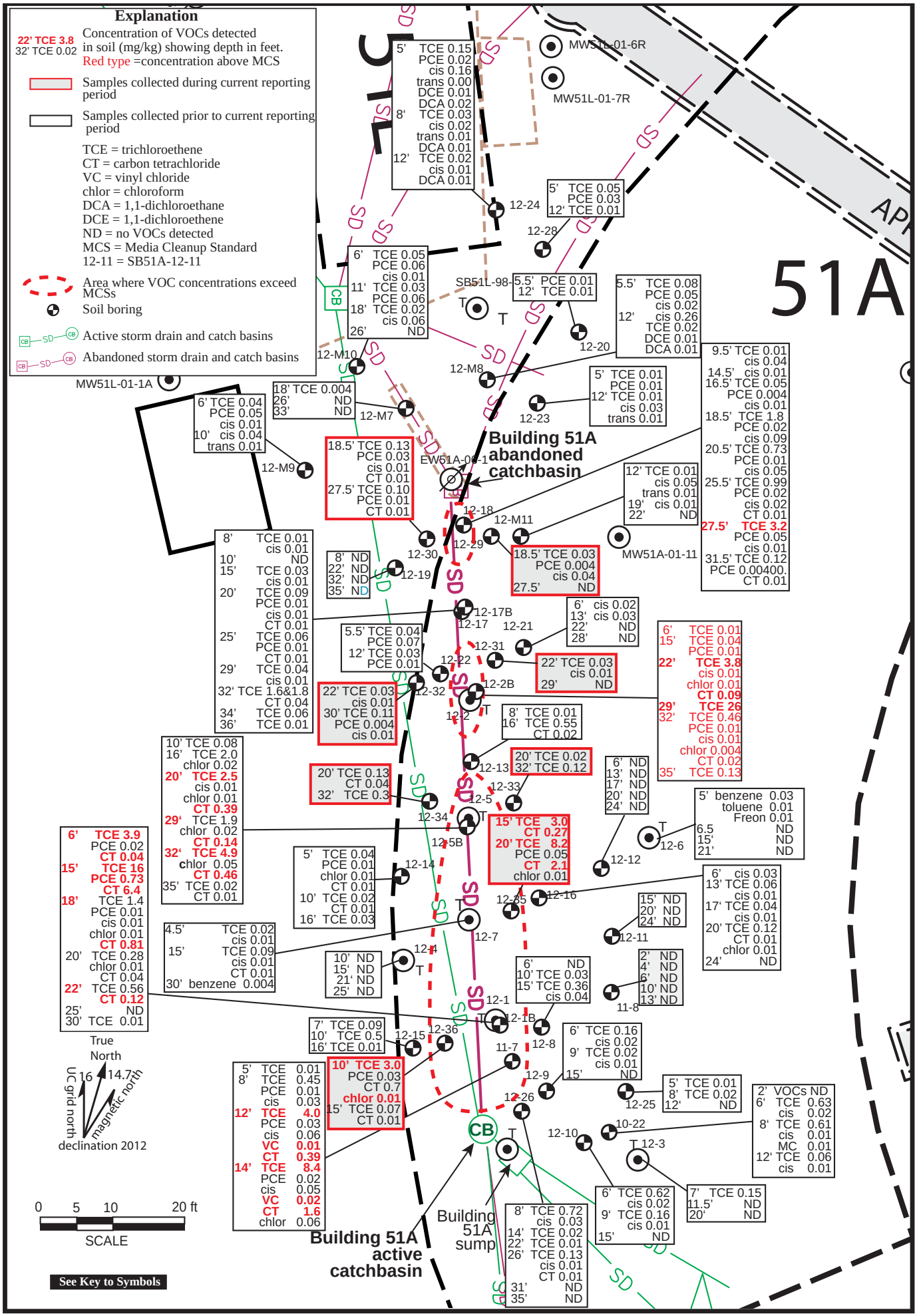


Figure 23. Concentrations of Volatile Organic Compounds (VOCs) Detected in Soil (mg/kg) Former Building 51A Area.

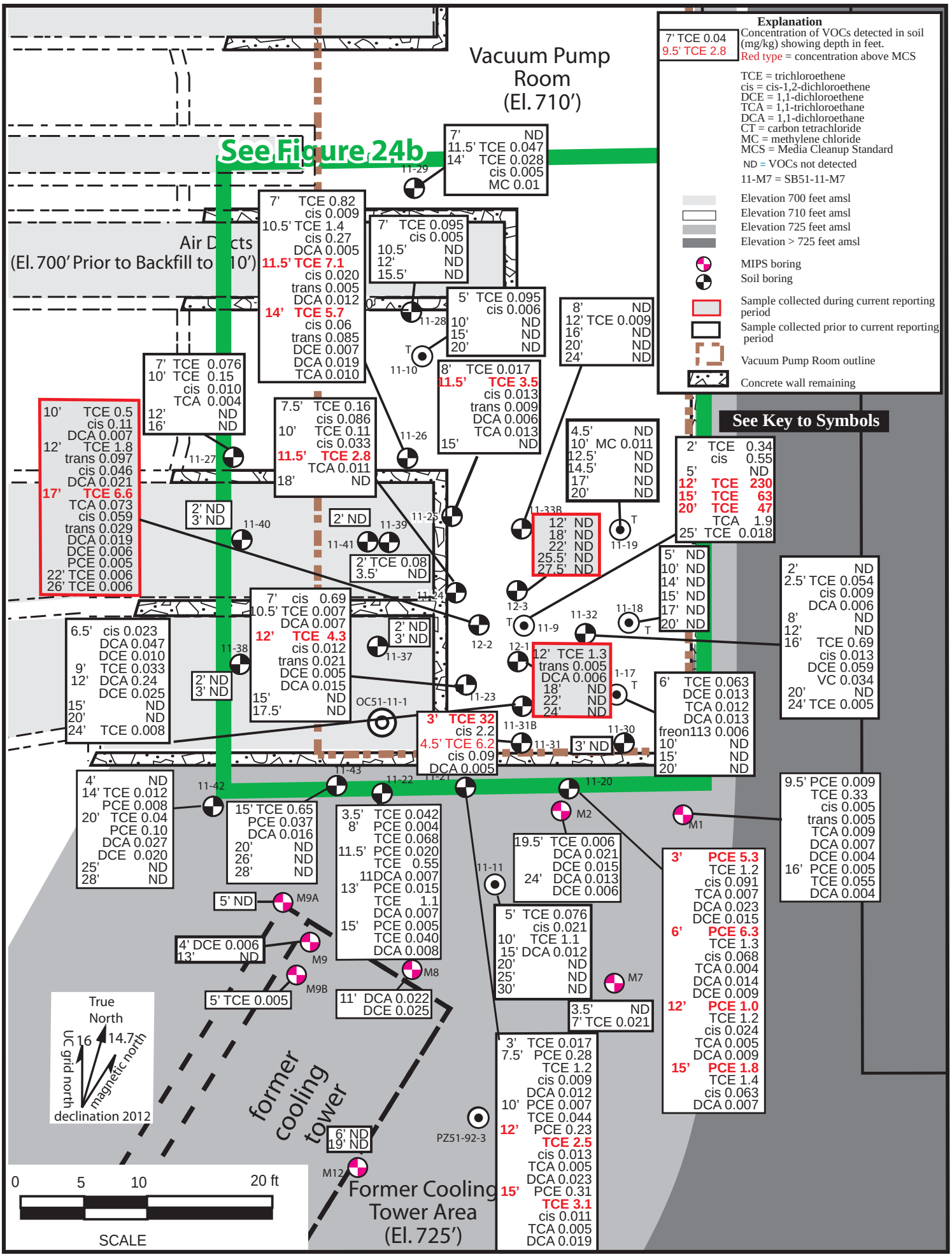
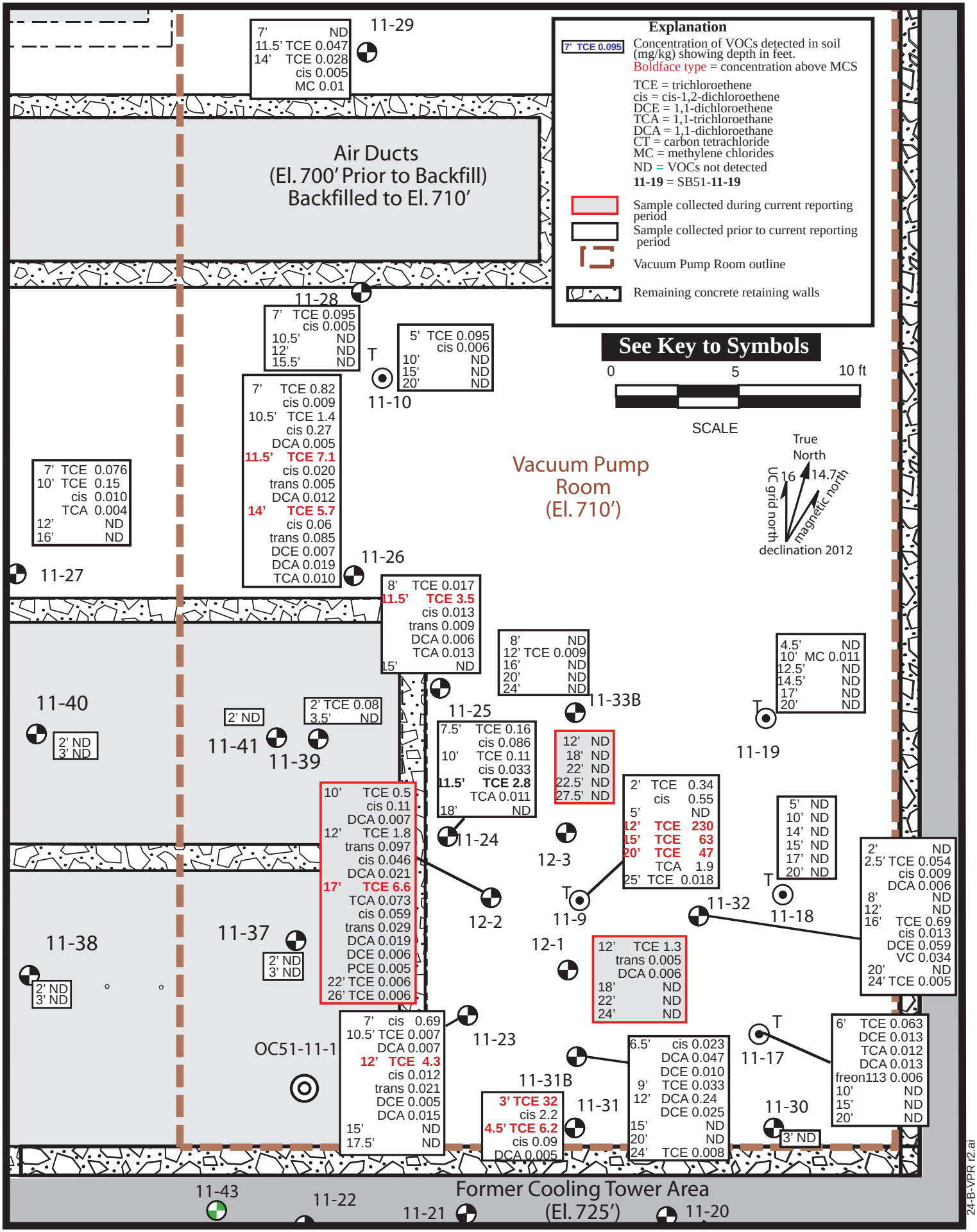


Figure 24a. Concentrations of Volatile Organic Compounds (VOCs) Detected in Soil (mg/kg), Former Building 51 Vacuum Pump Room Area.



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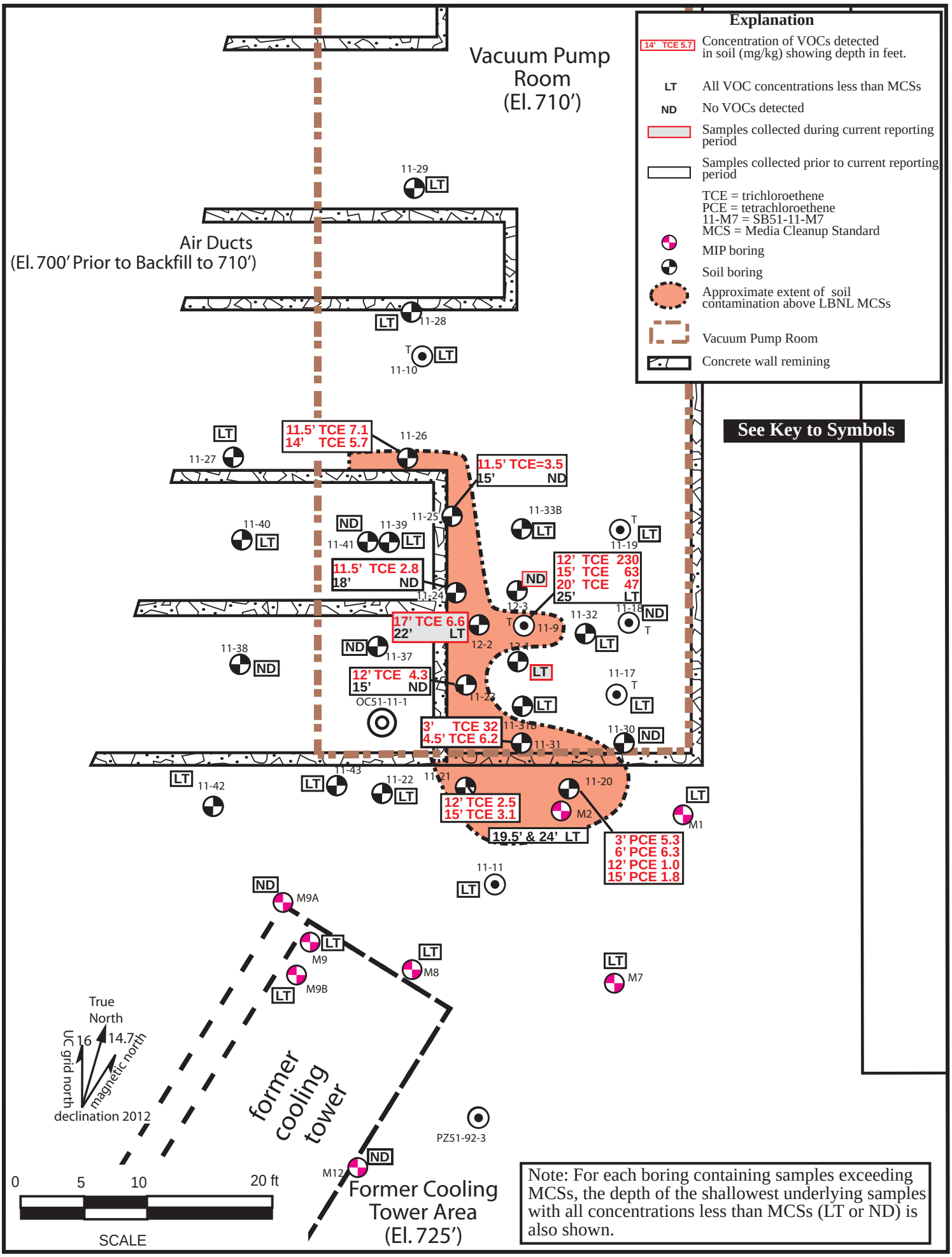

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EPA Method 8260 Quantitation Limits for Groundwater and Soil Samples
1st and 2nd Quarter FY 2013

	Water Samples (µg/L)			Soil Samples (mg/kg)
Compound	LBNL EML	BC Laboratories	Curtis & Tompkins	Curtis & Tompkins
Benzene	1.0	0.5	0.5	0.005
Bromobenzene	1.0			
Bromochloromethane	2.0			
Bromodichloromethane	1.0	0.5	0.5	0.005
Bromoform	2.0	0.5	0.5	0.005
Bromomethane	10.0	0.5	1.0	0.01
n-Butylbenzene	1.0			
sec-Butylbenzene	1.0			
tert-Butylbenzene	1.0			
Carbon Tetrachloride	1.0	0.5	0.5	0.005
Chlorobenzene	1.0	0.5	0.5	0.005
Chlorodifluoromethane (Freon-22)	30.0			
Chloroethane	30.0	0.5	0.5	0.005
Chloroform	3.0	0.5	0.5	0.005
Chloromethane	10.0	0.5	1.0	0.01
2-Chlorotoluene	2.0			
4-Chlorotoluene	2.0			
Dibromochloromethane	2.0	0.5	0.5	0.005
1,2-Dibromo-3-chloropropane	2.0	1.0	2.0	0.005
1,2-Dibromoethane	2.0			
Dibromomethane	1.0			
1,2-Dichlorobenzene	1.0			
1,3-Dichlorobenzene	1.0			
1,4-Dichlorobenzene	1.0			
Dichlorodifluoromethane (Freon-12)	3.0	0.5	1.0	0.01
1,1-Dichloroethane	1.0	0.5	0.5	0.005
1,2-Dichloroethane	2.0	0.5	0.5	0.005
1,1-Dichloroethene	1.0	0.5	0.5	0.005
cis-1,2-Dichloroethene	1.0	0.5	0.5	0.005
trans-1,2-Dichloroethene	1.0	0.5	0.5	0.005
1,2-Dichloropropane	1.0	0.5	0.5	0.005
1,3-Dichloropropane	1.0			
2,2-Dichloropropane	1.0			
1,1-Dichloropropene	1.0			
cis-1,3-Dichloropropene	1.0	0.5	0.5	0.005
trans-1,3-Dichloropropene	1.0	0.5	0.5	0.005
Dichlorotrifluoroethane (Freon-123)	1.0			
Ethylbenzene	1.0	0.5	0.5	0.005
Hexachlorobutadiene	3.0			
Isopropylbenzene	2.0			

Table 1 (Cont'd)
EPA Method 8260 Quantitation Limits
for Groundwater and Soil Samples
1st and 2nd Quarter FY 2013

	Water Samples µg/L			Soil Samples (mg/kg)
Compound	LBNL EML	BC Laboratories	Curtis & Tompkins	Curtis & Tompkins
p-Isopropyltoluene	1.0			
Methylene Chloride	1.0	1.0	10	0.01
Naphthalene	2.0			
n-Propylbenzene	1.0			
Styrene	1.0	0.5	0.5	0.005
1,1,2,2-Tetrachloroethane	1.0	0.5	0.5	0.005
1,1,1,2-Tetrachloroethane	2.0	0.5	0.5	0.005
Tetrachloroethene	1.0	0.5	0.5	0.005
Toluene	1.0	0.5	0.5	0.005
1,2,3-Trichlorobenzene	2.0			
1,2,4-Trichlorobenzene	1.0			
1,1,1-Trichloroethane	1.0	0.5	0.5	0.005
1,1,2-Trichloroethane	1.0	0.5	0.5	0.005
Trichloroethene	1.0	0.5	0.5	0.005
Trichlorofluoromethane (Freon-11)		0.5	1.0	0.005
1,2,3-Trichloropropane	1.0	1.0	1.0	0.005
Trichlorotrifluoroethane (Freon-113)	1.0	0.5	2.0	0.005
1,2,4-Trimethylbenzene	1.0			
1,3,5-Trimethylbenzene	1.0			
Vinyl Chloride	1.0	0.5	0.5	0.01
Total-Xylene	2.0	1.0	1.0	0.01
Acetone		10	10	0.1
Acetonitrile		100		
Acrolein		50		
Acrylonitrile		50		
Carbon DIsulfide		5.0	5.0	0.05
2-Chloroethyl vinyl ether		10		
Chloroprene		5.0		
trans-1,4-Dichloro-2-butene		5.0		
1,4-Dioxane		100		
Ethanol		1000	2000	10
2-Hexanone		10	10	0.01
Methyl ethyl ketone		10	10	0.01
Methyl isobutyl ketone		10	10	0.01
Vinyl Acetate		20	20	0.01

= Compound not included in analysis

Table 2
Groundwater Sampling Locations and Analytical Methods
1st and 2nd Quarter FY 2013

Location	Area	Page #	VOCs - 8260						TPH-Diesel 8015	PCB 608	Tritium 906
			Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13			
Trip Blank		P-71	√√	√	√√√√	√√√	√√√√	√√			
Field Blank		P-61	√√	√√√√	√√	√√√√	√√	√√√√			√√√
Monitoring Wells											
MW90-2[S]	2	P-41	√		√		√				
MW90-3[S]	1	P-25				√					
MW90-4[A]	1										
MW90-5[S]	1	P-25				√					
MW91-1[A]	5										
MW91-2[S]	5	P-50					√				
MW91-4[N]	3										
MW91-6[N]	3	P-60									√
MW91-8[S]	2	P-41	√		√		√				
MW91-9[A]	10	P-41		√		√		√			
MWP-1[Q]	15	P-25	√			√					
MWP-2[S]	8										
MWP-4[S]	14	P-42					√				
MWP-5[S]	14	P-42				√					
MWP-6[S]	14	P-42					√				
MWP-7[T]	14	P-42					√,D				
MWP-8[S]	10	P-42					√				
MWP-9[A]	5										
MWP-10[N]	5										
MW76-1[A]	4										
51-92-2[N]	9	P-23			√						
46-92-9[A]	7										
77-92-10[N]	5										
26-92-11[A]	10										
61-92-12[S]	5	P-50				√					
74-92-13[N]	11	P-62							√		
83-92-14[N]	11	P-62							√		
46A-92-15[A]	1										

Table 2 (Cont'd)
Groundwater Sampling Locations and Analytical Methods
1st and 2nd Quarter FY 2013

Location	Area	Page #	VOCs - 8260						TPH-Diesel 8015	PCB 608	Tritium 906
			Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13			
Monitoring Wells											
7-92-16[S]	2	P-36		√							
6-92-17[S]	14	P-36				√					
37-92-18A[N]	14										
7-92-19[S]	2	P-36	√		√		√				
27-92-20[Q]	2	P-38	√		√		√				
69A-92-22[A]	3										
75B-92-24[N]	3	P-60									√
62-92-26[S]	13	P-52				√					
62-92-27[S]	13	P-52				√					
CD-92-28[S]	OS	P-52				√					
71-93-2[N]	1	P-25		√							
58-93-3[S]	7	P-40					√				
6-93-4[A]	2										
76-93-6[N]	4	P-60									√
53-93-9[Q]	2	P-39		√		√		√			
5-93-10[S]	10	P-36		√		√		√			
88-93-11A[S]	6										
46-93-12[S]	7	P-38				√			√		
52-93-14[A]	10										
53-93-16-42'[A]	2										
53-93-16-69'[S]	2	P-40		√		√		√			
53-93-17[N]	2										
51B-93-18A[S]	9	P-24				√,D					
7-94-3[S]	2	P-36	√		√			√			
77-94-5[N]	5										
77-94-6[N]	5	P-60									√
74-94-7[S]	11	P-52				√					
74-94-8[S]	11	P-52				√					
25-94-12[A]	10										
16-94-13[A]	10										

Table 2 (Cont'd)
Groundwater Sampling Locations and Analytical Methods
1st and 2nd Quarter FY 2013

			VOCs - 8260						TPH-Diesel	PCB	Tritium
Location	Area	Page #	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	8015	608	906
Monitoring Wells											
58A-94-14[S]	7	P-41					√				
51-94-15[A]	7										
52-95-2A	10										
52-95-2B[S]	10	P-39	√	√		√		√			
16-95-3[N]	10										
25-95-5[N]	10	P-38			√		√				
74-95-6[A]	11	P-52				√			√		
71-95-9[N]	1	P-60									√
58-95-11[A]	7										
53-95-12[S]	2	P-40						√			
52B-95-13[A]	2										
6-95-14[A]	2	P-36			√		√				
58-95-18[A]	7										
58-95-19[S]	7	P-40					√				
58-95-20[A]	7										
7B-95-21[S]	2	P-37	√		√		√				
7-95-22[S]	2	P-37	√		√		√				
7-95-23[Q]	2	P-37	√		√		√				
7B-95-24[Q]	2	P-37	√		√		√				
7B-95-25[S]	2	P-37	√	√		√		√			
25-95-27[S]	10	P-38					√				
53-96-1[A]	2	P-40		√		√		√			
51-96-3[A]	7										
46-96-10[A]	7										
58-96-11[Q]	2	P-40	√		√	√,D					
51-96-15[S]	9	P-23				√					
51-96-16[S]	9	P-23	√	√		√		√			
51-96-17[A]	9	P-23	√	√		√		√			
51-96-18[S]	9	P-23		√		√		√,D			

Table 2 (Cont'd)
Groundwater Sampling Locations and Analytical Methods
1st and 2nd Quarter FY 2013

Location	Area	Page #	VOCs - 8260						TPH-Diesel 8015	PCB 608	Tritium 906
			Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13			
Monitoring Wells											
75-96-20[A]	3										
64-97-1[A]	9										
64-97-2[S]	9	P-25				√					
51-97-3[A]	9										
75-97-5[N]	3	P-60									√,D
75-97-6[N]	3	P-60									√
75-97-7[N]	3	P-50				√					
69-97-8[S]	3	P-50		√		√		√			
77-97-9[N]	5	P-60									√,D
77-97-11[N]	5	P-60									√
51-97-12[S]	9	P-24					√				
51-97-13[A]	9	P-24					√				
51-97-14[A]	9										
51-97-15[S]	9	P-24					√				
31-97-17[N]	5	P-60									√
31-97-18[N]	5	P-60									√
78-97-20[N]	4	P-60									√
69-97-21[N]	3										
56-98-2[A]	9										
52A-98-8A[A]	10										
52A-98-8B[S]	10	P-39	√	√		√		√			
52-98-9[A]	10	P-39	√	√		√		√			
25-98-10[A]	10	P-38					√				
71B-98-13[S]	1	P-25				√					√
75-98-14[A]	3	P-50				√					√
75-98-15[N]	3										
31-98-17[S]	5	P-50				√					√√
63-98-18[A]	15										
76-98-21[S]	4	P-50				√					

Table 2 (Cont'd)
Groundwater Sampling Locations and Analytical Methods
1st and 2nd Quarter FY 2013

Location	Area	Page #	VOCs - 8260						TPH-Diesel 8015	PCB 608	Tritium 906
			Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13			
Monitoring Wells											
76-98-22[S]	4	P-50					√				
51-99-1[N]	9	P-24					√				
71B-99-3R[Q]	1	P-25		√√		√		√			√
75-99-6[N]	3	P-60									√
75-99-7[N]	3	P-50				√					√
75-99-8[N]	3										
7-00-4[A]	2										
75A-00-7[A]	3										
51-00-8[Q]	9	P-24	√					√			
51-00-9[N]	9										
51-00-10[A]	9										
58-00-12[Q]	7	P-40	√,D		√		√,D				
51L-01-1A[A]	9	P-24			√						
51L-01-1B[N]	9										
51L-01-5A[A]	9	P-24	√								
51L-01-5B[A]	9	P-24	√								
51L-01-6R[A]	9	P-25	√√								√
51L-01-7R[A]	9	P-25	√√								√
51A-01-11R[A]	9	P-24		√							√
30-13-1	10	P-38						√			
30-13-2	10	P-38						√			
OW3-225[S]	8	P-52				√					
MP7-99-1BR	2	P-42	√		√		√				
MP7-99-2BR	2	P-42	√,D		√		√				
Hydraugers											
51-01-01	9	P-53			√,D		√,D				
51-01-02	9	P-53			√		√				
51-01-03	9	P-53			√,D	√	√ ,D				
51-01-04	9	P-53			√		√				

Table 2 (Cont'd)
Groundwater Sampling Locations and Analytical Methods
1st and 2nd Quarter FY 2013

			VOCs - 8260						TPH-Diesel	PCB	Tritium
Location	Area	Page #	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	8015	608	906
Temporary Groundwater Sampling Points											
OC51-11-1	10	P-34	√		√			√			
SB5A-98-1	10										
SB7-97-1	2										
SB16-97-11	10	P-43						√			
SB16-98-1	10	P-43						√			
SB27-96-1	5	P-43	√		√		√				
SB31-02-1	5										
SB31-02-2	5	P-61									√
SB31-02-4	5										
SB31-02-5	5	P-61									√
SB31-02-6	5										
SB31-02-7	5										
SB31-03-1	5										
SB31-03-2	5	P-61									√
SB31-03-3	5	P-61									√
SB31-03-4	5										
SB31-08-5A	5	P-61									√
SB31-08-5B	5	P-61									√
SB51-98-2	9	P-26					√			√	
SB51-98-6	9	P-26		√			√			√	
SB51-11-1R	9	P-34		√				√			√
SB51-11-3	9	P-34		√							√
SB51-11-4	9	P-34		√							√
SB51-11-9	9	P-34		√	√√			√			
SB51-11-10	9	P-34		√				√			
SB51-11-11	9	P-34			√						
SB51-11-17	9	P-34		√							
SB51-11-18	9	P-34		√							
SB51-11-19	9	P-35		√							
SB51A-12-1	9	P-35		√√		√					

Table 2 (Cont'd)
Groundwater Sampling Locations and Analytical Methods
1st and 2nd Quarter FY 2013

			VOCs - 8260						TPH-Diesel	PCB	Tritium
Location	Area	Page #	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	8015	608	906
Temporary Groundwater Sampling Points											
SB51A-12-2	9	P-35		√		√					
SB51A-12-3	9	P-35		√				√,D			
SB51A-12-4	9	P-35		√				√			
SB51A-12-5	9	P-35		√		√					
SB51A-12-6	9	P-35		√				√			
SB51A-12-7	9	P-35		√				√			
SB53-96-3	2	P-43		√		√		√			
SB58-95-1	7										
SB58-95-2	7	P-43						√			
SB58-96-1	7	P-43	√		√		√				
SB58-96-2	7	P-44	√		√		√,D				
SB58-97-1	7	P-44	√		√		√				
SB58-97-2	7	P-44	√		√		√				
SB58-98-1	7	P-44						√			
SB58-98-6	7	P-44						√			
SB58-98-7	7										
SB58-01-2	7	P-44						√			
SB58-02-1R	7										
SB58-02-2	7										
SB64-98-8	9	P-26		√		√		√			
SB64-98-12	9	P-26						√			
SB64-98-13	9	P-26						√			
SB64-98-17	9	P-26		√		√		√			
SB64-99-4	9	P-26		√		√		√			
SB64-99-5	9	P-27		√		√		√			
SB64-99-6	9	P-27						√			
SB64-00-1	9	P-27		√		√		√			
SB64-00-2	9	P-27		√		√		√			
SB64-02-1A	9	P-27	√		√		√				
SB64-02-1B	9	P-27	√		√		√				

Table 2 (Cont'd)
Groundwater Sampling Locations and Analytical Methods
1st and 2nd Quarter FY 2013

			VOCs - 8260						TPH-Diesel	PCB	Tritium
Location	Area	Page #	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	8015	608	906
Temporary Groundwater Sampling Points											
SB64-02-1C	9	P-28	√		√		√				
SB64-02-1D	9	P-28	√		√		√				
SB64-02-1E	9	P-28	√		√		√				
SB64-02-1F	9	P-28	√		√		√				
SB64-02-2A	9	P-28	√		√		√				
SB64-02-2B	9	P-29	√		√		√				
SB64-02-2C	9	P-29	√		√		√				
SB64-02-2D	9	P-29	√		√		√				
SB64-02-2E	9	P-29	√		√		√				
SB64-02-2F	9	P-29	√		√		√				
SB64-03-1A	9	P-30						√			
SB64-03-1B	9	P-30		√		√		√			
SB64-03-4	9	P-30						√			
SB64-03-5	9	P-30		√		√		√			
SB64-03-6	9	P-30		√		√		√			
SB64-03-7	9	P-30						√			
SB64-03-8	9	P-30						√			
SB64-03-12	9	P-31					√				
SB64-03-13	9	P-31					√				
SB64-05-4	9	P-31		√		√		√			
SB69-02-1A	3	P-60									√
SB69-02-1B	3										
SB69A-99-1	3	P-51		√		√		√			√
SB69A-00-1	3	P-51					√				
SB71B-99-1	1										
SB71B-03-1	1	P-31		√		√		√			
SB71B-03-2	1	P-31		√		√		√			
SB71B-04-1	1	P-31		√		√		√			
SB75-02-1	3	P-51						√			

Table 2 (Cont'd)
Groundwater Sampling Locations and Analytical Methods
1st and 2nd Quarter FY 2013

			VOCs - 8260						TPH-Diesel	PCB	Tritium
Location	**Area**	**Page #**	**Oct-12**	**Nov-12**	**Dec-12**	**Jan-13**	**Feb-13**	**Mar-13**	**8015**	**608**	**906**
Temporary Groundwater Sampling Points											
SB75A-02-1A	3	P-60									√
SB75A-02-1B	3										
SB75A-09-1	3	P-51						√			√
SB75A-09-2	3	P-51						√			
SB77-10-1A	5										
SB77-10-1B	5										
SB77-10-1C	5										
SB77-02-1	5										
W76-97-3	4	P-51						√	√		
W76-97-4	4	P-51						√	√		
W76-97-5	4	P-51						√			
Extraction Wells											
EW7-96-1	2	P-45		√		√		√			
EW7-96-2	2	P-45		√		√		√			
EW7-96-4R	2	P-45		√		√		√			
EW7-03-1	2	P-45		√		√		√			
EW7-03-2	2	P-45		√		√		√			
EW7-03-3	2	P-46		√		√		√			
EW7-06-1	2	P-46	√		√		√				
EW7C-04-2	2	P-46		√		√		√			
EW30-12-1	10	P-46		√		√		√			
EW30-12-2	10	P-46		√		√		√			
EW30-12-3	10	P-47		√		√		√			
EW51-07-1	9	P-32		√		√		√			
EW51-07-2	9	P-32		√		√		√			
EW51A-06-1	9	P-32		√		√		√			
EW51B-07-1	9	P-32		√		√		√			
EW51B-07-2	9	P-33		√		√		√			
EW51L-06-1	9	P-33		√		√		√			
EW53-04-2	2	P-47		√		√		√			
EW58-98-1[T]	7	P-47			√		√				

Table 2 (Cont'd)
Groundwater Sampling Locations and Analytical Methods
1st and 2nd Quarter FY 2013

Location	Area	Page #	VOCs - 8260						TPH-Diesel 8015	PCB 608	Tritium 906
			Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13			
Temporary Groundwater Sampling Points											
EW58-98-2[T]	7	P-47			√		√				
EW58E-98-1	7	P-47	√		√		√				
EW58E-98-2	7	P-48	√		√		√				
EW58E-98-3	7	P-48	√		√		√				
EW58E-98-4	7	P-48	√		√		√				
EW58E-98-5	7	P-48	√		√		√				
EW58E-98-6	7	P-48	√		√		√				
EW58E-98-7	7	P-49	√		√		√				
EW58E-98-8	7	P-49	√		√		√				
EW58-02-1[T]	7	P-49		√		√		√			
EW58-07-1	7	P-49		√		√		√			
EW64-00-1[T]	9	P-33		√		√		√			
EW64-03-1[T]	9	P-33		√		√		√			

= all compounds less than Quantitation Limit or for tritium less than Minimum Detectable Activity

Minimum required groundwater monitoring well sampling schedule for VOCs

[N] = No sampling
[Q] = Quarterly sampling
[S] =Semi-annual
[A] = Annual

[T] = Treatment system influent samples
D = each D represents one duplicate sample
OS = Offsite well
√ = each check represents one sample taken

Analytical Methods:

VOCs = Volatile Organic compounds, EPA Method 8260
TPH-D = TPH-Diesel, EPA Method 8015
PCBs = Polychlorinated Biphenyls, EPA Method 608

Table 3
Groundwater Elevations in LBNL Monitoring Wells
2nd Quarter FY 2013

Well Number	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Groundwater Elevation (feet msl)		Change from Previous Quarter (feet)
				Current Quarter	Previous Quarter	
Bevalac Area						
46A-92-15	830.10	2/26	15.10	815.00	815.63	-0.63
51-92-2	724.69	2/28	NM	NM	719.25	NM
51-96-15	709.83	2/28	21.34	688.49	687.28	1.21
51-96-16	709.72	2/28	17.55	692.17	690.91	1.26
51-96-17	709.64	2/28	12.26	697.38	694.74	2.64
51-96-18	710.76	2/28	4.63	706.13	NM	NM
51-97-3	709.81	2/28	43.81	666.00	666.13	-0.13
51-97-12	709.37	2/28	42.31	667.06	666.74	0.32
51-97-13	709.48	2/28	34.74	674.74	673.85	0.89
51-97-14	708.89	2/28	46.48	662.41	661.69	0.72
51-97-15	706.11	2/28	70.78	635.33	634.89	0.44
51-99-1	724.44	2/28	NM	NM	713.11	NM
51-00-8	682.11	2/28	21.04	661.07	659.86	1.21
51-00-9	709.35	2/28	13.30	696.05	696.31	-0.26
51-00-10	709.56	2/28	13.82	695.74	696.23	-0.49
51A-01-11R	709.49	2/28	22.70	686.79	NM	NM
51B-93-18A	709.95	2/28	7.16	702.79	701.85	0.94
51L-01-1A	710.04	2/28	NM	NM	NM	NM
51L-01-1B	710.04	2/28	NM	NM	NM	NM
51L-01-5A	709.96	2/28	26.79	683.17	685.50	-2.33
51L-01-5B	709.94	2/28	44.15	665.79	665.26	0.53
51L-01-6R	709.18	2/28	24.22	684.96	683.38	1.58
51L-01-7R	709.18	2/28	29.57	679.61	679.31	0.30
56-98-2	709.76	2/28	14.04	695.72	689.59	6.13
63-98-18	709.99	2/28	16.38	693.61	690.03	3.58

Well Number	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Groundwater Elevation (feet msl)		Change from Previous Quarter (feet)
				Current Quarter	Previous Quarter	
64-97-1	709.94	2/28	4.58	705.36	702.94	2.42
64-97-2	709.65	2/28	6.95	702.70	696.93	5.77
71-93-2	844.39	2/26	39.08	805.31	804.12	1.19
71-95-9	854.18	2/26	17.44	836.74	837.51	-0.77
71B-98-13	832.33	2/26	14.13	818.20	817.66	0.54
71B-99-3R	840.13	2/26	31.30	808.83	823.95	-15.12
MW90-3	820.60	2/26	41.73	778.87	778.42	0.45
MW90-4	746.15	2/26	6.62	739.53	737.01	2.52
MW90-5	745.75	2/26	12.69	733.06	728.09	4.97
MWP-1	630.65	2/26	40.93	589.72	587.22	2.50
Old Town Area						
5-93-10	914.90	2/27	20.31	894.59	894.63	-0.04
6-92-17	891.20	2/27	11.59	879.61	879.83	-0.22
6-93-4	881.60	2/26	40.35	841.25	854.33	-13.08
7-92-16	882.40	2/26	47.22	835.18	854.90	-19.72
7-92-19	884.80	2/26	22.51	862.29	863.63	-1.34
7-94-3	882.88	2/26	NM	NM	NM	NM
7-95-22	882.16	2/26	18.95	863.21	861.66	1.55
7-95-23	882.37	2/26	9.60	872.77	871.52	1.25
7-00-4	883.18	2/26	89.55	793.63	788.53	5.10
7B-95-21	883.63	2/26	22.31	861.32	859.99	1.33
7B-95-24	883.88	2/26	49.40	834.48	836.38	-1.90
7B-95-25	882.03	2/26	17.79	864.24	862.12	2.12
16-94-13	892.50	2/27	15.61	876.89	874.62	2.27
16-95-3	901.52	2/27	15.49	886.03	885.18	0.85

Table 3 (Cont'd)
Groundwater Elevations in LBNL Monitoring Wells
2nd Quarter FY 2013

Well Number	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Groundwater Elevation (feet msl)		Change from Previous Quarter (feet)
				Current Quarter	Previous Quarter	
Old Town Area						
25-94-12	937.59	2/27	NM	NM	NM	NM
25-95-5	932.88	2/27	NM	NM	NM	NM
25-95-27	859.83	2/27	28.22	831.61	830.56	1.05
25-98-10	934.42	2/27	70.2	864.22	NM	NM
26-92-11	936.19	2/26	15.28	920.91	917.33	3.58
27-92-20	881.10	2/26	44.83	836.27	835.43	0.84
37-92-18A	861.20	2/27	43.98	817.22	816.36	0.86
46-92-9	805.30	2/27	72.34	732.96	729.74	3.22
46-93-12	807.57	2/27	7.49	800.08	800.05	0.03
46-96-10	790.35	2/27	NM	NM	NM	NM
51-94-15	770.92	2/28	33.38	737.54	735.85	1.69
51-96-3	766.44	2/28	8.64	757.80	757.24	0.56
52-93-14	900.03	2/27	35.36	864.67	862.56	2.11
52-95-2A	910.27	2/27	43.26	867.01	866.54	0.47
52-95-2B	910.23	2/27	50.38	859.85	858.36	1.49
52-98-9	910.86	2/27	50.47	860.39	858.98	1.41
52A-98-8A	913.56	2/27	31.67	881.89	882.02	-0.13
52A-98-8B	913.51	2/27	49.39	864.12	862.12	2.00
52B-95-13	887.40	2/26	18.46	868.94	865.69	3.25
53-92-21-130'	886.97	2/26	67.37	819.60	819.79	-0.19
53-92-21-147'	886.99	2/26	65.47	821.52	821.63	-0.11
53-92-21-167'	886.97	2/26	66.65	820.32	820.34	-0.02
53-92-21-193'	886.98	2/26	77.32	809.66	809.51	0.15
53-93-9	900.68	2/26	57.82	842.86	841.91	0.95
53-93-16-42'	887.45	2/26	38.61	848.84	847.35	1.49

Well Number	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Groundwater Elevation (feet msl)		Change from Previous Quarter (feet)
				Current Quarter	Previous Quarter	
53-93-16-69'	887.40	2/26	NM	NM	NM	NM
53-93-17	902.62	2/26	61.60	841.02	839.82	1.20
53-95-12	867.45	2/26	30.60	836.85	835.83	1.02
53-96-1	887.64	2/26	59.48	828.16	828.04	0.12
58-93-3	830.06	2/27	11.06	819.00	818.06	0.94
58-95-11	831.62	2/27	2.84	828.78	829.25	-0.47
58-95-18	788.61	2/27	6.91	781.70	779.86	1.84
58-95-19	834.33	2/27	16.78	817.55	817.48	0.07
58-95-20	818.81	2/27	16.15	802.66	801.18	1.48
58-96-11	848.23	2/27	31.81	816.42	816.36	0.06
58-00-12	860.62	2/27	NM	NM	NM	NM
58A-94-14	821.73	2/27	22.85	798.88	799.35	-0.47
MW90-2	880.78	2/26	22.00	858.78	857.18	1.60
MW91-8	887.02	2/26	48.70	838.32	837.12	1.20
MW91-9	915.67	2/27	22.86	892.81	893.19	-0.38
MWP-4	831.56	2/27	42.47	789.09	788.80	0.29
MWP-5	852.37	2/27	95.31	757.06	756.63	0.43
MWP-6	845.44	2/27	22.34	823.10	820.98	2.12
MWP-7	854.01	2/27	23.96	830.05	821.98	8.07
MWP-8	872.34	2/28	23.96	848.38	845.70	2.68
Support Services						
31-97-17	746.15	2/27	19.75	726.40	725.44	0.96
31-97-18	747.80	2/27	21.25	726.55	725.39	1.16
31-98-17	693.47	2/27	11.42	682.05	681.89	0.16
61-92-12	843.90	2/27	84.57	759.33	758.11	1.22

Table 3 (Cont'd)
Groundwater Elevations in LBNL Monitoring Wells
2nd Quarter FY 2013

Well Number	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Groundwater Elevation (feet msl)		Change from Previous Quarter (feet)
				Current Quarter	Previous Quarter	
Support Services						
69-97-8	975.75	2/26	40.37	935.38	934.32	1.06
69-97-21	1003.40	2/26	23.63	979.77	974.59	5.18
69A-92-22	977.06	2/26	22.80	954.26	953.04	1.22
75-96-20	979.07	2/26	11.09	967.98	966.94	1.04
75-97-5	963.73	2/26	43.24	920.49	911.66	8.83
75-97-6	967.89	2/26	58.37	909.52	912.97	-3.45
75-97-7	970.70	2/26	55.44	915.26	914.44	0.82
75-98-14	977.94	2/26	11.24	966.70	956.66	10.04
75-98-15	977.97	2/26	10.12	967.85	966.73	1.12
75-99-6	979.94	2/26	9.46	970.48	969.86	0.62
75-99-7	977.92	2/26	11.44	966.48	966.06	0.42
75-99-8	979.34	2/26	8.83	970.51	969.16	1.35
75A-00-7	978.32	2/26	54.98	923.34	923.10	0.24
75B-92-24	956.90	2/26	33.67	923.23	917.43	5.80
MW76-1	923.70	2/26	16.71	906.99	904.09	2.90
76-93-6	948.61	2/26	14.81	933.80	930.74	3.06
76-98-21	923.20	2/26	17.87	905.33	897.93	7.40
76-98-22	904.57	2/26	12.21	892.36	890.44	1.92
77-92-10	879.11	2/27	22.82	856.29	828.02	28.27
77-94-5	878.96	2/27	33.26	845.70	843.45	2.25
77-94-6	876.76	2/27	45.75	831.01	826.34	4.67

Well Number	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Groundwater Elevation (feet msl)		Change from Previous Quarter (feet)
				Current Quarter	Previous Quarter	
77-97-9	888.69	2/27	19.62	869.07	867.91	1.16
77-97-11	814.67	2/27	30.46	784.21	782.80	1.41
78-97-20	949.54	2/27	17.07	932.47	930.78	1.69
MW91-1	877.98	2/27	22.88	855.10	854.15	0.95
MW91-2	877.27	2/27	42.67	834.60	834.20	0.40
MW91-4	978.55	2/26	75.87	902.68	866.51	36.17
MW91-6	975.22	2/26	27.23	947.99	944.79	3.20
MWP-9	818.83	2/27	32.56	786.27	785.48	0.79
MWP-10	809.74	2/27	51.35	758.39	757.58	0.81
Outlying Areas						
62-92-26	773.70	2/26	45.37	728.33	729.29	-0.96
62-92-27	769.90	2/26	35.55	734.35	731.16	3.19
74-92-13	834.90	2/27	14.22	820.68	819.78	0.90
74-94-7	819.82	2/27	13.78	806.04	805.08	0.96
74-94-8	815.74	2/27	19.59	796.15	795.47	0.68
74-95-6	838.66	2/27	19.13	819.53	817.72	1.81
83-92-14	830.09	2/27	15.07	815.02	817.03	-2.01
88-93-11A	537.35	2/27	NM	NM	NM	NM
CD-92-28	486.29	2/26	17.44	468.85	468.94	-0.09
MWP-2	710.33	2/27	53.98	656.35	656.78	-0.43
OW3-225	570.00	2/26	62.56	507.44	507.23	0.21

NM = Not measured

Table 4
LBNL Monitoring Well Construction Details

Location ID	Area	Completion Date	Abandonment Date	UC Grid North Coordinate	UC Grid East Coordinate	Total Depth (ft)	Top of Casing Elevation (ft above MSL)	Casing Diameter (inches)	Approximate Screened Interval (ft below TOC)	Screened Geologic Unit
MW90-2	2	7/19/1990		253.21	2637.82	60.0	880.78	2	25-35	Orinda
MW90-3	1	7/23/1990		1134.60	2460.40	60.0	820.60	2	48-58	Colluvium
MW90-4	1	12/1/1990		1103.90	2289.30	25.5	746.15	2	15-25	Colluvium
MW90-5	1	12/1/1990		1067.30	2293.70	25.0	745.75	4	15-25	Colluvium
MW90-6	1	12/1/1990	9/17/2002	1046.70	2291.60	25.5	746.00	2	15-25	Colluvium / Orinda
MW91-1	5	5/30/1991		-69.08	4050.61	55.0	877.98	2	44-54	Orinda
MW91-2	5	5/31/1991		-65.83	3666.47	51.0	877.27	2	40-50	Orinda
MW91-3	3	6/4/1991	9/21/2005	566.47	3807.95	63.5	981.69	2	53-63	Orinda
MW91-4	3	12/2/1991		476.81	3756.52	146.0	978.55	2	115-145	Orinda
MW91-5	3	6/3/1991	9/21/2005	490.76	3815.48	40.5	978.28	2	30-40	Orinda
MW91-6	3	11/17/1991		382.38	3879.71	45.0	975.22	4	34-44	Orinda
MW91-8	2	1/9/1992		465.11	2662.97	76.5	887.02	2	65.5-75.5	Moraga
MW91-9	10	12/9/1991		246.20	2896.17	39.5	915.67	2	28.5-38.5	Orinda
MWP-1	15	6/6/1991		1177.15	1674.81	49.5	630.65	2	39-49	Colluvium
MWP-2	8	12/6/1991		219.37	1693.34	76.0	710.33	2	66-76	Great Valley
MWP-4	14	6/19/1991		-36.08	2169.41	53.5	831.56	2	43-53	Great Valley
MWP-5	14	6/25/1991		-262.06	2213.41	109.0	852.37	2	98-108	Great Valley
MWP-6	14	6/9/1991		-256.79	2476.38	38.0	845.44	2	27-37	Great Valley
MWP-7	14	6/10/1991		-206.48	2638.97	35.5	854.01	2	25-35	Orinda / Great Valley
MWP-8	10	6/14/1991		-292.68	2876.29	35.0	872.34	2	25-35	Orinda
MWP-9	5	6/18/1991		-196.07	3674.77	62.0	818.83	2	51-61	Great Valley
MWP-10	5	6/8/1991		-246.37	3862.41	67.0	809.74	2	57-67	Great Valley
MW1-220	2	9/24/1988	9/26/2005	578.73	2751.09	93.0	901.64	4	83-93	Moraga
MW7-1	2	8/12/1988	8/19/2006	295.97	2681.13	18.0	884.13	4	8-18	
MW62-B1A	13	9/26/1987	9/20/2005	-987.16	4129.20	38.0	757.70	2	23-33	
MW62-B2	13	9/1/1986	9/7/2005	-984.02	4127.06	34.15	756.60	2	24-34	
MW76-1	4	8/9/1988		137.13	3366.07	30.0	923.70	4	20-30	
51-92-2	9	3/19/1992		660.30	2174.22	16.5	724.69	2	6.5-16.5	Orinda
88-92-4	6	3/18/1992	9/28/2005	931.05	1029.80	59.0	590.82	2	49-59	Great Valley
37-92-5	14	3/28/1992	12/9/2005	-125.20	2668.23	105.0	881.56	2	85-105	Great Valley
37-92-6	14	2/23/1992	2/19/2007	-245.60	2649.39	39.0	854.15	2	29-39	Great Valley
70-92-7	8	3/8/1992	9/12/2005	403.84	1708.83	26.0	762.93	2	20.8-25.8	Great Valley
46-92-9	7	3/1/1992		612.25	2423.20	79.0	805.30	2	68.5-78.5	Orinda
77-92-10	5	3/3/1992		19.05	4092.31	68.5	879.11	2	48-68	Orinda

Table 4 (Cont'd)
LBNL Monitoring Well Construction Details

Location ID	Area	Completion Date	Abandonment Date	UC Grid North Coordinate	UC Grid East Coordinate	Total Depth (ft)	Top of Casing Elevation (ft above MSL)	Casing Diameter (inches)	Approximate Screened Interval (ft below TOC)	Screened Formation Name
26-92-11	10	3/9/1992		165.02	3175.74	31.0	936.19	2	20.5-30.5	Orinda
61-92-12	5	2/28/1992		-356.90	3347.90	99.5	843.90	2	89-99	Orinda
74-92-13	11	4/15/1992		-355.80	5301.10	48.2	834.90	2	38.2-48.2	San Pablo (?)
83-92-14	11	2/22/1992		-354.70	5254.65	59.0	830.09	2	48-58	San Pablo (?)
46A-92-15	1	9/12/1992		1187.20	2539.10	40.0	830.10	2	29-39	Colluvium / Orinda
7-92-16	2	8/28/1992		181.20	2635.90	60.0	882.40	2	39-59	Moraga
6-92-17	14	8/27/1992		40.50	2729.10	40.0	891.20	2	24-39	Moraga/Orinda
37-92-18	14	8/31/1992	9/25/2002	-237.40	2723.80	30.0	860.30	2	19-29	Orinda
37-92-18A	14	9/14/1992		-240.60	2730.30	70.0	861.20	2	49-69	Great Valley
7-92-19	2	8/29/1992		299.60	2684.50	41.0	884.80	2	24-39	Moraga/Orinda
27-92-20	2	10/14/1992		544.10	2661.00	85.0	881.10	2	63.5-83.5	Moraga/Orinda
53-92-21-130'	2	10/1/1992		358.33	2657.18	130.0	886.97	2	125-130	Orinda
53-92-21-147'	2	10/1/1992		357.94	2657.11	147.0	886.99	2	142-147	Orinda
53-92-21-167'	2	10/1/1992		358.07	2656.90	167.0	886.97	2	162-167	Orinda
53-92-21-193'	2	10/1/1992		358.35	2656.90	193.0	886.98	2	188-193	Orinda
69A-92-22	3	1/22/1993		320.97	3951.1	65.0	977.06	2	44-64	Orinda
75-92-23	3	9/2/1992	9/26/2005	361.19	3826.89	50.0	972.10	6	29-49	Colluvium
75B-92-24	3	9/1/1992		218.40	3692.30	57.5	956.90	2	37-57	Orinda
76-92-25	4	9/13/1992	9/18/2002	181.90	3293.20	39.0	928.70	2	23.5-38	Orinda
62-92-26	13	9/3/1992		-1157.60	4402.30	58.0	773.70	2	47-57	Great Valley
62-92-27	13	9/4/1992		-1112.00	4157.10	67.0	769.90	2	56-66	Great Valley
CD-92-28	OS	10/26/1992		-1240.92	2435.51	55.0	486.29	2	45-55	Great Valley
71-93-1	1	9/9/1993	9/19/2005	1458.58	2562.60	64.0	872.39	2	43-63	Moraga/Orinda
71-93-2	1	9/8/1993		1352.87	2441.60	60.0	844.39	2	39-59	Moraga
58-93-3	7	5/17/1994		331.23	2515.06	24.0	830.06	2	14-24	Colluvium/Moraga
6-93-4	2	9/10/1993		229.92	2599.52	50.5	881.60	2	35-50	Artificial Fill/Moraga
37-93-5	14	8/26/1993	9/18/2002	-230.96	2573.02	49.5	850.17	2	39-49	Great Valley
76-93-6	4	8/25/1993		252.62	3600.80	44.5	948.61	2	34-44	Orinda
76-93-7	4	8/28/1993	9/27/2005	141.90	3299.84	40.0	924.85	2	24-39	Orinda
77-93-8	5	8/23/1993	9/19/2005	-44.32	3554.55	26.5	879.01	2	16-26	Art Fill/Col/Orinda
53-93-9	2	9/9/1993		427.92	2732.45	89.0	900.68	2	68-88	Moraga/Orinda
5-93-10	10	9/10/1993		179.51	2873.28	37.5	914.90	2	22-37	Moraga/Orinda
88-93-11A	6	3/2/1994		956.00	864.20	65.85	537.35	2	55-65	Great Valley
46-93-12	7	9/7/1993		673.46	2530.88	14.0	807.57	2	8.5-13.5	Moraga/Orinda

Table 4 (Cont'd)
LBNL Monitoring Well Construction Details

Location ID	Area	Completion Date	Abandonment Date	UC Grid North Coordinate	UC Grid East Coordinate	Total Depth (ft)	Top of Casing Elevation (ft above MSL)	Casing Diameter (inches)	Approximate Screened Interval (ft below TOC)	Screened Formation Name
88-93-13	6	11/1/1993	2/19/2007	671.81	980.85	139.0	581.50	2	118.5-138.5	Great Valley
52-93-14	10	12/9/1993		276.79	2842.59	40.0	900.03	2	24.5-39.5	Moraga/Orinda
25-93-15	10	11/8/1993	9/14/2005	-46.77	3057.62	75.5	936.44	2	55-75	Moraga/Orinda
53-93-16-42'	2	1/29/1994		356.87	2674.05	42.3	887.45	2	31.5-41.5	Moraga
53-93-16-69'	2	1/29/1994		356.74	2673.78	69.3	887.40	4	58.5-68.5	Moraga
53-93-17	2	11/2/1993		458.40	2707.41	76.0	902.62	2	60.5-75.5	Moraga
51B-93-18A	9	5/19/1994		1070.65	2174.99	43.9	709.95	2	23.5-43.5	Orinda
46A-93-19	1	1/15/1994	9/28/2005	1024.48	2439.82	65.0	809.77	2	44-64	Orinda
71-94-1	1	5/21/1994	9/16/2005	1381.17	2358.57	48.9	845.84	2	38.5-48.5	Moraga
7-94-3	2	5/13/1994		267	2705.26	43.0	882.88	2	22.5-42.5	Orinda
77-94-5	5	5/9/1994		-53.24	3604.82	63.3	878.96	2	43.5-63.5	Orinda
77-94-6	5	5/5/1994		-67.94	3722.2	61.4	876.76	2	40.5-60.5	Orinda
74-94-7	11	4/28/1994		-508.66	5233.24	44.2	819.82	2	33.5-43.5	San Pablo (?)
74-94-8	11	5/10/1994		-594.5	5343.25	30.4	815.74	2	20-30	Col/Alluv/San Pablo (?)
37-94-9	14	5/12/1994	9/9/2005	-228.55	2682.42	44.8	856.51	2	24-44	Orinda/Great Valley
52-94-10	10	10/17/1994	9/20/2005	465.38	2859.99	68.5	906.04	2	47-67	Moraga/Orinda
51-94-11	1	10/18/1994	9/16/2005	1194.70	2263.64	29.0	756.83	4	8-18	Moraga/Orinda
25-94-12	10	10/14/1994		24.60	3021.73	46.0	937.59	2	26-46	Moraga/Orinda
16-94-13	10	10/11/1994		253.46	2762.79	43.0	892.50	2	22-42	Orinda
58A-94-14	7	10/4/1994		424.85	2457.65	40.7	821.73	2	21-41	Moraga/Orinda
51-94-15	7	11/7/1994		625.97	2264.47	45.2	771.17	4	30-40	Orinda
46-94-16	9	11/7/1994	9/19/2002	906.27	2300.02	37.5	756.16	2		Orinda
71-95-1	1	4/11/1995	9/17/2002	1479.30	2335.13	48.3	846.94	2		Moraga
52-95-2A	10	8/29/1995		372.05	2864.37	45.0	910.27	2	34.5-44.5	Moraga
52-95-2B	10	8/29/1995		372.19	2864.56	110.0	910.23	2	65-110	Moraga/Orinda
16-95-3	10	4/18/1995		45.73	2787.74	38.3	901.52	2	23-30	Moraga/Orinda
25A-95-4	10	4/20/1995	9/19/2005	219.82	3033.97	49.5	938.35	2	28-48	Orinda
25-95-5	10	8/22/1995		-154.47	3091.60	94.8	932.88	2	69-94	Moraga/Orinda
74-95-6	11	7/14/1995		-354.67	5334.83	49.5	838.66	4	35-50	San Pablo (?)
83-95-7	11	7/14/1995	9/27/2005	-285.14	5246.70	47.0	840.75	4	36-46	San Pablo (?)
71-95-8	1	4/13/1995	9/16/2005	1298.86	2549.05	49.0	839.09	2	29-49	Orinda
71-95-9	1	4/14/1995		1249.27	2662.35	38.4	854.18	2	23.5-38.5	Artificial Fill/Colluvium
58-95-11	7	5/15/1995		296.22	2512.06	28.9	831.62	4	8.5-28.5	Moraga/Orinda
53-95-12	2	7/19/1995		360.87	2616.60	51.2	867.45	1	35-50	Moraga/Orinda

Table 4 (Cont'd)
LBNL Monitoring Well Construction Details

Location ID	Area	Completion Date	Abandonment Date	UC Grid North Coordinate	UC Grid East Coordinate	Total Depth (ft)	Top of Casing Elevation (ft above MSL)	Casing Diameter (inches)	Approximate Screened Interval (ft below TOC)	Screened Formation Name
52B-95-13	10	7/21/1995		282.76	2732.91	27.9	887.40	1	16-31	Moraga/Orinda
6-95-14	2	8/15/1995		184.75	2631.08	67.8	881.43	4	22-67	Moraga/Orinda
25A-95-15	10	8/3/1995	9/27/2012	148.22	2960.59	47.5	931.68	2	29-49	Orinda
62-95-16	13	8/4/1995	9/20/2005	-972.38	4088.45	34.1	741.06	4	18.5-33.5	Great Valley
51-95-17	9	2/12/1996	11/18/2002	913.86	2272.51	40.2	744.67	2	22-37	Orinda
58-95-18	7	8/9/1995		471.88	2401.55	17.8	788.61	4	7.5-17.5	Colluvium/Moraga/Orinda
58-95-19	7	9/13/1995		395.42	2562.55	30.5	834.33	1	20.5-30.5	Orinda
58-95-20	7	8/8/1995		494.26	2517.86	34.4	818.81	2	14.5-34.5	Moraga/Orinda
7B-95-21	2	8/11/1995		283.95	2679.19	37.6	883.63	4	13.5-38.5	Moraga/Orinda
7-95-22	2	8/10/1995		278.23	2659.08	37.6	882.16	4	13.5-38.5	Moraga
7-95-23	2	12/22/1995		285.15	2659.67	53.1	882.37	4	43-53	Moraga/Orinda
7B-95-24	2	12/18/1995		318.75	2655.51	72.8	883.88	4	53-73	Moraga/Orinda
7B-95-25	2	12/13/1995		274.27	2634.08	44.3	882.03	2	24-44	Moraga
25-95-26	10	4/29/1996	6/4/2011	-54.01	3139.20	57.6	935.81	2	38-58	Moraga
25-95-27	10	12/20/1995		-327.09	3045.68	34.7	859.83	2	19.5-34.5	Orinda
53-96-1 (MW91-7)	2	4/19/1996		344.37	2682.54	81.4	887.64	4	67-82	Moraga/Orinda
4-96-2	10	4/17/1996	9/13/2005	-84.00	2889.05	64.3	912.64	2	45-65	Orinda
51-96-3	9	4/23/1996		546.48	2240.66	27.5	766.44	4		Colluvium
88-96-4	6	4/26/1996	9/6/2005	968.53	1105.35	66.0	594.25	2	46.5-66.5	Great Valley
70A-96-5	8	4/15/1996	11/13/2002	370.50	1757.93	29.2	762.68	4	15-30	Great Valley
70A-96-6	8	4/16/1996	11/13/2002	334.24	1764.19	39.6	762.67	4	20-40	Great Valley
46-96-10	7	11/4/1996		886.68	2397.81	36.8	790.35	2	22-37	Moraga
58-96-11	2	6/11/1996		350.19	2588.64	42.5	848.23	2	15-40	Moraga/Orinda
58-96-12	7	12/4/1996	9/16/2002	295.46	2508.67	7.0	831.84	4	2-7	Fill/Moraga
70A-96-13	8	9/24/1996	9/7/2005	292.97	1511.04	145.1	711.87	2	111-141	Great Valley
70A-96-14	8	9/24/1996	9/8/2005	392.41	1498.87	145.1	716.64	2	112-142	Great Valley
51-96-15	9	9/26/1996		1004.38	2109.8	40.0	709.83	2	20-40	Orinda
51-96-16	9	9/25/1996		1054.3	2095.66	29.6	709.72	2	10-30	Artificial Fill
51-96-17	9	9/25/1996		1054.56	2093.45	54.3	709.64	2	35-55	Orinda
51-96-18	9	9/27/1996		1126.37	2170.13	15.3	710.76	2	6-16	Orinda
51-96-19	9	9/27/1996	9/12/2005	1066.52	2184.14	13.5	709.40	2	5-15	Artificial Fill
75-96-20	3	2/13/1997		487.72	3762.28	50.0	979.07	2	24.5-49.5	Orinda ?
64-97-1	9	5/20/1997		1194.82	2167.79	25.0	709.94	2	4.5-24.5	Orinda

Table 4 (Cont'd)
LBNL Monitoring Well Construction Details

Location ID	Area	Completion Date	Abandonment Date	UC Grid North Coordinate	UC Grid East Coordinate	Total Depth (ft)	Top of Casing Elevation (ft above MSL)	Casing Diameter (inches)	Approximate Screened Interval (ft below TOC)	Screened Formation Name
64-97-2	9	5/20/1997		1142.40	2085.16	30.0	709.65	2	9-29	Orinda
51-97-3	9	6/3/1997		1102.96	1902.48	75.0	709.81	2	54.5-74.5	Artificial Fill
51-97-4	9	6/25/1997	9/15/2005	1101.16	1902.01	105.0	709.66	2	89-104	Orinda
75-97-5	3	7/19/1997		232.73	3768.01	70.0	963.73	2	39-69	Orinda
75-97-6	3	5/22/1997		262.75	3819.22	74.0	967.89	4	53.5-73.5	Orinda
75-97-7	3	6/9/1997		253.44	3870.26	79.0	970.70	2	58.5-78.5	Orinda
69-97-8	3	9/13/1997		255.05	3921.16	70.0	975.75	2.25	50-70	Colluvium/Orinda
77-97-9	5	6/4/1997		76.53	3753.30	49.5	888.69	2	19-49	Colluvium/Orinda
77-97-10	5	5/21/1997	9/18/2002	-91.93	3871.35	52.5	877.73	2	32-52	Colluvium/Orinda
77-97-11	5	6/24/1997		-205.88	3749.71	43.0	814.67	2	22.5-42.5	Colluvium/Orinda
51-97-12	9	9/2/1997		1109.18	1904.55	49.6	709.37	2	29.5-49.5	Artificial Fill
51-97-13	9	9/11/1997		1196.36	1901.98	68.5	709.48	2	48-68	Artificial Fill
51-97-14	9	9/10/1997		1020.26	1883.14	64.3	708.89	2	44-64	Artificial Fill
51-97-15	9	9/12/1997		1155.18	1803.16	109.0	706.11	2	88-108	Artificial Fill
51-97-16	9	9/9/1997	3/17/2005	875.26	1917.64	35.1	709.58	2	14.5-34.5	Art. Fill/Great Valley
31-97-17	5	9/5/1997		-459.67	3738.68	31.8	746.15	2	21.5-31.5	Colluvium
31-97-18	5	9/4/1997		-480.52	3779.68	59.9	747.80	2	39.5-59.5	Colluvium/Great Valley
78-97-20	4	10/10/1997		298.21	3429.47	34.0	949.54	2	14-34	Orinda
69-97-21	3	9/23/1997		471.24	3985.45	42.0	1003.4	2	18.5-38.5	Orinda
76-97-22	4	10/17/1997	9/25/2002	165.14	3545.94	45.0	937.91	2	25-45	Colluvium/Orinda
71-97-23	1	9/8/1997	9/15/2005	1221.62	2469.83	60.0	844.45	2	39.5-59.5	Artificial Fill/Orinda
25A-98-1	10	4/23/1998	9/28/2012	99.79	2986.86	50.0	936.88	2	30-50	Orinda
56-98-2	9	4/24/1998		1264.86	1887.99	55.0	709.76	2	35-55	Artificial Fill/Orinda
25A-98-3	10	4/21/1998	9/27/2012	175.76	3027.87	45.0	940.14	2	25-45	Orinda
64-98-4	9	4/20/1998	3/15/2000	1133.05	2172.54	15.0	711.12	2	5-15	Orinda
51-98-5	9	5/8/1998	8/10/2006	951.70	1922.10	50.0	709.63	2	30-50	Colluvium
25A-98-6	10	10/2/1998	8/10/2006	134.29	3091.47	40.0	939.90	2	20.5-40.5	Moraga/Orinda
25A-98-7	10	9/1/1998	9/27/2012	140.51	3001.67	35.0	942.71	2	19-34	Orinda
52A-98-8A	10	9/16/1998		339.79	2883.49	33.5	913.56	2	23-33	Colluvium
52A-98-8B	10	9/17/1998		339.86	2883.73	80.0	913.51	2	60-80	Moraga
52-98-9	10	9/11/1998		377.44	2864.09	80.0	910.86	2	60-80	Moraga
25-98-10	10	9/12/1998		-105.23	3087.97	90.0	934.42	2	70-90	Moraga/Orinda
46A-98-11	1	11/3/1998	11/16/2002	1049.68	2422.42	74.0	813.66	2	54-74	Orinda

Table 4 (Cont'd)
LBNL Monitoring Well Construction Details

Location ID	Area	Completion Date	Abandonment Date	UC Grid North Coordinate	UC Grid East Coordinate	Total Depth (ft)	Top of Casing Elevation (ft above MSL)	Casing Diameter (inches)	Approximate Screened Interval (ft below TOC)	Screened Formation Name
71B-98-13	1	9/23/1998		1202.90	2583.97	30.0	832.33	2	15-30	Artificial Fill/Orinda
75-98-14	3	9/17/1998		436.14	3711.28	35.0	977.94	2	20-35	Orinda
75-98-15	3	9/21/1998		479.95	3640.78	35.0	977.97	2	20-35	Orinda
75-98-16	3	10/12/1998	9/16/2002	603.26	3451.27	90.0	1074.19	2	69-89	Orinda
31-98-17	5	9/14/1998		-719.39	3709.06	65.0	693.47	2	50-60	Colluvium
63-98-18	15	9/15/1998		1352.18	1819.94	35.0	709.99	2	20-35	Artificial Fill
64-98-19	9	2/1/1999	3/15/2000	1130.56	2178.51	26.0	711.11	2	21-26	Orinda
64-98-20	9	4/30/1999	8/2000	1133.29	2180.09	14.5	710.98	2	9.5-14.5	Orinda
76-98-21	4	9/25/1998		137.79	3352.42	35.0	923.20	2	15-35	Orinda
76-98-22	4	12/18/1998		72.85	3375.83	40.0	904.57	2	19-39	Orinda
51-99-1	9	5/1/1999		679.33	1978.83	35.0	724.44	2	25-35	Great Valley
25A-99-2	10	5/1/1999	9/27/2012	137.70	3037.07	30.0	940.45	2	20-30	Moraga/Orinda
71B-99-3	1	7/6/1999	10/2000	1179.35	2637.78	34.5	843.21	2	20-30	Orinda
71B-99-3R	1	4/5/2001		1178.62	2629.15	34.5	840.13	4	24-34	Orinda
75-99-4	3	7/20/1999	8/10/2006	462.42	3665.77	38.0	977.90	2	19.5-34.5	Orinda
25A-99-5	10	7/19/1999	9/23/2005	166.42	3062.06	47.5	940.16	2	24-44	Orinda
75-99-6	3	11/19/1999		519.69	3687.82	27.0	979.94	2	15.5-25.5	Orinda
75-99-7	3	11/19/1999		463.30	3749.60	26.0	977.92	2	14-24	Artificial Fill/Orinda
75-99-8	3	12/6/1999		502.05	3669.34	32.0	979.34	2	20-30	Orinda
51-00-1	9	2/5/2000	9/7/2005	690.86	2162.65	25.0	725.28	2	20-25	Orinda
71B-00-2	1	3/20/2000	8/10/2006	1197.37	2587.90	60.0	832.41	2	45-60	Orinda
58A-00-3	7	5/17/2000	8/10/2006	415.38	2454.06	85.0	822.54	2	69-84	Orinda
7-00-4	2	5/17/2000		294.69	2658.33	100.0	883.18	2	84-99	Orinda
25A-00-5	10	5/17/2000	8/10/2006	139.64	2965.28	85.0	933.12	2	68-83	Orinda
52A-00-6	10	5/17/2000	8/11/2006	321.30	2911.46	120.0	917.34	2	105-120	Orinda
75A-00-7	3	1/5/2001		469.39	3758.40	147.5	978.32	2	115-145	Orinda
51-00-8	9	9/7/2000		1095.81	1806.71	40.0	682.11	2	20-40	Artificial Fill/Orinda
51-00-9	9	10/2/2000		1008.33	2177.85	10.0	698.16	2	5-10	Orinda
51-00-10	9	10/3/2000		988.59	2177.76	10.0	698.10	2	5-10	Orinda
69A-00-11	3	9/8/2000	9/19/2005	321.66	3943.67	40.0	977.05	2	19.5-39.5	Orinda
58-00-12	7	10/5/2000		326.88	2607.24	59.5	860.62	2	38-59	Orinda/Mixed Unit
51L-01-1A	9	7/23/2001		864.13	1878.36	9.0	710.04	2	4-9	Artificial Fill/Colluvium
51L-01-1B	9	7/23/2001		863.88	1878.37	30.0	710.04	2	15-30	Great Valley

Table 4 (Cont'd)
LBNL Monitoring Well Construction Details

Location ID	Area	Completion Date	Abandonment Date	UC Grid North Coordinate	UC Grid East Coordinate	Total Depth (ft)	Top of Casing Elevation (ft above MSL)	Casing Diameter (inches)	Approximate Screened Interval (ft below TOC)	Screened Formation Name
51L-01-3	9	12/20/2001	9/2006	896.88	1893.03	50.0	709.54	2	34.5-49.5	Great Valley
51L-01-4	9	7/23/2001	9/2006	915.93	1884.49	45.0	709.87	2	30-45	Great Valley
51L-01-5A	9	7/16/2001		936.13	1908.95	33.0	709.96	2	18-33	Artificial Fill/Colluvium
51L-01-5B	9	7/16/2001		936.09	1908.62	65.5	709.94	2	48.5-63.5	Great Valley
51L-01-6	9	7/18/2001	6/9/2011	911.02	1931.44	30.0	709.80	2	20-30	Artificial Fill/Colluvium
51L-01-6R	9	2/17/2012		906.50	1915.84		709.18	2	20-30	Artificial Fill/Colluvium
51L-01-7	9	7/17/2001	6/9/2011	906.47	1931.41	75.0	709.76	2	60-75	Great Valley
51L-01-7R	9	2/23/2012		901.39	1917.90		709.18	2	60-75	Great Valley
51A-01-10A	9	10/3/2001	9/14/2005	814.28	1900.05	30.5	709.78	2	15-30	Great Valley
51A-01-11	9	9/28/2001	1/3/2012	841.85	1941.48	45.5	709.74	2	30-45	Great Valley
51A-01-11R	9	2/16/2012		845.77	1942.65		709.49	2	30-45	Great Valley
51L-02-1	9	1/11/2002	8/25/2006	921.03	1871.48	30.5	709.74	2	20-30	Artificial Fill/Colluvium/Great Valley
30-13-1	10	1/31/2013				27.5		2	12-27	Orinda
30-13-2	10	1/31/2013				27.5		2	12-27	Orinda

Artificial Fill: soils placed during grading activities
Colluvium: Quaternary soil/colluvium
Alluvium: Quaternary alluvium
San Pablo (?): shallow marine sandstones tentatively assigned to the San Pablo Group
Orinda: Orinda Formation sediments
Great Valley: Upper Cretaceous sedimentary rocks
Moraga: Moraga Formation volcanics

Table 5-1
Bevalac Area Groundwater Monitoring Well Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

		51-92-2	51-96-15	51-96-16				51-96-17				51-96-18			
Constituent	MCL	Dec-12*	Jan-13	Oct-12	Nov-12	Jan-13	Mar-13	Oct-12	Nov-12	Jan-13	Mar-13	Nov-12	Jan-13	Mar-13	(D)*
Aromatic or Non-Halogenated Hydrocarbons															
Benzene	1	<0.5	<1	2.7	2.4	3.0	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
n-Butylbenzene			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
sec-Butylbenzene			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
ter-Butylbenzene			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Ethylbenzene	300	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
Isopropylbenzene			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
p-Isopropyltoluene			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Naphthalene			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
n-Propylbenzene			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Toluene	150	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
1,2,4-Trimethylbenzene			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,3,5-Trimethylbenzene			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Xylenes, total	1750	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1
Total Aromatic Hydrocarbons				2.7	2.4	3.0									
Halogenated Hydrocarbons															
Bromodichloromethane	80	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
Bromoform	80	<0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.5
Carbon Tetrachloride	0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
Chloroethane		<0.5	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<0.5
Chloroform	80	<0.5	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<0.5
1,1-Dichloroethane	5	<0.5	<1	<1	<1	<1	<1	1.3	1.4	1.6	1.9	18.9	10.5	10.5	11
1,2-Dichloroethane	0.5	<0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.5
1,1-Dichloroethene	6	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	7.3	4.7	4.2	5.1
cis-1,2-Dichloroethene	6	<0.5	<1	16.5	24.5	24.3	57.8	3.0	3.3	6.6	7.8	1.1	<1	<1	0.81
trans-1,2-Dichloroethene	10	<0.5	<1	3.9	5.3	5.9	14	<1	<1	1.3	<1	<1	<1	<1	<0.5
1,2-Dichloropropane	5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
Tetrachloroethene	5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	48.9	38.3	40.2	44
1,1,1-Trichloroethane	200	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
1,1,2-Trichloroethane	5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
Trichloroethene	5	<0.5	2.8	<1	<1	<1	<1	<1	<1	<1	<1	17.8	15.3	14.5	15
Freon-113	1200	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
Vinyl Chloride	0.5	<0.5	<1	8.4	9.8	8.8	15.7	<1	<1	2.1	1.4	<1	<1	<1	<0.5
Total Halogenated Hydrocarbons			2.8	29	40	39	88	4.3	4.7	12	11	94	69	69	76
Total Concentration of VOCs			2.8	32	42	42	88	4.3	4.7	12	11	94	69	69	76

Table 5-1 (Cont'd)
Bevalac Area Groundwater Monitoring Well Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	51-97-12	51-97-13	51-97-15	51-99-1	51-00-8		51A-01-11R	51B-93-18A		51L-01-1A	51L-01-5A	51L-01-5B
		Feb-13	Feb-13	Feb-13	Feb-13	Oct-12	Mar-13*	Nov-12	Feb-13	(D)*	Dec-12*	Oct-12	Oct-12
Aromatic or Non-Halogenated Hydrocarbons													
Benzene	1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1	<1
n-Butylbenzene		<1	<1	<1	<1	<1		<1	<1			<1	<1
sec-Butylbenzene		<1	<1	<1	<1	<1		<1	<1			<1	<1
ter-Butylbenzene		<1	<1	<1	<1	<1		<1	<1			<1	<1
Ethylbenzene	300	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1	<1
Isopropylbenzene		<2	<2	<2	<2	<2		<2	<2			<2	<2
p-Isopropyltoluene		<1	<1	<1	<1	<1		<1	<1			<1	<1
Naphthalene		<2	<2	<2	<2	<2		<2	<2			<2	<2
n-Propylbenzene		<1	<1	<1	<1	<1		<1	<1			<1	<1
Toluene	150	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1	<1
1,2,4-Trimethylbenzene		<1	<1	<1	<1	<1		<1	<1			<1	<1
1,3,5-Trimethylbenzene		<1	<1	<1	<1	<1		<1	<1			<1	<1
Xylenes, total	1750	<2	<2	<2	<2	<2	<1	<2	<2	<1	<1	<2	<2
Total Aromatic Hydrocarbons													
Halogenated Hydrocarbons													
Bromodichloromethane	80	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1	<1
Bromoform	80	<2	<2	<2	<2	<2	<0.5	<2	<2	<0.5	<0.5	<2	<2
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1	<1
Chloroethane		<30	<30	<30	<30	<30	<0.5	<30	<30	<0.5	<0.5	<30	<30
Chloroform	80	<3	<3	<3	<3	<3	<0.5	<3	<3	<0.5	<0.5	<3	<3
1,1-Dichloroethane	5	3.6	2.6	<1	<1	2.4	2.5	<1	3.0	3.0	<0.5	1.8	<1
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<2	<0.5	<2	<2	<0.5	<0.5	<2	<2
1,1-Dichloroethene	6	5.4	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1	<1
cis-1,2-Dichloroethene	6	49	<1	<1	<1	3.8	1.1	<1	24.2	31	9.6	2.0	<1
trans-1,2-Dichloroethene	10	6.5	<1	<1	<1	<1	<0.5	<1	2.8	5.5	0.56	<1	<1
1,2-Dichloropropane	5	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1	<1
Tetrachloroethene	5	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1	<1
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1	<1
Trichloroethene	5	1.3	<1	<1	<1	<1	<0.5	<1	4.2	5.2	2.2	<1	<1
Freon-113	1200	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1	<1
Vinyl Chloride	0.5	1.8	1.1	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5	6.2	<1
Total Halogenated Hydrocarbons		68	3.7			6.2	3.6		34	45	12	10	
Total Concentration of VOCs		68	3.7			6.2	3.6		34	45	12	10	

Table 5-1 (Cont'd)
Bevalac Area Groundwater Monitoring Well Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	51L-01-6R		51L-01-7R		64-97-2	71-93-2	71B-98-13	71B-99-3R				MW90-3	MW90-5	MWP-1	
		Oct-12	Oct-12	Oct-12	Oct-12	Jan-13	Nov-12	Jan-13	Nov-12	Nov-12	Jan-13	Mar-13	Jan-13	Jan-13	Oct-12	Jan-13
Aromatic or Non-Halogenated Hydrocarbons																
Benzene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ter-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
n-Propylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	150	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	1750	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Aromatic Hydrocarbons																
Halogenated Hydrocarbons																
Bromodichloromethane	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	80	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane		<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
Chloroform	80	<3	<3	<3	<3	<3	3.4	<1	<3	<3	<3	<3	<3	<3	<3	<3
1,1-Dichloroethane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.2	<1	<1	<1
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethene	6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	6	<1	<1	<1	<1	<1	<1	4.0	13.1	11.9	12	20.8	4.0	<1	<1	<1
trans-1,2-Dichloroethene	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	5	<1	<1	<1	<1	<1	<1	<1	<1	1.1	2.3	1.1	4.6	<1	<1	<1
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	5	<1	<1	<1	<1	1.7	2.3	<1	1.3	1.4	3.9	3.6	5.2	<1	<1	<1
Freon-113	1200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	0.5	<1	<1	<1	<1	<1	<1	<1	3.1	2.4	1.4	1.4	<1	<1	<1	<1
Total Halogenated Hydrocarbons						1.7	5.7	4.0	18	17	20	27	15			
Total Concentration of VOCs						1.7	5.7	4.0	18	17	20	27	15			

MCL: Maximum contaminant level for drinking water (determined by CDPH)
All analyses by LBNL EML unless otherwise noted

(D) = Duplicate sample
* = Analysis by BC Laboratories

< = Less than Quantitation Limit
= Compound not included in analysis

Table 5-2
Bevalac Area Temporary Groundwater Sampling Point Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	SB51-98-2	SB51-98-6		SB64-98-8			SB64-98-12	SB64-98-13	SB64-98-17			SB64-99-4		
		Feb-13	Nov-12	Feb-13	Nov-12	Jan-13	Mar-13	Mar-13	Mar-13	Nov-12	Jan-13	Mar-13	Nov-12	Jan-13	Mar-13
Aromatic or Non-Halogenated Hydrocarbons															
Benzene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ter-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	70	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
n-Propylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	150	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	1750	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Aromatic Hydrocarbons															
Halogenated Non-Aromatic Hydrocarbons															
Bromodichloromethane	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	80	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane		<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
Chloroform	80	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Chloromethane		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,1-Dichloroethane	5	<1	<1	<1	36.9	31.4	26.4	12.6	41.1	33.6	85.7	27.8	146	66.3	100
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethene	6	<1	<1	<1	7.5	5.4	3.6	6.7	8.8	4.9	12.7	3.5	28.7	8.1	17.4
cis-1,2-Dichloroethene	6	<1	7.5	5.2	3.6	2.9	2.5	2.8	<1	<1	2.6	1.1	9.7	9.1	9.6
trans-1,2-Dichloroethene	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	5	<1	<1	<1	3.1	5.8	4.1	52.8	1.3	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	5	<1	1.3	<1	24.4	20.9	17.7	46.6	6.4	1.2	1.5	<1	5.7	6.2	5.8
Freon-113	1200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.5	<1
Total Halogenated Hydrocarbons			8.8	5.2	76	66	54	122	58	40	103	32	190	91	133
Total Concentration of VOCs			10≈	5.2	76	66	54	122	58	40	103	32	190	91	133

Table 5-2 (Cont'd)
Bevalac Area Temporary Groundwater Sampling Point Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

		SB64-99-5			SB64-99-6	SB64-00-1			SB64-00-2			SB64-02-1A			SB64-02-1B		
Constituent	MCL	Nov-12	Jan-13	Mar-13	Mar-13	Nov-12	Jan-13	Mar-13	Nov-12	Jan-13	Mar-13	Oct-12	Dec-12*	Feb-13	Oct-12	Dec-12*	Feb-13
Aromatic or Non-Halogenated Hydrocarbons																	
Benzene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1
n-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1		<1
sec-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1		<1
ter-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1		<1
Chlorobenzene	70	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1
Ethylbenzene	300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1
Isopropylbenzene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	<2		<2
p-Isopropyltoluene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1		<1
Naphthalene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	<2		<2
n-Propylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.3		1.3	<1		<1
Toluene	150	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	0.95	1.4
Xylenes, total	1750	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<2	<1	<2
Total Aromatic Hydrocarbons												1.3		1.3		0.95	1.4
Halogenated Non-Aromatic Hydrocarbons																	
Bromodichloromethane	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1
Bromomethane	80	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<0.5	<10	<10	<0.5	<10
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1
Chloroethane		<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<0.5	<30	<30	<0.5	<30
Chloroform	80	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<0.5	<3	<3	<0.5	<3
Chloromethane		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<0.5	<10	<10	<0.5	<10
1,1-Dichloroethane	5	20	22.7	31.4	2.5	47.3	48	32	5.9	6.6	10.9	500	410	433	214	240	248
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	4.3	5.2	4.3	<2	2.2	2.1
1,1-Dichloroethene	6	8.0	12.9	26	<1	6.8	7.3	4.7	22.4	26.8	40.5	62.8	73	60.7	25	33	33.7
cis-1,2-Dichloroethene	6	<1	<1	<1	<1	1.8	1.9	1.0	<1	1.1	1.8	56.3	50	54.8	46.9	55	59.8
trans-1,2-Dichloroethene	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1
1,2-Dichloropropane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.5	<2	<2	<0.5	<2
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.9	<0.5	1.8	<1	<0.5	<1
Tetrachloroethene	5	1.6	<1	2.8	<1	1.4	1.4	1.0	2.5	2.1	4.1	37.4	53	40.1	2.6	16	3.0
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.5	2.3	1.3	<1	<0.5	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.76	<1	<1	<0.5	<1
Trichloroethene	5	5.7	3.9	9.5	<1	7.7	7.5	5.2	10.3	10	18	124	130	130	33.6	53	43.6
Freon-113	1200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1
Vinyl Chloride	0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	4.9	3.2	7.2	26.2	19	38.3
Total Halogenated Hydrocarbons		35	40	70	2.5	65	66	44	41	47	75	793	727	733	348	418	429
Total Concentration of VOCs		35	40	70	2.5	65	66	44	41	47	75	794	1,227≈	735	348	699≈	430

Table 5-2 (Cont'd)
Bevalac Area Temporary Groundwater Sampling Point Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	SB64-02-1C			SB64-02-1D			SB64-02-1E			SB64-02-1F			SB64-02-2A		
		Oct-12	Dec-12*	Feb-13	Oct-12	Dec-12*	Feb-13	Oct-12	Dec-12*	Feb-13	Oct-12	Dec-12*	Feb-13	Oct-12	Dec-12*	Feb-13
Aromatic or Non-Halogenated Hydrocarbons																
Benzene	1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
n-Butylbenzene		<1		<1	<1		<1	<1		<1	<1		<1	<1		<1
sec-Butylbenzene		<1		<1	<1		<1	<1		<1	<1		<1	<1		<1
ter-Butylbenzene		<1		<1	<1		<1	<1		<1	<1		<1	<1		<1
Chlorobenzene	70	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
Ethylbenzene	300	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
Isopropylbenzene		<2		<2	<2		<2	<2		<2	<2		<2	<2		<2
p-Isopropyltoluene		<1		<1	<1		<1	<1		<1	<1		<1	<1		<1
Naphthalene		<2		<2	<2		<2	<2		<2	<2		<2	<2		<2
n-Propylbenzene		<1		<1	<1		<1	<1		<1	<1		<1	<1		<1
Toluene	150	<1	1.2	<1	<1	1.0	<1	1.5	1.8	1.5	2.1	1.7	1.9	<1	<0.5	<1
Xylenes, total	1750	<2	<1	<2	<2	<1	<2	<2	<1	<2	<2	<1	<2	<2	<1	<2
Total Aromatic Hydrocarbons			1.2			1		1.5	1.8	1.5	2.1	1.7	1.9			
Halogenated Non-Aromatic Hydrocarbons																
Bromodichloromethane	80	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
Bromomethane	80	<10	<0.5	<10	<10	<0.5	<10	<10	<0.5	<10	<10	<0.5	<10	<10	<1	<10
Carbon Tetrachloride	0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
Chloroethane		<30	3.0	<30	<30	<0.5	<30	<30	<0.5	<30	<30	2.0	<30	<30	<0.5	<30
Chloroform	80	<3	<0.5	<3	<3	<0.5	<3	<3	<0.5	<3	<3	<0.5	<3	<3	<0.5	<3
Chloromethane		<10	<0.5	<10	<10	<0.5	<10	<10	<0.5	<10	<10	<0.5	<10	<10	<0.5	<10
1,1-Dichloroethane	5	624	460	506	23.5	31	40.3	38.3	34	23.4	59.9	100	66	36.2	43	27
1,2-Dichloroethane	0.5	2.8	3.1	2.7	<2	<0.5	<2	<2	<0.5	<2	<2	2.3	<2	<2	<0.5	<2
1,1-Dichloroethene	6	27.9	24	21.3	3.5	5.2	4.5	6.1	5.7	3.5	5.1	29	6.7	13.1	16	10
cis-1,2-Dichloroethene	6	15.1	15	14.4	5.0	8.7	8.4	17.5	12	8.1	25.6	90	34.4	42	40	30.2
trans-1,2-Dichloroethene	10	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
1,2-Dichloropropane	5	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2
1,1,2,2-Tetrachloroethane	1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
Tetrachloroethene	5	1.4	1.8	1.3	1.5	2.1	1.2	1.2	2.0	1.8	<1	7.2	1.2	1.0	1.9	1.1
1,1,1-Trichloroethane	200	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
1,1,2-Trichloroethane	5	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
Trichloroethene	5	6.6	7.3	6.2	5.1	8.2	5.2	7.6	8.0	6.5	3.9	45	9.9	15.5	24	15.6
Freon-113	1200	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
Vinyl Chloride	0.5	48.1	46	43.8	2.3	2.8	3.1	2.9	3.1	2.2	7.1	20	10.2	<1	<0.5	<1
Total Halogenated Hydrocarbons		726	560	596	41	58	63	74	65	46	102	296	128	108	125	84
Total Concentration of VOCs		726	1,171≈	596	41	59	63	75	67	47	104	297	130	108	125	84

Table 5-2 (Cont'd)
Bevalac Area Temporary Groundwater Sampling Point Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	SB64-02-2B			SB64-02-2C			SB64-02-2D			SB64-02-2E			SB64-02-2F		
		Oct-12	Dec-12*	Feb-13	Oct-12	Dec-12*	Feb-13	Oct-12	Dec-12*	Feb-13	Oct-12	Dec-12*	Feb-13	Oct-12	Dec-12*	Feb-13
Aromatic or Non-Halogenated Hydrocarbons																
Benzene	1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
n-Butylbenzene		<1		<1	<1		<1	<1		<1	<1		<1	<1		<1
sec-Butylbenzene		<1		<1	<1		<1	<1		<1	<1		<1	<1		<1
ter-Butylbenzene		<1		<1	<1		<1	<1		<1	<1		<1	<1		<1
Chlorobenzene	70	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
Ethylbenzene	300	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
Isopropylbenzene		<2		<2	<2		<2	<2		<2	<2		<2	<2		<2
p-Isopropyltoluene		<1		<1	<1		<1	<1		<1	<1		<1	<1		<1
Naphthalene		<2		<2	<2		<2	<2		<2	<2		<2	<2		<2
n-Propylbenzene		<1		<1	<1		<1	<1		<1	<1		<1	<1		<1
Toluene	150	<1	0.57	<1	<1	1.1	<1	<1	0.79	<1	<1	1.2	1.0	1.2	1.4	<1
Xylenes, total	1750	<2	<1	<2	<2	<1	<2	<2	<1	<2	<2	<1	<2	<2	<1	<2
Total Aromatic Hydrocarbons			0.57			1.1			0.79			1.2	1.0	1.2	1.4	
Halogenated Non-Aromatic Hydrocarbons																
Bromodichloromethane	80	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
Bromomethane	80	<10	<0.5	<10	<10	<0.5	<10	<10	<0.5	<10	<10	<0.5	<10	<10	<0.5	<10
Carbon Tetrachloride	0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
Chloroethane		<30	<0.5	<30	<30	0.72	<30	<30	<0.5	<30	<30	0.71	<30	<30	3.3	<30
Chloroform	80	<3	<0.5	<3	<3	<0.5	<3	<3	<0.5	<3	<3	<0.5	<3	<3	<0.5	<3
Chloromethane		<10	<0.5	<10	<10	<0.5	<10	<10	<0.5	<10	<10	<0.5	<10	<10	<0.5	<10
1,1-Dichloroethane	5	416	310	431	60.5	64	69.6	64.8	64	63.1	52.5	58	61.4	318	280	259
1,2-Dichloroethane	0.5	2.1	1.9	2.0	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	1.7	<2
1,1-Dichloroethene	6	60.2	59	51.6	14.1	18	14	13.2	15	10.3	9.1	11	9.5	14.7	17	12.4
cis-1,2-Dichloroethene	6	20.5	17	14.7	8.5	9.4	8.2	8.0	7.8	8.6	7.7	9.2	7.6	11.7	12	10.1
trans-1,2-Dichloroethene	10	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
1,2-Dichloropropane	5	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2
1,1,2,2-Tetrachloroethane	1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
Tetrachloroethene	5	<1	<0.5	<1	<1	0.51	<1	<1	0.69	<1	<1	<0.5	<1	<1	0.61	<1
1,1,1-Trichloroethane	200	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
1,1,2-Trichloroethane	5	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
Trichloroethene	5	5.8	5.3	4.5	3.0	2.2	1.8	3.5	3.0	4.6	2.0	2.0	1.8	1.8	2.1	2.4
Freon-113	1200	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1
Vinyl Chloride	0.5	9.9	8.7	6.6	9.3	8.7	9.8	3.0	2.2	2.2	2.9	3.2	2.9	7.1	6.0	5.6
Total Halogenated Hydrocarbons		515	402	510	95	104	103	93	93	89	74	84	83	353	323	290
Total Concentration of VOCs		515	632≈	510	95	105	103	93	93	89	74	85	84	355	614≈	290

Table 5-2 (Cont'd)
Bevalac Area Temporary Groundwater Sampling Point Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	SB64-03-1A	SB64-03-1B			SB64-03-4	SB64-03-5			SB64-03-6			SB64-03-7	SB64-03-8
		Mar-13	Nov-12	Jan-13	Mar-13	Mar-13	Nov-12	Jan-13	Mar-13	Nov-12	Jan-13	Mar-13	Mar-13	Mar-13
Aromatic or Non-Halogenated Hydrocarbons														
Benzene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ter-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	70	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
n-Propylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	150	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	1750	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Aromatic Hydrocarbons														
Halogenated Non-Aromatic Hydrocarbons														
Bromodichloromethane	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	80	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane		<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
Chloroform	80	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Chloromethane		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,1-Dichloroethane	5	3.4	59	39.4	41.4	129	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethene	6	<1	2.0	1.4	1.4	5.8	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	6	<1	2.5	1.9	1.8	<1	<1	<1	<1	14.5	13.8	9.8	<1	<1
trans-1,2-Dichloroethene	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.0	<1	<1	<1
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	5	<1	7.1	5.7	5.6	<1	2.3	2.2	1.2	19	28.1	11.9	<1	<1
Freon-113	1200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Halogenated Hydrocarbons		3.4	71	48	50	135	2.3	2.2	1.2	34	43	22		
Total Concentration of VOCs		3.4	71	48	50	135	2.3	2.2	1.2	34	43	22		

Table 5-2 (Cont'd)
Bevalac Area Temporary Groundwater Sampling Point Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

		SB64-03-12	SB64-03-13	SB64-05-4			SB71B-03-1			SB71B-03-2			SB71B-04-1		
Constituent	MCL	Feb-13	Feb-13	Nov-12	Jan-13	Mar-13	Nov-12	Jan-13	Mar-13	Nov-12	Jan-13	Mar-13	Nov-12	Jan-13	Mar-13
Aromatic or Non-Halogenated Hydrocarbons															
Benzene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ter-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	70	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
n-Propylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	150	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	1750	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Aromatic Hydrocarbons															
Halogenated Non-Aromatic Hydrocarbons															
Bromodichloromethane	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	80	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane		<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
Chloroform	80	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Chloromethane		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,1-Dichloroethane	5	1.9	6.1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethene	6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	6	<1	<1	<1	<1	<1	11.5	23.2	26.8	<1	4.0	2.7	9.1	6.0	5.4
trans-1,2-Dichloroethene	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.2	1.2	6.1	8.0	5.4
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	5	1.8	<1	<1	<1	<1	<1	7.2	13.8	<1	1.1	<1	3.2	3.8	3.2
Freon-113	1200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	0.5	<1	<1	<1	<1	<1	2.8	4.4	5.1	<1	<1	<1	<1	<1	<1
Total Halogenated Hydrocarbons		3.7	6.1				14	35	46		6.3	3.9	18	18	14
Total Concentration of VOCs		3.7	6.1				14	35	46		6.3	3.9	18	18	14

MCL: Maximum contaminant level for drinking water (determined by CDPH)
All analyses by LBNL EML unless otherwise noted
≈:Total concentration of VOCs includes other chemicals, detail shown on Table 10.

< = Less than Quantitation Limit
= Compound not included in analysis
* = Analysis by BC Laboratories

Table 5-3
Bevalac Area Extraction Well Sampling Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	EW51-07-1			EW51-07-2			EW51A-06-1			EW51B-07-1		
		Nov-12	Jan-13	Mar-13*	Nov-12	Jan-13	Mar-13*	Nov-12	Jan-13	Mar-13*	Nov-12	Jan-13	Mar-13*
Aromatic or Non-Halogenated Hydrocarbons													
Benzene	1	<1	<1	<0.5	<1	<1	<0.5	<1	1.0	<0.5	<1	<1	<0.5
n-Butylbenzene		<1	<1		<1	<1		<1	<1		<1	<1	
sec-Butylbenzene		<1	<1		<1	<1		<1	<1		<1	<1	
ter-Butylbenzene		<1	<1		<1	<1		<1	<1		<1	<1	
Chlorobenzene	70	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5
Ethylbenzene	300	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5
Isopropylbenzene		<2	<2		<2	<2		<2	<2		<2	<2	
p-Isopropyltoluene		<1	<1		<1	<1		<1	<1		<1	<1	
Naphthalene		<2	<2		<2	<2		<2	<2		<2	<2	
n-Propylbenzene		<1	<1		<1	<1		<1	<1		<1	<1	
Toluene	150	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5
Xylenes, total	1750	<2	<2	<1	<2	<2	<1	<2	<2	<1	<2	<2	<1
Total Aromatic Hydrocarbons									1.0				
Halogenated Non-Aromatic Hydrocarbons													
Bromodichloromethane	80	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5
Bromoform	80	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5
Carbon Tetrachloride	0.5	<1	<1	<0.5	<1	<1	<0.5	8.5	35.9	9.8	<1	<1	<0.5
Chloromethane		<10	<10	<0.5	<10	<10	<0.5	<10	<10	<0.5	<10	<10	<0.5
Chloroform	80	<3	<3	<0.5	<3	<3	<0.5	<3	13.3	2.2	<3	<3	<0.5
1,1-Dichloroethane	5	3.0	5.3	4.8	2.0	3.4	6.3	<1	1.3	<0.5	8.1	7.5	7.9
1,2-Dichloroethane	0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5
1,1-Dichloroethene	6	1.6	2.4	2.7	<1	<1	0.83	<1	<1	<0.5	13.8	12.8	16
cis-1,2-Dichloroethene	6	109	183	160	2.5	4.2	8.9	3.6	35.6	3.5	25.3	24.8	28
trans-1,2-Dichloroethene	10	1.9	3.7	6.0	<1	<1	<0.5	<1	<1	<0.5	<1	<1	0.71
1,2-Dichloropropane	5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5
1,1,2,2-Tetrachloroethane	1	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5
Tetrachloroethene	5	<1	<1	<0.5	<1	<1	<0.5	1.2	14	1.4	<1	<1	<0.5
1,1,1-Trichloroethane	200	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5
1,1,2-Trichloroethane	5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5
Trichloroethene	5	15.2	17.3	17	34.8	27.1	42	103	437	98	4.7	4.7	5.2
Freon-113	1200	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5
Vinyl Chloride	0.5	<1	<1	1.8	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5
Total Halogenated Hydrocarbons		131	212	192	39	35	58	116	537	115	52	50	58
Total Concentration of VOCs		131	212	192	39	35	58	116	538	115	52	50	58

Table 5-3 (Cont'd)
Bevalac Area Extraction Well Sampling Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	EW51B-07-2			EW51L-06-1			EW64-00-1			EW64-03-1		
		Nov-12	Jan-13	Mar-13*	Nov-12	Jan-13	Mar-13*	Nov-12	Jan-13	Mar-13	Nov-12	Jan-13	Mar-13
Aromatic or Non-Halogenated Hydrocarbons													
Benzene	1	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1	<1	<1
n-Butylbenzene		<1	<1		<1	<1		<1	<1	<1	<1	<1	<1
sec-Butylbenzene		<1	<1		<1	<1		<1	<1	<1	<1	<1	<1
ter-Butylbenzene		<1	<1		<1	<1		<1	<1	<1	<1	<1	<1
Chlorobenzene	70	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1	<1	<1
Ethylbenzene	300	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1	<1	<1
Isopropylbenzene		<2	<2		<2	<2		<2	<2	<2	<2	<2	<2
p-Isopropyltoluene		<1	<1		<1	<1		<1	<1	<1	<1	<1	<1
Naphthalene		<2	<2		<2	<2		<2	<2	<2	<2	<2	<2
n-Propylbenzene		<1	<1		<1	<1		<1	<1	<1	<1	<1	<1
Toluene	150	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1	<1	<1
Xylenes, total	1750	<2	<2	<1	<2	<2	<1	<2	<2	<2	<2	<2	<2
Total Aromatic Hydrocarbons													
Halogenated Non-Aromatic Hydrocarbons													
Bromodichloromethane	80	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1	<1	<1
Bromoform	80	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<2	<2	<2	<2
Carbon Tetrachloride	0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1	<1	<1
Chloromethane		<10	<10	<0.5	<10	<10	<0.5	<10	<10	<10	<10	<10	<10
Chloroform	80	<3	<3	<0.5	<3	<3	<0.5	<3	<3	<3	<3	<3	<3
1,1-Dichloroethane	5	<1	1.0	1.7	2.5	1.2	1.2	2.6	<1	<1	22.3	<1	11.4
1,2-Dichloroethane	0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<2	<2	<2	<2
1,1-Dichloroethene	6	<1	<1	0.7	<1	<1	<0.5	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	6	7.4	8.3	6.1	7.6	5.7	5.4	<1	<1	<1	1.3	<1	<1
trans-1,2-Dichloroethene	10	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<0.5	<2	<2	<0.5	<2	<2	<2	<2	<2	<2
1,1,2,2-Tetrachloroethane	1	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1	<1	<1
Tetrachloroethene	5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	200	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1	<1	<1
Trichloroethene	5	<1	<1	<0.5	13.8	10.6	10	<1	<1	<1	3.3	<1	1.5
Freon-113	1200	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1	<1	<1
Vinyl Chloride	0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1	<1	<1
Total Halogenated Hydrocarbons		7.4	9.3	8.5	24	18	17	2.6			27		13
Total Concentration of VOCs		7.4	9.3	8.5	24	18	17	2.6			27		13

MCL: Maximum contaminant level for drinking water (determined by CDPH)
All analyses by LBNL EML unless otherwise noted
* = Analysis by BC Laboratories

< = Less than Quantitation Limit
= Compound not included in analysis

Table 5-4
Groundwater Sampling Results - Building 51A and Building 51 Vacuum Pump Room Area
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	OC51-11-1			SB51-11-1R		SB51-11-3	SB51-11-4	SB51-11-9				SB51-11-10		SB51-11-11	SB51-11-17	SB51-11-18
		Oct-12	Dec-12	Mar-13	Nov-12	Mar-13*	Nov-12	Nov-12	Nov-12	Dec-12	Dec-12	Mar-13	Nov-12	Mar-13*	Dec-12*	Nov-12	Nov-12
Aromatic or Non-Halogenated Hydrocarbons																	
Benzene	1	<1	<1	<1	<1	<0.5	4.0	<1	<10	<10	<10	<50	<1	<0.5	<0.5	<1	<1
n-Butylbenzene		<1	<1	<1	<1		<1	<1	<10	<10	<10	<50	<1			<1	<1
sec-Butylbenzene		<1	<1	<1	<1		<1	<1	<10	<10	<10	<50	<1			<1	<1
ter-Butylbenzene		<1	<1	<1	<1		<1	<1	<10	<10	<10	<50	<1			<1	<1
Chlorobenzene	70	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<50	<1	<0.5	<0.5	<1	<1
Ethylbenzene	300	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<50	<1	<0.5	<0.5	<1	<1
Isopropylbenzene		<2	<2	<2	<2		<2	<2	<20	<20	<20	<100	<2			<2	<2
p-Isopropyltoluene		<1	<1	<1	<1		<1	<1	<10	<10	<10	<50	<1			<1	<1
Naphthalene		<2	<2	<2	<2		<2	<2	<20	<20	<20	<100	<2			<2	<2
n-Propylbenzene		<1	<1	<1	<1		<1	<1	<10	<10	<10	<50	<1			<1	<1
Toluene	150	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<50	<1	<0.5	<0.5	<1	<1
1,2,4-Trimethylbenzene		<1	<1	<1	<1		<1	<1	<10	<10	<10	<50	<1			<1	<1
Xylenes, total	1750	<2	<2	<2	<2	<1	<2	<2	<20	<20	<20	<100	<2	<1	<1	<2	<2
Total Aromatic Hydrocarbons							4.0										
Halogenated Non-Aromatic Hydrocarbons																	
Bromodichloromethane	80	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<50	<1	<0.5	<0.5	<1	<1
Bromomethane	80	<10	<10	<10	<10	<0.5	<10	<10	<100	<100	<100	<500	<10	<0.5	<0.5	<10	<10
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	24.7	<50	<1	<0.5	<0.5	<1	<1
Chloroethane		<30	<30	<30	<30	<0.5	<30	<30	<300	<300	<300	<1500	<30	<0.5	<0.5	<30	<30
Chloroform	80	<3	<3	<3	<3	<0.5	<3	<3	<30	<30	<30	<150	<3	<0.5	<0.5	<3	<3
Chloromethane		<10	<10	<10	<10	<0.5	<10	<10	<100	<100	<100	<500	<10	<0.5	<0.5	<10	<10
1,1-Dichloroethane	5	9.6	9.2	8.7	<1	<0.5	<1	<1	78.1	105	38.3	51.5	<1	0.7	0.8	1.9	<1
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<0.5	<2	<2	<20	<20	<20	<100	<2	<0.5	<0.5	<2	<2
1,1-Dichloroethene	6	1.4	1.3	1.5	<1	<0.5	<1	<1	15.5	22.1	12.6	<50	<1	<0.5	<0.5	<1	<1
cis-1,2-Dichloroethene	6	122	124	152	<1	<0.5	<1	<1	84.5	36.9	40.8	<50	<1	<0.5	<0.5	<1	<1
trans-1,2-Dichloroethene	10	4.4	4.1	5.4	<1	<0.5	<1	<1	<10	<10	<10	<50	<1	<0.5	<0.5	<1	<1
1,2-Dichloropropane	5	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<50	<1	<0.5	<0.5	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<10	<10	<10	<50	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<2	<2	<0.5	<2	<2	<20	<20	<20	<100	<2	<0.5	<0.5	<2	<2
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<50	<1	<0.5	<0.5	<1	<1
Tetrachloroethene	5	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<50	<1	<0.5	<0.5	<1	<1
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<0.5	<1	<1	49.6	122	337	123	<1	<0.5	<0.5	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<50	<1	<0.5	<0.5	<1	<1
2,2-Dichloropropane		<1	<1	<1	<1		<1	<1	<10	<10	<10	<50	2.5			<1	<1
Trichloroethene	5	124	98.6	77.2	<1	<0.5	<1	<1	6490	9740	9130	4450	2.0	3.4	<0.5	1.8	2.3
Freon-113	1200	<1	<1	<1	<1	<0.5	<1	<1	<10	<10	<10	<50	<1	<0.5	<0.5	<1	<1
Vinyl Chloride	0.5	2.0	2.2	3.1	<1	<0.5	<1	<1	<10	<10	<10	<50	<1	<0.5	<0.5	<1	<1
Total Halogenated Hydrocarbons		263	239	248			0.0		6,718	10,026	9,583	4,625	4.5	4.1	0.8	3.7	2.3
Total Concentration of VOCs		263	239	248			4.0		6,718	10,026	9,583	4,625	4.5	4.1	0.8	3.7	2.3

Table 5-4 (Cont'd)
Groundwater Sampling Results - Building 51A and Building 51 Vacuum Pump Room Area
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	SB51-11-19	SB51A-12-1			SB51A-12-2		SB51A-12-3			SB51A-12-4		SB51A-12-5		SB51A-12-6		SB51A-12-7	
		Nov-12	Nov-12	Nov-12	Jan-13	Nov-12	Jan-13	Nov-12	Mar-13*	(D)*	Nov-12	Mar-13	Nov-12	Jan-13	Nov-12	Mar-13*	Nov-12	Mar-13
Aromatic or Non-Halogenated Hydrocarbons																		
Benzene	1	<1	<50	<10	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<100	<1	<1	<0.5	<1	<1
n-Butylbenzene		<1	<50	<10	<1	<1	<1	<1			<1	<1	<100	<1	<1		<1	<1
sec-Butylbenzene		<1	<50	<10	<1	<1	<1	<1			<1	<1	<100	<1	<1		<1	<1
ter-Butylbenzene		<1	<50	<10	<1	<1	<1	<1			<1	<1	<100	<1	<1		<1	<1
Chlorobenzene	70	<1	<50	<10	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<100	<1	<1	<0.5	<1	<1
Ethylbenzene	300	<1	<50	<10	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<100	<1	<1	<0.5	<1	<1
Isopropylbenzene		<2	<100	<20	<2	<2	<2	<2			<2	<2	<200	<2	<2		<2	<2
p-Isopropyltoluene		<1	<50	<10	<1	<1	<1	<1			<1	<1	<100	<1	<1		<1	<1
Naphthalene		<2	<100	<20	<2	<2	<2	<2			<2	<2	<200	<2	<2		<2	<2
n-Propylbenzene		<1	<50	<10	<1	<1	<1	<1			<1	<1	<100	<1	<1		<1	<1
Toluene	150	<1	<50	<10	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<100	<1	<1	<0.5	<1	<1
1,2,4-Trimethylbenzene		<1	<50	<10	<1	<1	<1	<1			<1	<1	<100	<1	<1		<1	<1
Xylenes, total	1750	<2	<100	<20	<2	<2	<2	<2	<1	<1	<2	<2	<200	<2	<2	<1	<2	<2
Total Aromatic Hydrocarbons																		
Halogenated Non-Aromatic Hydrocarbons																		
Bromodichloromethane	80	<1	<50	<10	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<100	<1	<1	<0.5	<1	<1
Bromomethane	80	<10	<500	<100	<10	<10	<10	<10	<0.5	<0.5	<10	<10	<1000	<10	<10	<0.5	<10	<10
Carbon Tetrachloride	0.5	<1	1400	1870	585	65.3	71.4	<1	<0.5	<0.5	<1	<1	1770	1510	<1	<0.5	<1	<1
Chloroethane		<30	<1500	<300	<30	<30	<30	<30	<0.5	<0.5	<30	<30	<3000	<30	<30	<0.5	<30	<30
Chloroform	80	<3	<150	226	301	40.4	17.8	<3	<0.5	<0.5	<3	<3	<300	49.7	<3	<0.5	<3	<3
Chloromethane		<10	<500	<100	<10	<10	<10	<10	<0.5	<0.5	<10	<10	<1000	<10	<10	<0.5	<10	<10
1,1-Dichloroethane	5	<1	<50	<10	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<100	<1	<1	<0.5	<1	<1
1,2-Dichloroethane	0.5	<2	<100	<20	<2	<2	<2	<2	<0.5	<0.5	<2	<2	<200	<2	<2	<0.5	<2	<2
1,1-Dichloroethene	6	<1	<50	<10	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<100	<1	<1	<0.5	<1	<1
cis-1,2-Dichloroethene	6	<1	<50	27.3	13	7.0	7.1	<1	1.3	1.4	<1	<1	<100	9.6	<1	<0.5	<1	<1
trans-1,2-Dichloroethene	10	<1	<50	<10	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<100	<1	<1	<0.5	<1	<1
1,2-Dichloropropane	5	<1	<50	<10	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<100	<1	<1	<0.5	<1	<1
Methylene Chloride	5	<1	<50	<10	6.9	<1	<1	<1	<1	<1	<1	<1	<100	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<100	<20	<2	<2	<2	<2	<0.5	<0.5	<2	<2	<200	<2	<2	<0.5	<2	<2
1,1,2,2-Tetrachloroethane	1	<1	<50	<10	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<100	<1	<1	<0.5	<1	<1
Tetrachloroethene	5	<1	209	200	201	4.7	7.5	<1	<0.5	<0.5	<1	<1	<100	23.9	<1	<0.5	<1	<1
1,1,1-Trichloroethane	200	<1	<50	<10	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<100	<1	<1	<0.5	<1	<1
1,1,2-Trichloroethane	5	<1	<50	<10	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<100	<1	<1	<0.5	<1	<1
2,2-Dichloropropane		<1	<50	<10	<1	<1	<1	<1			<1	<1	<100	<1	<1		<1	<1
Trichloroethene	5	<1	3750	8040	4160	1320	909	12.5	27	26	1.4	13.2	6550	4720	<1	<0.5	2.0	1.7
Freon-113	1200	<1	<50	<10	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<100	<1	<1	<0.5	<1	<1
Vinyl Chloride	0.5	<1	<50	<10	1.2	<1	<1	<1	<0.5	<0.5	<1	<1	<100	2.1	<1	<0.5	<1	<1
Total Halogenated Hydrocarbons			5,359	10,363	5,268	1,437	1,013	13	28	27	1.4	13	8,320	6,315			2.0	1.7
Total Concentration of VOCs			5,359	10,363	5,268	1,437	1,013	13	28	27	1.4	13	8,320	6,315			2.0	1.7

MCL: Maximum contaminant level for drinking water (determined by CDPH)
All analyses by LBNL EML unless otherwise noted

(D) = Duplicate sample
* = Analysis by BC Laboratories

< = Less than Quantitation Limit
= Compound not included in analysis

Table 6-1
Old Town Area Groundwater Monitoring Well Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	5-93-10			6-92-17	6-95-14T		7-92-16	7-92-19			7-94-3		
		Nov-12	Jan-13	Mar-13	Jan-13	Dec-12*	Feb-13	Nov-12	Oct-12	Dec-12*	Feb-13	Oct-12	Dec-12*	Mar-13*
Aromatic or Non-Halogenated Hydrocarbons														
Benzene	1	<1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5
n-Butylbenzene		<1	<1	<1	<1		<1	<1	<1		<1	<1		
sec-Butylbenzene		<1	<1	<1	<1		<1	<1	<1		<1	<1		
ter-Butylbenzene		<1	<1	<1	<1		<1	<1	<1		<1	<1		
1,4-Dichlorobenzene	5	<1	<1	<1	<1		<1	<1	<1		<1	<1		
Ethylbenzene	300	<1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5
Isopropylbenzene		<2	<2	<2	<2		<2	<2	<2		<2	<2		
p-Isopropyltoluene		<1	<1	<1	<1		<1	<1	<1		<1	<1		
Naphthalene		<2	<2	<2	<2		<2	<2	<2		<2	<2		
n-Propylbenzene		<1	<1	<1	<1		<1	<1	<1		<1	<1		
Toluene	150	<1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5
1,2,4-Trimethylbenzene		<1	<1	<1	<1		<1	<1	<1		<1	<1		
1,3,5-Trimethylbenzene		<1	<1	<1	<1		<1	<1	<1		<1	<1		
Xylenes, total	1750	<2	<2	<2	<2	<1	<2	<2	<2	<1	<2	<2	<1	<1
Total Aromatic Hydrocarbons														
Halogenated Hydrocarbons														
Bromodichloromethane	80	<1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5
Bromoform	80	<2	<2	<2	<2	<0.5	<2	<2	<2	<0.5	<2	<2	<0.5	<0.5
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5
Chloroform	80	<3	<3	<3	6.0	8.3	5.0	11.7	<3	<0.5	<3	<3	<0.5	0.74
1,1-Dichloroethane	5	<1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<0.5	<2	<2	<2	<0.5	<2	<2	<0.5	<0.5
1,1-Dichloroethene	6	<1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	2.6	<0.5	0.5
cis-1,2-Dichloroethene	6	<1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	1.9	2.9	5.2
trans-1,2-Dichloroethene	10	<1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	4.0	9.3	4.4
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<2	<2	<0.5	<2	<2	<2	<0.5	<2	<2	<0.5	<0.5
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5
Tetrachloroethene	5	<1	<1	<1	<1	1.6	<1	<1	<1	0.78	<1	20.7	13	13
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5
Trichloroethene	5	<1	<1	<1	5.8	3.2	1.7	1.6	<1	<0.5	<1	13.8	6.7	6.4
Freon-113	1200	<1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5
Vinyl Chloride	0.5	<1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<0.5	<0.5
Total Halogenated Hydrocarbons					12	13	6.7	13		0.8		43	32	30
Total Concentration of VOCs					12	13	6.7	13		0.8		43	32	30

Table 6-1 (Cont'd)
Old Town Area Groundwater Monitoring Well Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	7-95-22			7-95-23			7B-95-21			7B-95-24			7B-95-25	
		Oct-12	Dec-12*	Feb-13	Oct-12	Dec-12*	Feb-13	Oct-12	Dec-12*	Feb-13	Oct-12	Dec-12*	Feb-13	Oct-12	Nov-12
Aromatic or Non-Halogenated Hydrocarbons															
Benzene	1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1
n-Butylbenzene		<1		<1	<1		<1	<1		<1	<1		<1	<1	<1
sec-Butylbenzene		<1		<1	<1		<1	<1		<1	<1		<1	<1	<1
ter-Butylbenzene		<1		<1	<1		<1	<1		<1	<1		<1	<1	<1
1,4-Dichlorobenzene	5	<1		<1	<1		<1	<1		<1	<1		<1	<1	<1
Ethylbenzene	300	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1
Isopropylbenzene		<2		<2	<2		<2	<2		<2	<2		<2	<2	<2
p-Isopropyltoluene		<1		<1	<1		<1	<1		<1	<1		<1	<1	<1
Naphthalene		<2		<2	<2		<2	<2		<2	<2		<2	<2	<2
n-Propylbenzene		<1		<1	<1		<1	<1		<1	<1		<1	<1	<1
Toluene	150	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1
1,2,4-Trimethylbenzene		<1		<1	<1		<1	<1		<1	<1		<1	<1	<1
1,3,5-Trimethylbenzene		<1		<1	<1		<1	<1		<1	<1		<1	<1	<1
Xylenes, total	1750	<2	<1	<2	<2	<1	<2	<2	<1	<2	<2	<1	<2	<2	<2
Total Aromatic Hydrocarbons															
Halogenated Hydrocarbons															
Bromodichloromethane	80	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1
Bromoform	80	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<2
Carbon Tetrachloride	0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1
Chloroform	80	<3	<0.5	<3	<3	<0.5	<3	<3	<0.5	<3	<3	<0.5	<3	<3	<3
1,1-Dichloroethane	5	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1
1,2-Dichloroethane	0.5	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<2
1,1-Dichloroethene	6	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1
cis-1,2-Dichloroethene	6	<1	<0.5	<1	<1	0.75	<1	1.9	<0.5	6.1	<1	<0.5	<1	<1	<1
trans-1,2-Dichloroethene	10	<1	<0.5	<1	<1	<0.5	<1	1.4	<0.5	4.7	<1	<0.5	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<2
1,1,2,2-Tetrachloroethane	1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1
Tetrachloroethene	5	13.4	21	18.6	35.2	31	39.8	12.6	8.1	19.8	21	10	8.8	<1	<1
1,1,1-Trichloroethane	200	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1
1,1,2-Trichloroethane	5	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1
Trichloroethene	5	4.6	7.0	6.4	34.6	33	39.9	20.4	1.1	51.2	3.4	2.0	1.9	<1	<1
Freon-113	1200	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1
Vinyl Chloride	0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1
Total Halogenated Hydrocarbons		18	28	25	70	65	80	36	9.2	82	24	12	11		
Total Concentration of VOCs		18	28	25	70	65	80	36	9.2	82	24	12	11		

Table 6-1 (Cont'd)
Old Town Area Groundwater Monitoring Well Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	7B-95-25 (cont'd)		25-95-5		25-95-27	25-98-10	27-92-20			30-13-1	30-13-2	46-93-12
		Jan-13	Mar-13	Dec-12*	Feb-13*	Feb-13	Feb-13*	Oct-12	Dec-12*	Feb-13	Mar-13*	Mar-13*	Jan-13
Aromatic or Non-Halogenated Hydrocarbons													
Benzene	1	<1	<1	<0.5	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1
n-Butylbenzene		<1	<1			<1		<1		<1			<1
sec-Butylbenzene		<1	<1			<1		<1		<1			<1
ter-Butylbenzene		<1	<1			<1		<1		<1			<1
1,4-Dichlorobenzene	5	<1	<1			<1		<1		<1			<1
Ethylbenzene	300	<1	<1	<0.5	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1
Isopropylbenzene		<2	<2			<2		<2		<2			<2
p-Isopropyltoluene		<1	<1			<1		<1		<1			<1
Naphthalene		<2	<2			<2		<2		<2			<2
n-Propylbenzene		<1	<1			<1		<1		<1			<1
Toluene	150	<1	<1	<0.5	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1
1,2,4-Trimethylbenzene		<1	<1			<1		<1		<1			<1
1,3,5-Trimethylbenzene		<1	<1			<1		<1		<1			<1
Xylenes, total	1750	<2	<2	<1	<1	<2	<1	<2	<1	<2	<1	<1	<2
Total Aromatic Hydrocarbons													
Halogenated Hydrocarbons													
Bromodichloromethane	80	<1	<1	<0.5	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1
Bromoform	80	<2	<2	<0.5	<0.5	<2	<0.5	<2	<0.5	<2	<0.5	<0.5	<2
Carbon Tetrachloride	0.5	<1	<1	<0.5	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1
Chloroform	80	<3	<3	<0.5	<0.5	<3	<0.5	<3	0.79	<3	<0.5	<0.5	<3
1,1-Dichloroethane	5	<1	<1	<0.5	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1
1,2-Dichloroethane	0.5	<2	<2	<0.5	<0.5	<2	<0.5	<2	<0.5	<2	<0.5	<0.5	<2
1,1-Dichloroethene	6	<1	<1	<0.5	<0.5	<1	<0.5	<1	<0.5	<1	0.6	2.3	<1
cis-1,2-Dichloroethene	6	<1	<1	<0.5	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	0.71	<1
trans-1,2-Dichloroethene	10	<1	<1	<0.5	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<0.5	<0.5	<2	<0.5	<2	<0.5	<2	<0.5	<0.5	<2
1,1,2,2-Tetrachloroethane	1	<1	<1	<0.5	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1
Tetrachloroethene	5	<1	<1	<0.5	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1
1,1,1-Trichloroethane	200	<1	<1	<0.5	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1
1,1,2-Trichloroethane	5	<1	<1	<0.5	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1
Trichloroethene	5	<1	<1	0.83	0.74	<1	<0.5	<1	0.96	1.0	3.9	39	<1
Freon-113	1200	<1	<1	<0.5	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1
Vinyl Chloride	0.5	<1	<1	<0.5	<0.5	<1	<0.5	<1	<0.5	<1	<0.5	<0.5	<1
Total Halogenated Hydrocarbons				0.8	0.7				1.8	1.0	4.5	42	
Total Concentration of VOCs				0.8	0.7				1.8	1.0	4.5	42	

Table 6-1 (Cont'd)
Old Town Area Groundwater Monitoring Well Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	52-95-2B				52-98-9				52A-98-8B				53-93-9		
		Oct-12	Nov-12	Jan-13	Mar-13*	Oct-12	Nov-12	Jan-13	Mar-13*	Oct-12	Nov-12	Jan-13	Mar-13*	Nov-12	Jan-13	Mar-13
Aromatic or Non-Halogenated Hydrocarbons																
Benzene	1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
n-Butylbenzene		<1	<1	<1		<1	<1	<1		<1	<1	<1		<1	<1	<1
sec-Butylbenzene		<1	<1	<1		<1	<1	<1		<1	<1	<1		<1	<1	<1
ter-Butylbenzene		<1	<1	<1		<1	<1	<1		<1	<1	<1		<1	<1	<1
1,4-Dichlorobenzene	5	<1	<1	<1		<1	<1	<1		<1	<1	<1		<1	<1	<1
Ethylbenzene	300	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
Isopropylbenzene		<2	<2	<2		<2	<2	<2		<2	<2	<2		<2	<2	<2
p-Isopropyltoluene		<1	<1	<1		<1	<1	<1		<1	<1	<1		<1	<1	<1
Naphthalene		<2	<2	<2		<2	<2	<2		<2	<2	<2		<2	<2	<2
n-Propylbenzene		<1	<1	<1		<1	<1	<1		<1	<1	<1		<1	<1	<1
Toluene	150	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
1,2,4-Trimethylbenzene		<1	<1	<1		<1	<1	<1		<1	<1	<1		<1	<1	<1
1,3,5-Trimethylbenzene		<1	<1	<1		<1	<1	<1		<1	<1	<1		<1	<1	<1
Xylenes, total	1750	<2	<2	<2	<1	<2	<2	<2	<1	<2	<2	<2	<1	<2	<2	<2
Total Aromatic Hydrocarbons																
Halogenated Hydrocarbons																
Bromodichloromethane	80	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
Bromoform	80	<2	<2	<2	<0.5	<2	<2	<2	<0.5	<2	<2	<2	<0.5	<2	<2	<2
Carbon Tetrachloride	0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
Chloroform	80	<3	<3	<3	0.97	<3	<3	<3	0.92	<3	<3	<3	0.52	<3	<3	<3
1,1-Dichloroethane	5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
1,2-Dichloroethane	0.5	<2	<2	<2	<0.5	<2	<2	<2	<0.5	<2	<2	<2	<0.5	<2	<2	<2
1,1-Dichloroethene	6	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
cis-1,2-Dichloroethene	6	<1	<1	<1	0.83	<1	<1	<1	0.7	<1	<1	1.2	0.58	<1	<1	<1
trans-1,2-Dichloroethene	10	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<2	<0.5	<2	<2	<2	<0.5	<2	<2	<2	<0.5	<2	<2	<2
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
Tetrachloroethene	5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
1,1,1-Trichloroethane	200	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
Trichloroethene	5	<1	1.2	1.0	1.2	<1	1.1	1.2	1.1	<1	<1	1.6	0.7	<1	<1	<1
Freon-113	1200	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
Vinyl Chloride	0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<1	<1	<1
Total Halogenated Hydrocarbons			1.2	1.0	3.0		1.1	1.2	2.7			2.8	1.8			
Total Concentration of VOCs			1.2	1.0	3.0		1.1	1.2	2.7			2.8	1.8			

Table 6-1 (Cont'd)
Old Town Area Groundwater Monitoring Well Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	53-93-16-69'			53-95-12	53-96-1			58-93-3	58-95-19	58-96-11				58-00-12	
		Nov-12	Jan-13	Mar-13	Mar-13*	Nov-12	Jan-13	Mar-13	Feb-13	Feb-13	Oct-12	Dec-12	Feb-13	(D)*	Oct-12	(D)*
Aromatic or Non-Halogenated Hydrocarbons																
Benzene	1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<50	<0.5
n-Butylbenzene		<1	<1	<1		<1	<1	<1	<1	<1	<1	<1	<1		<50	
sec-Butylbenzene		<1	<1	<1		<1	<1	<1	<1	<1	<1	<1	<1		<50	
ter-Butylbenzene		<1	<1	<1		<1	<1	<1	<1	<1	<1	<1	<1		<50	
1,4-Dichlorobenzene	5	<1	<1	<1		<1	<1	<1	<1	<1	<1	<1	<1		<50	
Ethylbenzene	300	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<50	<0.5
Isopropylbenzene		<2	<2	<2		<2	<2	<2	<2	<2	<2	<2	<2		<100	
p-Isopropyltoluene		<1	<1	<1		<1	<1	<1	<1	<1	<1	<1	<1		<50	
Naphthalene		<2	<2	<2		<2	<2	<2	<2	<2	<2	<2	<2		<100	
n-Propylbenzene		<1	<1	<1		<1	<1	<1	<1	<1	<1	<1	<1		<50	
Toluene	150	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<50	<0.5
1,2,4-Trimethylbenzene		<1	<1	<1		<1	<1	<1	<1	<1	<1	<1	<1		<50	
1,3,5-Trimethylbenzene		<1	<1	<1		<1	<1	<1	<1	<1	<1	<1	<1		<50	
Xylenes, total	1750	<2	<2	<2	<1	<2	<2	<2	<2	<2	<2	<2	<2	<1	<100	<1
Total Aromatic Hydrocarbons																
Halogenated Hydrocarbons																
Bromodichloromethane	80	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<50	<0.5
Bromoform	80	<2	<2	<2	<0.5	<2	<2	<2	<2	<2	<2	<2	<2	<0.5	<100	1.8
Carbon Tetrachloride	0.5	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	12.6	10.2	17.1	19	79.8	100
Chloroform	80	<3	<3	<3	<0.5	<3	<3	<3	<3	<3	<3	<3	<3	<0.5	<150	3.4
1,1-Dichloroethane	5	<1	<1	<1	<0.5	<1	<1	<1	2.5	<1	<1	<1	<1	<0.5	<50	1.2
1,2-Dichloroethane	0.5	<2	<2	<2	<0.5	<2	<2	<2	<2	<2	<2	<2	<2	<0.5	<100	<0.5
1,1-Dichloroethene	6	<1	<1	<1	<0.5	<1	<1	<1	<1	1.1	2.8	2.4	3.2	2.8	<50	13
cis-1,2-Dichloroethene	6	<1	<1	<1	<0.5	<1	3.5	2.3	1.1	61.1	9.9	9.0	10.8	9.1	<50	30
trans-1,2-Dichloroethene	10	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<50	<0.5
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<1
1,1,1,2-Tetrachloroethane		<2	<2	<2	<0.5	<2	<2	<2	<2	<2	<2	<2	<2	<0.5	<100	4.1
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<50	<0.5
Tetrachloroethene	5	4.9	3.7	3.3	<0.5	6.7	6.3	5.0	1.9	20.4	402	301	424	300	1630	1400
1,1,1-Trichloroethane	200	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<50	<0.5
1,1,2-Trichloroethane	5	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<50	0.66
Trichloroethene	5	3.3	2.9	2.1	<0.5	3.0	4.0	3.1	2.1	81.9	296	247	298	220	1530	1500
Freon-113	1200	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<50	<0.5
Vinyl Chloride	0.5	<1	<1	<1	<0.5	<1	1.0	<1	<1	<1	<1	<1	<1	<0.5	<50	<0.5
Total Halogenated Hydrocarbons		8.2	6.6	5.4		9.7	15	10	7.6	165	723	570	753	551	3,240	3,054
Total Concentration of VOCs		8.2	6.6	5.4		9.7	15	10	7.6	165	723	570	753	551	3,240	3,054

Table 6-1 (Cont'd)
Old Town Area Groundwater Monitoring Well Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	58-00-12 (cont'd)			58A-94-14	MW90-2			MW91-8			MW91-9		
		Dec-12	Feb-13	(D)*	Feb-13	Oct-12	Dec-12*	Feb-13	Oct-12	Dec-12*	Feb-13	Nov-12	Jan-13	Mar-13
Aromatic or Non-Halogenated Hydrocarbons														
Benzene	1	<50	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
n-Butylbenzene		<50	<1		<1	<1		<1	<1		<1	<1	<1	<1
sec-Butylbenzene		<50	<1		<1	<1		<1	<1		<1	<1	<1	<1
ter-Butylbenzene		<50	<1		<1	<1		<1	<1		<1	<1	<1	<1
1,4-Dichlorobenzene	5	<50	<1		<1	<1		<1	<1		<1	<1	<1	<1
Ethylbenzene	300	<50	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
Isopropylbenzene		<100	<2		<2	<2		<2	<2		<2	<2	<2	<2
p-Isopropyltoluene		<50	<1		<1	<1		<1	<1		<1	<1	<1	<1
Naphthalene		<100	<2		<2	<2		<2	<2		<2	<2	<2	<2
n-Propylbenzene		<50	<1		<1	<1		<1	<1		<1	<1	<1	<1
Toluene	150	<50	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
1,2,4-Trimethylbenzene		<50	<1		<1	<1		<1	<1		<1	<1	<1	<1
1,3,5-Trimethylbenzene		<50	<1		<1	<1		<1	<1		<1	<1	<1	<1
Xylenes, total	1750	<100	<2	<1	<2	<2	<1	<2	<2	<1	<2	<2	<2	<2
Total Aromatic Hydrocarbons														
Halogenated Hydrocarbons														
Bromodichloromethane	80	<50	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
Bromoform	80	<100	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<2	<2
Carbon Tetrachloride	0.5	73.7	29.1	48	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
Chloroform	80	<150	8.4	9.7	<3	<3	<0.5	<3	<3	0.72	<3	<3	<3	<3
1,1-Dichloroethane	5	<50	<1	0.6	3.7	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
1,2-Dichloroethane	0.5	<100	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<2	<2
1,1-Dichloroethene	6	<50	7.1	8.8	8.7	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
cis-1,2-Dichloroethene	6	<50	13.6	15	13.5	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
trans-1,2-Dichloroethene	10	<50	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
Methylene Chloride	5	<50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<100	<2	1.9	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<2	<2
1,1,2,2-Tetrachloroethane	1	<50	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
Tetrachloroethene	5	1750	1370	1100	<1	1.5	4.5	1.1	<1	<0.5	<1	3.1	2.0	3.0
1,1,1-Trichloroethane	200	<50	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
1,1,2-Trichloroethane	5	<50	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
Trichloroethene	5	1440	1160	1000	<1	<1	0.9	<1	<1	0.76	<1	2.3	1.2	2.1
Freon-113	1200	<50	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
Vinyl Chloride	0.5	<50	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
Total Halogenated Hydrocarbons		3,264	2,588	2,184	26	1.5	5.4	1.1		1.5		5.4	3.2	5.1
Total Concentration of VOCs		3,264	2,588	2,184	26	1.5	5.4	1.1		1.5		5.4	3.2	5.1

Table 6-1 (Cont'd)
Old Town Area Groundwater Monitoring Well Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	MWP-4	MWP-5	MWP-6	MWP-7		MWP-8	MP7-99-1BR			MP7-99-2BR			
		Feb-13	Jan-13	Feb-13	Feb-13	(D)*	Feb-13	Oct-12	Dec-12*	Feb-13	Oct-12	(D)*	Dec-12*	Feb-13
Aromatic or Non-Halogenated Hydrocarbons														
Benzene	1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1
n-Butylbenzene		<1	<1	<1	<1		<1	<1		<1	<1			<1
sec-Butylbenzene		<1	<1	<1	<1		<1	<1		<1	<1			<1
ter-Butylbenzene		<1	<1	<1	<1		<1	<1		<1	<1			<1
1,4-Dichlorobenzene	5	<1	<1	<1	<1		<1	<1		<1	<1			<1
Ethylbenzene	300	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1
Isopropylbenzene		<2	<2	<2	<2		<2	<2		<2	<2			<2
p-Isopropyltoluene		<1	<1	<1	<1		<1	<1		<1	<1			<1
Naphthalene		<2	<2	<2	<2		<2	<2		<2	<2			<2
n-Propylbenzene		<1	<1	<1	<1		<1	<1		<1	<1			<1
Toluene	150	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1
1,2,4-Trimethylbenzene		<1	<1	<1	<1		<1	<1		<1	<1			<1
1,3,5-Trimethylbenzene		<1	<1	<1	<1		<1	<1		<1	<1			<1
Xylenes, total	1750	<2	<2	<2	<2	<1	<2	<2	<1	<2	<2	<1	<1	<2
Total Aromatic Hydrocarbons														
Halogenated Hydrocarbons														
Bromodichloromethane	80	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1
Bromoform	80	<2	<2	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<0.5	<2
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<0.5	<1	5.6	<0.5	1.2	20.1	30	26	24
Chloroform	80	<3	<3	<3	<3	<0.5	<3	<3	<0.5	<3	<3	<0.5	<0.5	<3
1,1-Dichloroethane	5	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<0.5	<2	<2	<0.5	<2	<2	<0.5	<0.5	<2
1,1-Dichloroethene	6	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1
cis-1,2-Dichloroethene	6	<1	<1	<1	<1	<0.5	<1	1.3	<0.5	<1	<1	0.8	<0.5	<1
trans-1,2-Dichloroethene	10	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<2	<2	<0.5	<2	<2	<0.5	<2	<2	0.79	<0.5	<2
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1
Tetrachloroethene	5	<1	<1	<1	<1	<0.5	<1	151	17	33.6	1680	1300	1400	1430
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1
Trichloroethene	5	<1	<1	<1	2.1	1.9	<1	134	7.8	21.3	160	150	68	58.6
Freon-113	1200	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1
Vinyl Chloride	0.5	<1	<1	<1	<1	<0.5	<1	<1	<0.5	<1	<1	<0.5	<0.5	<1
Total Halogenated Hydrocarbons					2.1	1.9		292	25	56	1,860	1,482	1,494	1,513
Total Concentration of VOCs					2.1	1.9		292	25	56	1,860	1,482	1,494	1,513

MCL: Maximum contaminant level for drinking water (determined by CDPH)
All analyses by LBNL EML unless otherwise noted
* = Analysis by BC Laboratories

(D) = Duplicate sample
T Treatment System Influent Line

< = Less than Quantitation Limit
= Compound not included in analysis

Table 6-2
Old Town Area Temporary Groundwater Sampling Point Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	SB16-97-11	SB16-98-1	SB27-96-1			SB53-96-3			SB58-95-2	SB58-96-1		
		Mar-13*	Mar-13*	Oct-12	Dec-12*	Feb-13	Nov-12	Jan-13	Mar-13	Mar-13	Oct-12	Dec-12	Feb-13
Aromatic or Non-Halogenated Hydrocarbons													
Benzene	1	<0.5	<0.5	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene				<1		<1	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene				<1		<1	<1	<1	<1	<1	<1	<1	<1
ter-Butylbenzene				<1		<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	300	<0.5	<0.5	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene				<2		<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene				<1		<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene				<2		<2	<2	<2	<2	<2	<2	<2	<2
n-Propylbenzene				<1		<1	<1	<1	<1	<1	<1	<1	<1
Toluene	150	<0.5	<0.5	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene				<1		<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene				<1		<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	1750	<1	<1	<2	<1	<2	<2	<2	<2	<2	<2	<2	<2
Total Aromatic Hydrocarbons													
Halogenated Non-Aromatic Hydrocarbons													
Bromodichloromethane	80	<0.5	<0.5	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1
Carbon Tetrachloride	0.5	<0.5	<0.5	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	80	<0.5	1.3	<3	0.54	<3	<3	<3	<3	<3	<3	<3	<3
1,1-Dichloroethane	5	<0.5	<0.5	<1	<0.5	<1	<1	<1	<1	4.3	<1	<1	<1
1,2-Dichloroethane	0.5	<0.5	<0.5	<2	<0.5	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethene	6	<0.5	<0.5	<1	<0.5	<1	<1	<1	<1	7.4	<1	<1	<1
cis-1,2-Dichloroethene	6	8.9	<0.5	<1	<0.5	<1	1.1	1.8	1.4	4.6	1.2	<1	<1
trans-1,2-Dichloroethene	10	<0.5	<0.5	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	5	<0.5	<0.5	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<0.5	<0.5	<2	<0.5	<2	<2	<2	<2	<2	<2	<2	<2
1,1,2,2-Tetrachloroethane	1	<0.5	<0.5	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	5	5.8	<0.5	<1	<0.5	<1	26	27.3	21.2	14.6	3.2	3.8	2.4
1,1,1-Trichloroethane	200	<0.5	<0.5	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	5	<0.5	<0.5	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	5	4.5	1.4	<1	<0.5	<1	16	16.2	13.4	14.1	4.2	4.8	2.8
Freon-113	1200	<0.5	<0.5	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	0.5	<0.5	<0.5	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1
Total Halogenated Hydrocarbons		19	2.7		0.5		43	45	36	45	8.6	8.6	5.2
Total Concentration of VOCs		19	2.7		0.5		43	45	36	45	8.6	8.6	5.2

Table 6-2 (Cont'd)
Old Town Area Temporary Groundwater Sampling Point Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	SB58-96-2				SB58-97-1			SB58-97-2			SB58-98-1	SB58-98-6	SB58-01-02
		Oct-12	Dec-12	Feb-13	(D)*	Oct-12	Dec-12*	Feb-13	Oct-12	Dec-12*	Feb-13	Mar-13	Mar-13	Mar-13
Aromatic or Non-Halogenated Hydrocarbons														
Benzene	1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
n-Butylbenzene		<1	<1	<1		<1		<1	<1		<1	<1	<1	<1
sec-Butylbenzene		<1	<1	<1		<1		<1	<1		<1	<1	<1	<1
ter-Butylbenzene		<1	<1	<1		<1		<1	<1		<1	<1	<1	<1
Ethylbenzene	300	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
Isopropylbenzene		<2	<2	<2		<2		<2	<2		<2	<2	<2	<2
p-Isopropyltoluene		<1	<1	<1		<1		<1	<1		<1	<1	<1	<1
Naphthalene		<2	<2	<2		<2		<2	<2		<2	<2	<2	<2
n-Propylbenzene		<1	<1	<1		<1		<1	<1		<1	<1	<1	<1
Toluene	150	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
1,2,4-Trimethylbenzene		<1	<1	<1		<1		<1	<1		<1	<1	<1	<1
1,3,5-Trimethylbenzene		<1	<1	<1		<1		<1	<1		<1	<1	<1	<1
Xylenes, total	1750	<2	<2	<2	<1	<2	<1	<2	<2	<1	<2	<2	<2	<2
Total Aromatic Hydrocarbons														
Halogenated Non-Aromatic Hydrocarbons														
Bromodichloromethane	80	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
Carbon Tetrachloride	0.5	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
Chloroform	80	<3	<3	<3	<0.5	<3	<0.5	<3	<3	<0.5	<3	<3	<3	<3
1,1-Dichloroethane	5	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<1	3.7
1,2-Dichloroethane	0.5	<2	<2	<2	<0.5	<2	<0.5	<2	<2	<0.5	<2	<2	<2	<2
1,1-Dichloroethene	6	<1	<1	<1	0.63	<1	<0.5	<1	<1	<0.5	<1	<1	<1	8.1
cis-1,2-Dichloroethene	6	<1	<1	<1	0.99	<1	0.61	<1	3.0	1.7	2.2	<1	<1	4.9
trans-1,2-Dichloroethene	10	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
1,2-Dichloropropane	5	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<2	<0.5	<2	<0.5	<2	<2	<0.5	<2	<2	<2	<2
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
Tetrachloroethene	5	6.8	17.2	17.2	16	2.0	1.9	1.5	<1	<0.5	<1	<1	1.2	9.3
1,1,1-Trichloroethane	200	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
Trichloroethene	5	3.6	10.4	10.9	12	<1	1.4	<1	<1	<0.5	<1	<1	<1	24.6
Freon-113	1200	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
Vinyl Chloride	0.5	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<0.5	<1	<1	<1	<1
Total Halogenated Hydrocarbons		10	28	28	30	2.0	3.9	1.5	3.0	1.7	2.2		1.2	51
Total Concentration of VOCs		10	28	28	30	2.0	3.9	1.5	3.0	1.7	2.2		1.2	51

MCL: Maximum contaminant level for drinking water (determined by CDPH)
All analyses by LBNL EML unless otherwise noted
* = Analysis by BC Laboratories

< = Less than Quantitation Limit
= Compound not included in analysis
(D) = Duplicate sample

Table 6-3
Old Town Area Extraction Well Sampling Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	EW7-96-1			EW7-96-2			EW7-96-4R			EW7-03-1			EW7-03-2		
		Nov-12	Jan-13	Mar-13	Nov-12	Jan-13	Mar-13	Nov-12	Jan-13	Mar-13	Nov-12	Jan-13	Mar-13	Nov-12	Jan-13	Mar-13
Aromatic or Non-Halogenated Hydrocarbons																
Benzene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ter-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
n-Propylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	150	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	1750	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Aromatic Hydrocarbons																
Halogenated Non-Aromatic Hydrocarbons																
Bromodichloromethane	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	80	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.2
Chloromethane		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chloroform	80	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1,1-Dichloroethane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethene	6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	6	<1	<1	<1	<1	<1	<1	3.7	<1	<1	<1	<1	<1	<1	18.3	<1
trans-1,2-Dichloroethene	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	5	45.8	63.3	78.5	13.3	7.4	8.5	<1	1.4	<1	18.8	22.2	14.9	1.8	22.8	51.7
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	5	1.6	2.6	2.2	8.4	5.1	4.9	<1	<1	<1	14.1	18.5	9.8	<1	17.8	12.4
Freon-113	1200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2.8	<1
Total Halogenated Hydrocarbons		47	66	81	22	13	13	3.7	1.4		33	41	25	1.8	62	65
Total Concentration of VOCs		47	66	81	22	13	13	3.7	1.4		33	41	25	1.8	62	65

Table 6-3 (Cont'd)
Old Town Area Extraction Well Sampling Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	EW7-03-3			EW7-06-1			EW7C-04-2			EW30-12-1			EW30-12-2		
		Nov-12	Jan-13	Mar-13	Oct-12	Dec-12	Feb-13	Nov-12	Jan-13	Mar-13	Nov-12	Jan-13	Mar-13	Nov-12	Jan-13	Mar-13
Aromatic or Non-Halogenated Hydrocarbons																
Benzene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ter-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
n-Propylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	150	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	1750	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Aromatic Hydrocarbons																
Halogenated Non-Aromatic Hydrocarbons																
Bromodichloromethane	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	80	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Carbon Tetrachloride	0.5	5.2	5.8	8.0	<1	<1	<1	2.5	2.7	2.3	<1	<1	<1	<1	<1	<1
Chloromethane		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chloroform	80	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1,1-Dichloroethane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethene	6	<1	<1	1.2	1.5	1.9	2.1	<1	<1	<1	<1	<1	<1	1.9	<1	<1
cis-1,2-Dichloroethene	6	1.6	1.9	1.8	27.2	37	26.6	<1	<1	<1	<1	<1	<1	3.3	2.3	2.1
trans-1,2-Dichloroethene	10	<1	<1	<1	<1	1.2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	5	191	158	269	1490	1920	1450	23.5	18.1	19.6	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	5	101	108	146	181	230	173	4.8	3.9	3.7	7.0	17.4	15.6	54.3	53	39.7
Freon-113	1200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	0.5	<1	<1	<1	4.4	5.4	3.4	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Halogenated Hydrocarbons		299	274	426	1,704	2,196	1,655	31	25	26	7.0	17	16	60	55	42
Total Concentration of VOCs		299	274	426	1,704	2,196	1,655	31	25	26	7.0	17	16	60	55	42

Table 6-3 (Cont'd)
Old Town Area Extraction Well Sampling Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

		EW30-12-3			EW53-04-2			EW58-98-1'		EW58-98-2'		EW58E-98-1		
Constituent	MCL	Nov-12	Jan-13	Mar-13	Nov-12	Jan-13	Mar-13	Dec-12*	Feb-13	Dec-12*	Feb-13	Oct-12	Dec-12	Feb-13
Aromatic or Non-Halogenated Hydrocarbons														
Benzene	1	1.0	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<1	<1
n-Butylbenzene		<1	<1	<1	<1	<1	<1		<1		<1	<1	<1	<1
sec-Butylbenzene		<1	<1	<1	<1	<1	<1		<1		<1	<1	<1	<1
ter-Butylbenzene		<1	<1	<1	<1	<1	<1		<1		<1	<1	<1	<1
1,4-Dichlorobenzene	5	<1	<1	<1	<1	<1	<1		<1		<1	<1	<1	<1
Ethylbenzene	300	<1	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<1	<1
Isopropylbenzene		<2	<2	<2	<2	<2	<2		<2		<2	<2	<2	<2
p-Isopropyltoluene		<1	<1	<1	<1	<1	<1		<1		<1	<1	<1	<1
Naphthalene		<2	<2	<2	<2	<2	<2		<2		<2	<2	<2	<2
n-Propylbenzene		<1	<1	<1	<1	<1	<1		<1		<1	<1	<1	<1
Toluene	150	<1	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<1	<1
Xylenes, total	1750	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2	<2	<2	<2
Total Aromatic Hydrocarbons		1.0												
Halogenated Non-Aromatic Hydrocarbons														
Bromodichloromethane	80	<1	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<1	<1
Bromoform	80	<2	<2	<2	<2	<2	<2	<0.5	<2	<0.5	<2	<2	<2	<2
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	2.8	2.1	2.1
Chloromethane		<10	<10	<10	<10	<10	<10	<0.5	<10	<0.5	<10	<10	<10	<10
Chloroform	80	<3	<3	<3	<3	<3	<3	1.5	<3	1.4	<3	<3	<3	<3
1,1-Dichloroethane	5	<1	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<1	<1
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<2	<2	<0.5	<2	<0.5	<2	<2	<2	<2
1,1-Dichloroethene	6	<1	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<1	<1
cis-1,2-Dichloroethene	6	<1	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	3.1	2.0	1.5
trans-1,2-Dichloroethene	10	<1	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<1	<1
1,2-Dichloropropane	5	<1	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<2	<2	<2	<2	<0.5	<2	<0.5	<2	<2	<2	<2
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<1	<1
Tetrachloroethene	5	<1	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	111	68.9	62.2
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<1	<1
Trichloroethene	5	1.7	2.4	1.2	<1	<1	<1	<0.5	<1	<0.5	<1	78	54.2	47.5
Freon-113	1200	<1	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<1	<1
Vinyl Chloride	0.5	<1	<1	<1	<1	<1	<1	<0.5	<1	<0.5	<1	<1	<1	<1
Total Halogenated Hydrocarbons		1.7	2.4	1.2				1.5		1.4		195	127	113
Total Concentration of VOCs		2.7	2.4	1.2				1.5		1.4		195	127	113

Table 6-3 (Cont'd)
Old Town Area Extraction Well Sampling Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	EW58E-98-2			EW58E-98-3			EW58E-98-4			EW58E-98-5			EW58E-98-6		
		Oct-12	Dec-12	Feb-13	Oct-12	Dec-12	Feb-13	Oct-12	Dec-12	Feb-13	Oct-12	Dec-12	Feb-13	Oct-12	Dec-12	Feb-13
Aromatic or Non-Halogenated Hydrocarbons																
Benzene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ter-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
n-Propylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	150	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	1750	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Aromatic Hydrocarbons																
Halogenated Non-Aromatic Hydrocarbons																
Bromodichloromethane	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	80	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.1	<1	<1	<1	<1
Chloromethane		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chloroform	80	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1,1-Dichloroethane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethene	6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	6	1.9	1.7	1.7	1.7	1.2	1.5	1.6	1.2	1.2	6.0	4.0	1.3	3.2	2.4	<1
trans-1,2-Dichloroethene	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	5	22.2	24.4	13.1	16.1	13.9	12.4	8.3	6.9	4.6	27.5	28.4	5.0	9.6	8.8	2.9
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	5	28.4	32.4	21.2	24.4	23.3	19.3	25.9	24.2	18.9	43.4	40.1	10.4	19.8	19.1	7.9
Freon-113	1200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Halogenated Hydrocarbons		53	59	36	42	38	33	36	32	25	77	74	17	33	30	11
Total Concentration of VOCs		53	59	36	42	38	33	36	32	25	77	74	17	33	30	11

Table 6-3 (Cont'd)
Old Town Area Extraction Well Sampling Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	EW58E-98-7			EW58E-98-8			EW58-02-1			EW58-07-1		
		Oct-12	Dec-12	Feb-13	Oct-12	Dec-12	Feb-13	Nov-12	Jan-13	Mar-13	Nov-12	Jan-13	Mar-13
Aromatic or Non-Halogenated Hydrocarbons													
Benzene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ter-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
n-Propylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	150	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	1750	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Aromatic Hydrocarbons													
Halogenated Non-Aromatic Hydrocarbons													
Bromodichloromethane	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	80	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chloroform	80	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1,1-Dichloroethane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	4.6	4.0	3.5
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethene	6	<1	<1	<1	<1	<1	<1	<1	<1	<1	6.0	5.6	4.9
cis-1,2-Dichloroethene	6	3.3	1.8	1.2	3.9	<1	2.1	1.3	1.1	1.5	4.6	4.2	3.4
trans-1,2-Dichloroethene	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	5	6.7	6.7	2.6	19.5	6.8	14	12.5	8.7	13.1	11.8	11.1	8.6
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	5	15.6	13.9	6.2	20.4	5.3	14.1	8.3	5.6	9.2	12.3	11.2	10.5
Freon-113	1200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Halogenated Hydrocarbons		26	22	10	44	12	30	22	15	24	39	36	31
Total Concentration of VOCs		26	22	10	44	12	30	22	15	24	39	36	31

MCL: Maximum contaminant level for drinking water (determined by CDPH)
All analyses by LBNL EML unless otherwise noted

[T]Treatment System Influent Line
* = Analysis by BC Laboratories

< = Less than Quantitation Limit
= Compound not included in analysis

Table 7-1
Support Services Area Groundwater Monitoring Well Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	31-98-17	61-92-12	69-97-8			75-97-7	75-98-14	75-99-7	76-98-21	76-98-22	MW91-2
		Jan-13	Jan-13	Nov-12	Jan-13	Mar-13	Jan-13	Jan-13	Jan-13	Jan-13	Feb-13	Feb-13
Aromatic or Non-Halogenated Hydrocarbons												
Benzene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ter-Butylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
n-Propylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	150	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	1750	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Aromatic Hydrocarbons												
Halogenated Non-Aromatic Hydrocarbons												
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	80	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
1,1-Dichloroethane	5	<1	<1	<1	<1	<1	<1	1.3	<1	<1	<1	<1
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethene	6	<1	<1	<1	<1	<1	<1	4.6	<1	<1	<1	<1
cis-1,2-Dichloroethene	6	<1	<1	4.8	4.9	4.0	<1	<1	<1	1.4	<1	5.9
trans-1,2-Dichloroethene	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	5	<1	<1	<1	<1	<1	<1	<1	<1	4.3	<1	<1
Freon-113	1200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Halogenated Hydrocarbons				4.8	4.9	4.0		5.9		5.7		5.9
Total Concentration of VOCs				4.8	4.9	4.0		5.9		5.7		5.9

MCL: Maximum contaminant level for drinking water (determined by CDPH)
All analyses by LBNL EML unless otherwise noted

< = Less than Quantitation Limit

Table 7-2
Support Services Area Temporary Groundwater Sampling Point Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	SB69A-99-1			SB69A-00-1	SB75-02-1	SB75A-09-1	SB75A-09-2	W76-97-3	W76-97-4	W76-97-5
		Nov-12	Jan-13	Mar-13	Feb-13	Mar-13*	Mar-13*	Mar-13	Mar-13	Mar-13	Mar-13
Aromatic or Non-Halogenated Hydrocarbons											
Benzene	1	1.1	1.0	<1	<1	<0.5	<0.5	1.0	<1	<1	<1
n-Butylbenzene		<1	<1	<1	<1			<1	<1	<1	<1
sec-Butylbenzene		<1	<1	<1	<1			<1	<1	<1	<1
ter-Butylbenzene		<1	<1	<1	<1			<1	<1	<1	<1
Chlorobenzene	70	<1	<1	<1	<1	<0.5	2.0	2.5	<1	<1	<1
Ethylbenzene	300	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1
Isopropylbenzene		<2	<2	<2	<2			<2	<2	<2	<2
p-Isopropyltoluene		<1	<1	<1	<1			<1	<1	<1	<1
Naphthalene		<2	<2	<2	<2			<2	<2	<2	<2
n-Propylbenzene		<1	<1	<1	<1			<1	<1	<1	<1
Toluene	150	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1
Xylenes, total	1750	<2	<2	<2	<2	<1	<1	<2	<2	<2	<2
Total Aromatic Hydrocarbons		1.1	1.0				2.0	3.5			
Halogenated Non-Aromatic Hydrocarbons											
Bromodichloromethane	80	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1
Chloroethane		<30	<30	<30	<30	<0.5	<0.5	<30	<30	<30	<30
Chloroform	80	<3	<3	<3	<3	1.8	<0.5	<3	<3	<3	<3
1,1-Dichloroethane	5	<1	<1	<1	<1	2.4	<0.5	<1	<1	<1	<1
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<0.5	<0.5	<2	<2	<2	<2
1,1-Dichloroethene	6	<1	<1	<1	<1	<0.5	0.51	<1	<1	<1	<1
cis-1,2-Dichloroethene	6	<1	2.0	5.9	7.7	69	180	72.9	1.1	<1	<1
trans-1,2-Dichloroethene	10	<1	1.7	1.1	<1	0.73	3.2	1.9	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane		<2	<2	<2	<2	<0.5	<0.5	<2	<2	<2	<2
Tetrachloroethene	5	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	1.1
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1
Trichloroethene	5	<1	<1	<1	<1	11	2.4	<1	13.6	<1	<1
Freon-113	1200	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1
Vinyl Chloride	0.5	3.0	12.8	8.3	2.3	<0.5	1.7	45	<1	<1	<1
Total Halogenated Hydrocarbons		3.0	17	15	10	85	188	120	15		1.1
Total Concentration of VOCs		4.1	18	15	10	85	190	123	15		1.1

MCL: Maximum contaminant level for drinking water (determined by CDPH)
All analyses by LBNL EML unless otherwise noted
* = Analysis by BC Laboratories

< = Less than Quantitation Limit
= Compound not included in analysis

Table 8
Outlying Areas Groundwater Monitoring Well Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	CD-92-28	62-92-26	62-92-27	74-94-7	74-94-8	74-95-6	OW3-225
		Jan-13	Jan-13	Jan-13	Jan-13	Jan-13	Jan-13	Jan-13
Aromatic or Non-Halogenated Hydrocarbons								
Benzene	1	<1	<1	<1	<1	<1	<1	<1
n-Butylbenzene		<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene		<1	<1	<1	<1	<1	<1	<1
ter-Butylbenzene		<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	300	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene		<2	<2	<2	<2	<2	<2	<2
p-Isopropyltoluene		<1	<1	<1	<1	<1	<1	<1
Naphthalene		<2	<2	<2	<2	<2	<2	<2
n-Propylbenzene		<1	<1	<1	<1	<1	<1	<1
Toluene	150	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene		<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene		<1	<1	<1	<1	<1	<1	<1
Xylenes, total	1750	<2	<2	<2	<2	<2	<2	<2
Total Aromatic Hydrocarbons								
Halogenated Hydrocarbons								
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<1	<1	<1
Chloroform	80	<3	<3	<3	<3	<3	<3	<3
1,1-Dichloroethane	5	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<2	<2	<2
1,1-Dichloroethene	6	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	6	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	10	<1	<1	<1	<1	<1	<1	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	5	<1	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	5	<1	<1	<1	<1	<1	<1	<1
Freon-113	1200	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	0.5	<1	<1	<1	<1	<1	<1	<1
Total Halogenated Hydrocarbons								
Total Concentration of VOCs								

MCL: Maximum contaminant level for drinking water (determined by CDPH)
All analyses by LBNL EML unless otherwise noted

< = Less than Quantitation Limit

Table 9
Hydrauger Monitoring Results
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

		51-01-01				51-01-02		51-01-03					51-01-04	
Constituent	MCL	Dec-12*	(D)*	Feb-13	(D)	Dec-12*	Feb-13	Dec-12*	(D)^	Jan-13	Feb-13	(D)^	Dec-12*	Feb-13
Aromatic or Non-Halogenated Hydrocarbons														
Benzene	1	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.5	<1	<1	<0.5	<0.5	<1
n-Butylbenzene				<1	<1		<1			<1	<1			<1
sec-Butylbenzene				<1	<1		<1			<1	<1			<1
ter-Butylbenzene				<1	<1		<1			<1	<1			<1
Chlorobenzene		<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.5	<1	<1	<0.5	<0.5	<1
Ethylbenzene	700	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.5	<1	<1	<0.5	<0.5	<1
Isopropylbenzene				<2	<2		<2			<2	<2			<2
p-Isopropyltoluene				<1	<1		<1			<1	<1			<1
Naphthalene				<2	<2		<2			<2	<2			<2
n-Propylbenzene				<1	<1		<1			<1	<1			<1
Toluene	150	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.5	<1	<1	<0.5	<0.5	<1
Xylenes, total	1750	<1	<1	<2	<2	<1	<2	<1	<1	<2	<2	<1	<1	<2
Total Aromatic Hydrocarbons														
Halogenated Non-Aromatic Hydrocarbons														
Bromodichloromethane	80	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.5	<1	<1	<0.5	<0.5	<1
Carbon Tetrachloride	0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.5	<1	<1	<0.5	<0.5	<1
Chloroform	80	1.7	1.7	<3	<3	<0.5	<3	<0.5	<0.5	<3	<3	<0.5	<0.5	<3
Chloroethane		<0.5	<0.5	<30	<30	<0.5	<30	<0.5	<0.5	<30	<30	<0.5	<0.5	<30
1,1-Dichloroethane	5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.5	<1	<1	<0.5	<0.5	<1
1,2-Dichloroethane	0.5	<0.5	<0.5	<2	<2	<0.5	<2	<0.5	<0.5	<2	<2	<0.5	<0.5	<2
1,1-Dichloroethene	6	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.5	<1	<1	<0.5	<0.5	<1
cis-1,2-Dichloroethene	6	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.5	<1	<1	<0.5	0.97	<1
trans-1,2-Dichloroethene	10	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.5	<1	<1	<0.5	<0.5	<1
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<10	<1	<1
1,1,1,2-Tetrachloroethane		<0.5	<0.5	<2	<2	<0.5	<2	<0.5	<0.5	<2	<2	<0.5	<0.5	<2
Tetrachloroethene	5	<0.5	<0.5	<1	<1	<0.5	<1	0.89	0.9	<1	<1	0.6	1.2	<1
1,1,1-Trichloroethane	200	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.5	<1	<1	<0.5	<0.5	<1
1,1,2-Trichloroethane	5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.5	<1	<1	<0.5	<0.5	<1
Trichloroethene	5	<0.5	<0.5	<1	<1	1.0	1.0	<0.5	<0.5	<1	<1	<0.5	1.1	<1
Freon-11		<0.5	<0.5			<0.5		<0.5	<1			<1	<0.5	
Freon-113	1200	1.6	1.6	1.3	1.4	1.6	<1	<0.5	<2	<1	<1	<2	<0.5	<1
Vinyl Chloride	0.5	<0.5	<0.5	<1	<1	<0.5	<1	<0.5	<0.5	<1	<1	<0.5	<0.5	<1
Total Halogenated Hydrocarbons		3.3	3.3	1.3	1.4	2.6	1.0	0.9	0.9			0.6	3.3	
Total Concentration of VOCs		3.3	3.3	1.3	1.4	2.6	1.0	0.9	0.9			0.6	3.3	

MCL: Maximum contaminant level for drinking water (determined by CDPH)
All analyses by LBNL EML unless otherwise noted
* = Analysis by BC Laboratories; ^ = Analysis by Curtis & Tompkins, Ltd.

< = Less than Quantitation Limit
= Compound not included in analysis
(D) = Duplicate sample

Table 10
Minor Chemical Detections in Site-Wide Wells
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	SB51-98-6	SB64-01-1A	SB64-01-1B	SB64-01-1C	SB64-01-2B	SB64-01-2F
	Nov-12	Dec-12*	Dec-12*	Dec-12*	Dec-12*	Dec-12*
Halogenated Non-Aromatic Hydrocarbons						
2,2-Dichloropropane	1.6					
Other						
1,4-Dioxane		500	280	610	230	290

No MCLs have been established for these chemicals
All analyses by LBNL EML unless otherwise noted
* = Analysis by BC Laboratories

Table 11
Volatile Organic Compounds Detected in Groundwater Above MCLs
EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

	Halogenated VOCs													Aromatic VOCs
	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride	Carbon Tetrachloride	Chloroform	Methylene Chloride	1,1,1-TCA	1,1,2,2-PCA	Benzene
MCL	5	0.5	6	6	10	5	5	0.5	0.5	80	5	200	1	1
TRBMCSs	3,663	1,030	28,873	98,405	94,405	343	1,594	12	27	1,206	10,381	1,570,783	NS	175
Building 71 VOC Plume - Building 71B Lobe														
MW71B-99-3R				20.8				3.1						
MW90-3							5.2							
SB71B-03-1				26.8			13.8	5.1						
SB71B-04-1				9.1		8.0								
Building 51/64 VOC Plume														
MW51-96-16				57.8	14			**15.7**						3.0
MW51-96-17				7.8				2.1						
MW51-96-18	18.9		7.3			48.9	17.8							
MW51-97-12				49				1.8						
MW51-97-13								1.1						
MW51B-93-18A				31			5.2							
SB51-98-6				7.5										
SB64-98-8	36.9		7.5			5.8	24.4							
SB64-98-12	12.6		6.7			52.8	46.6							
SB64-98-13	41.1		8.8				6.4							
SB64-98-17	85.7		12.7											
SB64-99-4	146		28.7	9.7			6.2	1.5						
SB64-99-5	31.4		26				9.5							
SB64-00-1	48		7.3				7.7							
SB64-00-2	10.9		40.5				18							
SB64-02-1A	500	5.2	73	56.3		53	130	7.2					1.9	
SB64-02-1B	248	2.2	33.7	59.8		16	53	**38.3**						
SB64-02-1C	624	3.1	27.9	15.1			7.3	**48.1**						
SB64-02-1D	40.3			8.7			8.2	3.1						

Table 11 (Cont'd)
Volatile Organic Compounds Detected in Groundwater Above MCLs
EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

	Halogenated VOCs													Aromatic VOCs
	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride	Carbon Tetrachloride	Chloroform	Methylene Chloride	1,1,1-TCA	1,1,2,2-PCA	Benzene
MCL	5	0.5	6	6	10	5	5	0.5	0.5	80	5	200	1	1
TRBMCSs	3,663	1,030	28,873	98,405	94,405	343	1,594	12	27	1,206	10,381	1,570,783	NS	175
SB64-02-1E	38.3		6.1	17.5			8.0	3.1						
SB64-02-1F	100	2.3	29	90		7.2	45	**20**						
SB64-02-2A	43		16	42			24							
SB64-02-2B	431	2.1	60.2	20.5			5.8	9.9						
SB64-02-2C	69.6		18	9.4				9.8						
SB64-02-2D	64.8		15	8.6				3.0						
SB64-02-2E	61.4		11	9.2				3.2						
SB64-02-2F	318	1.7	17	12				7.1						
SB64-03-1B	59						7.1							
SB64-03-4	129													
SB64-03-6				14.5			28.1							
SB64-03-13	6.1													
EW51-07-1	5.3			183			17.3	1.8						
EW51-07-2	6.3			8.9			42							
EW51B-07-1	8.1		16	28			5.2							
EW51B-07-2				8.3										
EW64-03-1	22.3													
Building 51L Plume														
MW51L-01-1A				9.6										
MW51L-01-5A								6.2						
EW51L-06-1				7.6			13.8							
Former Building 51 Vacuum Pump Room Area														
OC51-11-1	9.6			152			124	3.1						
SB51-11-3														4.0
SB51-11-9	105		22.1	84.5			**9,740**		24.7			337		

Table 11 (Cont'd)
Volatile Organic Compounds Detected in Groundwater Above MCLs
EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

	Halogenated VOCs													Aromatic VOCs
	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride	Carbon Tetrachloride	Chloroform	Methylene Chloride	1,1,1-TCA	1,1,2,2-PCA	Benzene
MCL	5	0.5	6	6	10	5	5	0.5	0.5	80	5	200	1	1
TRBMCSs	3,663	1,030	28,873	98,405	94,405	343	1,594	12	27	1,206	10,381	1,570,783	NS	175
Former Building 51A Area														
EW51A-06-1				35.6		14	437		**35.9**					1.0
SB51A-12-1				27.3		209	**8,040**	1.2	**1,870**	301	6.9			
SB51A-12-2				7.1		7.5	1,320		**71.4**					
SB51A-12-3							27							
SB51A-12-4							13.2							
SB51A-12-5				9.6		23.9	**6,550**	2.1	**1,770**					
Old Town VOC Plume - Building 7 Lobe														
MP7-99-1BR						151	134		5.6					
MP7-99-2BR						**1,680**	160		**30**					
MW7-94-3						20.7	13.8							
MW7-95-22						21	7.0							
MW7-95-23						39.8	39.9							
MW7B-95-21				6.1		19.8	51.2							
MW7B-95-24						21								
MW53-96-1						6.7		1.0						
MW58-95-19				61.1		20.4	81.9							
MW58-96-11				10.8		**424**	298		19					
MW58-00-12			13	30		**1,750**	**1,530**		**100**					
MW58A-94-14			8.7	13.5										
SB53-96-3						27.3	16.2							
SB58-95-2			7.4			14.6	14.1							
SB58-96-2						17.2	12							
SB58-01-02			8.1			9.3	24.6							
EW7-96-1						78.5								

Table 11 (Cont'd)
Volatile Organic Compounds Detected in Groundwater Above MCLs
EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

	Halogenated VOCs													Aromatic VOCs
	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride	Carbon Tetrachloride	Chloroform	Methylene Chloride	1,1,1-TCA	1,1,2,2-PCA	Benzene
MCL	5	0.5	6	6	10	5	5	0.5	0.5	80	5	200	1	1
TRBMCSs	3,663	1,030	28,873	98,405	94,405	343	1,594	12	27	1,206	10,381	1,570,783	NS	175
EW7-96-2						13.3	8.4							
EW7-03-1						22.2	18.5							
EW7-03-2				18.3		51.7	17.8	2.8	1.2					
EW7-03-3						269	146		8.0					
EW7-06-1				37		**1,920**	230	5.4						
EW7C-04-2						23.5			2.7					
EW58E-98-1						111	78		2.8					
EW58E-98-2						24.4	32.4							
EW58E-98-3						16.1	24.4							
EW58E-98-4						8.3	25.9							
EW58E-98-5				6.0		28.4	43.4		1.1					
EW58E-98-6						9.6	19.8							
EW58E-98-7						6.7	15.6							
EW58E-98-8						19.5	20.4							
EW58-02-1						13.1	9.2							
EW58-07-1			6.0			11.8	12.3							
Old Town VOC Plume - Building 25A Lobe														
MW6-92-17							5.8							
MW30-13-2							39							
SB16-97-11				8.9		5.8								
EW30-12-1							17.4							
EW30-12-2							54.3							
EW30-12-3														1.0
Building 69/69A Area of Groundwater Contamination														
SB69A-99-1								**12.8**						1.1
SB69A-00-1				7.7				2.3						

Table 11 (Cont'd)
Volatile Organic Compounds Detected in Groundwater Above MCLs
EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

	Halogenated VOCs													Aromatic VOCs
	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride	Carbon Tetrachloride	Chloroform	Methylene Chloride	1,1,1-TCA	1,1,2,2-PCA	Benzene
MCL	5	0.5	6	6	10	5	5	0.5	0.5	80	5	200	1	1
TRBMCSs	3,663	1,030	28,873	98,405	94,405	343	1,594	12	27	1,206	10,381	1,570,783	NS	175
Building 75/75A Area of Groundwater Contamination														
SB75-02-1				69			11							
SB75A-09-1				180				1.7						
SB75A-09-2				72.9				**45**						1.0
Building 76 Area of Groundwater Contamination														
W76-97-3							13.6							

MCL: Maximum contaminant level for drinking water (determined by CDPH)

TRBMCS:Target Risk Based Media Cleanup Standard

Boldface type indicates that concentration exceeds TRBMCS

Note: Where duplicate or split samples were collected, or more than one sample was collected during the quarter, the maximum detected concentration is shown.

NS= Not Specified

Table 12
Groundwater Monitoring Results
Tritium- EPA Method 906
April 2012 through March 2013
(concentrations in pCi/L)

Area	Well No.	FY2012 Qtr 3 Apr-Jun	FY2012 Qtr 4 Jul-Sept	FY2013 Qtr 1 Oct-Dec	FY2013 Qtr 2 Jan-Mar
Groundwater Monitoring Wells					
1	71-95-9		<300		350*
	71B-98-13		<300		<300
	71B-99-3R		<300		230*
3	MW91-6				1,400
	75B-92-24		700		590*
	75-97-5		12,000		12,000
	(D)		11,000		12,000
	75-97-6				<300
	75-97-7		<300		
	75-98-14		4,800		4,900
	75-99-6		3,900		3,300
	75-99-7				4,600
4	76-93-6		1,700		1,600
	78-97-20				870*
5	MWP-9		<300		
	MWP-10		<300		
	77-94-6		4,000		4,000
	77-97-9				4,200
	(D)				4,100
	77-97-11		2,900		2,700
	31-97-17		650		710
	31-97-18				<300
	31-98-17	<300	<300	<300	<300
9	51A-01-11R			<300	
	51L-01-6R			<300	
	51L-01-7R			<300	
Temporary Groundwater Sampling Points					
3	SB69-02-1A		300		300*
	SB69A-99-1		<300		420*
	SB69A-00-1		<300		
	SB75-02-1		710		
	SB75A-02-1A		550		600*
	SB75A-09-1		4,000		4,130*
	SB75A-09-2		820		

Table 12 (Cont'd)
Groundwater Monitoring Results
Tritium- EPA Method 906
April 2012 through March 2013
(concentrations in pCi/L)

Area	Well No.	FY2012 Qtr 3 Apr-Jun	FY2012 Qtr 4 Jul-Sept	FY2013 Qtr 1 Oct-Dec	FY2013 Qtr 2 Jan-Mar
Temporary Groundwater Sampling Points					
5	SB31-02-1		710		
	SB31-02-2		980		1,030*
	(D)		980		
	SB31-02-4		1,200		
	SB31-02-5		1,200		1,190*
	SB31-02-6		420		
	SB31-02-7		<300		
	SB31-03-1		1,600		
	SB31-03-2		2,200		2,040*
	SB31-03-3		1,300		1,080*
	SB31-03-4		1,400		
	SB31-08-5A				<300*
	SB31-08-5B				<300*
	SB77-02-1		<300		
	SB77-10-1A		2,800		
	SB77-10-1B		<300		
	SB77-10-1C		<300		
9	SB51-11-1R	<300		<300	
	SB51-11-3	<300		<300	
	SB51-11-4	<300		<300	
Quality Assurance Samples					
	Field Blank	<300	<300	<300	<300
			<300		<300*
			<300		

Maximum contaminant level (MCL) for drinking water for tritium determined by CDPH = 20,000 pCi/L
All samples were analyzed by Eberline unless otherwise noted
* = Analysis by ALS Environmental
= Not Sampled
< = Less than Reporting Limit (RL)
(D) = Duplicate sample

Table 13
Groundwater Monitoring Results
Total Petroleum Hydrocarbons-EPA Modified Method 8015
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Area	Location	Well No.	Date	TPH-Diesel
4	Building 76 Former Diesel and Gasoline Underground Storage Tanks	W76-97-3	3/6/2013	<50
		W76-97-4	3/6/2013	<50
7		46-93-12	12/14/2012	<50
11	Building 74 Former Diesel UST	74-92-13	1/15/2013	79
		74-95-6	1/15/2013	78
		83-92-14	1/17/2013	64

All samples were analyzed by BC Laboratories.
< = Less than Reporting Limit (RL)

Table 14
Groundwater Monitoring Well Results
Polychlorinated Biphenyl Compounds -EPA Method 608
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

RFI Unit	Area	Well No.	Date	PCBs
Building 51 Sanitary Sewer and Drainage System	9	SB51-98-2	2/21/13	PCB-1260=5.3
		SB51-98-6	2/14/13	<0.2

Maximum contaminant level (MCL) for drinking water for PCBs determined by California DHS = 0.5 µg/L
All Samples were analyzed by BC Laboratories < = Less than reporting limit

Table 15a
Surface Water Sampling Results
VOCs and Metals
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Location	Date	Lab	VOCs	Metals																
				Sb	As	Ba	Be	Cd	Cr	Co	Cu	Pb	Hg	Mo	Ni	Se	Ag	Tl	V	Zn
Cafeteria Creek	2/20/13	EML/BC	ND	2.2	<2	83	<1	<1	<10	<50	<10	<1	<0.2	<50	<10	<2	<10	<1	<10	18
Chicken Creek	2/20/13	EML/BC	ND	2.0	2.3	110	<1	<1	<10	<50	<10	<1	<0.2	<50	<10	<2	<10	<1	<10	14
	(D)	CT	ND	3.1	<2	100	<1	<1	<10	<50	<10	<1	<0.2	<50	<10	<2	<10	<1	<10	<20
N.Fork Strawberry Creek	2/20/13	EML/BC	ND	<2	2.0	79	<1	<1	<10	<50	<10	<1	<0.2	<50	<10	<2	<10	<1	<10	<10
No Name Creek	2/20/13	EML/BC	ND	<2	<2	42	<1	<1	<10	<50	<10	<1	<0.2	<50	<10	<2	<10	<1	<10	<10
Ravine Creek	2/20/13	EML/BC	ND	5.7	<2	88	<1	<1	<10	<50	<10	<1	<0.2	<50	<10	<2	<10	<1	<10	<10
Upper Botanical Garden Creek	2/20/13	EML/BC	ND	<2	<2	48	<1	<1	<10	<50	<10	<1	<0.2	<50	<10	<2	<10	<1	<10	12
Winter Creek	2/20/13	EML/BC	ND	<2	<2	65	<1	<1	<10	<50	<10	<1	<0.2	<50	<10	<2	<10	<1	<10	<10
Equipment Blank	2/20/13	EML/BC	ND	<2	<2	<10	<1	<1	<10	<50	<10	<1	<0.2	<50	<10	<2	<10	<1	<10	<10

BC: analysis by BC Laboratories
CT: analyses by Curtis & Tompkins, Ltd.
EML: analysis by EML Laboratories

ND = Not Detected
< = Less than Quantitation Limit
(D) = Duplicate sample

Table 15b
Surface Water Sampling Results
Tritium
1st and 2nd Quarter FY 2013
(concentrations in pCi/L)

Location	Lab	Date	Tritium
Chicken Creek	ALS	2/2/2013	440
	GEL	(D)	244
North Fork Strawberry Creek	ALS	2/2/2013	<200
Equipment Blank	ALS	2/2/2013	<200

Maximum contaminant level (MCL) for drinking water for tritium determined by CDPH = 20,000 pCi/L
ALS: analysis by ALS Environmental
GEL: analysis by GEL Laboratories LLC
< = Less than Reporting Limit (RL)
(D) = Duplicate sample

Table 16a
Soil Sampling Results - Former Building 51A Area
Organic Analytes
1st and 2nd Quarter FY 2013
(concentrations in mg/kg)

				VOCs-E8260				
Location	**Sample ID**	**Depth (ft)**	**Date**	**cis-1,2-DCE**	**PCE**	**TCE**	**Carbon Tetrachloride**	**Chloroform**
			Target Risk-Based MCSs	**38**	**0.45**	**2.3**	**0.05**	**0.28**
SB51A-12-29	SB51A-12-29-18.5'	18.5	10/24/12	0.041	0.0044	0.029	ND	ND
	SB51A-12-29-27.5'	27.5	10/24/12	ND	ND	ND	ND	ND
SB51A-12-30	SB51A-12-30-18.5'	18.5	10/24/12	0.006	0.03	0.13	0.012	ND
	SB51A-12-30-27.5'	27.5	10/24/12	ND	0.0053	0.1	0.014	ND
SB51A-12-31	SB51A-12-31-22'	22	10/24/12	0.014	ND	0.027	ND	ND
	SB51A-12-31-29'	29	10/24/12	ND	ND	ND	ND	ND
SB51A-12-32	SB51A-12-32-22'	22	10/24/12	0.0053	ND	0.027	ND	ND
	SB51A-12-32-30'	30	10/24/12	0.014	0.0044	0.11	ND	ND
SB51A-12-33	SB51A-12-33-20'	20	10/24/12	ND	ND	0.02	ND	ND
	SB51A-12-33-32'	32	10/24/12	ND	ND	0.12	ND	ND
SB51A-12-34	SB51A-12-34-20'	20	10/24/12	ND	ND	0.13	0.035	ND
	SB51A-12-34-32'	32	10/24/12	ND	ND	0.34	ND	ND
SB51A-12-35	SB51A-12-35-15'	15	10/24/12	ND	ND	**3.0**	**0.27**	ND
	SB51A-12-35-20'	20	10/24/12	ND	0.05	**8.2**	**2.1**	0.01
SB51A-12-36	SB51A-12-36-10'	10	10/24/12	ND	0.03	**3.0**	**0.7**	0.0047
	SB51A-12-36-15'	15	10/24/12	ND	ND	0.07	0.013	ND

All samples were analyzed by Curtis & Tompkins Ltd
MCS: Media Cleanup Standard (LBNL, 2005a)
Boldface type indicates concentration above MCS

ND = Not Detected

Table 16b
Soil Sampling Results - Building 51 Vacuum Pump Room Area
Organic Analytes
1st and 2nd Quarter FY 2013
(concentrations in mg/kg)

				VOCs-E8260							
Location	**Sample ID**	**Depth (ft)**	**Date**	**1,1-DCA**	**1,1-DCE**	**cis-1,2-DCE**	**trans-1,2-DCE**	**PCE**	**TCE**	**1,1,1-TCA**	**Benzene**
			Target Risk-Based MCSs	**1.3**	**8**	**38**	**50**	**0.45**	**2.3**	**690**	**0.1**
SB51-12-1	SB51-12-1-12'	12	10/24/12	0.0058	ND	ND	0.0046	ND	1.3	ND	ND
	SB51-12-1-18'	18	10/24/12	ND	ND	ND	ND	ND	ND	ND	ND
	SB51-12-1-22'	22	10/24/12	ND	ND	ND	ND	ND	ND	ND	ND
	SB51-12-1-24'	24	10/24/12	ND	ND	ND	ND	ND	ND	ND	ND
SB51-12-2	SB51-12-2-10'	10	10/25/12	0.0067	ND	0.11	ND	ND	0.5	ND	ND
	SB51-12-2-12'	12	10/25/12	0.021	ND	0.046	0.097	ND	1.8	ND	ND
	SB51-12-2-17'	17	10/25/12	0.019	0.0061	0.059	0.029	0.0049	**6.6**	0.073	ND
	SB51-12-2-22'	22	10/25/12	ND	ND	ND	ND	ND	0.0062	ND	ND
	SB51-12-2-26'	26	10/25/12	ND	ND	ND	ND	ND	0.0056	ND	ND
SB51-12-3	SB51-12-3-12'	12	10/25/12	ND	ND	ND	ND	ND	ND	ND	ND
	SB51-12-3-18'	18	10/25/12	ND	ND	ND	ND	ND	ND	ND	0.0064
	SB51-12-3-22'	22	10/25/12	ND	ND	ND	ND	ND	ND	ND	ND
	SB51-12-3-25.5'	25.5	10/25/12	ND	ND	ND	ND	ND	ND	ND	ND
	SB51-12-3-27.5'	27.5	10/25/12	ND	ND	ND	ND	ND	ND	ND	0.0049

All samples were analyzed by Curtis & Tompkins Ltd
MCS: Media Cleanup Standard (LBNL, 2005a)
Boldface type indicates concentration above MCS

ND = Not Detected

Table 17
Hydrochemical Indicator Parameters Sampling Results
1st and 2nd Quarter FY 2013

				Building 51/64 Plume				Building 7 Lobe Old Town Plume	
Parameter	**Units**	**Lab**	**Optimum Range in Concentration**	**MW51-96-16**	**MW51-96-17**	**MW51-97-12**	**MW51-97-13**	**MW58-93-3**	**MW58A-94-14**
				Mar-13	Mar-13	Feb-13	Feb-13	Feb-13	Feb-13
Ethane (C_2H_6)	µg/L	Microseeps	>10	0.079	<0.025	0.32	0.31	<0.025	<0.025
Ethene (C_2H_4)			>10	2.8	0.13	0.12	0.97	0.027	0.16
Methane (CH_4)			>500	**6,000**	6.9	390	**6,800**	2.7	**890**
Volatile Fatty Acids (VFAs)	mg/L	Microseeps	>0.1	**0.639**	**0.39**	ND	**1.21**	NA	NA
Nitrate (NO_3^-)	mg/L	BC	<1	**ND#**	4.5	**ND**	**ND**	2.4	**ND**
Sulfate (SO_4^{2-})	mg/L	BC	<20	24	24	**13**	**2.5**	49	57
Sulfide (H_2S)	mg/L	Field Measurement	>1	ND	ND	ND	ND	ND	ND
Total Sulfide	mg/L	BC	>1	ND	ND	ND	ND	ND	ND
Ferrous Iron (Fe^{2+})	mg/L	Field Measurement	>1	**3.8**	**ND**	**1.8**	**2.2**	ND	ND
Dissolved Oxygen (DO)	mg/L	Field Measurement	<0.5	**0.09**	**0.2**	**0.18**	**0.04**	**0.46**	**0.64**
pH	pH units	Field Measurement	5 to 9	**6.61**	**7.12**	**6.34**	**6.56**	**6.96**	**7.17**
Temperature	°C	Field Measurement	>20	15.7	18.4	17.2	18.6	16.3	16.3
Nitrite (NO_2^-)	mg/L	BC		ND	ND	ND	ND	ND	ND
Carbon Dioxide (CO_2)	ppm	Field Measurement	> 2 times background	<10	18	11.8	11.9	13.8	21

Table 17 (Cont'd)
Hydrochemical Indicator Parameters Sampling Results
1st and 2nd Quarter FY 2013

				Building 69A Area of Groundwater Contamination			Building 71B Plume	
Parameter	**Units**	**Lab**	**Optimum Range in Concentration**	**MW69-97-8**	**SB69A-99-1**	**SB69A-00-1**	**MW71B-99-3R**	**MW71-95-9***
				Mar-13	Mar-13	Feb-13	Mar-13	Feb-13
Ethane (C_2H_6)	µg/L	Microseeps	>10	0.035	0.23	0.14	0.084	<0.025
Ethene (C_2H_4)			>10	0.035	2.8	0.78	0.2	<0.025
Methane (CH_4)			>500	**860**	**9,500**	**2,900**	260	190
Volatile Fatty Acids (VFAs)	mg/L	Microseeps	>0.1	**0.12**	**0.12**	**1.82**	**0.224**	ND
Nitrate (NO_3^-)	mg/L	BC	<1	**ND**	**ND#**	**ND**	**ND**	4.7
Sulfate (SO_4^{2-})	mg/L	BC	<20	**5.1**	**1.2**	**ND**	**13**	**19**
Sulfide (H_2S)	mg/L	Field Measurement	>1	ND	ND	0.22	ND	ND
Total Sulfide	mg/L	BC	>1	ND	ND	ND	ND	ND
Ferrous Iron (Fe^{2+})	mg/L	Field Measurement	>1	**1.8**	**3.0**	**1.4**	ND	ND
Dissolved Oxygen (DO)	mg/L	Field Measurement	<0.5	**0.17**	**0.12**	1.82	**0.17**	2.62
pH	pH units	Field Measurement	5 to 9	**6.68**	**6.61**	**6.54**	**6.85**	**6.73**
Temperature	°C	Field Measurement	>20	17.5	18.1	16.2	17.9	16.8
Nitrite (NO_2^-)	mg/L	BC		ND	ND	ND	ND	ND
Carbon Dioxide (CO_2)	ppm	Field Measurement	> 2 times background	12	11.8	11.2	17.8	12

< indicates that analyte was not detected above method reporting limit noted.
Boldface type indicates that analytes were within optimum range for biodegradation.
* Upgradient (background well) for Building 71B and Building 51/64 plumes.

ND indicates analyte was not detected by instrument.
Not analyzed or analysis not required.
#: Sample was re-analyzed past holding time.

Table 18
Groundwater Quality Control Samples
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	Equipment (Rinseate) Blanks																	
		Oct-12	Oct-12	Nov-12	Nov-12	Nov-12	Nov-12	Dec-12*	Dec-12*	Jan-13	Jan-13	Jan-13	Jan-13	Feb-13	Feb-13	Mar-13	Mar-13	Mar-13	Mar-13*
Aromatic and Non-Halogenated Hydrocarbons																			
Benzene	1	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
n-Butylbenzene		<1	<1	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1	<1	<1	<1	
sec-Butylbenzene		<1	<1	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1	<1	<1	<1	
ter-Butylbenzene		<1	<1	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,4-Dichlorobenzene	5	<1	<1	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1	<1	<1	<1	
Ethylbenzene	300	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
Isopropylbenzene		<2	<2	<2	<2	<2	<2			<2	<2	<2	<2	<2	<2	<2	<2	<2	
p-Isopropyltoluene		<1	<1	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1	<1	<1	<1	
Naphthalene		<2	<2	<2	<2	<2	<2			<2	<2	<2	<2	<2	<2	<2	<2	<2	
n-Propylbenzene		<1	<1	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1	<1	<1	<1	
Toluene	150	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
1,2,4-Trichlorobenzene	5	<1	<1	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,2,4-Trimethylbenzene		<1	<1	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,3,5-Trimethylbenzene		<1	<1	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1	<1	<1	<1	
Xylenes, total	1750	<2	<2	<2	<2	<2	<2	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1
Total Aromatic Hydrocarbons																			
Halogenated Non-Aromatic Hydrocarbons																			
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
Chloroform	80	<3	<3	<3	<3	<3	<3	<0.5	<0.5	<3	<3	<3	<3	<3	<3	<3	<3	<3	<0.5
Dibromochloromethane	80	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
1,1-Dichloroethane	5	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<2	<2	<0.5	<0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.5
1,1-Dichloroethene	6	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
cis-1,2-Dichloroethene	6	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
trans-1,2-Dichloroethene	10	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
Methylene Chloride	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	5	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
Trichloroethene	5	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
Freon-11								<0.5	<0.5										<0.5
Freon-113	1200	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
Vinyl Chloride	0.5	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
Total Halogenated Hydrocarbons																			
Total Concentration of VOCs																			

Table 18 (Cont'd)
Groundwater Quality Control Samples
Volatile Organic Compounds - EPA Method 8260
1st and 2nd Quarter FY 2013
(concentrations in µg/L)

Constituent	MCL	Trip Blanks Oct-12	Oct-12	Nov-12	Dec-12	Dec-12*	Dec-12^	Dec-12	Jan-13	Jan-13	Jan-13	Feb-13	Feb-13	Feb-13^	Feb-13	Mar-13	Mar-13*
Aromatic and Non-Halogenated Hydrocarbons																	
Benzene	1	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5
n-Butylbenzene		<1	<1	<1	<1			<1	<1	<1	<1	<1	<1		<1	<1	
sec-Butylbenzene		<1	<1	<1	<1			<1	<1	<1	<1	<1	<1		<1	<1	
ter-Butylbenzene		<1	<1	<1	<1			<1	<1	<1	<1	<1	<1		<1	<1	
1,4-Dichlorobenzene	5	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1		<1	<1	
Ethylbenzene	300	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5
Isopropylbenzene		<2	<2	<2	<2			<2	<2	<2	<2	<2	<2		<2	<2	
p-Isopropyltoluene		<1	<1	<1	<1			<1	<1	<1	<1	<1	<1		<1	<1	
Naphthalene		<2	<2	<2	<2			<2	<2	<2	<2	<2	<2		<2	<2	
n-Propylbenzene		<1	<1	<1	<1			<1	<1	<1	<1	<1	<1		<1	<1	
Toluene	150	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5
1,2,4-Trichlorobenzene	5	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1		<1	<1	
1,2,4-Trimethylbenzene		<1	<1	<1	<1			<1	<1	<1	<1	<1	<1		<1	<1	
1,3,5-Trimethylbenzene		<1	<1	<1	<1			<1	<1	<1	<1	<1	<1		<1	<1	
Xylenes, total	1750	<2	<2	<2	<2	<1	<1	<2	<2	<2	<2	<2	<2	<1	<2	<2	<1
Total Aromatic Hydrocarbons																	
Halogenated Non-Aromatic Hydrocarbons																	
Carbon Tetrachloride	0.5	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5
Chloroform	80	<3	<3	<3	<3	<0.5	<0.5	<3	<3	<3	<3	<3	<3	<0.5	<3	<3	<0.5
Dibromochloromethane	80	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5
1,1-Dichloroethane	5	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5
1,2-Dichloroethane	0.5	<2	<2	<2	<2	<0.5	<0.5	<2	<2	<2	<2	<2	<2	<0.5	<2	<2	<0.5
1,1-Dichloroethene	6	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5
cis-1,2-Dichloroethene	6	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5
trans-1,2-Dichloroethene	10	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5
Methylene Chloride	5	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Tetrachloroethene	5	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5
1,1,1-Trichloroethane	200	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5
1,1,2-Trichloroethane	5	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5
Trichloroethene	5	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5
Freon-11						<0.5	<1							<1			<0.5
Freon-113	1200	<1	<1	<1	<1	<0.5	<2	<1	<1	<1	<1	<1	<1	<2	<1	<1	<0.5
Vinyl Chloride	0.5	<1	<1	<1	<1	<0.5	<0.5	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<0.5
Total Halogenated Hydrocarbons																	
Total Concentration of VOCs																	

MCL: Maximum contaminant level for drinking water (determined by CDPH)
All analyses by LBNL EML unless otherwise noted
* = Analysis by BC Laboratories; ^ = Analysis by Curtis & Tompkins, Ltd.

< = Less than Quantitation Limit
= Compound not included in analysis