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April 13, 2012

Penny Reddy
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75 Hawthorne Street
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Subject: **2011 Annual Progress Report – Former Fairchild Building 9**
Middlefield-Ellis-Whisman ("MEW") Area
Mountain View, California

Dear Ms. Reddy:

Attached please find the 2011 Annual Progress Report for Former Fairchild Building 9, prepared by Geosyntec Consultants on behalf of Schlumberger Technology Corporation.

This annual progress report is being submitted in accordance with U.S. Environmental Protection Agency (EPA) Section XV of the Administrative Order for Remedial Design and Remedial Action (106 Order).

If you have any questions regarding this 2011 Annual Progress Report, please feel free to call me.

Very truly yours,

Virgilio Cocianni
Remediation Manager

Attachment

CC: MEW Distribution List

Prepared for

Schlumberger Technology Corporation
225 Schlumberger Drive
Sugar Land, Texas 77478

2011 ANNUAL PROGRESS REPORT FOR FORMER FAIRCHILD BUILDING 9

MOUNTAIN VIEW, CALIFORNIA

Prepared by

Geosyntec consultants

engineers | scientists | innovators

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Project Number: WR1133

13 April 2012

2011 Annual Progress Report for Former Fairchild Building 9

401 National Avenue
Middlefield-Ellis-Whisman Study Area
Mountain View, California

Prepared by

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Geosyntec consultants

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ACRONYMS AND ABBREVIATIONS

106 Order	Administrative Order for Remedial Design and Remedial Action
bgs	below ground surface
cis-1,2-DCE	cis-1,2-dichloroethene
EPA	United States Environmental Protection Agency
Fairchild	Fairchild Semiconductor Corporation
ft	feet
gpm	gallons per minute
GAC	granular activated carbon
Geosyntec	Geosyntec Consultants
GSLIB	Geostatistical Software Library
K	hydraulic conductivity
µg/L	micrograms per liter
MCLs	maximum contaminant levels
MEW	Middlefield-Ellis-Whisman
NASA	National Aeronautics and Space Administration
O&M	operations and maintenance
PCE	Tetrachloroethene
QA/QC	quality assurance and quality control
RGRP	Regional Groundwater Remediation Program
RAOs	Remediation Action Objectives
ROD	Record of Decision
RRWs	regional recovery wells
SCRWs	source control recovery wells
Site	401 National Avenue, Mountain View, California (Building 9)
STC	Schlumberger Technology Corporation

SVE	soil vapor extraction
System 1	groundwater treatment system located at 515 Whisman Road
TCE	trichloroethene
VOCs	volatile organic compounds
Water Board	California Regional Water Quality Control Board
Weiss	Weiss Associates

1. INTRODUCTION

This 2011 Annual Progress Report was prepared by Geosyntec Consultants (Geosyntec) with assistance from Weiss Associates (Weiss) on behalf of Schlumberger Technology Corporation (STC) for the former Fairchild Semiconductor Corporation (Fairchild) facilities located at 401 National Avenue (former Building 9) in Mountain View, California (Site) (Figures 1 and 2). The 401 National Avenue property is part of a joint source control responsibility and an annual progress report for the 401 National Avenue property located outside of the Former Fairchild Building 9 area is being submitted under separate cover (AMEC, 2012).

This progress report contains a summary of Site activities and data from 1 January through 31 December 2011, and monitoring data from the past five years. The report is submitted in accordance with Section XV of the 1990 Administrative Order for Remedial Design and Remedial Action (106 Order) issued by the United States Environmental Protection Agency (EPA), and the EPA's correspondence prescribing Annual Report contents (EPA, 1990a, 2005, and 2011).

1.1 Site Background

The Site lies within the Middlefield-Ellis-Whisman (MEW) study area, an approximate quarter square-mile area bounded by Middlefield Road on the south, Ellis Street on the east, Whisman Road on the west, and Highway 101 on the north, in Mountain View, California (Figure 2).

From 1966 to 1987 Former Building 9 functioned as a facility for receiving, mixing, and delivering chemicals for Fairchild. The Site is currently used as a warehouse by Adema Technologies, Inc.; their manufacturing operations ceased by September 2010.

Remedial actions for the MEW study area, including the Site, are specified in a 1989 Record of Decision (ROD) issued by the EPA and two subsequent Explanations of Significant Difference (EPA, 1989, 1990b, 1996). The volatile organic compounds (VOCs) addressed in the MEW ROD are assigned to both facility-specific and regional responsibilities.

As specified in the ROD, groundwater cleanup included initial actions (completed) and the current long-term remedial phase (EPA, 1989).[1]

In order to prevent migration of VOCs offsite, four groundwater extraction wells were installed at the Site between 1982 and 1986, and a soil-bentonite slurry wall was constructed at the Site from the ground surface to the A/B aquitard in 1986. A description of the remedy is provided in Section 1.3.

1.2 Local Hydrogeology

The Site is located within the northern portion of the Santa Clara Valley Groundwater Sub-basin, the northernmost of three interconnected groundwater basins within Santa Clara County (SCVWD, 2001). The groundwater flow direction is northerly, toward the San Francisco Bay, and generally sub-parallel to the ground slope. The hydrostratigraphy in this part of the sub-basin is divided into upper and lower water-bearing zones, separated by an extensive regional aquitard (SCVWD, 1989).

The upper water-bearing zone is subdivided into two water-bearing zones: the A Zone (roughly between 20 and 45 feet below ground surface [bgs]) and the B Zone (roughly between 50 and 160 feet bgs), which are separated by the A/B aquitard. The B Zone is subdivided into three zones (B1-, B2-, and B3 Zones).

The lower water-bearing zone occurs below a depth of about 200 feet bgs. The lower water bearing zone is subdivided into the C Zone (which extends to about 240 feet bgs) and the Deep Zone. The aquitard separating the upper and lower water-bearing zones is represented as the B/C aquitard and is the major confining layer beneath the Site.

The water-bearing zones defined at the MEW area are summarized below:

Water Bearing Zones	Approximate Depth Interval Below Ground Surface (bgs)
A[a]	0 to 45 feet
B1[b]	50 to 75 feet
B2	75 to110 feet

[1] The soil cleanup goals have been met at the Site (EPA, 2004). Site soil cleanup actions were conducted from 1995 to 1997 and included in-situ soil vapor extraction (SVE) with treatment by vapor-phase granular activated carbon (GAC), and soil excavation and treatment by aeration.

Water Bearing Zones	Approximate Depth Interval Below Ground Surface (bgs)
B3	120 to 160 feet
C	200 to 240 feet
Deep Aquifer	>240 feet

[a] Navy and National Aeronautics and Space Administration (NASA) refer to this zone as the A1 Zone north of Highway 101.
[b]Navy and NASA refer to this zone as the A2 Zone north of Highway 101.

The following table summarizes the estimated ranges of hydraulic conductivity (K) hydraulic gradient, and transmissivity for the A and B Zones[2].

Water-Bearing Zone	Estimated Hydraulic Conductivity (ft/day)		Approximate Horizontal Gradient (ft/ft)	Saturated Thickness (ft)	Transmissivity (ft^2/day)	
	Low	High			Low	High
A Zone	6	480	0.004	15	44	4,400
B1 Zone	20	260	0.003	25	150	2,600
B2 Zone	0.4	5	0.002 to 0.005	35	2	230
B3 Zone	0.5	5	0.001 to 0.002	40	5	130

Groundwater flow beneath the Site is generally towards the north in the A Zone during both non-pumping and pumping conditions. Groundwater hydraulic gradients are locally modified by the operation of groundwater recovery wells (both source control and regional recovery wells) and slurry walls, resulting in steeper gradients in the vicinity of pumping wells.

The vertical component of groundwater flow is generally upward from the B1- to the A Zone. Vertical gradients below the B1 Zone are generally upward (Geosyntec, 2008). Groundwater extraction has likely exerted an influence on the measured vertical gradients.

[2] Pumping tests were conducted at the MEW study area from 1986 through 1985. References are Canonie 1986a, 1986b, 1987, and 1988, Geomatrix 2004, HLA 1986 & 1987, Locus 1998, PRC 1991, Navy 2005 and Weiss Associates 1995 and 2005.

1.3 Description of the Remedy

As specified in the ROD, the current Site remedy consists of slurry wall containment and groundwater extraction.

The groundwater extraction and offsite treatment system is designed to protect local water supplies and to remediate or control groundwater that contains elevated concentrations of chemicals, including control of discharge of such groundwater to surface water.[3]

Groundwater cleanup goals are 5 micrograms per liter (µg/L) for trichloroethene (TCE) in shallow groundwater (A and B Zones).[4] The ROD states that the chemical ratio of TCE to other chemicals found at the Site is such that achieving the cleanup goal for TCE will result in cleanup of the other Site chemicals to at least their respective federal maximum contaminant levels (MCLs).

A network of four extraction wells located inside the A Zone slurry wall is used to remove groundwater from the Site (Table 1). Extracted groundwater is then transported through conveyance piping to a treatment facility located at 515 N. Whisman Road (System 1). Once treated, the water is monitored and sampled in compliance with a National Pollutant Discharge Elimination System (NPDES) Permit, then discharged to a storm water sewer.

Effectiveness of the remedy is evaluated using a network of monitoring wells that are currently monitored according to the schedule provided in Table 2. A construction summary for these wells is provided in Table 3.

1.4 Summary of 2011 Site Activities and Deliverables

Table 2 provides the 2011 monitoring and reporting schedule for the Site Groundwater Remediation Program. Ongoing Site activities include:

- Groundwater extraction;
- Assessment of remedial progress; and

[3] The objectives of the groundwater remedy design are described in the ROD and the Feasibility Study (Canonie, 1988).
[4] Groundwater cleanup goals are presented in the ROD.

- Planning for future remedial activities.

Specific Site activities and deliverables by month in 2011 are listed below:

March 2011

- 25 March – Collected semiannual groundwater elevation measurements in Site monitoring and extraction wells.

May 2011

- 26 May – Collected quarterly groundwater elevation measurements in Site slurry wall well pairs.

June 2011

- 15 June – Distributed the 2010 Annual Progress Report to the EPA and MEW distribution list parties.

September 2011

- 15 September – Collected semiannual groundwater elevation measurements in Site monitoring and extraction wells.
- 22 September through 3 October – Collected annual groundwater samples from Site wells.

November 2011

- 10 November – Collected quarterly groundwater elevation measurements in Site slurry wall well pairs.

D*ecember 2011*

- 9 December – Conducted annual settlement monitoring.

The 2011 Annual Report Remedy Performance Checklist is provided in Appendix A.

2. GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

2.1 Extraction and Treatment System Description

Groundwater is extracted from four Site source control recovery wells (SCRWs) located inside of the slurry wall (AE/RW-9-1, AE/RW-9-2, RW 20A, and RW-21A) and is piped via double-contained piping to offsite Fairchild Treatment System 1 located at 515 Whisman Road. Further discussion of System 1 is provided in the 2011 Annual Progress Report for Former Fairchild Buildings 1-4 (Geosyntec, 2012a).

2.2 Extraction and Treatment System Operation and Maintenance

As required by the System 1 discharge permit, the Site extraction well flow readings are recorded weekly and are reported quarterly to the California Regional Water Quality Control Board (Water Board). Extraction well flow rates were optimized in 2010 for all Fairchild wells (Geosyntec, 2010a). The optimized target flow rates and actual flow rates are shown in Table 1. The combined average flow rates for the Site extraction wells pumping to System 1 totaled approximately 18 gallons per minute (gpm), which meets the target flow rate of 17 gpm. Monthly average flow rates and monthly extraction totals for the Site extraction wells are provided in Tables 4 and 5, respectively.

A summary of non-routine maintenance or operational activities performed at the Site during 2011 is provided in Table 6. The EPA and Water Board are required to be notified of extraction well and system down-time events as follows:

- EPA: The owner and/or operator of the Fairchild treatment system will make a best effort to orally notify EPA within 24 hours of a well or system shutdown that occurs for more than 72 hours.
- Water Board: If the treatment system is shut down for more than 120 consecutive hours after the startup period (maintenance, repair, violations, etc.) the reason(s) for shut down, proposed corrective action(s), and estimated start-up date shall be orally reported to the Water Board within five days of shut down and a written submission shall also be provided within 15 days of shut down.

As demonstrated by extraction well downtime events listed in Table 6, no notifications of well shut downs were required during 2011.

2.3 Groundwater Level Monitoring

Groundwater levels are measured semi-annually for the purpose of monitoring the hydraulic performance of the Site groundwater remedy. During this reporting period, groundwater levels were measured in the Site monitoring wells on 24 March and 15 September 2011. In addition, water levels were measured in 4 slurry wall well pairs (8 wells) quarterly on 24 March, 26 May, 15 September, and 10 November. Table 3 summarizes the construction details for the Site monitoring and extraction wells. Water levels measured in the Site monitoring wells during 2011 are included in Table 7. Water levels measured in the Site Slurry Wall Well Pairs between January 2007 and December 2011 are included in Table 8.

Hydrographs of Site slurry wall well pairs are provided in Figure 4. Figure 4 includes a set of three hydrographs of A Zone slurry wall well pairs showing the inward and outward gradients across the slurry wall and one hydrograph of a slurry wall well pair in which one well is screened inside the slurry wall in the A Zone, and the adjacent well pair is screened below the slurry wall in the B1 Zone.

Groundwater elevation contour maps for the Site are provided in Figures 5 and 6 and are based on facility-specific and regional data as presented in the MEW Regional Groundwater Remediation Program (RGRP) Annual Report (Geosyntec, 2012b). The groundwater elevation contour maps were created using KT3D_H2O version 3.0, a geostatistical software package (Tonkin and Larson, 2002).[5] As opposed to most interpolation programs that require a choice between linear and logarithmic kriging, this version of KT3D allows for linear-log ordinary kriging using linear kriging in areas distant from recovery wells and point logarithmic kriging in the vicinity of recovery wells. The flow rates from the extraction wells were input to the program in order to allow for a variable radial distance of transition from linear to logarithmic kriging. A spherical variogram was specified with grid spacing of 30 feet.

[5] The KT3D software package was developed as part of the Geostatistical Software Library (GSLIB) at Stanford University and was subsequently modified by S.S. Papadopulos and Associates, Inc. to include well drift (Deutsh and Journal 1998, Tonkin and Larson 2002).

2.4 Hydraulic Control and Capture Zone Analysis

The water level monitoring described in Section 2.3 provides the basis for evaluating the hydraulic performance of the Site-specific groundwater remedies. The hydraulic capture area achieved by one or more recovery wells cannot be directly measured, but rather requires analysis and interpretation of the measured water levels and extraction rates. The following discussion summarizes the basis for estimating the capture zones.

2.4.1 Methodology

In evaluating groundwater capture for Site wells, consideration was given to the EPA guidance document *A Systematic Approach for Evaluation of Capture Zones at Pump and Treat Systems* (EPA, 2008). The following steps were used to perform the hydraulic evaluation of the groundwater remedy.

- The Site conceptual model, remedy objectives, slurry wall locations, and target capture zones were available from previous studies and prior annual monitoring reports;
- Water level measurements from March and September 2011 were interpolated to generate groundwater elevation contour maps as described in Section 2.3 and the MEW RGRP Annual Report (Geosyntec, 2012b);
- Pumping rates from regional recovery wells (RRWs) and SCRWs were compiled;
- Hydraulic capture from each RRW and SCRW was estimated based on graphical flow-net analysis of the contour maps, guided by backward particle tracking and analytical flow solutions (Section 2.4.2);
- A water balance calculation was used to check the total width of capture estimated from the graphical analysis;
- Water level data from well clusters were analyzed for the distribution of vertical gradients; and
- VOC time-series trends in monitoring wells were reviewed for confirming evidence of hydraulic capture (Section 2.5).

2.4.2 Estimated Extraction Well Capture

Estimated capture zones for Site recovery wells in March and September 2011 are shown in Figures 5 and 6. The capture zones were estimated by graphical flow-net analysis, using the groundwater elevation contour maps (Section 2.3). The graphical analysis was guided by backward particle tracking using TransientTracker in KT3D_H20 and calculated distances to the stagnation point and capture zone width based on the analytical solution of Javandel and Tsang (1986). All extraction wells pumping in the MEW study area were considered as part of the capture zone evaluation for the Site. The KT3D_H20 particle tracking method and analytical calculations assume homogeneous, two-dimensional groundwater flow with a single regional estimated value of transmissivity. These methods were used as supporting lines of evidence to evaluate capture together with the groundwater elevation contour maps. The final capture zones, as presented in Figures 5 and 6, are based on professional judgment in consideration of the above analyses, known Site conditions, and experience with similar sites.

2.4.3 Capture Width Based on Combined Flow Rate Analysis

The capture zone analysis described in Section 2.4.2 above was developed on a well-by-well basis. However, the net result of the combined capture zones from all SCRWs is an area of hydraulic capture that is significantly wider than the hydraulic capture created by a single recovery well. An independent check of the capture zones presented in Figures 5 and 6 was developed by using the combined 2011 groundwater extraction rates for all Site SCRWs, to estimate the total capture width in the A Zone slurry wall. The estimated total capture width was then compared to the distribution of TCE in groundwater (Section 2.5, Figure 7) within the slurry wall boundaries, measured in map view. If the estimated width of capture is greater than the trans-gradient width TCE in groundwater, then hydraulic containment of the plume is indicated.

A calculation of the estimated total capture width is shown in Table 9. This calculation is based on the total extraction rate, regional hydraulic gradient, hydraulic conductivity, and zone thickness.

The results indicate that the estimated total capture width of the four Site SCRWs is greater than the measured distribution of TCE in groundwater within the Site slurry

wall, thereby providing an additional line of evidence that hydraulic containment is achieved.

2.4.4 Horizontal and Vertical Gradients

Figure 4 illustrates head differences between slurry wall well pairs at the Site. The well pairs are used to evaluate the direction of horizontal gradient across the slurry wall by comparing water levels in wells located inside the slurry wall with water levels in adjacent wells outside the slurry wall. These wells are also used to evaluate the direction of vertical gradient across the A/B aquitard by comparing water levels in wells located inside the slurry wall (in the A Zone) with water levels in wells located below the slurry wall (in the B1 Zone). Groundwater elevations were recorded quarterly in March, May, August, and November 2011 in the slurry wall well pairs listed on Table 8. The well locations are shown in Figure 3.

Results of the well pair analysis at the Building 9 slurry wall indicate the following:

Horizontal Gradients: During this reporting period, inward gradients were consistently observed at well pair 123A/122A located on the upgradient side of the slurry wall, well pair 138A/127A located on the eastern crossgradient side of the slurry wall, and well pair 126A/35A located on the downgradient side of the slurry wall.

Vertical Gradients: During this reporting period, an upward gradient was observed between the A and B1 aquifer at well pair 69B1/37A.

The horizontal and vertical gradients recorded during this reporting period are generally consistent with historical observations. Inward and upward gradients are maintained across the Site slurry wall in accordance with the remediation action objectives (RAOs).

2.5 Groundwater Quality Monitoring

The 2011 Annual Groundwater Quality Sampling Event at the Site was conducted in September and October 2011. A total of 12 Site wells were sampled for VOCs in 2011. Water quality samples are collected annually for specified wells outside the slurry wall For wells inside the slurry walls the monitoring program requires sampling every five years; however, during some years wells have been voluntarily sampled more frequently. The last five-year sampling event for wells inside the slurry walls was in 2007. A summary of chemical analytic results for the previous five years (2007 through

2011) is provided in Table 10. Appendix B contains the laboratory analytic reports and chain-of-custody documents for samples collected in 2011, and Appendix C contains the quality assuarance/quality control (QA/QC) evaluation report, summary tables, and criteria. VOC versus time graphs for select monitoring wells are included in Appendix D.

2.5.1 Isoconcentration Contour Maps

TCE, cis-1,2-dichloroethene (cis-1,2-DCE), vinyl chloride, and Tetrachloroethene (PCE) isoconcentration contour maps were created for the 2011 annual sampling event. The 2011 TCE contour maps were based on the existing 2010 TCE contour maps (Geosyntec, 2011) with contours modified as needed to reflect decreases or increases in TCE concentrations from 2010 to 2011. Similarly, the cis-1,2-DCE and vinyl chloride contour maps were based on and modified from the regional 2009 cis-1,2-DCE and vinyl chloride contour maps (Geosyntec, 2010b). The PCE contour maps were generated by hand and based on professional judgment in consideration of known Site conditions. All wells in the MEW study area sampled for VOCs in 2011 were included in isoconcentration contouring as presented in the MEW RGRP Annual Progress Report (Geosyntec, 2012b). The 2011 isoconcentration contour maps for the Site are presented for the A Zone in Figures 7 to 10.

2.5.2 Remedy Performance

In conjunction with the hydraulic analysis described in Section 2.4, the VOC monitoring data provides an additional line of evidence for assessing remedy performance.

Selected VOC versus time graphs are presented in Appendix D. In addition to the creation of time series graphs a Mann-Kendall statistical analysis was performed in order to evaluate VOC concentration trends in the Site wells[6] (Table 11). Based on the Mann-Kendall statistical analysis the TCE concentrations are stable, decreasing or have no trend in all of the Site wells. Approximately 45% of Site wells display decreasing TCE concentration trends and 55% show no trend or are stable.

[6] A Mann-Kendall statistical analysis was performed on all Site wells using the TCE, cis-1,2-DCE and vinyl chloride concentration data from 2002 to 2011 to evaluate the concentration trends. Well with insufficient data (< 4 sampling events) were not included in the trend analysis evaluation.

The spatial distribution of VOC monitoring data can also be used to assess remedy performance. Figure 7 presents a map of the A Zone, with the September 2011 hydraulic capture zones (Section 2.4) overlain on the September/October 2011 TCE isoconcentration maps. This figure illustrates complete hydraulic capture, within the Site boundaries.

The VOC time series data and VOC monitoring data indicate that the combined MEW remedies are performing as designed to control or remediate VOCs in groundwater.

3. OTHER ACTIVITIES

3.1 Air/Vapor Intrusion

The EPA issued a ROD amendment on 16 August 2010 to address vapor intrusion (EPA, 2010). The MEW parties continued to work with EPA and local entities to implement the ROD amendment during 2011. In accordance with the Statement of Work for the Vapor Intrusion ROD Amendment, an annual report summarizing the status of the vapor intrusion remedy will be submitted under separate cover (Haley and Aldrich, 2012).

3.2 Annual Settlement Survey

An annual settlement survey was performed on 9 December 2011. The purpose of these annual measurements is to evaluate any potential adverse effects on the Site facilities, and whether long-term remedial groundwater extraction could affect soil settlement in the MEW study area. A qualified Geotechnical Engineer reviewed the historical settlement and water level elevation data and concluded that the measured values of ground elevation change do not appear to be related to groundwater extraction operations. Additional information on the settlement survey can be found in the RGRP 2011 Annual Progress Report (Geosyntec, 2012b).

4. PROBLEMS ENCOUNTERED

Table 6 summarizes all non-routine operations and maintenance (O&M) events that occurred at the Building 9 extraction wells. No other problems related to the Site were encountered.

5. TECHNICAL ASSESSMENT

The following assessment of the groundwater remedy performance was made based on data collected through 2011.

- The remedy is functioning as intended. Based on 2011 data reviewed, the groundwater remedy is generally functioning as intended. An Annual Report Remedy Performance Checklist is included in Appendix A.
- The capture zones are adequate. Groundwater elevations, graphical flow net analysis, capture zone width calculations, and VOC concentration trends provide converging lines of evidence that the Site extraction wells are achieving adequate horizontal and vertical capture. The concentration trends in downgradient wells indicate supporting evidence for adequate plume control within the Site slurry wall enclosure.
- VOC concentrations are steady to decreasing over time. Table 11 shows that all of the Site wells with a statistically significant trend in TCE concentrations are decreasing or stable.

The remedial actions meet the RAOs for groundwater.

6. CONCLUSIONS AND RECOMMENDATIONS

The technical assessment concludes that the Site groundwater remedy is performing as intended. The estimated capture zones from March and September 2011 meet or exceed the target capture area as indicated by converging lines of evidence, including graphical flow net analysis, capture zone width calculations, and concentration trends. No modifications to the current remedy are recommended.

The Fairchild wells connected to Treatment System 1 are currently addressed in three separate Annual Progress Reports for the Former Fairchild Facilities: Former Fairchild Buildings 1-4, Former Fairchild Building 18, and Former Fairchild Building 9. Given the proximity of these Sites to one another, and the fact that they share a treatment system, it is recommended that future Annual Progress Reports for Former Fairchild Buildings 9, 1-4, and 18 be combined and submitted as a single Annual Progress Report.

7. UPCOMING WORK IN 2012 AND PLANNED FUTURE ACTIVITIES

March	• Groundwater level measurements
April	• Submit Annual Progress Report to EPA
September	• Annual Groundwater sampling • Groundwater level measurements

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TABLES

Table 1
Target and 2011 Average Recovery Well Flow Rates
MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, CA

Extraction Wells	2011 Target Flow Rate[1] (gpm)	Average 2011 Flow Rate[2] (gpm)
A/A1 Zone		
AE/RW-9-1	4.0	4.5
AE/RW-9-2	2.0	1.8
RW-20A	4.0	4.7
RW-21A	7.0	7.2

Notes:

1. Target flow rates were adjusted in 2010 based on EPA comments on the 2008 Optimization Evaluation (Geosyntec, 2010).

2. Average 2011 flow rates were calculated by dividing the total volume of groundwater recovered by the time in minutes between the totalizer readings. System totalizer readings were recorded on 29 December 2010 and 28 December 2011.

gpm = gallons per minute

Table 2
2011 Monitoring and Reporting Schedule
MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, CA

Monitoring and Sampling		
Well	**Sample Frequency**	**Water Level Gauging Frequency**
A/A1 Zone		
35A[1]	Once every 5 years	Quarterly
36A		Semiannually (March, September)
37A	Annually (September or October)	Quarterly
40A	Annually (September or October)	Semiannually (March, September)
41A	Annually (September or October)	Semiannually (March, September)
42A	Annually (September or October)	Semiannually (March, September)
43A	Annually (September or October)	Semiannually (March, September)
44A	Annually (September or October)	Semiannually (March, September)
122A[1]	Once every 5 years	Quarterly
123A		Quarterly
126A		Quarterly
137A	Annually (September or October)	Quarterly
138A	Annually (September or October)	Quarterly
AE/RW-9-1	Annually (September or October)	Quarterly
AE/RW-9-2	Annually (September or October)	Semiannually (March, September)
RW-20A	Annually (September or October)	Semiannually (March, September)
RW-21A	Annually (September or October)	Semiannually (March, September)
B1/A2 Zone		
69B1		Quarterly

Reporting	
Report	**Due Date**
EPA Annual Progress Report	April 15

Notes:
Wells shown in **bold** are located onsite and associated with the Fairchild Operation & Maintenance Program (RMT, 2003).
1. Wells are sampled every five years and will be sampled next in 2012.
Slurry wall well pair water levels are measured on a quarterly basis.

Table 3
Extraction and Monitoring Well Construction Summary
MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, CA

Well ID	Year Installed	Reference Elevation[1] (ft msl)	Diameter (inches)	Total Well Depth (ft btoc)	Top of Screened Interval (ft btoc)	Bottom of Screened Interval (ft btoc)	Top of Sand Pack (ft btoc)	Bottom of Sand Pack (ft btoc)	Well Type
A/A1 Zone									
35A	1982	42.67	2	37	12	37	12	37	Mon
36A	1982	42.32	2	40	35	40	15	40	Mon
37A	1982	43.21	2	30	15	30	12	30	Mon
40A	1982	43.44	2	27	11.5	27	12	27	Mon
41A	1982	42.40	2	25	13	25	13	25	Mon
42A	1982	42.97	2	35	10	35	12	35	Mon
43A	1982	43.38	2	27	15	27	15	27	Mon
44A	1982	43.13	2	28	13.5	28	13.5	28	Mon
122A	1986	44.23	4	38	28	38	18	39	Mon
123A	1986	44.37	4	38	28	38	18	39	Mon
126A	1986	42.85	4	38	23	38	18	40	Mon
137A	1986	43.68	4	36	34	36	32	38	Mon
138A	1986	43.60	4	37	34	37	32	38	Mon
AE/RW-9-1	1995	43.15	6	33	8	33	6	36	Ext
AE/RW-9-2	1995	43.85	6	37	8	37	6	38	Ext
RW-20A	1987	43.57	8	37.5	26.5	36.5	11	38	Ext
RW-21A	1987	43.16	6	37	21	36	11	38	Ext
B1/A2 Zone									
69B1	1985	42.62	4	59	54	59	50	61	Mon

Notes:
Water levels for extraction wells are taken from a 2" piezometer located next to the well.
1. Reference Elevations are in National Geodetic Vertical Datum from 1929 (NGVD 29).
ft msl = feet mean sea level
ft btoc = feet below top of casing
Ext = extraction well
Mon = monitoring well

Table 4
Monthly Average Recovery Well Flow Rates
MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, CA

Extraction Well	2011 Average Monthly Flowrate[1] (gpm)											
	January	February	March	April	May	June	July	August	September	October	November	December
A/A1 Zone												
RW-20A	4.75	4.86	4.87	4.94	5.10	5.07	4.52	4.68	4.38	4.64	4.70	4.23
RW-21A	6.70	6.82	6.79	6.71	7.26	7.67	7.32	7.53	6.69	7.27	7.70	7.24
AE/RW-9-1	4.22	4.29	4.30	4.29	4.46	4.56	4.45	4.70	4.22	4.66	4.96	4.72
AE/RW-9-2	2.27	1.76	1.53	2.27	2.16	2.81	2.04	1.10	1.17	1.47	1.40	1.28
Total	17.95	17.73	17.49	18.22	18.97	20.11	18.34	18.01	16.46	18.04	18.75	17.47

Notes:

1. Monthly average recovery well flow rates were calculated by dividing the volume of groundwater extracted by the time (minutes) between effluent totalizer readings (generally taken last Wednesday of each month).

gpm = gallons per minute

Table 5
Monthly Extraction Totals
MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, CA

Extraction Well	2011 Monthly Volume Extracted[1] (gallons)											
	January	February	March	April	May	June	July	August	September	October	November	December
A/A1 Zone												
RW-20A	191,719	195,996	245,686	199,266	205,487	255,357	182,428	235,649	176,475	186,996	236,710	170,485
RW-21A	270,331	274,968	342,034	270,477	292,835	386,413	295,300	379,282	269,878	293,082	388,168	291,891
AE/RW-9-1	170,099	172,820	216,539	173,063	179,706	229,840	179,609	236,971	170,234	187,870	249,810	190,404
AE/RW-9-2	91,420	71,077	77,279	91,677	86,936	141,803	82,286	55,626	47,118	59,256	70,362	51,607

Notes:

1. The monthly volume of groundwater extracted from each well is based on effluent totalizer readings (generally taken last Wednesday of each month).

Table 6
Summary of Non-Routine Maintenance and Operational Activities
MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, CA

2011	Component	Off-line Time	Event/Alert	Diagnosis and Response	Regulatory Notification[1]
May 1 – May 2	AE/RW-9-2	35 hours	Low flow alert.	The flow meter fouled. The paddle wheel and the piping in the vault were cleaned and the well was restarted.	Not Required
May 24	AE/RW-9-2	1 hour	Low flow alert.	The flow meter paddle wheel fouled. It was cleaned and the well was restarted.	Not Required
June 10	AE/RW-9-2	8 hours	Low flow alert.	The flow meter paddle wheel fouled. It was cleaned and the well was restarted.	Not Required
July 2	AE/RW-9-2	8 hours	Low flow alert.	The flow meter paddle wheel had fouled. It was cleaned and the well was restarted.	Not Required
July 24 – 25	AE/RW-9-2	20 hours	Low flow alert.	The flow meter paddle wheel had fouled. It was cleaned and the well was restarted.	Not Required
August 24 – 25	AE/RW-9-2	17 hours	Low flow alert.	The flow meter paddle wheel had fouled. It was cleaned and the well was restarted.	Not Required
September 21	AE/RW-9-2	2 hours	Low flow alert.	The pump failed and was replaced. Well was restarted.	Not Required
October 22	AE/RW-9-2	42 hours	Low flow alert.	The flow meter paddle wheel had fouled. It was cleaned and the well was restarted.	Not Required
November 11	AE/RW-9-2	1 hour	Low flow alert.	The flow meter paddle wheel had fouled. The paddle wheel was cleaned, and the well was restarted.	Not Required
December 10 –13	AE/RW-9-2	71 hours	Low flow alert.	Pump failed and was replaced. Well was restarted.	Not Required

Notes:
1. The EPA is required to be notified if the treatment system or an extraction well is shut down for 72 consecutive hours. The Water Board is required to be notified if the treatment system is shut down for more than 120 consecutive hours.
EPA = United States Environmental Protection Agency

Table 7

2011 Groundwater Elevations, January Through December 2011

MEW Former Fairchild Building 9 Groundwater Remediation Program

Mountain View, California

Well ID	TOC Elevation (ft msl)	24 March 2011		15 September 2011	
		Depth To Water (feet)	Groundwater Elevation (ft msl)	Depth To Water (feet)	Groundwater Elevation (ft msl)
A/A1					
35A	42.67	12.69	29.98	14.47	28.20
36A	42.32	12.05	30.27	14.80	27.52
37A	43.21	13.17	30.04	15.83	27.38
40A	43.44	11.26	32.18	12.57	30.87
41A	42.40	11.07	31.33	12.43	29.97
42A	42.97	11.55	31.42	12.79	30.18
43A	43.38	11.42	31.96	12.72	30.66
44A	43.13	11.38	31.75	12.64	30.49
122A	44.23	12.70	31.53	16.85	27.38
123A	44.37	10.55	33.82	12.38	31.99
126A	42.85	11.61	31.24	13.03	29.82
137A	43.68	13.75	29.93	16.07	27.61
138A	43.60	10.87	32.73	12.29	31.31
AE/RW-9-1	43.15	13.55	29.60	16.38	26.77
AE/RW-9-2	43.85	16.16	27.69	17.27	26.58
RW-20A	43.57	15.54	28.03	18.43	25.14
RW-21A	43.16	13.99	29.17	16.91	26.25
A2/B1					
69B1	42.62	10.26	32.36	11.82	30.80

Notes:
ft msl = Feet Mean Sea Level
TOC = Top of Casing

Table 8

Groundwater Elevations, Slurry Wall Well Pairs, January 2007 Through December 2011

MEW Former Fairchild Building 9 Groundwater Remediation Program

Mountain View, California

Date	Well ID (Outside)	Groundwater Elevation (ft msl)	Well ID (Inside)	Groundwater Elevation (ft msl)	Difference	Flow Direction
Southern Wall - Upgradient Well Pairs						
3/22/2007	123A	32.81	122A	27.31	5.50	Inward
5/24/2007	123A	32.01	122A	26.13	5.88	Inward
8/23/2007	123A	32.66	122A	30.68	1.98	Inward
11/15/2007	123A	33.46	122A	32.03	1.43	Inward
3/27/2008	123A	33.31	122A	31.31	2.00	Inward
5/22/2008	123A	33.14	122A	31.13	2.01	Inward
8/28/2008	123A	32.87	122A	30.82	2.05	Inward
11/20/2008	123A	32.47	122A	30.59	1.88	Inward
3/26/2009	123A	33.28	122A	31.59	1.69	Inward
5/21/2009	123A	32.90	122A	31.42	1.48	Inward
8/27/2009	123A	32.47	122A	30.68	1.79	Inward
11/19/2009	123A	32.22	122A	30.25	1.97	Inward
3/25/2010	123A	33.40	122A	31.66	1.74	Inward
5/27/2010	123A	32.78	122A	31.35	1.43	Inward
8/26/2010	123A	32.71	122A	30.75	1.96	Inward
11/18/2010	123A	31.59	122A	26.83	4.76	Inward
3/24/2011	123A	33.82	122A	31.53	2.29	Inward
5/26/2011	123A	32.53	122A	27.72	4.81	Inward
9/15/2011	123A	31.99	122A	27.38	4.61	Inward
11/10/2011	123A	31.68	122A	26.67	5.01	Inward
Eastern Wall - Crossgradient Well Pairs						
3/22/2007	138A	32.44	137A	27.10	5.34	Inward
5/24/2007	138A	31.77	137A	25.90	5.87	Inward
8/23/2007	138A	31.57	137A	30.78	0.79	Inward
11/15/2007	138A	32.58	137A	31.81	0.77	Inward
3/27/2008	138A	32.30	137A	31.00	1.30	Inward
5/22/2008	138A	31.85	137A	30.83	1.02	Inward
8/28/2008	138A	31.83	137A	30.58	1.25	Inward
11/20/2008	138A	31.33	137A	30.31	1.02	Inward
11/20/2008	138A	31.37	137A	30.31	1.06	Inward
3/26/2009	138A	31.11	137A	31.47	-0.36	Outward
3/26/2009	138A	32.26	137A	31.47	0.79	Inward
5/21/2009	138A	31.73	137A	30.34	1.39	Inward
8/27/2009	138A	31.33	137A	30.42	0.91	Inward
11/19/2009	138A	31.17	137A	29.97	1.20	Inward
11/19/2009	138A	31.16	137A	29.97	1.19	Inward
3/25/2010	138A	32.15	137A	31.43	0.72	Inward
5/27/2010	138A	31.60	137A	31.09	0.51	Inward
8/26/2010	138A	31.51	137A	30.52	0.99	Inward
11/18/2010	138A	30.90	137A	26.61	4.29	Inward
11/18/2010	138A	31.10	137A	26.61	4.49	Inward
3/24/2011	138A	32.73	137A	29.93	2.80	Inward
5/26/2011	138A	31.82	137A	27.5	4.32	Inward
9/15/2011	138A	31.31	137A	27.61	3.70	Inward
11/10/2011	138A	31.11	137A	26.68	4.43	Inward

Table 8

Groundwater Elevations, Slurry Wall Well Pairs, January 2007 Through December 2011

MEW Former Fairchild Building 9 Groundwater Remediation Program

Mountain View, California

Date	Well ID (Outside)	Groundwater Elevation (ft msl)	Well ID (Inside)	Groundwater Elevation (ft msl)	Difference	Flow Direction
Northern Wall - Downgradient Well Pairs						
3/22/2007	126A	31.12	35A	27.23	3.89	Inward
5/24/2007	126A	30.25	35A	25.89	4.36	Inward
8/23/2007	126A	30.36	35A	30.39	-0.03	Outward
11/15/2007	126A		35A	31.71		#Error
3/27/2008	126A	30.87	35A	31.23	-0.36	Outward
5/22/2008	126A	30.73	35A	30.93	-0.20	Outward
8/28/2008	126A	30.55	35A	30.57	-0.02	Outward
11/20/2008	126A	30.10	35A	30.37	-0.27	Outward
3/26/2009	126A	30.87	35A	31.45	-0.58	Outward
5/21/2009	126A	30.51	35A	30.56	-0.05	Outward
8/27/2009	126A	29.97	35A	30.42	-0.45	Outward
11/19/2009	126A	29.92	35A	30.15	-0.23	Outward
3/25/2010	126A	30.89	35A	31.47	-0.58	Outward
5/27/2010	126A	30.54	35A	31.03	-0.49	Outward
8/26/2010	126A	30.41	35A	30.47	-0.06	Outward
11/18/2010	126A	29.64	35A	26.70	2.94	Inward
3/24/2011	126A	31.24	35A	29.98	1.26	Inward
5/26/2011	126A	30.36	35A	27.62	2.74	Inward
9/15/2011	126A	29.82	35A	28.20	1.62	Inward
11/10/2011	126A	29.8	35A	26.47	3.33	Inward
Vertical Gradient Well Pairs						
3/22/2007	69B1	32.14	37A	28.37	3.77	Upward
5/24/2007	69B1	31.36	37A	26.84	4.52	Upward
8/23/2007	69B1	31.32	37A	30.87	0.45	Upward
11/15/2007	69B1	32.08	37A	31.95	0.13	Upward
3/27/2008	69B1	31.69	37A	31.37	0.32	Upward
5/22/2008	69B1	31.66	37A	30.81	0.85	Upward
8/28/2008	69B1	31.34	37A	30.56	0.78	Upward
11/20/2008	69B1	30.82	37A	30.51	0.31	Upward
3/26/2009	69B1	31.49	37A	31.12	0.37	Upward
5/21/2009	69B1	31.30	37A	30.27	1.03	Upward
8/27/2009	69B1	30.92	37A	30.29	0.63	Upward
11/19/2009	69B1	30.72	37A	29.60	1.12	Upward
3/25/2010	69B1	31.47	37A	30.94	0.53	Upward
5/27/2010	69B1	30.76	37A	30.20	0.56	Upward
8/26/2010	69B1	30.96	37A	30.36	0.60	Upward
11/18/2010	69B1	30.66	37A	26.50	4.16	Upward
3/24/2011	69B1	32.36	37A	30.04	2.32	Upward
5/26/2011	69B1	31.24	37A	27.46	3.78	Upward
9/15/2011	69B1	30.80	37A	27.38	3.42	Upward
11/10/2011	69B1	30.62	37A	26.24	4.38	Upward

Notes:
ft msl = Feet Mean Sea Level

Table 9
Calculation of Predicted Capture Widths Based on Combined Flow Rate
MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, CA

Parameter	A-Zone Slurry Wall[1]
Q = Combined pumping rate (gpm)	18
b = saturated aquifer thickness (ft)	15
i = regional hydraulic gradient (ft/ft)	0.014
K = hydraulic conductivity (ft/day)[2]	40
Calculated Capture Width (ft) = Q/(K x b x i)	400
Measured plume width at widest point (ft)[3]	280

Notes:
1. The combined pumping rate equals the summed average 2011 flow rates of all extraction wells located within the Former Fairchild Building 9 Site that are inside the slurry wall.
2. Hydraulic conductivity values used are from the numerical model included as Appendix B to the 2008 Optimization Report (Geosyntec, 2008).
3. Measured plume width at widest point is not continued past slurry wall boundaries, slurry wall width is approximately 280 feet.
1 cubic foot = 7.48 gallons
1 day = 1440 minutes
gpm = gallons per minute
ft = feet

Assumptions:
1. Homogeneous, isotropic, confined aquifer of infinite extent
2. Uniform regional horizontal hydraulic gradient
3. No net recharge (or net recharge is accounted for in the regional hydraulic gradient)
4. Uniform aquifer thickness
5. Fully penetrating extraction well
6. Steady-state flow
7. Negligible vertical gradient

Table 10
VOC Analytical Results
Five Year Summary, January 2007 through December 2011
MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, California

Sample Location	Sample Date	Constituent (concentration in micrograms per liter, ug/L and method is 8260B)												
		Chloroform	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride	1,4-Dioxane
A/A1 Zone														
35A	11/13/2007	<1.0	**34**	<0.5	**22**	**420**	**4.3**	**11**	<20	<0.5	**5.9**	**370**	**9.7**	NA
36A	11/13/2007	<5.0	**18**	<2.5	**7.3**	**360**	**6.4**	<2.5	<100	<2.5	**45**	**160**	<2.5	NA
36A	12/11/2008	<3.3	**20**	<1.7	**9.2**	**370**	**3.0**	**4.0**	<67	<1.7	**21**	**110**	<1.7	NA
36A	11/17/2009	<1.0	**7.2**	<0.5	**7.5**	**490**	**3.9**	**2.2**	<20	<0.5	**2.0**	**98**	**1.6**	NA
36A	11/12/2010	<5.0	**4.9**	<2.5	**5.9**	**380**	**7.7**	<10	<10	<2.5	<2.5	**150**	<2.5	NA
37A	11/13/2007	<50	**1100**	<25	**610**	**1100**	<25	**98**	<1000	<25	**2700**	**2900**	**78**	NA
37A	12/11/2008	<25	**3000**	<13	**610**	**2000**	**20**	**140**	<500	<13	**2600**	**2300**	**280**	NA
37A	11/17/2009	<1.0	**18**	<0.5	**17**	**140**	**1.9**	**7.5**	<20	<0.5	**160**	**300**	**1.9**	NA
37A	11/12/2010	<4.0	**10**	<2.0	**9.1**	**110**	**3.0**	<8.0	<8.0	<2.0	**61**	**270**	<2.0	NA
37A	9/29/2011	<4.0	**5.7**	<2.0	**2.3**	**88**	**5.5**	<8.0	<8.0	<2.0	**18**	**210**	<2.0	NA
40A	11/14/2007	<13	<6.3	<6.3	<6.3	**140**	<6.3	**13**	<250	<6.3	**8.5**	**780**	<6.3	NA
40A	11/7/2008	<20	<10	<10	<10	**150**	<10	**20**	<400	<10	**11**	**1000**	<10	NA
40A	11/17/2009	<1.0	**6.3**	<0.5	**11**	**310**	**4.3**	**22**	<20	<0.5	**9.4**	**1100**	**30**	NA
40A	11/12/2010	<10	**6.7**	<5.0	**10**	**140**	<5.0	**23**	<20	<5.0	**8.8**	**790**	**8.3**	NA
40A	10/3/2011	<10	**5.8**	<5.0	**6.5**	**420**	**10**	<20	<20	<5.0	**7.1**	**700**	**7.1**	NA
41A	11/16/2010	<2.5	<1.3	<1.3	<1.3	**59**	**1.3**	<5.0	<5.0	<1.3	<1.3	**240**	**2.9**	NA
41A	9/29/2011	<14	<7.1	<7.1	<7.1	**130**	<7.1	<29	<29	<7.1	<7.1	**760**	<7.1	NA
42A	11/14/2007	<5.0	**3.6**	<2.5	**3.1**	**55**	<2.5	**15**	<100	**3.5**	**5.6**	**430**	<2.5	NA
42A	11/15/2008	<6.3	**4.2**	<3.1	**3.4**	**61**	<3.1	**9.9**	<130	<3.1	**5.2**	**380**	<3.1	NA
42A	11/24/2009	<5.0	**3.6**	<2.5	<2.5	**49**	**3.9**	**12**	<100	<2.5	**6.1**	**430**	<2.5	NA
42A	12/2/2010	<3.3	**3.0**	<1.7	**2.3**	**47**	<1.7	<6.7	<6.7	<1.7	**2.9**	**250**	<1.7	NA
42A	9/22/2011	<3.3	**2.8**	<1.7	**3.0**	**65**	<1.7	**8.1**	<6.7	<1.7	**2.9**	**350**	<1.7	NA
43A	11/12/2007	<8.3	**5.4**	<4.2	**4.7**	**91**	<4.2	**21**	<170	<4.2	**9.5**	**480**	<4.2	NA
43A	11/7/2008	<6.3	**4.5**	<3.1	**3.9**	**72**	<3.1	**12**	<130	<3.1	**6.8**	**390**	<3.1	NA
43A	11/16/2009	<5.0	**5.6**	<2.5	**4.4**	**88**	**4.5**	**11**	<100	<2.5	**6.7**	**320**	<2.5	NA
43A	11/12/2010	<4.0	**4.7**	<2.0	**5.1**	**65**	<2.0	**11**	<8.0	<2.0	**5.5**	**330**	<2.0	NA
43A	9/29/2011	<5.0	**2.9**	<2.5	**2.7**	**78**	<2.5	<10	<10	<2.5	**2.9**	**310**	<2.5	NA
44A	11/12/2007	<10	<5.0	<5.0	<5.0	**93**	<5.0	**7.8**	<200	<5.0	<5.0	**560**	<5.0	NA

Table 10
VOC Analytical Results
Five Year Summary, January 2007 through December 2011
MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, California

Sample Location	Sample Date	Constituent (concentration in micrograms per liter, ug/L and method is 8260B)												
		Chloroform	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride	1,4-Dioxane
A/A1 Zone														
44A	11/7/2008	<7.1	<3.6	<3.6	<3.6	**40**	<3.6	**7.0**	<140	<3.6	**5.0**	**450**	<3.6	NA
44A	11/16/2009	<6.3	**4.4**	<3.1	**3.4**	**54**	<3.1	<13	<130	<3.1	**5.2**	**360**	<3.1	NA
44A	11/12/2010	<5.0	**4.4**	<2.5	**5.3**	**120**	**2.6**	<10	<10	<2.5	**4.1**	**440**	**5.2**	NA
44A	9/29/2011	<13	<6.3	<6.3	<6.3	**200**	<6.3	<25	<25	<6.3	<6.3	**580**	<6.3	NA
122A	11/13/2007	<1.0	**71**	<0.5	**17**	**120**	**1.7**	**6.6**	<20	<0.5	**190**	**250**	**0.8**	NA
126A	11/17/2010	<2.0	**5.9**	<1.0	**4.2**	**110**	**1.3**	<4.0	<4.0	<1.0	<1.0	**130**	**1.4**	NA
137A	11/13/2007	<100	<50	<50	<50	**9100**	**82**	<50	<2000	<50	<50	**4600**	**83**	NA
137A	11/18/2008	<63	<31	<31	<31	**3800**	**69**	<31	<1300	<31	<31	**2100**	<31	NA
137A	11/17/2009	<33	<17	<17	<17	**4200**	**45**	<67	<670	<17	<17	**1700**	<17	NA
137A	11/12/2010	<100	<50	<50	<50	**7000**	<50	<200	<200	<50	<50	**6200**	<50	NA
137A	10/3/2011	<200	<100	<100	<100	**10000**	**110**	<400	<400	<100	<100	**6900**	<100	NA
138A	11/17/2010	<20	**12**	<10	**23**	**1900**	**20**	<40	<40	<10	<10	**120**	**130**	NA
138A	9/29/2011	<20	<10	<10	**10**	**1200**	**13**	<40	<40	<10	<10	**190**	**32**	NA
AE/RW-9-1	8/8/2007	<33	**500**	<17	**74**	**1000**	<17	**24**	<670	<17	**2600**	**1200**	**71**	NA
AE/RW-9-1	4/22/2008	<8.3	**47**	<4.2	**22**	**430**	**11**	**16**	<170	<4.2	**140**	**650**	**5.1**	NA
AE/RW-9-1	11/7/2008	<13	**54**	<6.3	**24**	**460**	**10**	**19**	<250	<6.3	**360**	**730**	<6.3	NA
AE/RW-9-1	11/17/2009	<2.0	**19**	<1.0	**11**	**400**	**12**	**11**	<40	**4.4**	**36**	**460**	**2.6**	**3.4**
AE/RW-9-1	11/12/2010	<6.3	**71**	<3.1	**26**	**470**	**11**	<13	<13	<3.1	**260**	**490**	**12**	NA
AE/RW-9-1	10/3/2011	<10	**74**	<5.0	**16**	**550**	**9.8**	<20	<20	<5.0	**120**	**540**	**12**	NA
AE/RW-9-2	8/8/2007	<100	<50	<50	<50	**5100**	**59**	**110**	<2000	<50	**84**	**5400**	**220**	NA
AE/RW-9-2	11/16/2007	<50	**58**	<25	**39**	**3700**	**45**	**56**	<1000	<25	**74**	**2500**	**170**	NA
AE/RW-9-2	11/6/2008	<100	<100	<100	<100	**3100**	<100	<100	<100	<100	<100	**4100**	**130**	NA
AE/RW-9-2	11/17/2009	<4.0	**58**	<2.0	**27**	**2700**	**35**	**67**	<80	<2.0	**42**	**3000**	**95**	**3.2**
AE/RW-9-2	11/12/2010	<100	**130**	<50	**78**	**5400**	<50	**210**	<200	<50	**74**	**7200**	**260**	NA
AE/RW-9-2	10/3/2011	<170	**110**	<83	<83	**4400**	<83	<330	<330	<83	<83	**8300**	**170**	NA
RW-20A	8/8/2007	<13	**23**	<6.3	**18**	**860**	**11**	**9.1**	<250	<6.3	**34**	**790**	**15**	NA
RW-20A	11/16/2007	<6.3	**83**	<3.1	**69**	**480**	**8.6**	**7.1**	<130	**8.5**	**420**	**440**	<3.1	NA
RW-20A	11/15/2008	<5.0	**21**	<2.5	**18**	**590**	**8.4**	**6.7**	<100	**3.1**	**48**	**360**	**4.2**	NA

Table 10
VOC Analytical Results
Five Year Summary, January 2007 through December 2011
MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, California

Sample Location	Sample Date	Constituent (concentration in micrograms per liter, ug/L and method is 8260B)												
		Chloroform	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride	1,4-Dioxane
A/A1 Zone														
RW-20A	11/13/2009	<1.0	**13**	<0.5	**14**	**680**	**9.7**	**8.5**	<20	**2.4**	**6.5**	**840**	**5.1**	**3.9**
RW-20A	11/12/2010	<14	**13**	<7.1	**17**	**730**	**15**	<29	<29	<7.1	**13**	**910**	**7.6**	NA
RW-20A	10/3/2011	<14	**11**	<7.1	**9.0**	**560**	**20**	<29	<29	<7.1	**9.5**	**770**	<7.1	NA
RW-21A	8/8/2007	<6.3	**8.7**	<3.1	**7.4**	**250**	**6.9**	**12**	<130	**6.3**	**8.5**	**340**	<3.1	NA
RW-21A	11/16/2007	<1.4	**8.1**	<0.7	**5.0**	**64**	**4.8**	**52**	<29	**3.5**	**4.9**	**71**	**1.1**	NA
RW-21A	11/17/2008	<1.0	**7.8**	<0.5	**5.8**	**68**	**8.1**	**49**	<20	<0.5	**1.7**	**58**	**1.3**	NA
RW-21A D	11/17/2008	<1.0	**8.0**	<0.5	**5.5**	**68**	**8.7**	**50**	<20	<0.5	**1.6**	**60**	**1.3**	NA
RW-21A	11/13/2009	<1.0	**4.9**	<0.5	**4.2**	**68**	**0.7**	**50**	<20	<0.5	**0.5**	**79**	**0.8**	**2.1**
RW-21A D	11/13/2009	<1.0	**4.9**	<0.5	**3.9**	**65**	**0.6**	**50**	<20	<0.5	<0.5	**79**	**0.9**	NA
RW-21A D	11/12/2010	<4.0	**8.7**	<2.0	**9.1**	**300**	**11**	**26**	<8.0	**2.5**	**2.6**	**310**	**2.9**	NA
RW-21A	11/12/2010	<4.0	**8.9**	<2.0	**9.2**	**310**	**11**	**26**	<8.0	**2.7**	**2.5**	**310**	**2.7**	NA
RW-21A	10/3/2011	<4.0	**5.8**	<2.0	**4.9**	**240**	**8.0**	**11**	<8.0	**4.2**	**2.4**	**250**	<2.0	NA

Notes:
1,1-DCA = 1,1-Dichloroethane
1,2-DCA = 1,2-Dichloroethane
1,1-DCE = 1,2-Dichloroethene
cis-1,2-DCE = cis-1,2-Dichloroethene
trans-1,2-DCE = trans-1,2-Dichloroethene
PCE = Tetrachloroethene
1,1,1-TCA = 1,1,1-Trichloroethane
TCE = Trichloroethene
< indicates analyte not detected above the reported detection limit
D indicates duplicate sample
NA indicates the sample wasn't analyzed for the given analyte

Table 11
Mann-Kendall Statistics Concentration Trends Summary
MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, California

Well Name	TCE	cis-1,2-DCE	Vinyl Chloride
A/A1 Zone			
35A	N/A	N/A	N/A
36A	S	NT	NT
37A	D	D	D
40A	PD	I	I
41A	N/A	N/A	N/A
42A	D	I	NT
43A	PD	I	NT
44A	NT	NT	NT
122A	N/A	N/A	N/A
126A	N/A	N/A	N/A
137A	NT	S	NT
138A	N/A	N/A	N/A
AE/RW-9-1	PD	S	NT
AE/RW-9-2	NT	S	S
RW-20A	S	S	S
RW-21A	S	S	S
B1/A2 Zone			
69B1	N/A	N/A	N/A

Notes:

TCE = Trichloroethene

cis-1,2-DCE = cis-1,2-Dichloroethene

PI =Probably Increasing

I =Increasing

N/A = Not applicable due to insufficient data (< 4 sampling events)

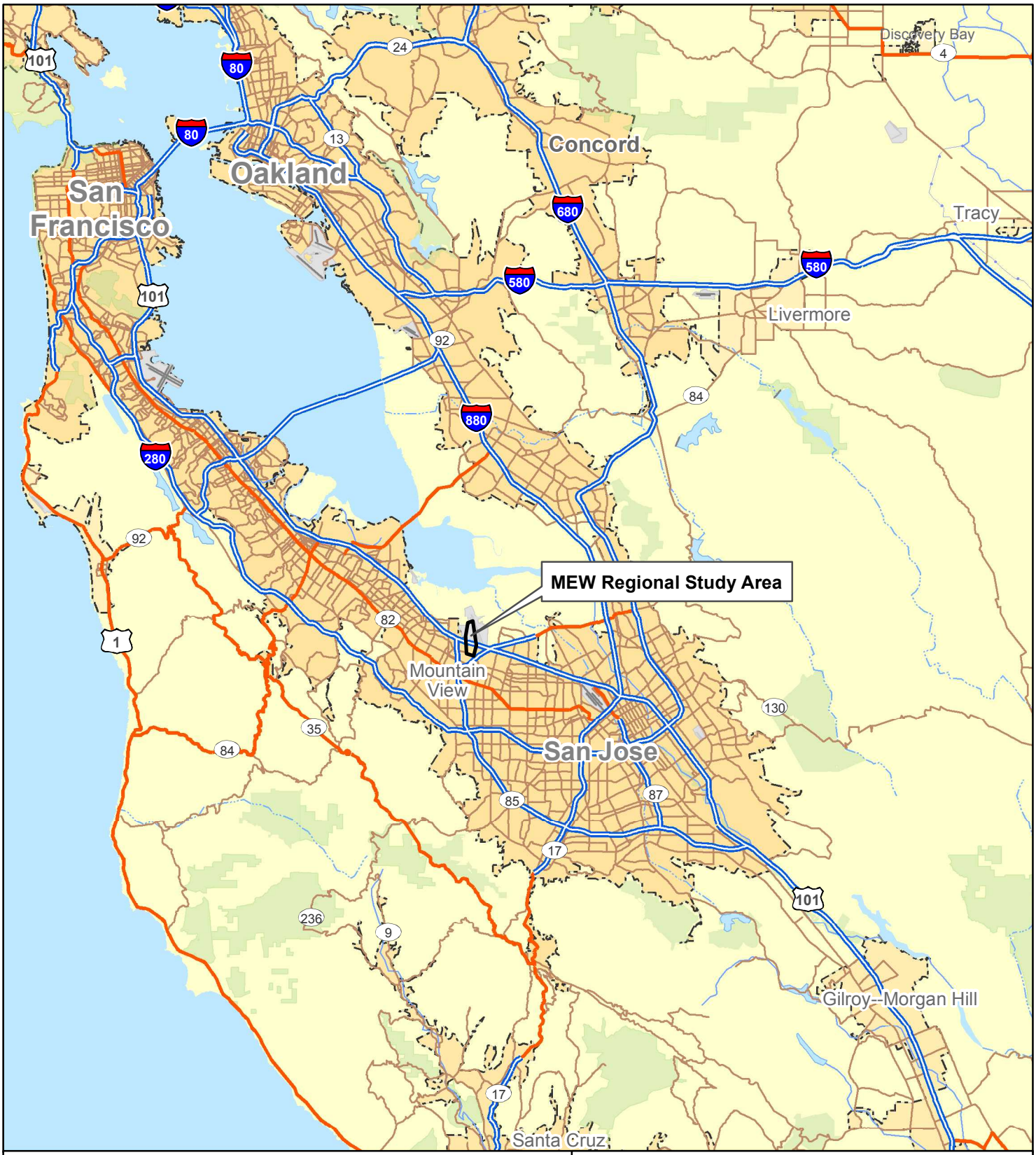
S = Stable

PD = Probably Decreasing

D = Decreasing

NT = No Trend

FIGURES



N

0 10 Miles

Site Location Map

MEW Area, Mountain View, California

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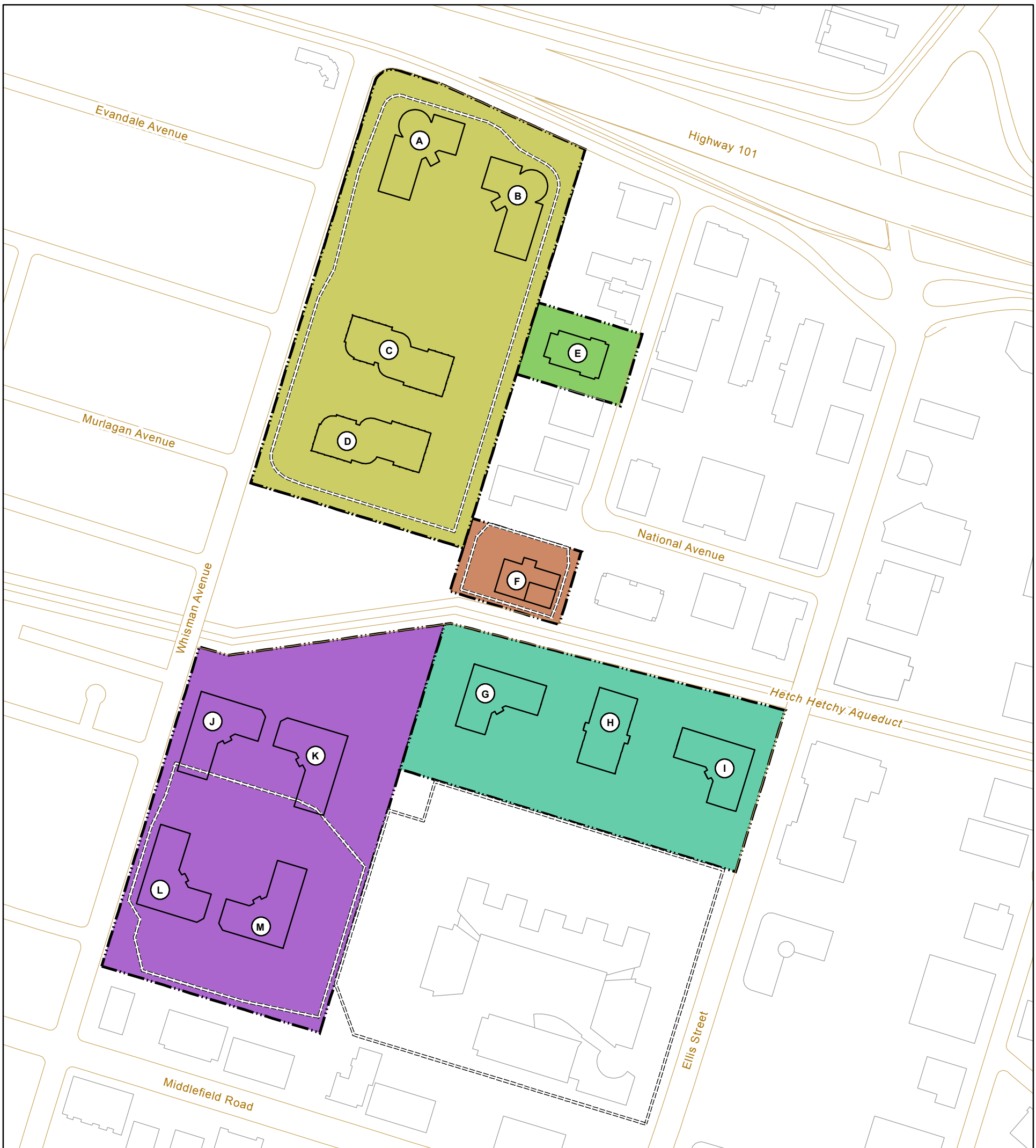
Oakland	April 2012

Figure 1

P:\GIS\MEW\Project\Fairchild\Building09\2011_AR\Fig01_Loc_Map.mxd



Legend

Former Fairchild Facility

- Buildings 1 - 4
- Building 18
- Building 9
- Building 20 and 20A
- Buildings 13, 19, and 23
- Slurry Wall
- Building
- Road

FAIRCHILD BUILDINGS 1 - 4
A. 313 Fairchild Drive
B. 323 Fairchild Drive
C. 545 North Whisman Road
D. 515 North Whisman Road

FAIRCHILD BUILDING 18
E. 644 National Avenue

FAIRCHILD BUILDING 9
F. 401 National Avenue

FAIRCHILD BUILDING 20 AND 20A
G. 468 Ellis Street
H. 466 Ellis Street
I. 464 Ellis Street

FAIRCHILD BUILDINGS 13, 19, AND 23
J. 399 North Whisman Road
K. 389 North Whisman Road
L. 369 North Whisman Road
M. 379 North Whisman Road

N

300 150 0 300 Feet

Current Building Configurations
Former Fairchild Facilities

MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, California

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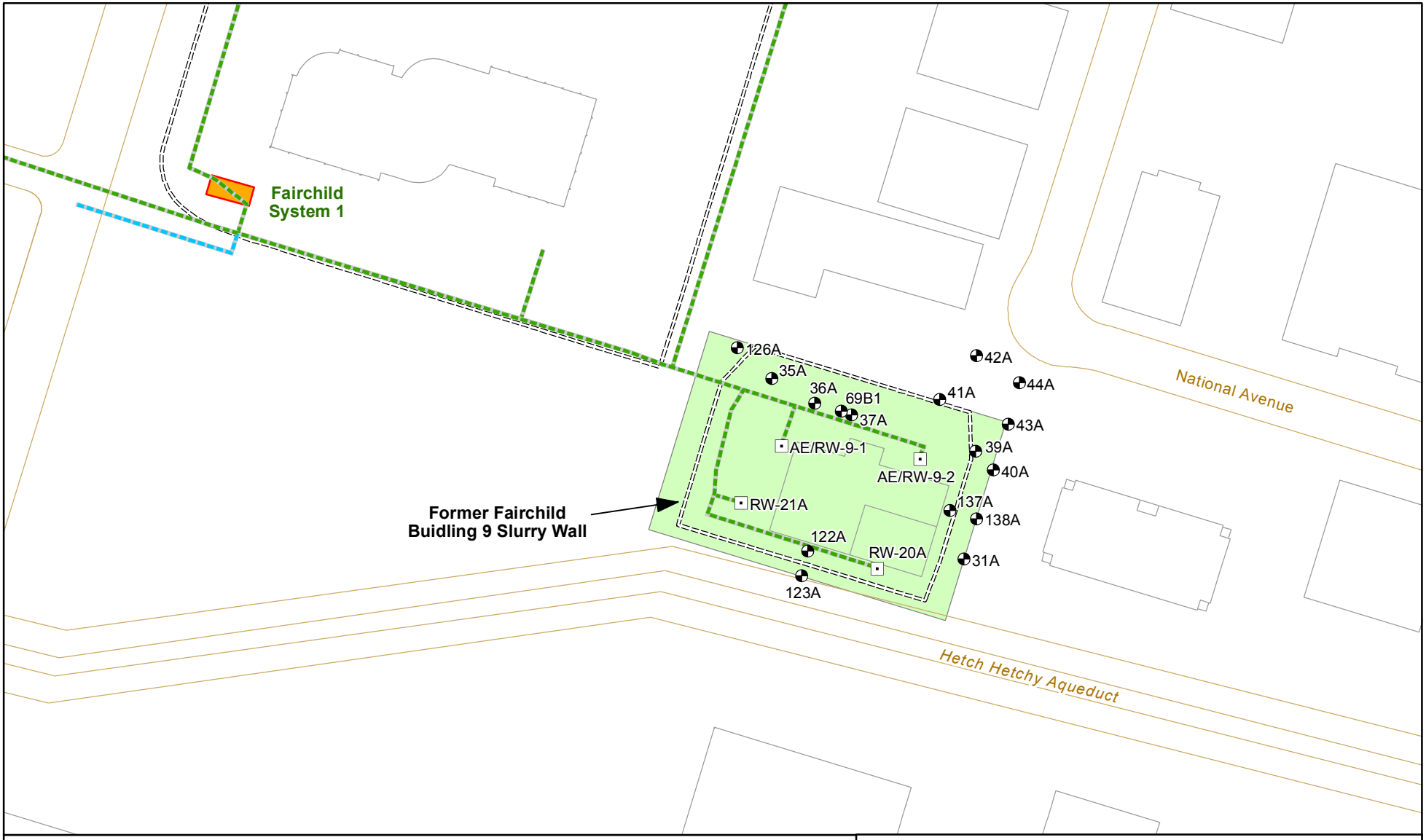
Figure **2**

P:\GIS\MEW\Project\Fairchild\Building09\2011_AR\Fig02_FormerFacilities.mxd



Legend

Extraction and Monitoring Wells

- Monitoring Well
- Recovery Well, On
- Recovery Well, Off
- Former Fairchild Building 9 Site - 401 National Avenue
- Fairchild Groundwater Treatment System 1
- Treatment System Pipeline
- Treatment-System Discharge Pipeline
- Slurry Wall
- Building
- Road

N

0 150 Feet

Site Map and Well Network

MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, California

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Figure 3

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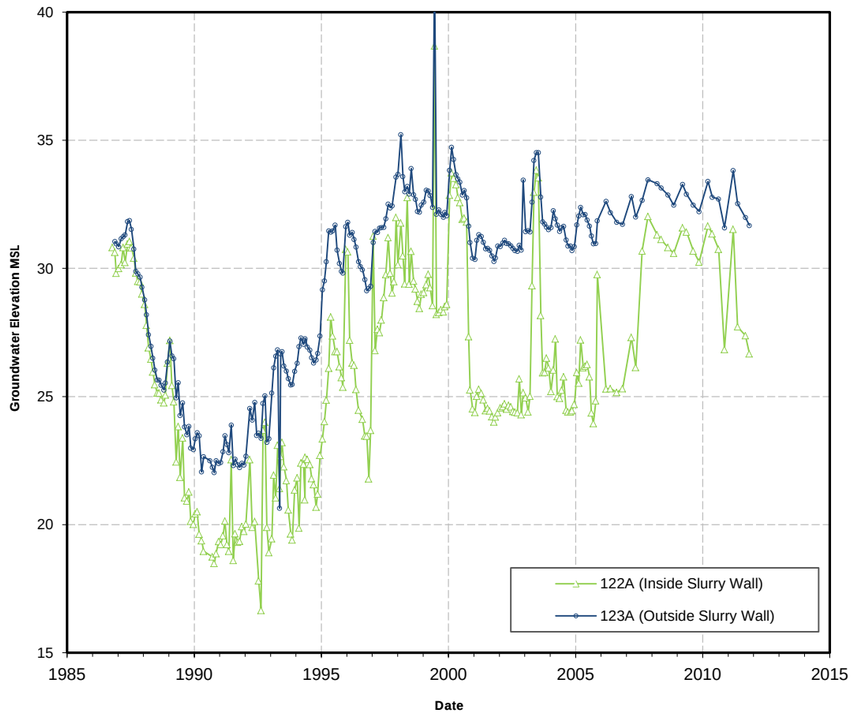
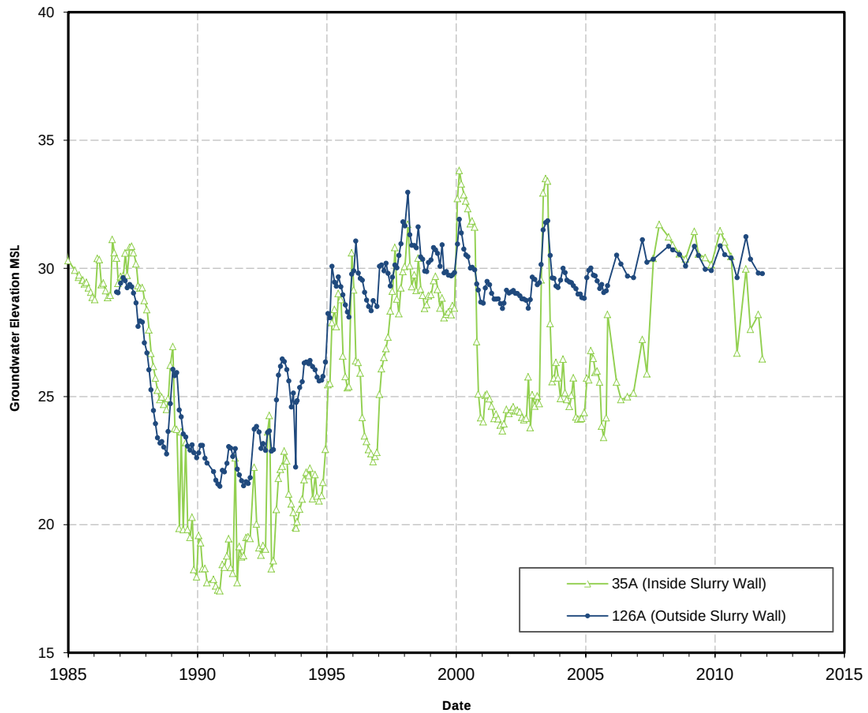
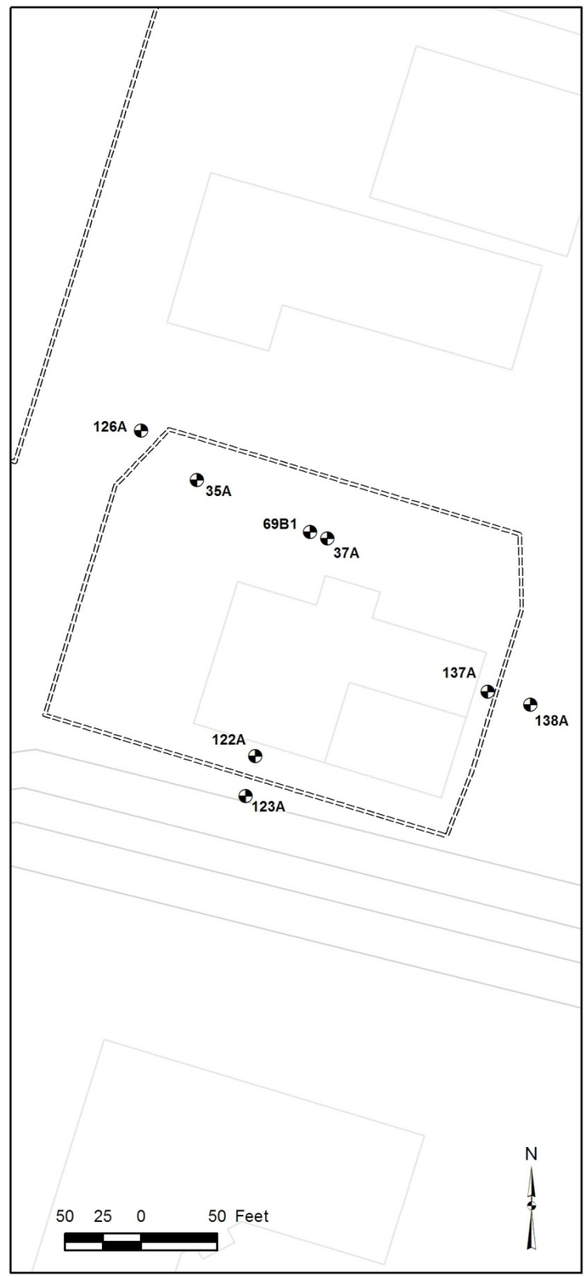
123A - 122A Upgradient Well Pair

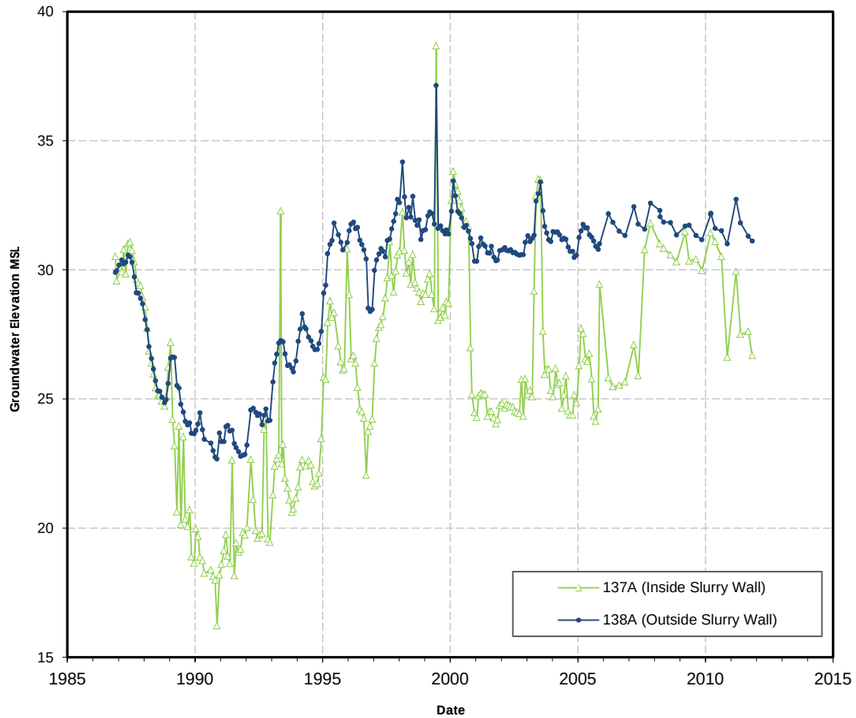


126A - 35A Downgradient Well Pair

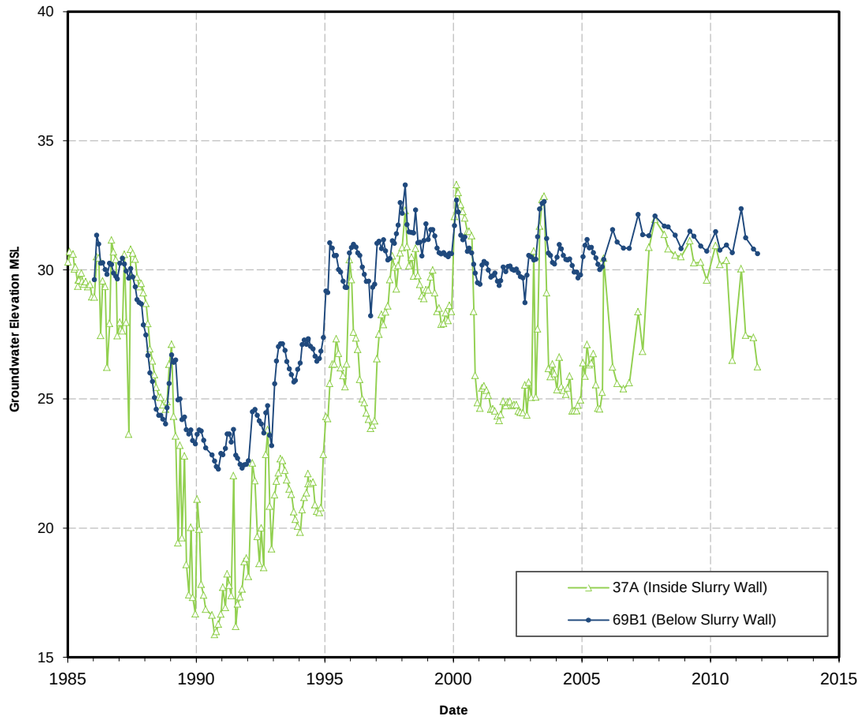




138A - 137A Eastern Crossgradient Well Pair



69B1 - 37A Vertical Gradient Well Pair



Hydrographs - Groundwater Elevation Measurements
Slurry Wall Well Pairs

MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, California

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Figure **4**

P:\GIS\MEW\Excel\Fairchild\Building09\Fig04_Hydrographs.xlsx


National Avenue
Hetch Hetchy Aqueduct
126A
31.24
35A
29.98
36A
30.27
37A
30.04
41A
31.33
42A
31.44
44A
31.73
43A
31.93
39A
31.95
40A
32.17
137A
29.93
138A
32.73
31A
32.86
122A
31.53
123A
33.82
AE/RW-9-1 (4.13)
29.60
AE/RW-9-2 (2.35)
27.69
RW-21A (6.47)
29.17
RW-20A (4.67)
28.03
29
30
31
32
33
34
35
36
37
38
Legend
Monitoring Well
Recovery Well On
Recovery Well Off
Groundwater Elevation: 1 ft Contours
Groundwater Elevation: 5 ft Contours
Closely Spaced Groundwater Contour
Estimated Capture Zone
Building
Road
Slurry Wall
Site Boundary
RW-20A (4.67) Well ID (Flow Rate)
28.03 Groundwater Elevation (feet above mean sea level)
Note:
Wells not associated with the Former Fairchild Building 9 Site are shown in gray.
N
80 40 0 80 Feet
A/A1 Zone Groundwater Contours and Estimated Capture Zones
24 March 2011
MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, California
Geosyntec consultants
Oakland
April 2012
Figure
5
\\Oakland-01\Data\GIS\MEW\Project\Fairchild\Building09\2011_AR\Fig05_GW_AA1_Mar2011.mxd | 4/11/2012 9:44:16 AM

Legend

- Monitoring Well
- Recovery Well On
- Recovery Well Off
- Groundwater Elevation: 1 ft Contours
- Groundwater Elevation: 5 ft Contours
- Closely Spaced Groundwater Contour
- Estimated Capture Zone
- Building
- Road
- Slurry Wall
- Site Boundary

RW-20A (4.4) Well ID (Flow Rate)
25.14 Groundwater Elevation (feet above mean sea level)

Note:
Wells not associated with the Former Fairchild Building 9 Site are shown in gray.

N

80 40 0 80 Feet

A/A1 Zone Groundwater Contours and Estimated Capture Zones 15 September 2011

MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, California

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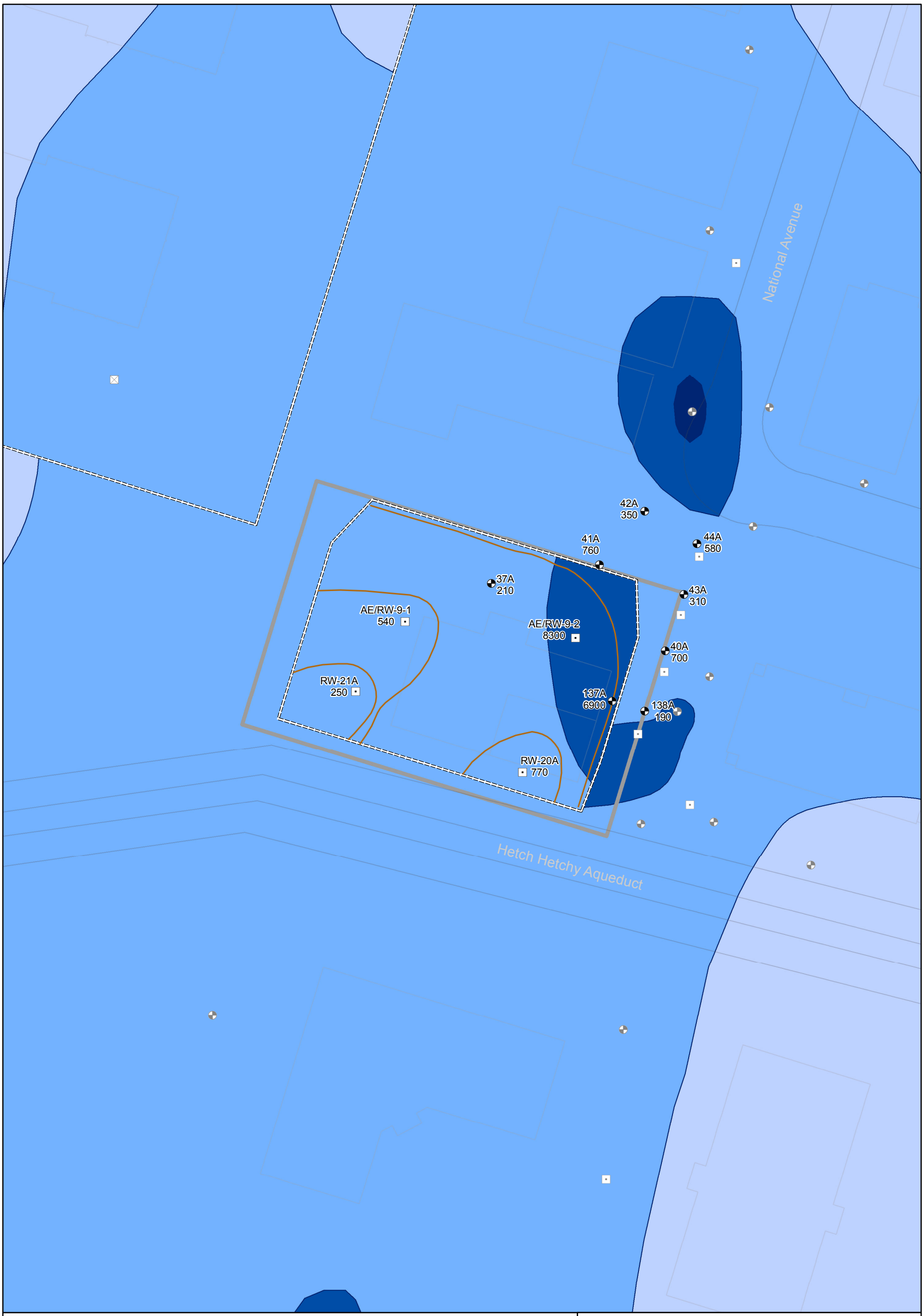
Figure 6

\\Oakland-01\Data\GIS\MEW\Project\Fairchild\Building09\2011_AR\Fig06_GW_AA1_Sept2011.mxd | 4/11/2012 9:44:25 AM



Legend

- Monitoring Well
- Recovery Well On
- Recovery Well Off

TCE Concentration

- 5 - 100 ug/L
- 100 - 1,000 ug/L
- 1,000 - 10,000 ug/L
- Greater than 10,000 ug/L

- Estimated Capture Zone
- ==== Slurry Wall
- Building
- Road
- Site Boundary

N

80 40 0 80 Feet

Notes:
TCE = Trichloroethene
ug/L = micrograms per liter
Figure shows only those wells sampled and analyzed for TCE in 2011.
Wells not associated with the Former Fairchild Building 9 Site are shown in gray.

A/A1 Zone TCE Concentrations and Estimated Capture Zones September/October 2011

MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, California

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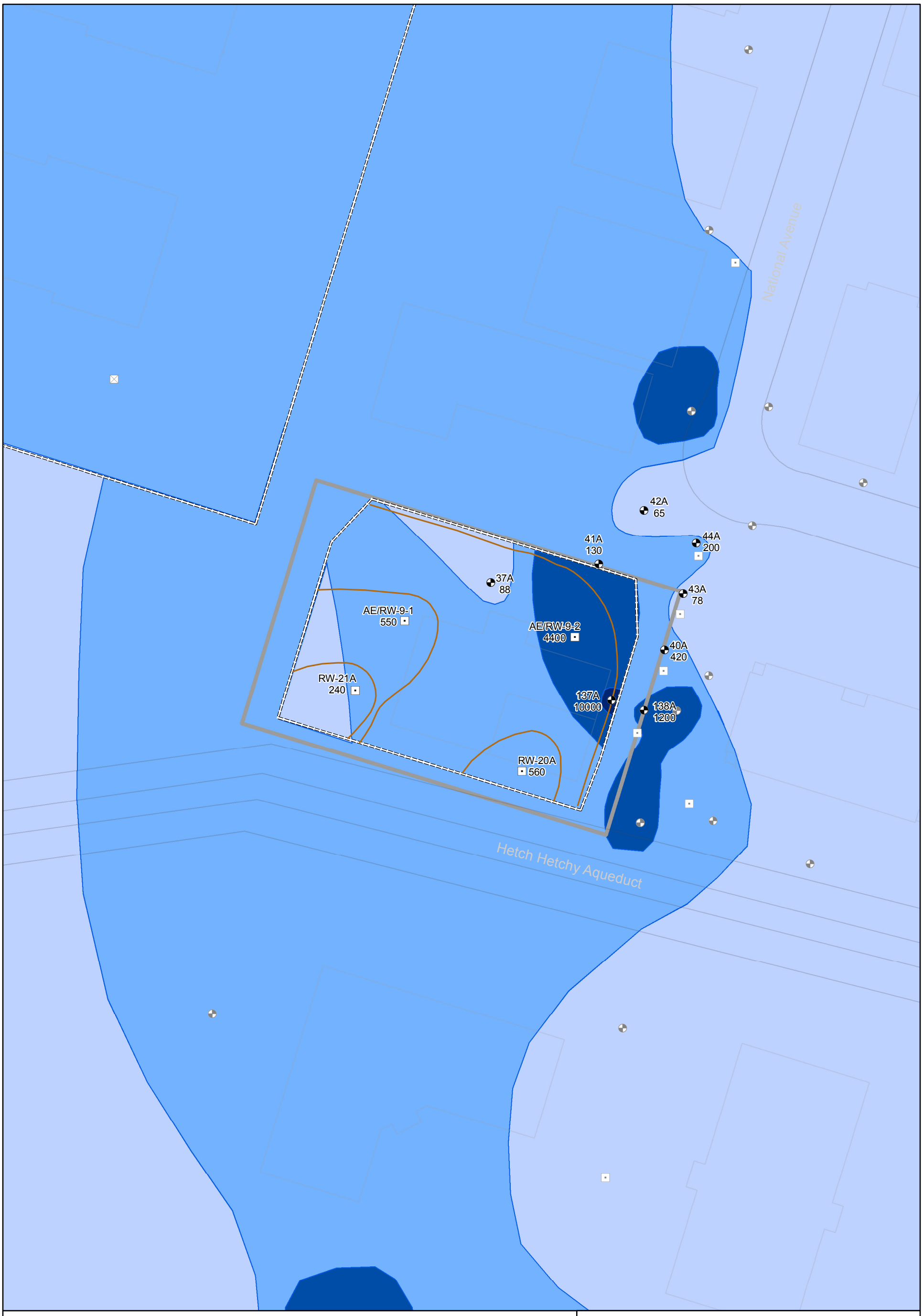
Figure 7

\\Oakland-01\Data\GIS\MEW\Project\Fairchild\Building09\2011_AR\Fig07_TCE_AA1_Sept2011_CZ.mxd | 4/11/2012 9:44:35 AM



Legend

- Monitoring Well
- Recovery Well On
- Recovery Well Off

cDCE Concentration

- 5 - 100 ug/L
- 100 - 1,000 ug/L
- 1,000 - 10,000 ug/L
- Greater than 10,000 ug/L

- Estimated Capture Zone
- ==== Slurry Wall
- Building
- Road
- Site Boundary

N

80 40 0 80 Feet

Notes:
cDCE = cis-1,2-Dichloroethene
ug/L = micrograms per liter
Figure shows only those wells sampled and analyzed for cDCE in 2011.
Wells not associated with the Former Fairchild Building 9 Site are shown in gray.

A/A1 Zone cDCE Concentrations and Estimated Capture Zones September/October 2011

MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, California

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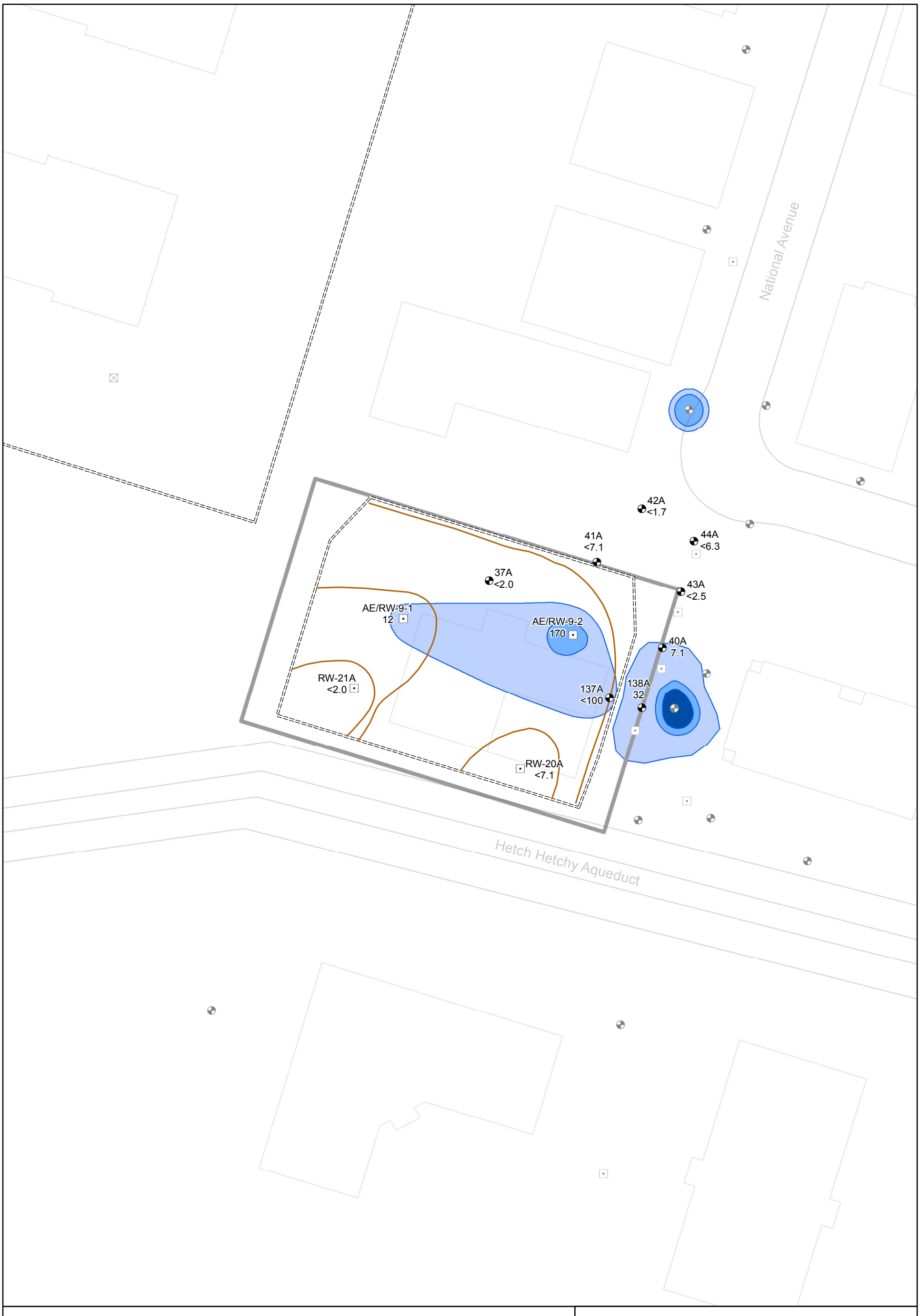
Figure 8

\\Oakland-01\Data\GIS\MEW\Project\Fairchild\Building09\2011_AR\Fig08_DCE_AA1_Sept2011_CZ.mxd | 4/11/2012 9:44:53 AM



Legend

- Monitoring Well
- Recovery Well On
- Recovery Well Off

VC Concentration

- 5 - 100 ug/L
- 100 - 1,000 ug/L
- 1,000 - 10,000 ug/L
- Greater than 10,000 ug/L

- Estimated Capture Zone
- ==== Slurry Wall
- Building
- Road
- Site Boundary

N

80 40 0 80 Feet

Notes:
VC = Vinyl Chloride
ug/L = micrograms per liter
Figure shows only those wells sampled and analyzed for VC in 2011.
Wells not associated with the Former Fairchild Building 9 Site are shown in gray.

A/A1 Zone VC Concentrations and Estimated Capture Zones September/October 2011

MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, California

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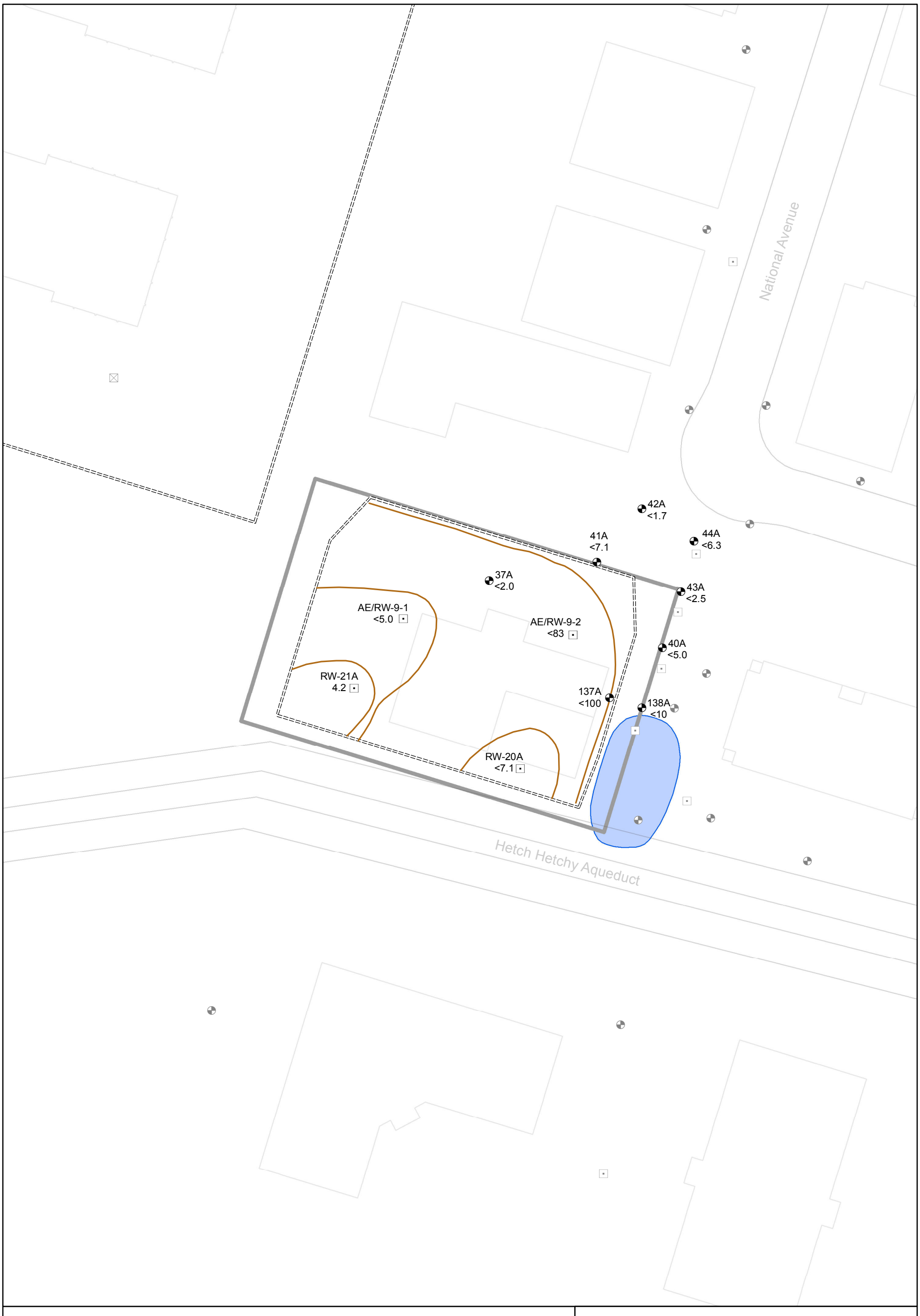
Oakland | April 2012

Figure 9

\\Oakland-01\Data\GIS\MEW\Project\Fairchild\Building09\2011_AR\Fig09_VC_AA1_Sept2011_CZ.mxd | 4/11/2012 9:45:04 AM



Legend

- Monitoring Well
- Recovery Well On
- Recovery Well Off

PCE Concentration

- 5 - 100 ug/L
- 100 - 1,000 ug/L
- 1,000 - 10,000 ug/L
- Greater than 10,000 ug/L

- Estimated Capture Zone
- ==== Slurry Wall
- Building
- Road
- Site Boundary

N

80 40 0 80 Feet

Notes:
TCE = Tetrachloroethene
ug/L = micrograms per liter
Figure shows only those wells sampled and analyzed for PCE in 2011.
Wells not associated with the Former Fairchild Building 9 Site are shown in gray.

A/A1 Zone PCE Concentrations and Estimated Capture Zones September/October 2011

MEW Former Fairchild Building 9 Groundwater Remediation Program
Mountain View, California

Geosyntec consultants

Oakland | April 2012

Figure 10

\\Oakland-01\Data\GIS\MEW\Project\Fairchild\Building09\2011_AR\Fig10_PCE_AA1_Sept2011_CZ.mxd | 4/11/2012 9:45:17 AM

APPENDIX A

2011 Annual Report Remedy Performance Checklist

2011 Annual Report Remedy Performance Checklist

I. GENERAL SITE INFORMATION

Facility Name: Former Fairchild Facilities, Middlefield-Ellis-Whisman Study Area (MEW Site)

Facility Address, City, State: 515/545 North Whisman Road and 313 Fairchild Drive (former Bldgs. 1-4)
369 and 441 North Whisman Road (former Bldgs. 13 and 19 and 23)
401 National Avenue (former Bldg. 9)
644 National Avenue (former Bldg. 18)
464 Ellis Street (former Bldg. 20 and 20A)

Checklist completion date: 23 march 2012

EPA Site ID: System-1: CAR000164285
System-3: CAD095989778
System-19: CAR000164228

Site Lead: ☐ Fund ☑ PRP ☐ State ☐ State Enforcement ☐ Federal Facility ☐ Other: EPA Region IX

Site Remedy Components (Include Other Reference Documents for More Information, as appropriate):

1. Three slurry wall enclosures around former Buildings 1-4, Building 9, and Building 19. The slurry walls extend to a depth of about 40 feet below ground surface and are keyed a minimum of two feet into the A/B1 aquitard.
2. Extraction Systems as described below:

Buildings 1-4 – 20 recovery wells: three Regional Groundwater Remediation Program (RGRP) wells and 17 Source Control Recovery Wells (SCRWs)

Buildings 13, 19, 23 – 15 recovery wells: one RGRP well and 14 SCRWs

Building 9 – Four SCRWs

Building 18 – One SCRW and one basement dewatering sump

3. Treatment Systems as described below:

System 1 (treats water from Buildings 1-4, Building 9, and Building 18)

- Three 5,000-pound GAC vessels in series, treatment pad, controls, double-contained groundwater conveyance piping, vaults, electrical distribution, controls and other appurtenances.

System 3 (treats water from Buildings 1-4)

- Three 5,000-pound GAC vessels in series, treatment pad, controls, double-contained groundwater conveyance piping, vaults, electrical distribution, controls and other appurtenances.

System 19 (treats water from Buildings 13, 19, and 23)

- Three 5,000-pound GAC vessels in series, treatment pad, controls, double-contained groundwater conveyance piping, vaults, electrical distribution, controls and other appurtenances.

II. CONTACTS

List important personnel associated with the Site: Name, title, phone number, e-mail address:

	Name/Title	Phone	E-mail
RP/Facility Representative	Virgilio Cocianni Schlumberger Technology Corporation	281-285-4747	cocianni-v@slb.com
RP Consultant	John Gallinatti Geosyntec Consultants	510-285-2750	jgallinatti@geosyntec.com
RP Consultant	Alok Kolekar Weiss Associates	650-968-7000	adk@weiss.com

2011 Annual Report Remedy Performance Checklist

III. O&M COSTS (OPTIONAL)

What is your annual O&M cost total for the reporting year?_____
Breakout your annual O&M cost total into the following categories (use either dollars or %):

- Analytical (e.g., lab costs): _____
- Labor (e.g., site maintenance, sampling): _____
- Materials (e.g., treatment chemicals): _____
- Oversight (e.g., project management): _____
- Utilities (e.g., electric, gas, phone, water): _____
- Reporting (e.g., NPDES, progress): _____
- Other (e.g., capital improvements): _____

Describe unanticipated/unusually high or low O&M costs (go to section [fill in] to recommend optimization methods):

IV. ON-SITE DOCUMENTS AND RECORDS (Check all that apply)

☑ O&M Manual ☑ O&M Maintenance Logs ☐ O&M As-built drawings ☑ O&M reports
☑ Daily access/Security logs
☑ Site-Specific Health & Safety Plan ☑ Contingency/Emergency Response Plan
☑O&M/OSHA Training Records ☑ Settlement Monument Records
☐ Gas Generation Records ☑ Groundwater monitoring records ☐ Leachate extraction records
☑ Discharge Compliance Records
☐Air discharge permit ☑ Effluent discharge permit ☑ Waste disposal, POTW Permit

Are these documents currently readily available? ☑ Yes ☐ No If no, where are records kept?

Documents and records are available at treatment systems and/or on-site office located at 453 Ravendale Drive, Suite C, Mountain View, CA.

V. INSTITUTIONAL CONTROLS (as applicable)

List institutional controls called for (and from what enforcement document): Signs and other security measures are in place at extraction and treatment points.

Status of their implementation: Posted signage (Health & Safety and emergency contact information).

- Signs and other security measures are in place at extraction and treatment points.
- Groundwater production wells within plume area are prohibited. Administered by Santa Clara Valley Water District.
- Properties formerly owned by Fairchild have deed restrictions that require notification prior to subsurface construction and provide for access for remedial actions.
- Public notifications regarding remediation activities.

Where are the ICs documented and/or reported?

ICs are being properly implemented and enforced? ☑ Yes ☐ No, elaborate below
ICs are adequate for site protection? ☑ Yes ☐ No, elaborate below

Additional remarks regarding ICs:

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VI. SIGNIFICANT SITE EVENTS
Check all Significant Site events Since the Last Checklist that Affects or May Affect Remedy Performance

☐ Community Issues
☐ Vandalism
☐ Maintenance Issues
☐Other:

Please elaborate on Significant Site Events:

VII. REDEVELOPMENT

Is redevelopment on property planned? ☑ Yes ☐ No

If yes, what is planned? Please describe below.

Is redevelopment plan complete Yes, date:_____; ☑ No ? ☐ Not Applicable

Redevelopment proposal in progress? ☑ Yes, elaborate below
☐ No; If no, is a proposal anticipated? ☐ Yes ☐ No

☑ Is the redevelopment proposal compatible with remedy performance? ☑ Yes ☐ No

Elaborate on redevelopment proposal and how it affects remedy performance:

644 National Avenue property (former Building 18) has been bought by Carr America National Avenue LLC. The building will be removed and replaced by a multi-parcel development. Construction is anticipated to begin May/June 2012.

369 and 441 North Whisman Road (former Bldgs. 13 and 19 and 23), owned by Keenan, Lovewell Ventures, is developing plans for additional buildings on the site.

The existing treatment systems and their components (conveyance piping, extraction wells, and monitoring wells) will be maintained or modified as appropriate to accommodate redevelopment.

2011 Annual Report Remedy Performance Checklist

VIII. GROUNDWATER REMEDY (reference isoconcentration, capture zone maps, trend analysis, and other documentation to support analysis)

Groundwater Quality Data

List the types of data that are available:	What is the source report?
Potentiometric surface maps, hydrographs Capture zone maps, isoconcentration maps VOC time series plots and trend analysis Laboratory Analytical Results and Reports	2011 Annual Fairchild Building Reports (Geosyntec, 2012) and the 2011 Annual Regional Report (Geosyntec, 2012)

☑ Contaminant trend(s) tracked during O&M (i.e., temporal analysis of groundwater contaminant trends).
☑ Groundwater data tracked with software for temporal analyses.
☐ Reviewed MNA parameters to ensure health of substrate (e.g., DO, pH, temperature), if appropriate?

Groundwater Pump & Treat Extraction Well and Treatment System Data

List the types of data that are available:	What is the source report?
O&M logs System Influent & Effluent water samples VOC mass and groundwater removal graphs	NPDES Self-Monitoring Reports 2011 Annual Fairchild Building Reports

☑ The system is functioning adequately.
☐ The system has been shut down for significant periods of time in the past year. Please elaborate below.

Discharge Data

List the types of data that are available:	What is the source report?
System performance data such as average flow rates, totalized flow, influent/effluent chemical data, GAC removal efficiencies	NPDES Self-Monitoring Reports

☑ The system is in compliance with discharge permits.

Slurry Wall Data

List the types of data that are available:	What is the source report?
Water level elevations in select well pairs Analysis of inward and upward hydraulic gradients	2011 Annual Fairchild Reports (Geosyntec, 2012)

Is slurry wall operating as designed? ☑ Yes ☐ No

If not, what is being done to correct the situation?

The slurry walls are operating as designed and are effective at impeding flow and preventing VOCs inside the wall from migrating downgradient. However, the ROD specifies that the slurry walls, "maintain inward and upward gradients." Historically, this has not been observed in all well pairs, even under maximum historical pumping scenarios.

The chemical concentration data and potentiometric surface contours from 2011 continue to demonstrate that the slurry walls are an effective means of impeding VOC migration outside of the slurry walls.

Elaborate on technical data and/or other comments

2011 Annual Report Remedy Performance Checklist

IX. AIR MONITORING/VAPOR INTRUSION PATHWAY EVALUATION (Include in Annual Progress Report and reference document)

Walk-throughs/Surveys: The EPA issued a ROD amendment on 16 August 2010 to address vapor intrusion. The MEW parties continued to work with EPA and local entities to implement the ROD amendment during 2011. In accordance with the Statement of Work for the Vapor Intrusion ROD Amendment, an annual report summarizing the status of the vapor intrusion remedy will be submitted under separate cover (Haley and Aldrich, 2012).

Summary of Results: See the Annual Vapor Intrusion Progress Report (Haley and Aldrich, 2012).

Problems Encountered: See the Annual Vapor Intrusion Progress Report (Haley and Aldrich, 2012).

Recommendations/Next Steps: See the Annual Vapor Intrusion Progress Report (Haley and Aldrich, 2012).

Schedule: See the Annual Vapor Intrusion Progress Report (Haley and Aldrich, 2012).

X. REMEDY PERFORMANCE ASSESSMENT

A. Groundwater Remedies

What are the remedial goals for groundwater? ☑ Plume containment (prevent plume migration); ☑ Plume restoration (attain ROD-specific cleanup levels in aquifer); ☐ Other goals, please explain:

The groundwater remedy is hydraulic remediation by extraction and treatment. The Treatment System is reliable and consistent in its operation and mass removal ability, with greater than 95% up-time. The capture zones from the extraction wells provide sufficient overlap to achieve hydraulic control over the plume based on flow net evaluation and converging lines of evidence, including stable lateral extent of TCE exceeding 5 µg/L. Remediation is also demonstrated because concentrations within the TCE plume have continued to decrease in all zones. Groundwater with TCE concentrations exceeding 5 µg/L does not discharge to surface water.

Have you done a trend analysis? ☑ Yes ☐ No; If Yes, what does it show?

(Is it inconclusive due to inadequate data? Are the concentrations increasing or decreasing?) Explain and provide source document reference

Concentrations within TCE plume have been evaluated using Mann-Kendall analysis and reviewing VOC concentrations over time. The analyses show that TCE concentrations continued to decrease, remain stable, or show no trend in all zones, while the lateral extent of TCE exceeding 5 µg/L has been stable. See Annual Reports for trends in monitoring wells (Geosyntec 2012).

If plume containment is a remedial goal, check all that apply:
☑ Plume migration is under control (explain basis below)
☐ Plume migration is not under control (explain basis below)
☐ Insufficient data to determine plume stability (explain below)
(Include attachments that substantiate your answers, e.g., reference plume, trend analysis, and capture zone maps in source document)

Elaborate on basis for determining that plume containment goal is being met or not being met**:**

Plume containment goal is met, slurry walls provide physical containment of sources on 369 N. Whisman Road, 401 National Avenue, 515/545 N. Whisman Road and 313 Fairchild Drive.

Groundwater elevation and chemical monitoring results from 2011 demonstrate that the Fairchild extraction wells continue to achieve adequate horizontal and vertical capture based on converging lines of evidence, including graphical flow net analysis and chemical concentration trends.

If plume restoration is a cleanup objective, check all that apply:
☑ Progress is being made toward reaching cleanup levels (explain basis below)
☐ Progress is not being made toward reaching cleanup levels (explain basis below)
☐ Insufficient data to determine progress toward restoration goal (explain below)

2011 Annual Report Remedy Performance Checklist

Elaborate on basis for determining progress or lack of progress toward restoration goal:

The objective is to remediate and control the plume. VOC concentrations in groundwater continue to remain well below historical maximums, and generally show long-term decreasing trends. The groundwater extraction, treatment, and containment systems are functioning as intended and meet the Remedial Action Objectives for the Site.

B. Vertical Migration

Have you done an assessment of vertical gradients? ☑ Yes ☐ No; If Yes, what does it show? (Is it inconclusive due to inadequate data?

Are the concentrations increasing or decreasing? Explain and provide source document reference

In general, vertical gradients across the B and deeper water-bearing zones are upward. Upward vertical gradients are typical from the B- to A-zone, but downward vertical gradients are observed at a few locations.

Source document reference: 2011 Annual Fairchild Building Reports (Geosyntec, 2012)
2011 Annual Regional Report (Geosyntec, 2012)
2008 Optimization Evaluation (Geosyntec, 2008)

C. Source Control Remedies

What are the remedial goals for source control?

Capture of former source areas is the goal for source control. Cleanup standards are Maximum Contaminant Level (MCLs) in upper groundwater zones; the TCE MCL is 5 µg/L.

Elaborate on basis for determining progress or lack of progress toward these goals:

Capture zone analysis in the 2011 Fairchild Building and RGRP Annual Progress Reports indicate containment of target capture areas.

XI. PROJECTIONS

Administrative Issues
Dates of next monitoring and sampling events for next annual reporting period: September/October 2012

A. Groundwater Remedies - Projections for the upcoming year and long-term (Check all that apply)

Remedy Projections for the upcoming year (2012/2013)
☑ No significant changes projected.
☐ Groundwater remedy will be converted to monitored natural attenuation. Target date:
☐ Groundwater Pump & Treat will be shut down. Target date:
☐ Groundwater cleanup standards to be modified. Target date:
☐ PRP will request remedy modification. Target date of request:
☐ Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☐ Change in the number and/or types of analytes being analyzed. ☐ Increasing or ☐ decreasing? Target date:
☐ Change in groundwater extraction system. Expansion or minimization (i.e., number of extraction wells and/or pumping rate)? Target date:
☐ Modification on groundwater treatment? Elaborate below. Target date:
☐ Change in discharge location. Target date:
☐ Other modification(s) anticipated: Groundwater Feasibility Study Elaborate below. Target date: 2012

Elaborate on Remedy Projections: The EPA is developing a Groundwater Feasibility Study for MEW.

2011 Annual Report Remedy Performance Checklist

Remedy Projections for **the long-term** (Check all that apply)
☐ No significant changes projected.
☐ Groundwater remedy will be converted to monitored natural attenuation. Target date:
☐ Groundwater Pump & Treat will be shut down. Target date:
☐ Groundwater cleanup standards to be modified. Target date:
☐ PRP will request remedy modification. Target date of request:
☐ Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☐Change in the number and/or types of analytes being analyzed. ☐ Increasing or ☐ decreasing? Target date:
☐ Change in groundwater extraction system. ☐ Expansion or ☐ minimization (i.e., number of extraction wells and/or pumping rate)? Target date:
☐ Modification on groundwater treatment? Elaborate below. Target date:
☐ Change in discharge location. Target date:
☑ Other modification(s) anticipated: Groundwater Feasibility Study Elaborate below. Target date: 2012

Elaborate on Remedy Projections: The EPA is developing a Groundwater Feasibility Study for MEW.

B. Projections – Slurry Walls (Check all that apply)

Remedy Projections for **the upcoming year**
☐ No significant changes projected.
☐ PRP will request remedy modification. Target date of request:
☐Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☑ Other modification(s) anticipated: Groundwater Feasibility Study Elaborate below. Target date: 2012

Elaborate on Remedy Projections:

Remedy Projections for **the long-term**
☐ No significant changes projected.
☐ PRP will request remedy modification. Target date of request:
☐ Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☑ Other modification(s) anticipated: Groundwater Feasibility Study Elaborate below. Target date: 2012

Elaborate on Remedy Projections: The EPA is developing a Groundwater Feasibility Study for MEW.

C. Projections – Other Remedial Options Being Reviewed to Enhance Cleanup

Progress implementing recommendations from last report or Five-Year Review
Has optimization study been implemented or scheduled? ☑ Yes; No; If Yes, please elaborate.

Extraction rates were modified in 2010 based on an Optimization Evaluation conducted in 2008 (Geosyntec, 2008).

XII. ADMINISTRATIVE ISSUES
Check all that apply:

☐ Explanation of Significant Differences in progress ☐ ROD Amendment in progress
☐ Site in operational and functional ("shake down") period;
☐ Notice of Intent to Delete in progress ☐ Partial site deletion in progress ☐ TI Waivers
☑ Other administrative issues:

Site-Wide Focused Groundwater Feasibility Study for Groundwater being conducted by EPA.

Date of Next EPA Five-Year Review: September 30, 2014

XIII. RECOMMENDATIONS

APPENDIX B

Laboratory Analytical Reports and Chain-of-Custody Documents

(This appendix is being submitted on CD to the EPA only and is available upon request)

APPENDIX C

QA/QC Report,
Summary Tables and Criteria

Weiss Associates

M E M O R A N D U M

TO:	Carolyn Kneiblher, C.HG. Geosyntec Consultants	**FROM:**	Alok D. Kolekar, P.E. Weiss Associates
RE:	**2011 DATA QUALITY SUMMARY** **FORMER FAIRCHILD BUILDING 9** MIDDLEFIELD-ELLIS-WHISMAN AREA SUPERFUND SITE MOUNTAIN VIEW, CALIFORNIA	**DATE:**	April 6, 2012

This memorandum summarizes data quality for groundwater and treatment system water samples collected in 2011 from monitoring wells associated with former Fairchild Building 9 at the Middlefield-Ellis-Whisman (MEW) Area Superfund Site in Mountain View, California. The groundwater samples were collected during the 2011 annual groundwater sampling event in September and October. Detailed results for quality assurance/quality control (QA/QC) samples collected during the MEW annual groundwater sampling are presented in Weiss Associates' (Weiss) memorandum titled, "Data Quality Assurance/Quality Control Report, 2011 Groundwater Sampling, Middlefield-Ellis-Whisman Area Superfund Site" and dated March 9, 2012.

The analytical laboratory data and accompanying quality assurance/quality control (QA/QC) information were reviewed for precision, accuracy, reproducibility, and completeness in accordance with the approved MEW 1991 *Quality Assurance Project Plan* (QAPP).[1] In addition, the data quality review was based on Weiss Associates' Standard Operating Procedures (SOPs) for data verification, data validation, and validation procedures for metals, volatile organic chemicals (VOCs), and semivolatile organic chemicals. The SOPs functionally adhere to the most recent USEPA *Contract Laboratory Program National Functional Guidelines for Organic (October 1999) and Inorganic (February 1994) Data Review*. As specified by the QAPP and the SOPs, Weiss Associates collected field QA/QC samples and performed a laboratory data quality review.

FIELD QC SAMPLE COLLECTION

To assess the reliability of field sampling procedures and materials, the following field QA/QC samples were collected or prepared for the annual groundwater sampling and GWETS sampling:

- Field duplicate – Field duplicate samples are blind duplicates that provide data to assess precision of the contract laboratory. Field duplicates are specified to be collected at a frequency of 1 for every 20 field samples collected.
- Matrix spike/Matrix spike duplicate – Matrix spike/matrix spike duplicate (MS/MSD) samples measure the accuracy and precision of the analytical methods MS/MSD samples are specified at a frequency of 1 for every 20 field samples collected.

[1] 1991, *Quality Assurance Project Plan Middlefield-Ellis-Whisman Site, Mountain View, California,* prepared by Canonie Environmental, Rev. 1.0,; August 16, 1991. This document is sometimes referred to as the Unified QAPP because it is used by MEW, NASA and Navy.

- Rinseate blank – These samples consist of reagent water collected from a final rinse of sampling equipment after the decontamination procedure has been performed. The purpose of rinseate samples is to evaluate whether the sampling equipment may be causing cross-contamination of the samples. Rinseate blank sampling is not necessary for locations that have dedicated sample collection, such as at GWETS sample ports. Following equipment decontamination, deionized/organic-free water used for the final rinse is collected in appropriate bottles. Rinseate samples were specified at a frequency of 1 for every 20 field samples that are collected using reusable sample collection equipment.
- Field blank – These samples consist of source water used for decontamination of equipment. The purpose of field blanks is to evaluate whether source water is contributing to contamination of samples. Field blanks were collected at a frequency of 5% of the field samples collected.
- Trip blank – These samples consist of "clean," volatile organic analysis vials (VOAs) filled with deionized/organic-free water and preserved. These pre-filled VOAs are supplied by the laboratory and accompany other samples in the field and on their trip to the laboratory. The purpose of the trip blank is to evaluate whether exposure to sampling site conditions, storage, and shipment of samples may be causing contamination after the samples are collected. Trip blanks are collected only when samples are collected for VOC analysis. One trip blank accompanies each VOC sample shipment.

LABORATORY DATA QUALITY REVIEW PARAMETERS

For the 2011 annual groundwater sampling event, the sample results were verified for completeness using a Level 2 data review summary per the QAPP and SOPs. The following parameters were reviewed in this review:

- Holding time;
- Detection and reporting limits;
- Surrogate recovery (VOC methods only);
- Laboratory control sample recovery;
- Matrix spike and spike duplicate recovery;
- Method blank results;
- Travel blank results (VOC methods only);
- Field/rinseate blank results; and
- Field sample duplicates results.

Ten percent of the sample delivery groups underwent a Level 4 data validation as required by the QAPP. The samples intended for the Level 4 data validation were documented on separate chain-of-custody forms than the other samples. Level 4 validation procedures vary by method. In addition to the Level 2 verification parameters listed above, the Level 4 validation parameters for organic (e.g., VOC) analyses include:

- Ion abundance;

- Minimum number of initial calibration standards analyzed;
- Relative response factors in initial and continuing calibrations;
- Percent of relative standard deviations in initial calibrations;
- Percent of differences in continuing calibrations;
- Internal standard retention times;
- Internal standard area counts;
- Analytical sequence carryover;
- Dilutions performed appropriately;
- Calibration blank contamination; and
- Data package completeness for all raw data, including chromatograms and bench sheets, for calibration standards, quality control data, and samples.

The Level 4 review of inorganic (e.g., metal) data include:

- Minimum number of initial calibration standards analyzed;
- All initial calibration verification recoveries within established limits;
- Initial calibration correlation coefficients within established limits;
- Continuing calibration verification recoveries within established limits;
- Analytical sequence carryover;
- Dilutions performed appropriately;
- Laboratory duplicate results within established limits;
- Initial and continuing calibration blank contamination; and
- Data package completeness for all raw data, including bench sheets, for calibration standards, quality control data, and sample.

CONCLUSIONS

Weiss Associates' Project Chemist assigned qualifiers to data that were found outside the control limits specified by the QAPP and data evaluation SOPs. Data qualifiers defined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review* were used.

A total of 13 groundwater samples were collected from monitoring wells associated with former Fairchild Building 9 during the annual sampling. These samples were analyzed by Curtis and Tompkins, Ltd in Berkeley, California for:

- Halogenated VOCs by U.S. EPA Method 8260B (12 samples)
- Metals by U.S. EPA Method 6010B (1 sample)

The samples were collected, stored, transported, and managed according to USEPA protocols based on Weiss' review of field and laboratory documentation. The laboratories reported that sample temperature and holding times were within acceptable ranges. Custody seals were used for each set of samples as specified by the QAPP.

No data non-conformances were identified during the data verification and validation process. Thus, no data qualifiers were necessary, and the data are usable for their intended purposes. Tables 1 and 2 summarize the conformance with sampling and analytical QA/QC methods, respectively.

Table 1. Summary of Conformance with Sampling QA/QC Methods for Water Samples Collected in 2011, Former Fairchild Building 9, 401 National Avenue, Mountain View, California.

Who performed sampling (Firm name/address/contact/phone):	Weiss Associates 453 Ravendale Drive, Suite C, Mountain View, CA 94043 Alok D. Kolekar (650) 968-7000
Chain-of-custody forms completed for all samples?	YES
Field parameters stabilized prior to taking sample?	YES
Headspace in sample containers < 6mm (applicable to VOCs only)?	YES
Samples preserved according to analytical method?	YES
Required field QA/QC samples taken?	YES

Explain any "NO" answers.

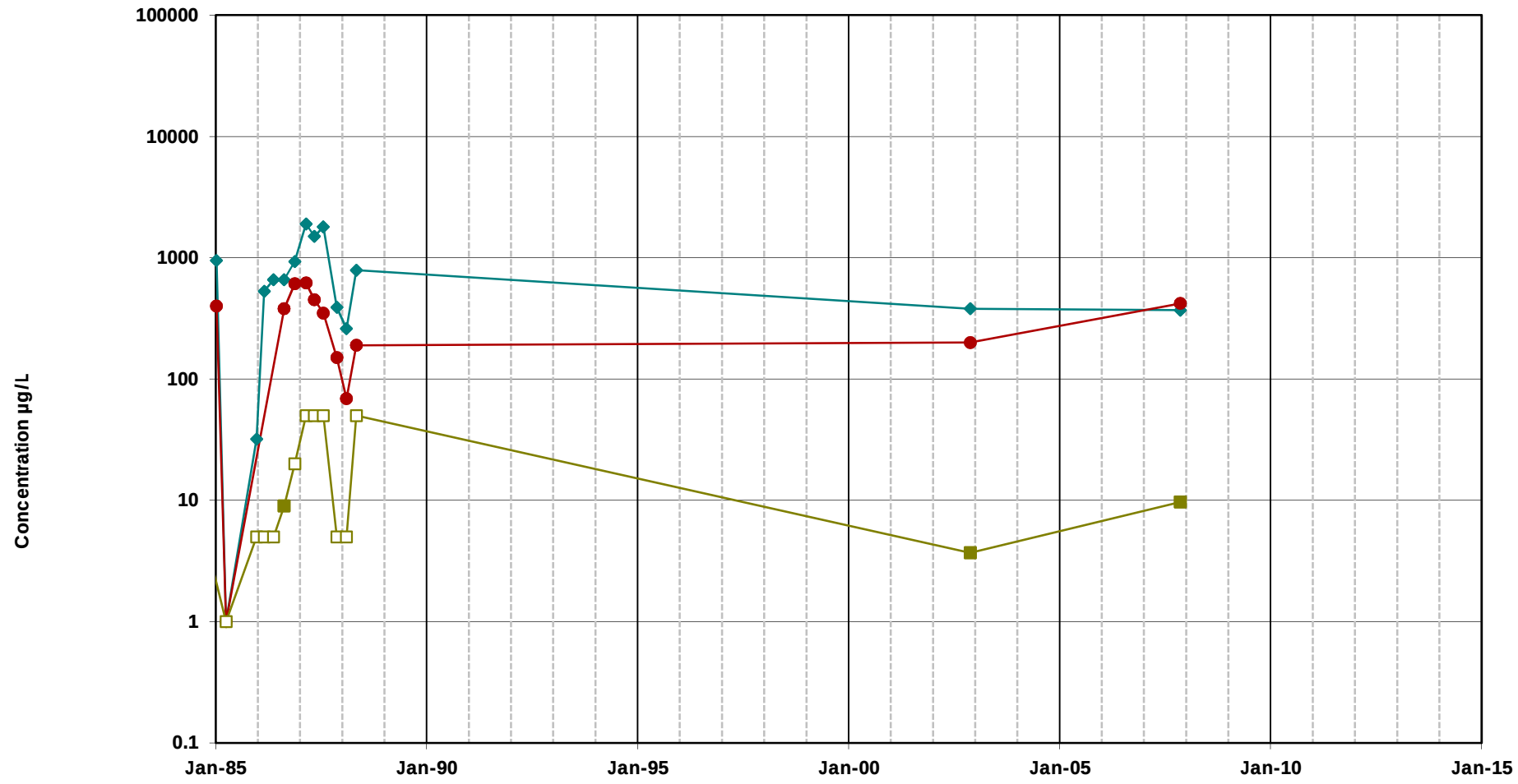
Table 2. Summary of Conformance with Analytical QA/QC Methods for Water Samples Collected in2011, Former Fairchild Building 9, 401 National Avenue, Mountain View, California.

Who performed analysis (Lab name/address/contact/phone):	Curtis and Tompkins 2323 Fifth Street Berkeley, CA 94710 Micah Smith (510) 204-2223
Are the labs state-certified for the above-noted analytical methods?	YES
Analyses performed according to standard methods?	YES
Sample holding times met?	YES
Analytical results reported for all values above MDL?	YES
QA/QC analyses run consistent with analytical methods?	YES
QA/QC results meet all acceptance criteria?	YES
QA/QC results and acceptance criteria on file?	YES

Explain any "NO" answers.

APPENDIX D

VOCs versus Time Graphs



Trichloroethene

cis-1,2-Dichloroethene

Vinyl Chloride

Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well 35A
MEW Former Fairchild Building 9

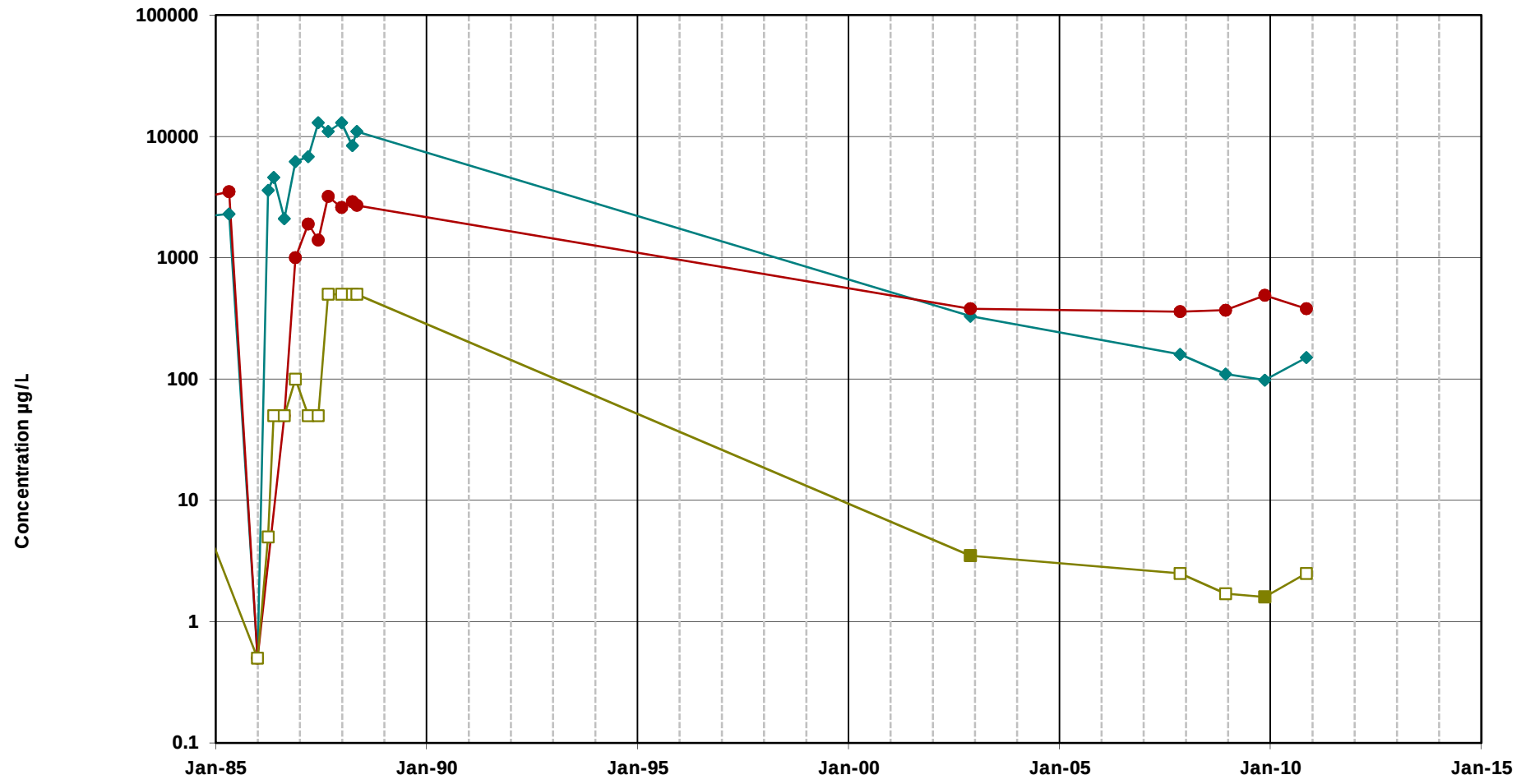
Geosyntec consultants

Oakland | April 2012

Figure

D-01

\\oakland-01\data\gis\MEW\Excel\TimeSeries\2011_AR\Building 9\ExcelFiles\[35A_VOC.xls]Plot_35A_VOC



Trichloroethene

cis-1,2-Dichloroethene

Vinyl Chloride

Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well 36A
MEW Former Fairchild Building 9

Geosyntec consultants

Oakland | April 2012

Figure

D-02

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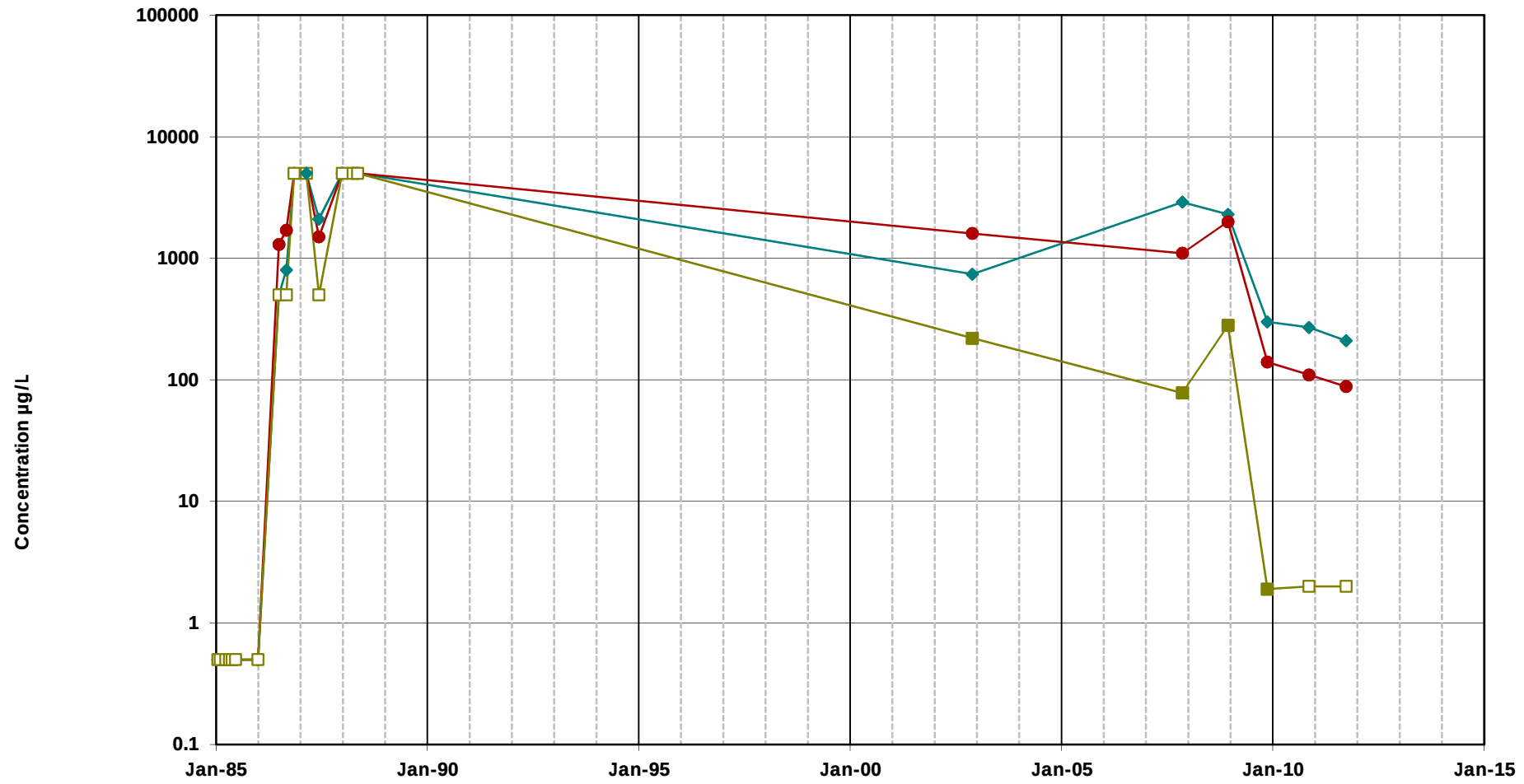

Trichloroethene

cis-1,2-Dichloroethene

Vinyl Chloride

Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well 37A
MEW Former Fairchild Building 9

Geosyntec consultants

Oakland | April 2012

Figure

D-03

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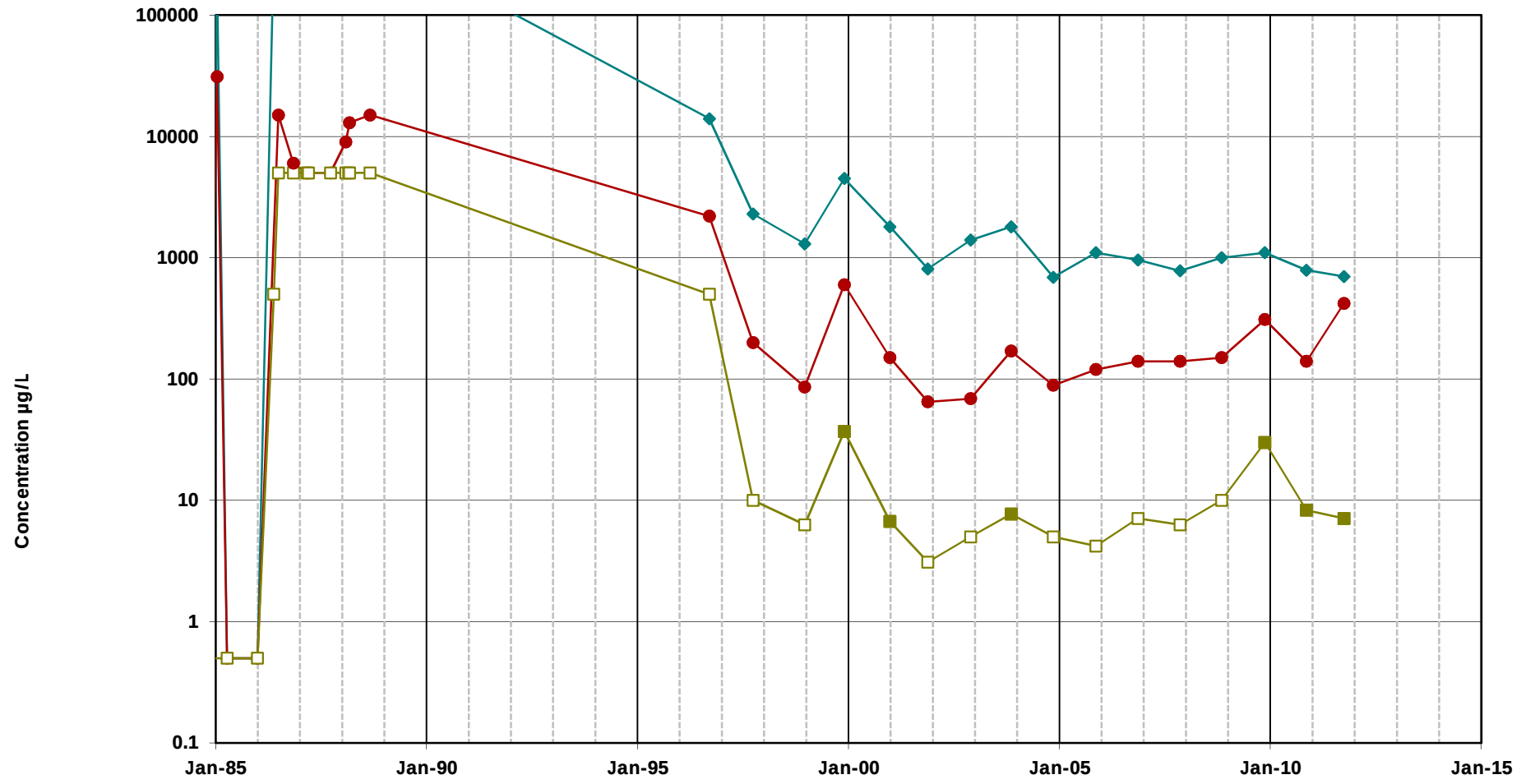


Trichloroethene

cis-1,2-Dichloroethene

Vinyl Chloride

Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well 40A
MEW Former Fairchild Building 9

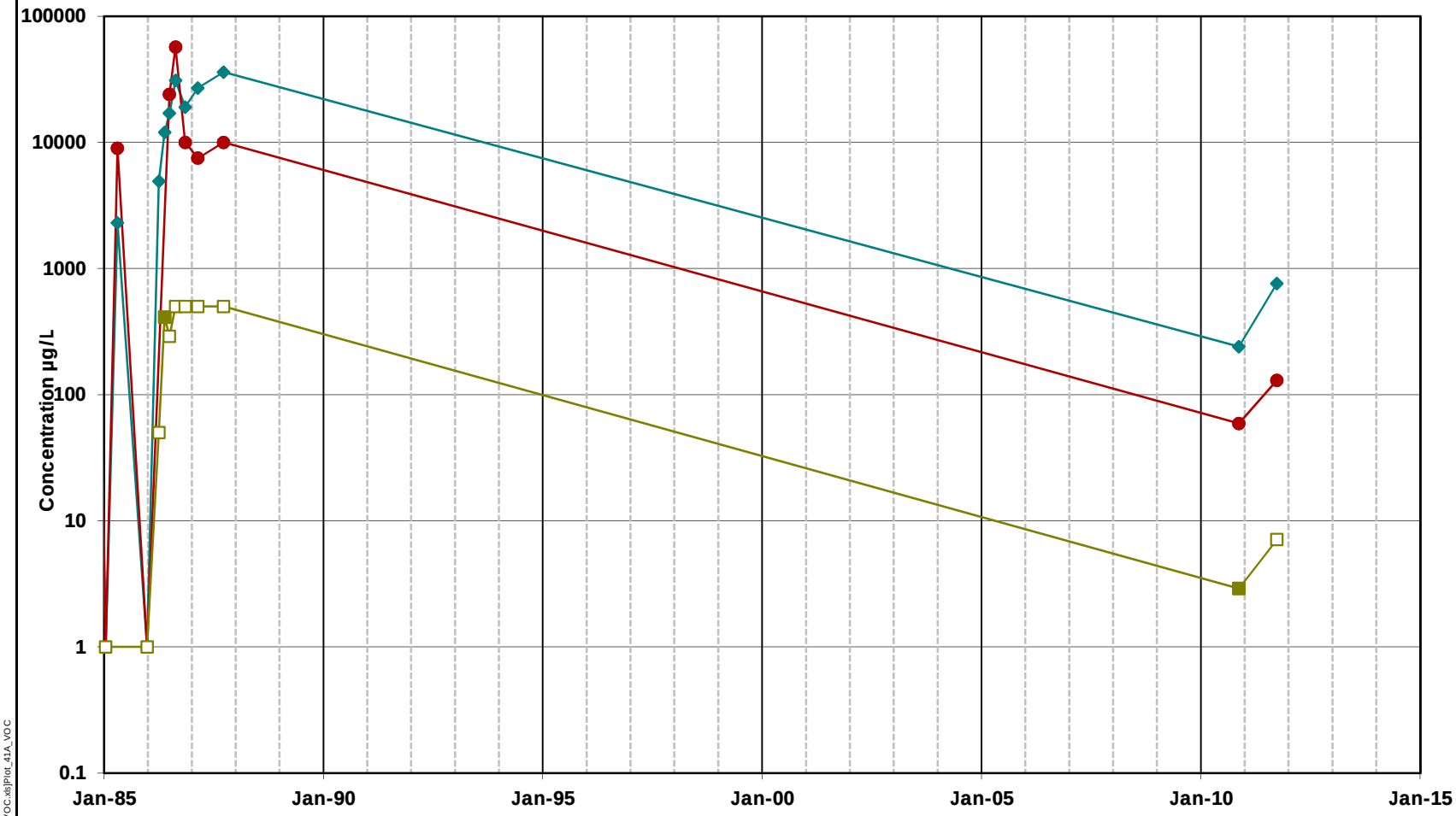
Geosyntec consultants

Oakland | April 2012

Figure

D-04

\\oakland-01\data\gis\MEW\Excel\TimeSeries\2011_AR\Building 9\ExcelFiles\[40A_VOC.xls]Plot_40A_VOC



Trichloroethene

cis-1,2-Dichloroethene

Vinyl Chloride

Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well 41A
Building 9

Geosyntec consultants

Oakland | June 2011

Figure
D-05

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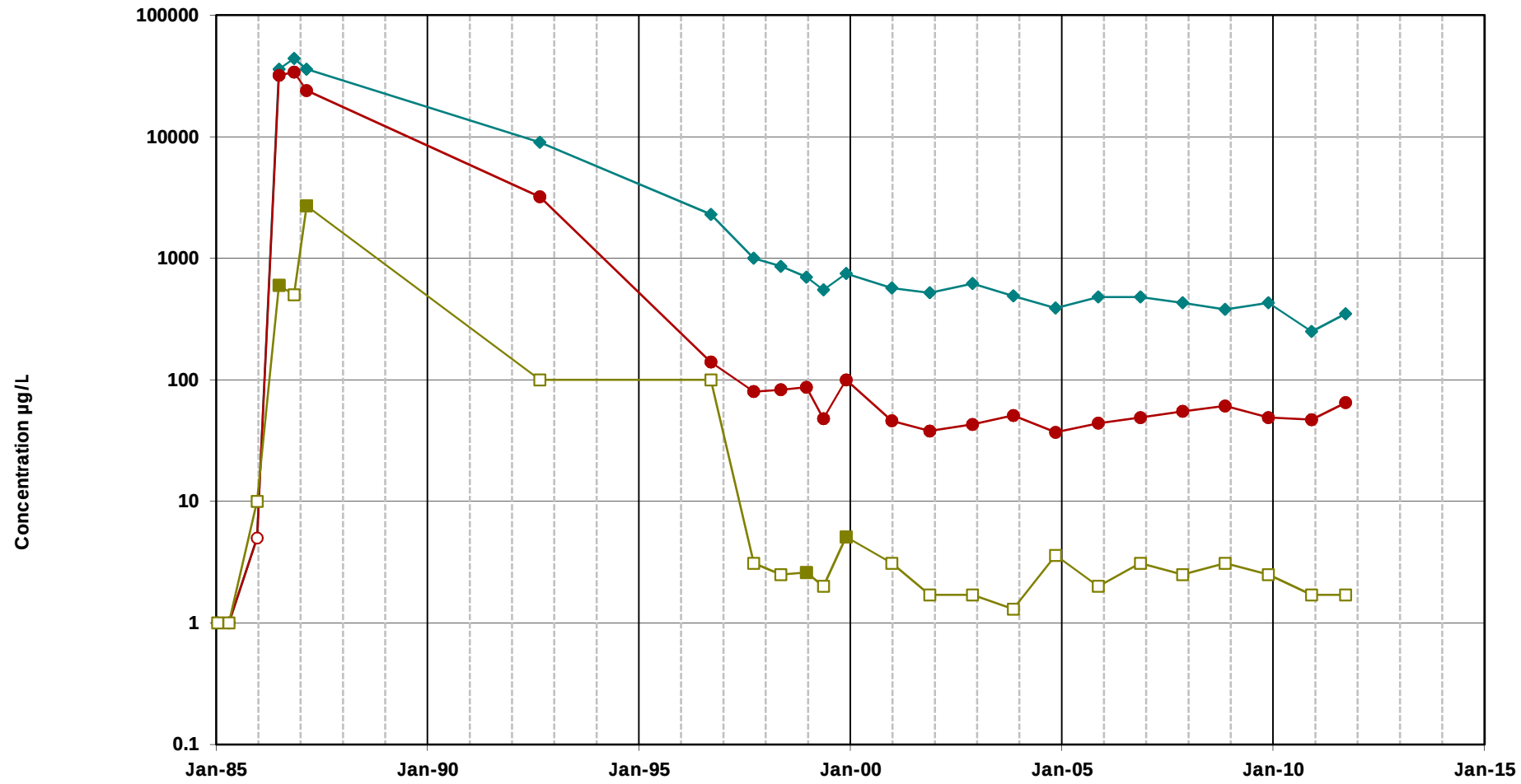

Trichloroethene

cis-1,2-Dichloroethene

Vinyl Chloride

Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well 42A
MEW Former Fairchild Building 9

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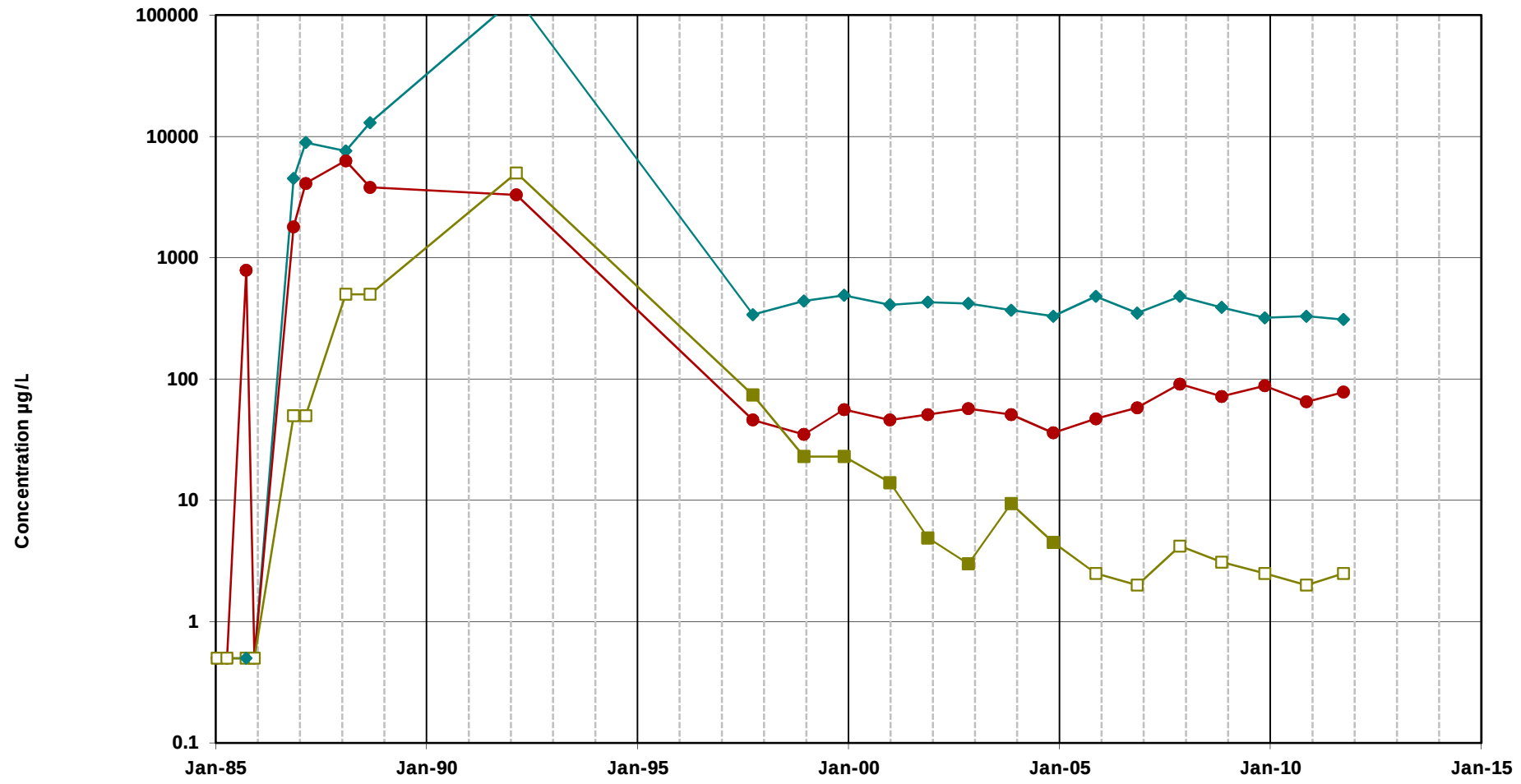
Figure

D-06

\\oakland-01\data\gis\MEW\Excel\TimeSeries\2011_AR\Building 9\ExcelFiles\[42A_VOC.xls]Plot_42A_VOC



Trichloroethene

cis-1,2-Dichloroethene

Vinyl Chloride

Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well 43A
MEW Former Fairchild Building 9

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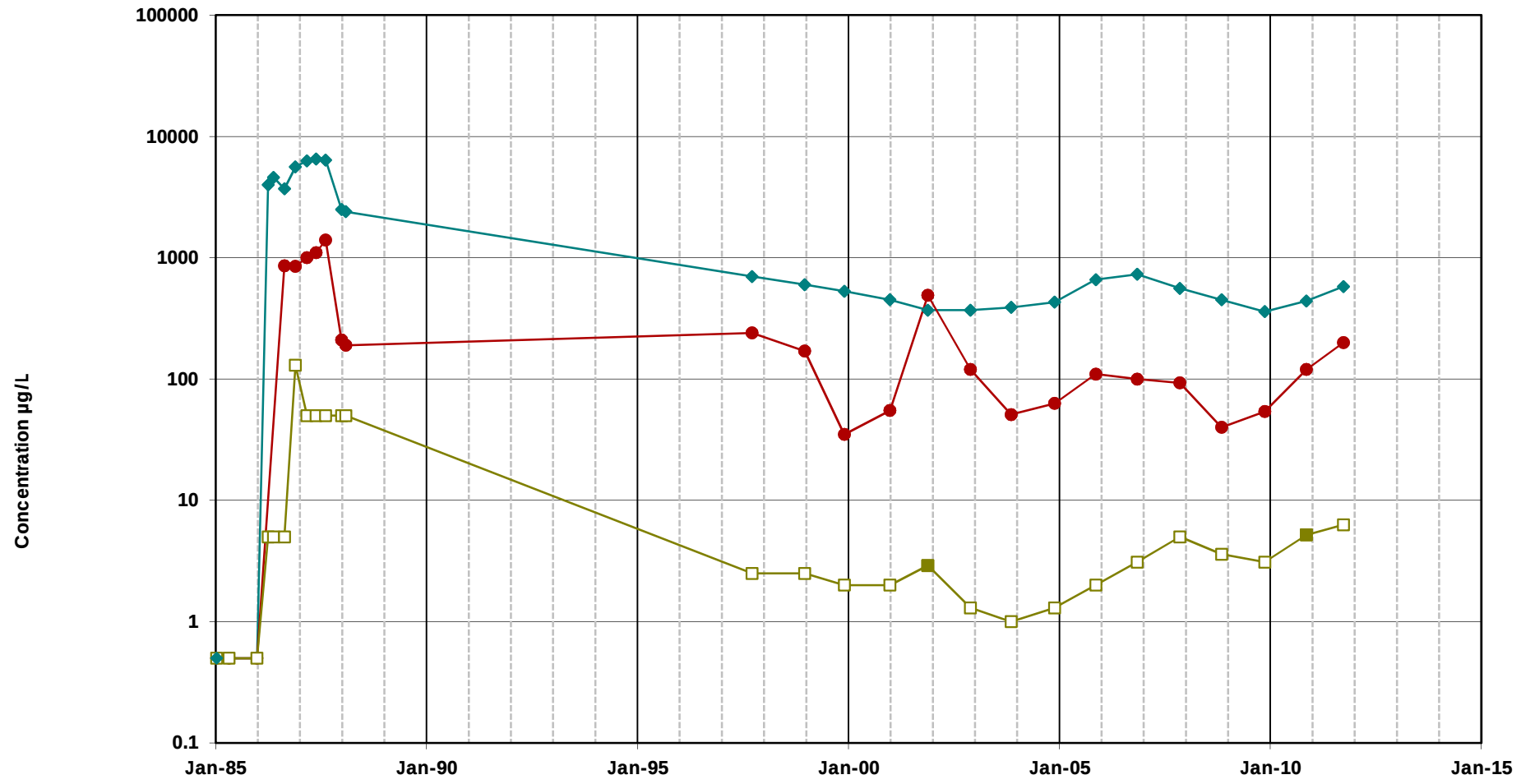
Figure

D-07

\\oakland-01\data\gis\MEW\Excel\TimeSeries\2011_AR\Building 9\ExcelFiles\[43A_VOC.xls]Plot_43A_VOC



Trichloroethene

cis-1,2-Dichloroethene

Vinyl Chloride

Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well 44A
MEW Former Fairchild Building 9

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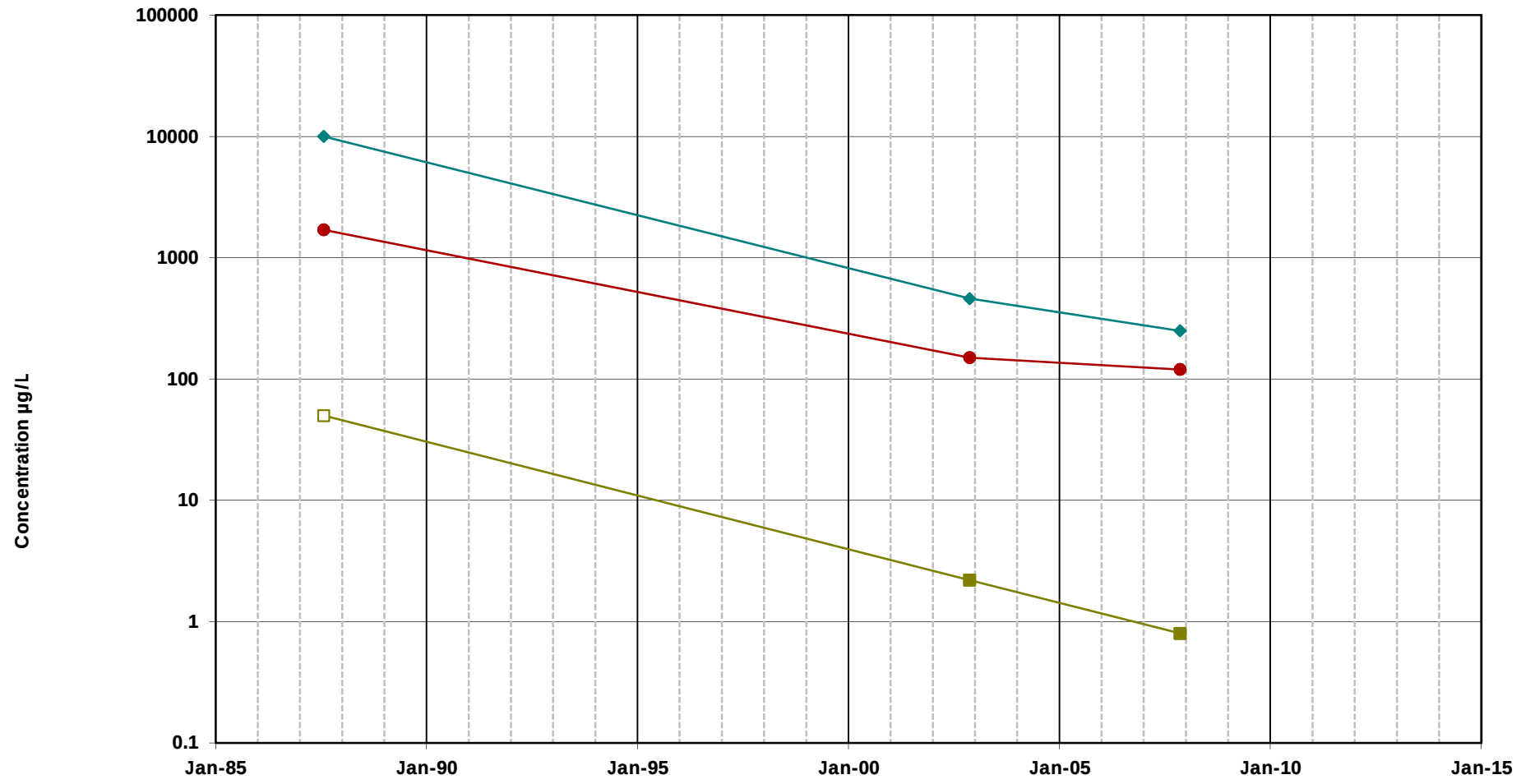
Figure

D-08

\\oakland-01\data\gis\MEW\Excel\TimeSeries\2011_AR\Building 9\ExcelFiles\[44A_VOC.xls]Plot_44A_VOC



Trichloroethene

cis-1,2-Dichloroethene

Vinyl Chloride

Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well 122A
MEW Former Fairchild Building 9

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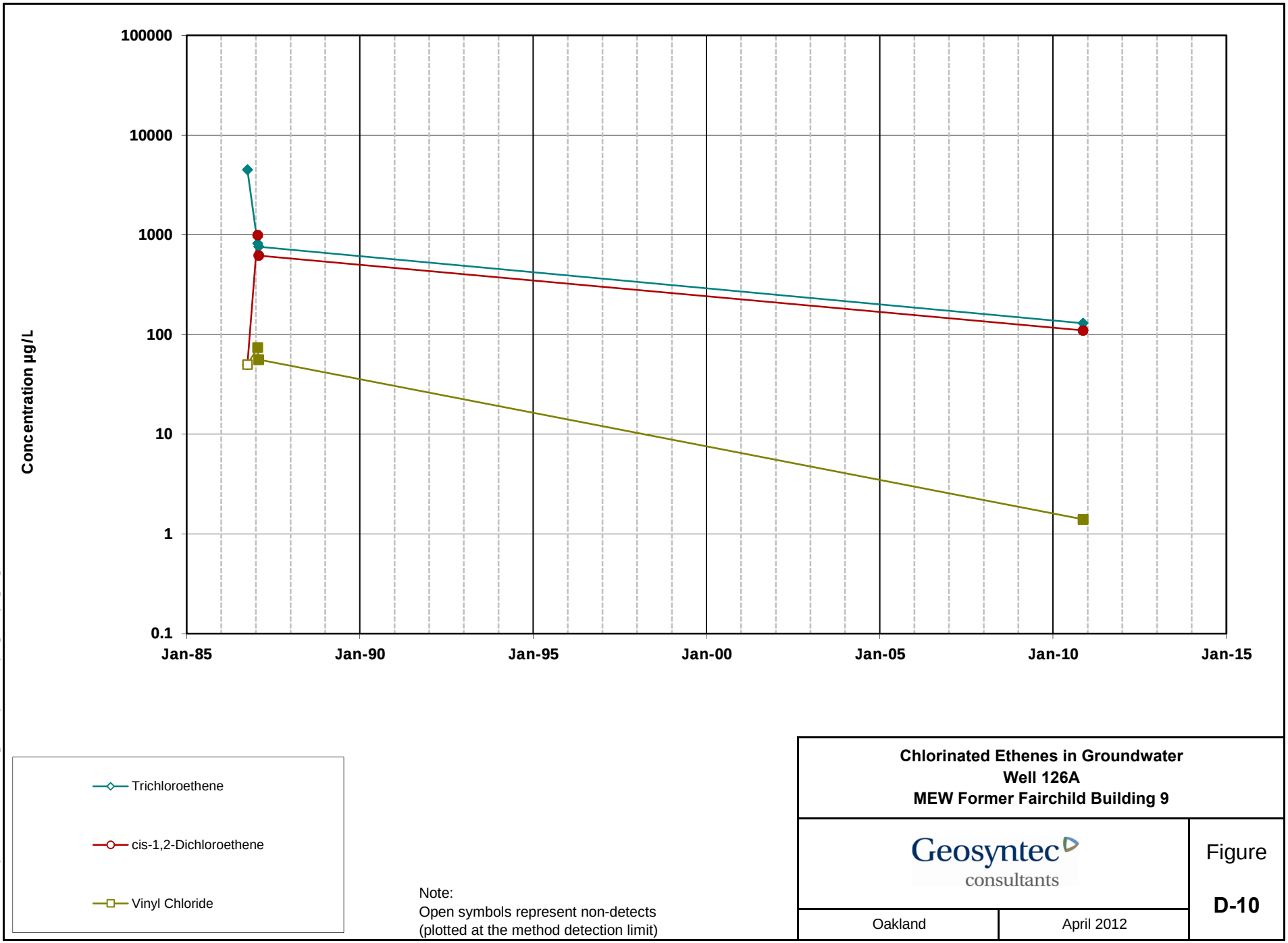
Figure

D-09

\\oakland-01\data\gis\MEW\Excel\TimeSeries\2011_AR\Building 9\ExcelFiles\[122A_VOC.xls]Plot_122A_VOC



Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well 126A
MEW Former Fairchild Building 9

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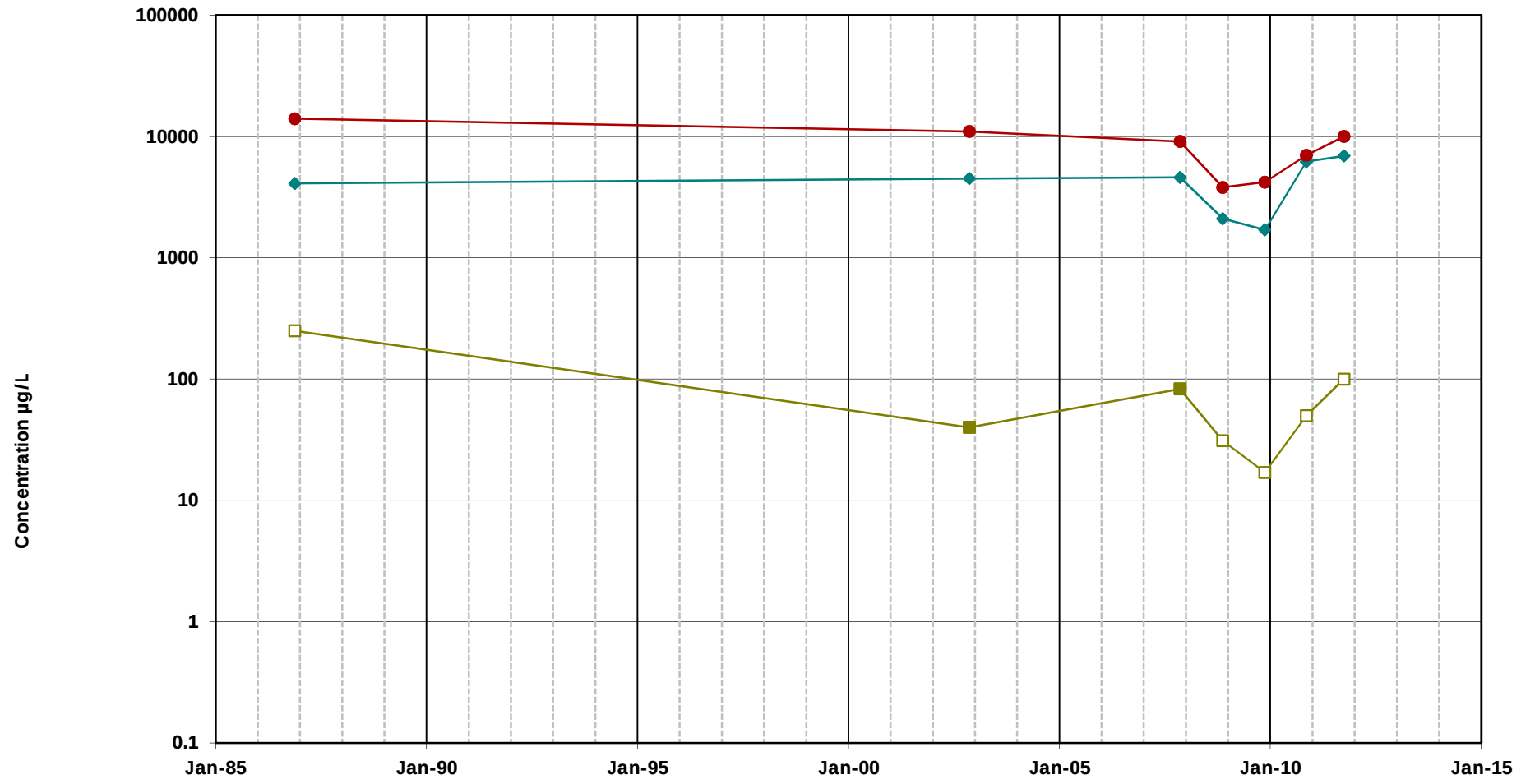
Figure

D-10

\\oakland-01\data\gis\MEW\Excel\TimeSeries\2011_AR\Building 9\ExcelFiles\[126A_VOC.xls]Plot_126A_VOC



Trichloroethene

cis-1,2-Dichloroethene

Vinyl Chloride

Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well 137A
MEW Former Fairchild Building 9

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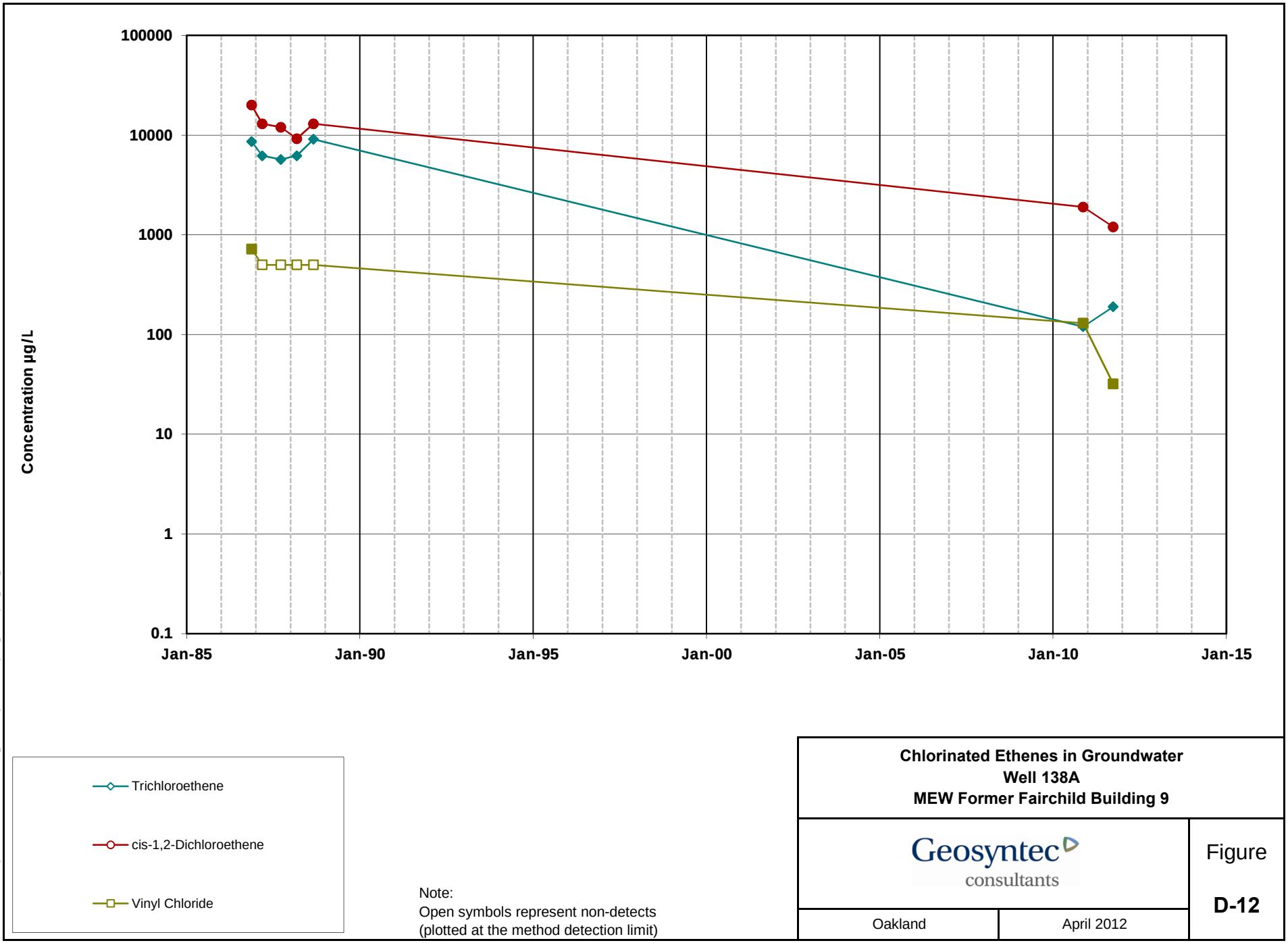
Figure

D-11

\\oakland-01\data\gis\MEW\Excel\TimeSeries\2011_AR\Building 9\ExcelFiles\[137A_VOC.xls]Plot_137A_VOC



Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well 138A
MEW Former Fairchild Building 9

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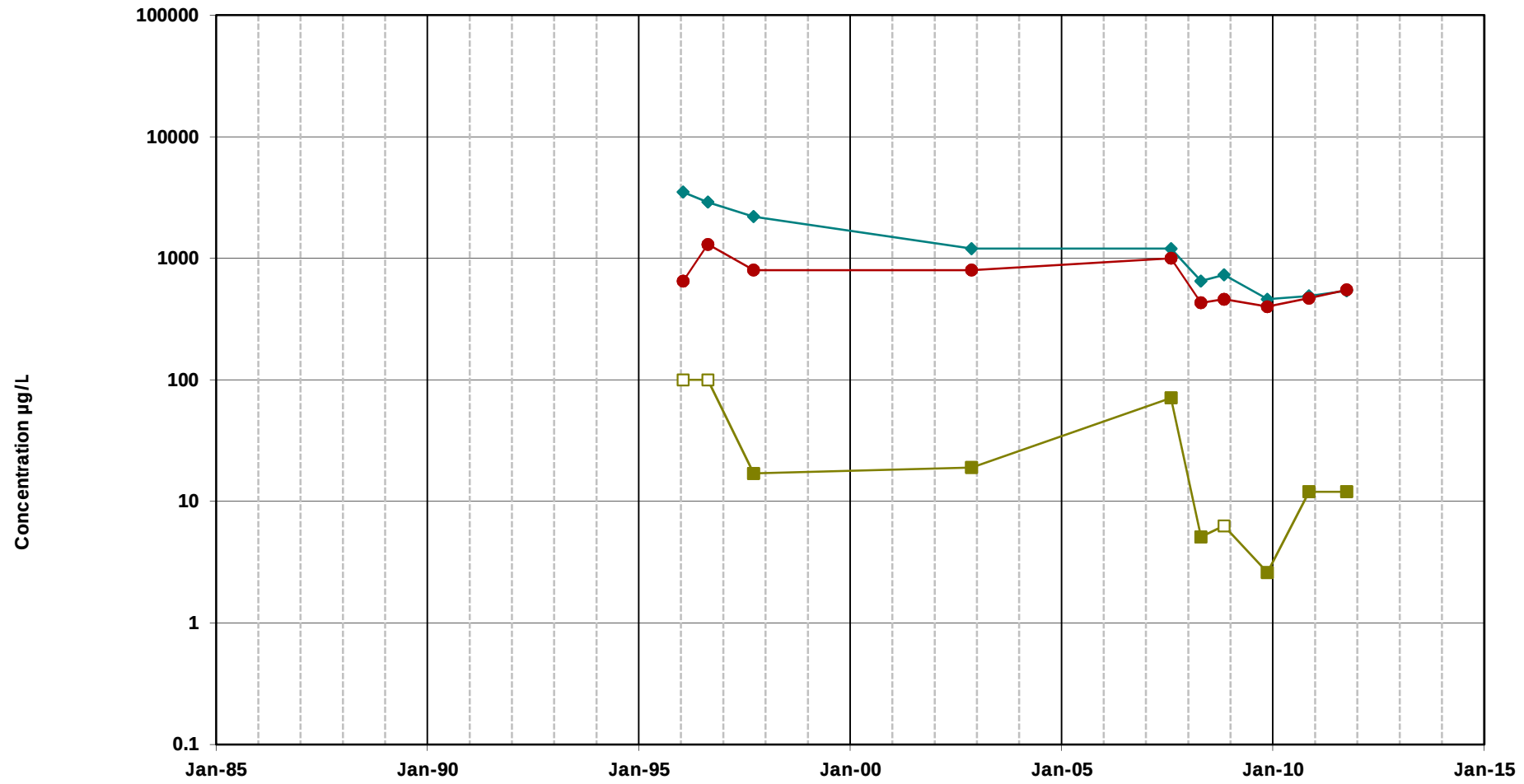
Figure **D-12**

\\oakland-01\data\gis\MEW\Excel\TimeSeries\2011_AR\Building 9\ExcelFiles\[138A_VOC.xls]Plot_138A_VOC



Trichloroethene

cis-1,2-Dichloroethene

Vinyl Chloride

Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well AE/RW-9-1
MEW Former Fairchild Building 9

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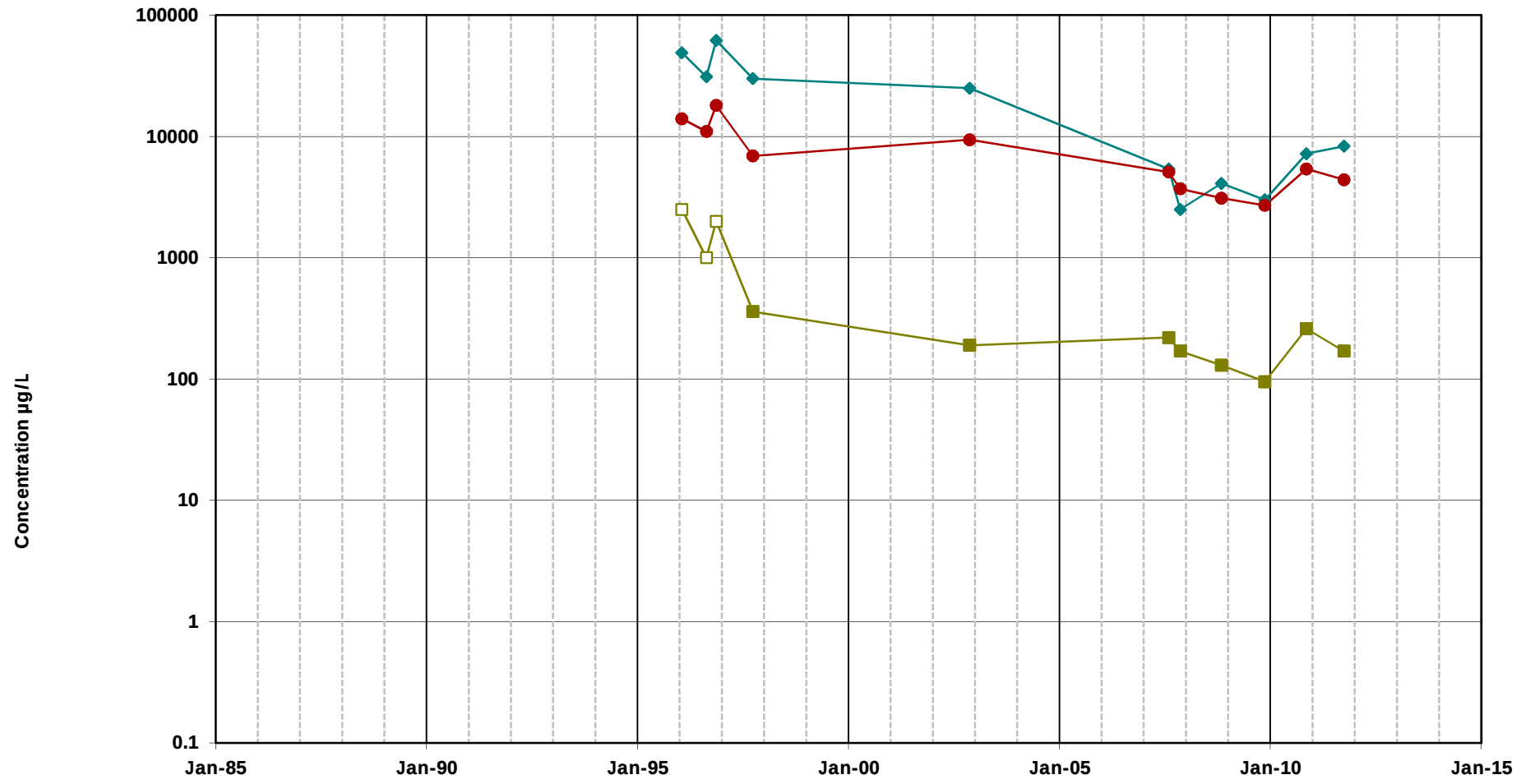
Figure

D-13

\\oakland-01\data\gis\MEW\Excel\TimeSeries\2011_AR\Building 9\ExcelFiles\[AE_RW-9-1_VOC.xls]Plot_AE_RW-9-1_VOC



Trichloroethene

cis-1,2-Dichloroethene

Vinyl Chloride

Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well AE/RW-9-2
MEW Former Fairchild Building 9

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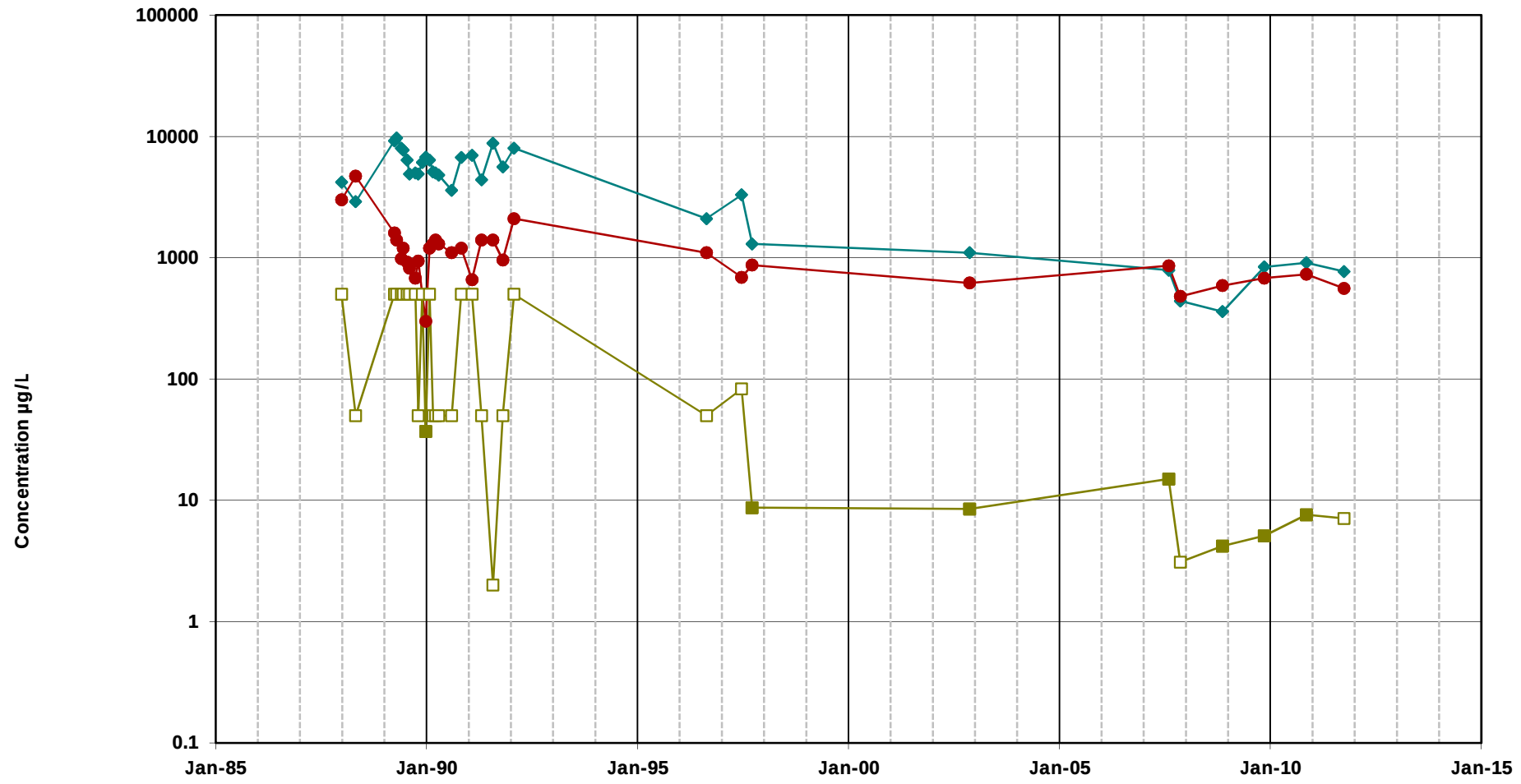
Figure

D-14

\\oakland-01\data\gis\MEW\Excel\TimeSeries\2011_AR\Building 9\ExcelFiles\[AE_RW-9-2_VOC.xls]Plot_AE_RW-9-2_VOC



Trichloroethene

cis-1,2-Dichloroethene

Vinyl Chloride

Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well RW-20A
MEW Former Fairchild Building 9

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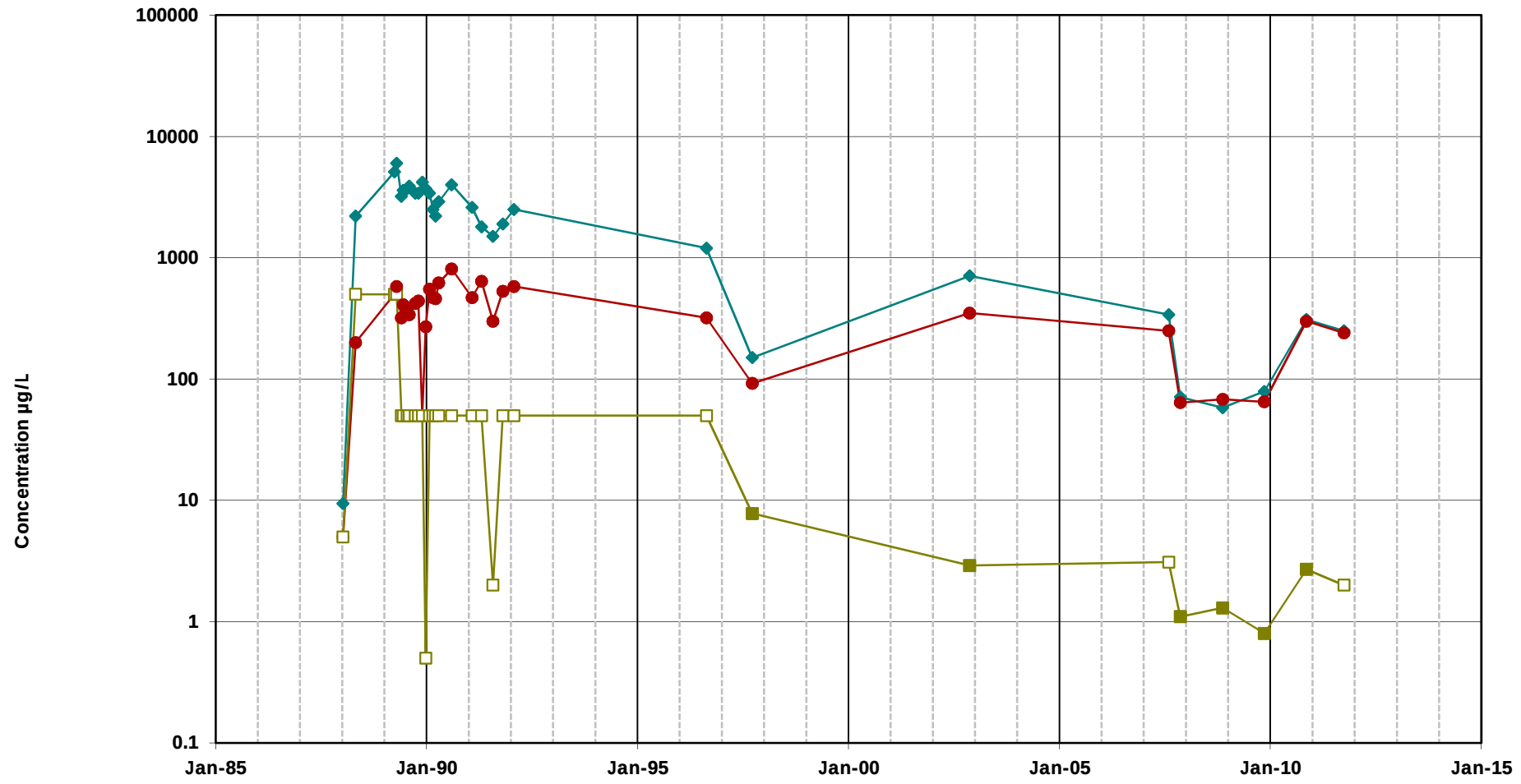
Figure

D-15

\\oakland-01\data\gis\MEW\Excel\TimeSeries\2011_AR\Building 9\ExcelFiles\[RW-20A_VOC.xls]Plot_RW-20A_VOC



Trichloroethene

cis-1,2-Dichloroethene

Vinyl Chloride

Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well RW-21A
MEW Former Fairchild Building 9

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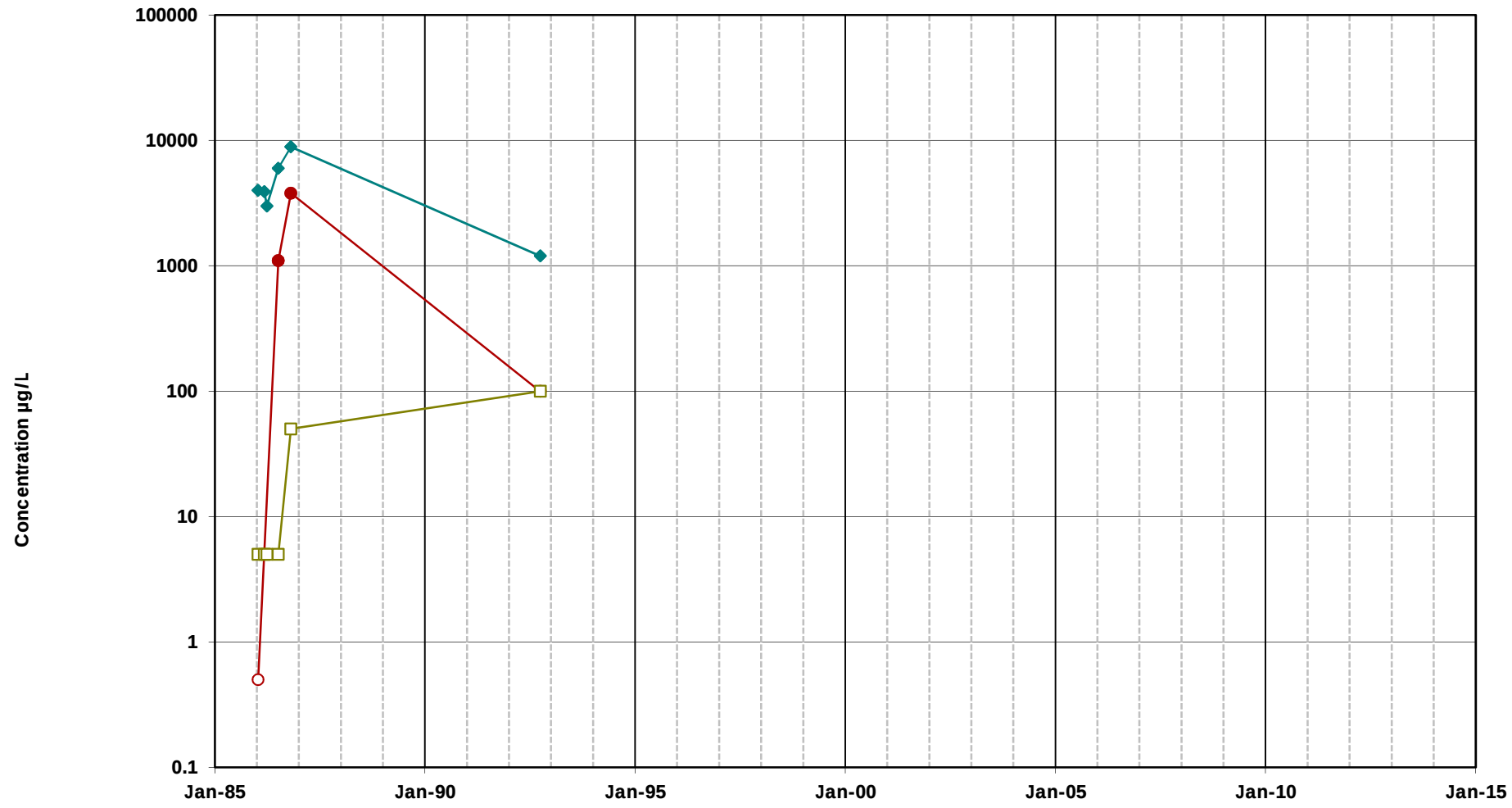
Figure

D-16

\\oakland-01\data\gis\MEW\Excel\TimeSeries\2011_AR\Building 9\ExcelFiles\[RW-21A_VOC.xls]Plot_RW-21A_VOC



Trichloroethene

cis-1,2-Dichloroethene

Vinyl Chloride

Note:
Open symbols represent non-detects
(plotted at the method detection limit)

Chlorinated Ethenes in Groundwater
Well 69B1
MEW Former Fairchild Building 9

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Figure

D-17

\\oakland-01\data\gis\MEW\Excel\TimeSeries\2011_AR\Building 9\ExcelFiles\[69B1_VOC.xls]Plot_69B1)_VOC