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June 15, 2011

Penny Reddy
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EPA Region IX
75 Hawthorne Street
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Subject: **2010 Annual Progress Report - Regional Groundwater Remediation Program**
Middlefield-Ellis-Whisman ("MEW") Area
Mountain View, California

Dear Ms. Reddy:

Attached please find the 2010 Annual Progress Report for the Regional Groundwater Remediation Program (RGRP), prepared by Geosyntec Consultants on behalf of Schlumberger Technology Corporation, the Project Coordinator for the MEW Area RGRP.

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 2010 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
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Sugar Land, Texas, 77478

2010 ANNUAL PROGRESS REPORT

MIDDLEFIELD-ELLIS-WHISMAN REGIONAL GROUNDWATER REMEDIATION PROGRAM

MOUNTAIN VIEW, CALIFORNIA

Prepared by

Geosyntec consultants

engineers | scientists | innovators

1111 Broadway, 6th Floor
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Project Number WR1128

15 June 2011

2010 Annual Progress Report
Middlefield-Ellis-Whisman
Regional Groundwater Remediation Program
Mountain View, California

Prepared by

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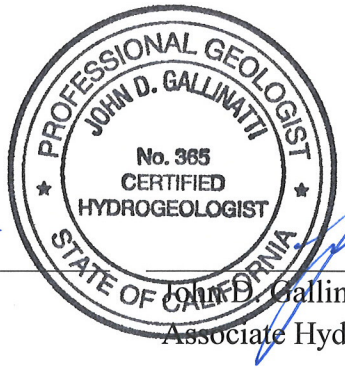

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Project Number: WR1128
15 June 2011

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ACRONYMS AND ABBREVIATIONS

106 Order	Section 106 Unilateral Administrative Order for Remedial Design and Remedial Action
bgs	below ground surface
cis-1,2-DCE	cis-1,2-dichloroethene
cm/sec	centimeter per second
EPA	Environmental Protection Agency
FFA	Federal Facilities Agreement
former Building 18	644 National Avenue
GAC	granular activated carbon
gpm	gallons per minute
GETS	groundwater extraction and treatment system
GWFS	groundwater feasibility study
µg/L	micrograms per Liter
$\mu g/m^3$	micrograms per cubic meter
K	hydraulic conductivity
MEW	Middlefield-Ellis-Whisman
mg/kg	milligram per kilogram
MNA	Monitored natural attenuation
NAS	Naval Air Station
NASA	National Aeronautics and Space Administration
North of 101	RGRP Treatment System at Corner of Wescoat Road and McCord Avenue, Moffett Field
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
O&M	operations and maintenance
ppb	parts per billion
ppm	parts per million
PLC	programmable logic control
PRPs	potentially responsible parties
QA/QC	quality analysis and quality control

RGRP	Regional Groundwater Remediation Program
RI/FS	remedial investigation and feasibility study
ROD	Record of Decision
RRWs	regional recovery wells
SCADA	supervisory control and data acquisition
SCVWD	Santa Clara Valley Water District
SCRWs	source control recovery wells
SMP	settlement measurement point
South of 101	RGRP Treatment System at 644 National Avenue
TCE	trichloroethylene
VFD	variable frequency drive
VI	vapor intrusion
VOCs	volatile organic compounds
VPC	vapor phase carbon
VC	vinyl chloride
Water Board	California Regional Water Quality Control Board, San Francisco Bay Region
WDRs	Waste Discharge Requirements

1. INTRODUCTION

This 2010 Annual Progress Report was prepared at the direction of Schlumberger Technology Corporation, the Project Coordinator for the Middlefield-Ellis-Whisman (MEW) Regional Groundwater Remediation Program (RGRP). The progress report was prepared by Geosyntec Consultants (Geosyntec) with assistance from Weiss Associates.

The progress report, summarizing MEW RGRP activities from 1 January through 31 December 2010, is being submitted to United States Environmental Protection Agency (EPA) in accordance with:

- Section XV of the 1990 Administrative Order for Remedial Design and Remedial Action issued by EPA (106 Order);
- Section XI of the Consent Decree entered in Action No. 20275 (N.D. Cal.) in 1992 (Consent Decree); and
- EPA correspondence prescribing annual report contents (EPA, 2005).

The 106 Order and Consent Decree responded to the presence of volatile organic compounds (VOCs) in soil and groundwater.

1.1 Site Background

The MEW study area, located in Mountain View, California (Figure 1), encompasses an approximately 1 square mile area, bisected by Interstate Highway 101 (Figure 2). South of Highway 101, the MEW Study Area includes three National Priority List (NPL) sites (Fairchild Semiconductor Corp. - Mountain View Superfund Site; Intel Corp. - Mountain View Superfund Site; and, Raytheon Company Superfund Site) and several non-Superfund sites within an approximately 100-acre area bounded by Middlefield Road on the south, Ellis Street on the east, Whisman Road on the west, and Highway 101 on the north. North of Highway 101, the MEW study area extends across portions of Former Naval Air Station (NAS) Moffett Field and the National Aeronautics and Space Administration (NASA) Ames Research Center and includes Moffett Field Superfund Site.

Remedial actions for the MEW study area are specified in a 1989 Record of Decision (ROD) issued by EPA and two subsequent Explanations of Significant Difference (EPA, 1989, 1990, 1996).

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

The VOCs addressed in the MEW ROD are assigned to both facility-specific and regional responsibilities. Each MEW Company is responsible for investigation, remediation, and source control for VOCs in soil and groundwater at their facility-specific properties south of Highway 101. The MEW Companies are jointly responsible, through the RGRP, for remediation of VOCs in groundwater that is not being captured by the facility-specific source control systems or that cannot be attributed to a single source (EPA, 2004). The MEW Companies are:

- **106 Order**: Fairchild Semiconductor Corporation, Schlumberger Technology Corporation, NEC Electronics Inc. (NEC), Sumitomo Mitsubishi Silicon America (SUMCO, formerly Siltec Corporation), SMI Holding LLC (SMI), Vishay General Semiconductor (Vishay, formerly General Instrument Corporation), National Semiconductor Corporation, Tracor X-Ray, and Union Carbide (now known as Dow Chemical Company). National Semiconductor Corporation, Tracor X-Ray, and Union Carbide are not involved with the active investigation and cleanup of the MEW Site (EPA, 2004).
- **Consent Decree**: Raytheon Company, Intel Corporation.

Responsibility for VOCs in groundwater north of Highway 101 is allocated between the MEW RGRP, Navy, and NASA. Navy is regulated by EPA under a Federal Facilities Agreement (FFA).

[1] The soil cleanup goals have been met at all of the MEW Companies' properties (EPA, 2004).

1.2 Local Hydrology

The MEW study area is located in the Santa Clara Valley Groundwater Sub-basin, the northern-most of three interconnected groundwater basins within Santa Clara County (SCVWD, 2001). The groundwater flow direction is northerly, toward San Francisco Bay, and generally sub-parallel to the ground slope.

The MEW study area lies within the northern portion of the sub-basin, where the hydrostratigraphy 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 A/B Aquitard appears to be laterally continuous across the study area south of Highway 101, but may be discontinuous north of the highway (Tetra Tech FW, 2005).

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 are summarized below.

Water-Bearing Zones	Approximate Depth Interval Below Ground Surface
A[1]	20-45 feet
B1[2]	50-75 feet
B2	75-110 feet
B3	120-160 feet
C	200-240 feet
Deep	>240 feet

[1] The Navy and NASA refer to this zone as A1 north of Highway 101.
[2] The Navy and NASA refer to this zone as A2 north of Highway 101.

The following table summarizes the estimated ranges of hydraulic conductivity, horizontal gradient, saturated thickness, and transmissivity for the A and B Zones.

Water Bearing Zone	Estimated Hydraulic Conductivity (ft/day)		Approximate Horizontal Gradient	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

Regionally, groundwater flow is generally toward the north in the A and B Zones under non-pumping conditions. Groundwater flow in the C Zone and Deep Zone is predominantly to the north-northwest. In general, the horizontal gradients are steeper in the southern portion of the Site and flatten to the north as the groundwater approaches San Francisco Bay. Because the MEW study area is near the northern discharge side of the groundwater basin, vertical gradients are generally upward.

Groundwater hydraulic gradients are locally modified by the operation of MEW groundwater recovery wells (both source control and regional recovery wells) and slurry walls, resulting in steeper gradients in the vicinity of pumping wells and overall gradients towards the central core of the MEW study area. Hydraulic capture resulting from the recovery wells is described in Section 2.4.

1.3 Description of Remedy and Summary of Remedial Action

As specified in the ROD, the current RGRP remedy consists of groundwater extraction and treatment. The RGRP groundwater extraction and treatment systems are designed to control and remove VOCs migrating beyond the source control recovery wells (SCRWs) that are operated by the PRPs.

The RGRP remedy 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. [2, 3] Groundwater cleanup

[2] The objectives of the groundwater remedy design are described in the ROD and the Feasibility Study (Canonie, 1988).

goals are 5 µg/L for TCE in shallow groundwater (A and B zones) and 0.8 µg/L for TCE in deep groundwater (C and Deep Zones).[4]

Effectiveness of the remedy is monitored using a network of RGRP monitoring wells (Tables 1A and 1B) that are currently monitored according to the schedule provided on Table 2. This regional information compliments the facility-specific chemical data and capture zone analyses provided in Annual Progress Reports submitted to EPA by the individual MEW PRPs, NASA, and the Navy.

The RGRP extraction systems are summarized in Table 3. The regional plume north of Highway 101 is addressed by 15 Regional Recovery Wells (RRWs) that convey groundwater to the North of 101 Treatment System located on the corner of Wescoat Road and McCord Avenue, Moffett Field. The regional plume south of Highway 101 is addressed by ten RRWs that convey groundwater to the South of 101 Treatment System, located at 644 National Avenue, and six RRWs that convey groundwater to Fairchild facility-specific systems.

The groundwater remedy is operated according to the Operation and Maintenance (O&M) manuals for each system (Locus, 1999, 2000). Treated groundwater is discharged to Stevens Creek in compliance with National Pollutant Discharge Elimination System (NPDES) Permit CAG912003, Order No. R2-2009-0059. As discussed in Section 3.1, the North of 101 groundwater treatment system has a bypass valve that allows treated groundwater to be diverted for reuse by NASA when needed.

1.4 Summary of 2010 Site Activities and Deliverables

Ongoing site activities include:

- O&M of treatment systems;
- Assessment of remedial progress; and
- Planning for future remedial activities.

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[3] The ROD also contains design objective for vadose soil that has been achieved and is not applicable to the RGRP.

[4] Groundwater cleanup goals are presented in the ROD.

Specific site activities and deliverables by month in 2010 are listed below.

February 2010

- 11 February – Submitted to the Water Board the Fourth Quarter and Annual 2009 Self-Monitoring Report under NPDES Discharge Permit No. CAG912003.

March 2010

- 25 March – Semi-annual groundwater elevation measurements in RGRP groundwater monitoring and extraction wells.

May 2010

- 14 May – Submitted to Water Board the First Quarter 2010 Self-Monitoring Report under NPDES Discharge Permit No. CAG912003.

June 2010

- 15 June – Submitted to EPA the 2009 Annual Progress Report for the RGRP.

July 2010

- 2 July – Submitted to EPA the following information as requested: size of the MEW groundwater plume, the maximum historical and current TCE concentrations at MEW, and the reduction in average TCE concentration at MEW since 1992.

August 2010

- 13 August – Submitted to Water Board the Second Quarter 2010 Self-Monitoring Report under NPDES Discharge Permit No. CAG912003.
- 26 August – Transmitted to EPA comments on the Second Five-Year Review Report.

October 2010

- 21 October – Submitted to EPA the MNA supplemental sampling work plan.
- 26 October – "All Parties" meeting with EPA to discuss the groundwater feasibility study (GWFS) process at MEW.

- 27 October – “All Parties” meeting with EPA to discuss vapor intrusion (VI) at MEW.

November 2010

- 15 November – Submitted to Water Board the Third Quarter 2010 Self-Monitoring Report under NPDES Discharge Permit No. CAG912003.
- 18 November – Semi-annual groundwater elevation measurements in RGRP groundwater monitoring and extraction wells.
- 3 November through 28 December – Annual monitoring of RGRP groundwater monitoring and extraction wells.

December 2010

- 7 December – Perform annual settlement elevation survey of designated settlement measuring points.
- 14 December – “All Parties” meeting with EPA to discuss ongoing development of the Site-wide GWFS.
- 15 December – Submitted to EPA: Draft Indoor Air Sampling and Analysis Work Plan for Existing, Unsampled Commercial Buildings.
- 16 December – VI meeting with EPA.
- 22 December – Submitted matrix diffusion memorandum to EPA.
- 22 December – Submitted to EPA 2009 cis-1,2-dichloroethene (cDCE) and vinyl chloride (VC) isoconcentration contour maps as requested for development of the GWFS.
- 22 December – Submitted to EPA the 2010 RGRP O&M costs as requested for development of the Site-wide GWFS.

The 2010 Annual Report Remedy Performance Checklist is provided in Appendix A.

2. GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

2.1 System Description

Two groundwater extraction and treatment systems (GETS) are associated with the RGRP. The RGRP GETS are referred to as the North of 101 and South of 101 treatment systems. Treated groundwater from the RGRP GETS is discharged under the requirements of Order No. R2-2009-0059, NPDES Permit No. CAG912003 (VOC General Permit). These systems receive groundwater extracted from 25 RRWs. There are eleven additional RRWs (six currently operating) treated by Fairchild GETS. Table 3 lists the RRWs and their associated groundwater zones and GETS.

2.1.1 North of 101

The North of 101 GETS is located near the corner of Wescoat Road and McCord Avenue on Moffett Field and is shown in Figure 3. The North of 101 GETS includes the following components:

- 15 RRWs
- Conveyance piping
- Sediment filters and housing (2)
- Anti-scaling compound storage and metering system
- Two shallow-tray air-strippers in series
- pH adjustment using sulfuric acid between air-stripper units
- A duct heater to reduce the water content of the air stripper off-gas stream
- Two 4,000-pound vapor-phase granular activated carbon (GAC) vessels in series to remove VOC from the air stripper off-gas, and
- Electrical distribution and control panels including:
    - a programmable logic controller (PLC)
    - Auto-dialer, and
    - a supervisory control and data acquisition (SCADA) computer.

2.1.2 South of 101

The South of 101 GETS is located at 644 National Avenue and is shown in Figure 3. The South of 101 GETS includes the following components:

- 10 RRWs
- Conveyance piping
- Sediment filters and housing (4)
- Three 10,000-pound liquid-phase GAC vessels in series, and
- Electrical distribution and control panels including:
    - a PLC
    - Auto-dialer, and
    - SCADA computer.

In addition, groundwater extracted from the sump collection system at the former Fairchild Building 18 (644 National Avenue) is diverted to the South of 101 GETS during GAC change-outs at Fairchild System 1.

2.1.2.1 RGRP Wells Treated by Fairchild Treatment Systems

There are 11 RRWs connected to the three Fairchild GETS (Table 3). Groundwater is treated using liquid-phase GAC at the Fairchild GETS (Weiss 2011a,b,c,d). Six of these wells were operated in 2010.[5]

2.2 Operation and Maintenance

The North of 101 GETS removed approximately 452 pounds of VOCs from 57.5 million gallons of groundwater during 2010. The South of 101 GETS removed approximately 507 pounds of VOCs from 35.3 million gallons of groundwater in 2010. Table 4 summarizes the volume of groundwater treated, the influent total VOC concentrations and the mass of VOC treated by each RGRP GETS per month during

[5] Deep RRWs were last operated in 2002 (DW3-505R) and 2006 (DW3-219, DW3-244, DW3-334, DW3-364).

2010. Figures 4 and 5 illustrate the cumulative volume of groundwater and VOC mass removal for each of the GETS systems since 1998. In total, approximately 19,000 pounds of VOCs in 1.4 billion gallons of groundwater have been treated by the RGRP GETS.

Table 5 summarizes the VOC sampling results from the GETS NPDES compliance samples. TCE and cis-DCE are detected at higher concentrations in GETS influent samples as compared to other detected VOCs. TCE concentrations ranged from 550 to 850 µg/L in the North of 101 influent samples and from 1,300 to 1,800 µg/L in the South of 101 influent samples collected in 2010.

Table 6 presents target flow rates and 2010 average annual flow rates for each RRW. Target flow rates were established in August 2007 based on the 2006 RGRP Annual Progress Report (Weiss, 2006). Since that time, target rates for four RRWs (REG-7B1, REG-10A, REG-3A and REG-4A) have been adjusted.[6] Monthly average extraction rates (gallons per minute) for each RRW treated by an RGRP GETS in 2010 are provided in Table 7. These rates were calculated by dividing the volume of groundwater extracted by an RRW (gallons as reported by individual well totalizers) and dividing by the time (minutes) between meter readings.

In 2010, weekly average flow rates from each RRW were calculated and compared to the target rate for that RRW. Adjustments to the flow control valves were made at an RRW if the average rate was less than the target rate.

Non-routine GETS operation and maintenance activities in 2010 are summarized in Tables 8a and 8b. In one case, EPA was notified of down time for one extraction well. No Water Board notifications were necessary. Notifications to the EPA and Water Board are required for extraction well and system down-time events as follows:

- EPA: The owner and/or operator of the RGRP/Fairchild treatment system will make a best effort to orally notify EPA within 24 hours of a RRW or system shutdown that occurs for more than 72 hours (N101 and S101 O&M Manuals).
- Water Board: If the treatment system is shut down for more than 72 consecutive hours after the start up period (maintenance, repair, violations, etc.) the

[6] See Table 6 notes

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 (Order No.R2-2009-0059, VOC General NPDES Permit No. CAG912003, expires September 2014).

In addition, the following O&M compliance activities were conducted during this reporting period:

- Submitted monthly statements of groundwater volumes extracted from North of 101 and South of 101 RRWs to the Santa Clara Valley Water District;
- Disposed of spent sediment filters from the North of 101 and South of 101 treatment systems and spent carbon from South of 101 treatment system compound as hazardous waste (spent carbon from North of 101 system managed as non-hazardous waste);
- Submitted amended Notices of Intent (NOIs) to modify General VOC Discharge Permits for North of 101 and South of 101 to the Water Board on 6 October 2010. NOIs were updated to address treated water reuse for North of 101 and to correct the treatment system descriptions for North and South of 101. The Water Board approved the amended NOIs on 22 November 2010.

2.3 Groundwater Level Monitoring

Groundwater levels are measured semi-annually (Table 2) in approximately 900 wells for the purpose of monitoring the hydraulic performance of RGRP and facility-specific groundwater remedies in the MEW study area. Table 9 summarizes the construction details for RGRP monitoring and extraction wells used in the water level monitoring program. Groundwater levels were measured on 25 March and 18 November.[7] Water levels measured in RGRP wells during 2010 are included in Appendix I.

Groundwater levels in most MEW wells were measured monthly from 1984 to 1993 and quarterly from 1993 to 2004. On 2 December 2004, the EPA approved a reduction of the groundwater elevation measurement frequency from quarterly to semi-annually

[7] March and November are the months statistically evaluated to be the most representative of the seasonal high and low water levels, respectively.

for the MEW RGRP well network (Weiss, 2006). However, some MEW companies continue to measure site-specific groundwater levels quarterly in March, May, August and November as part of slurry wall evaluation activities.

Hydrographs of selected monitoring wells are presented in Figures 6 and 7. Figure 6 includes a set of A Zone hydrographs from along a north-south line through the MEW study area. These hydrographs indicate that the magnitude of seasonal and long-term water level fluctuations in the A Zone is very small relative to water level variations across the study area. Figure 7 presents hydrographs from a series of well clusters wherein adjacent wells are screened in different hydrostratigraphic zones. These hydrographs provide a representative measure of vertical hydraulic gradients between zones.

The groundwater elevations were used to construct groundwater elevation contour maps of the five water-bearing zones in the region (A/A1, B1/A2, B2, B3 and C/Deep) for the March and November monitoring periods. Groundwater elevations from monitoring wells and from piezometers installed in the filter pack of extraction wells were used in contouring. The groundwater elevation contour maps were created using KT3D_H2O version 3.0, a geostatistical software package (Tonkin and Larson, 2002).[8] 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.

Ten groundwater elevation contour maps are presented in Figures 8 through 17 (the capture zones included on the figures are discussed below in Section 2.4). Appendix B includes the ten contour maps, presented at a larger scale with posted groundwater elevation data and without the estimated capture zones.

[8] 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 RGRP and facility-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 RGRP 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[9];
- Water level measurements from March and November 2010 were interpolated to generate groundwater elevation contour maps as described in Section 2.3;
- Pumping rates from RRWs and SCRWs were compiled from available sources;
- Hydraulic capture from each RRW and SCRW was estimated based on graphical flow-net analysis of the contour maps;
- 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).

[9] For example, EPA Second 5-Year Review (EPA 2009a) and 2008 Annual Progress Report (Weiss, 2009).

2.4.2 Estimated Extraction Well Capture

Estimated capture zones for the RRWs in March and November 2010 are shown in Figures 8 through 17. 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). 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 RGRP regional contour maps and capture zone maps encompass the facility-specific areas. Capture zones from the facility-specific sites were reviewed and incorporated in the RGRP capture evaluation. The final capture zones as presented in Figures 8 through 17 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 2.4.2 above was developed on a well-by-well basis. However, the net result of the combined capture zones from all RRWs is an area of hydraulic capture significantly wider than the distribution of VOCs in groundwater. An independent check of the capture zones presented in Figures 8 through 17 was developed by using the combined 2010 groundwater extraction rates for all RRWs and SCRWs to estimate the total capture width in each zone (A, B1, B2, and B3). The estimated capture widths were then compared to the distribution of TCE in groundwater (Section 2.5) measured in map view for each zone. If the estimated width of capture is greater than the trans-gradient width of the TCE distribution in groundwater, then hydraulic containment of the plume is indicated.

The calculations of capture width for each zone based on the total extraction rate, regional hydraulic gradient, hydraulic conductivity, and zone thickness are shown in Table 10.

The results indicate that the predicted capture width based on the total extraction rate is greater than the measured transgradient width of TCE in groundwater, thereby providing an additional line of evidence that hydraulic containment is achieved.

2.4.4 Vertical Gradients

Hydrographs for selected Site wells showing vertical gradients are shown in Figure 7. The vertical gradients depicted in the hydrographs are summarized as follows.

- South of Highway 101 and north of the Raytheon Slurry wall: the vertical gradients are upward between all zones (graph 1 on Figure 7);
- South of Highway 101 and east of the Fairchild Building 1-4 Slurry wall: the vertical gradients are downward between the A and B1 zones and upward between the B1 and B2 zones (graph 2 on Figure 7);
- North of Highway 101 (approximately 1000 ft): the vertical gradients are upward between the A and B1 zones and downward between the B1 and B2 zones (graph 3 on Figure 7); and,
- North of Highway 101 (approximately 5000 ft): the vertical gradient is neutral to upward between the A and B1 zones (graph 4 on Figure 7).

2.5 Groundwater Quality Monitoring

The 2010 annual groundwater quality monitoring event was conducted in November and December 2010. Groundwater samples were collected from the RGRP wells and were analyzed for VOCs in compliance with the MEW monitoring schedule and O&M manuals (Table 3). A total of 229 RGRP wells were sampled in 2010. Of these wells, 218 were sampled as part of the required monitoring schedule and 11 were sampled voluntarily. VOC concentration versus time graphs for all the RGRP wells are included in Appendix D.

A summary of the analytical results including historical results for the last five years (2006 to 2010) is presented in Appendix E and the analytical reports are included in Appendix F.

Text and tables summarizing the sampling and analysis quality assurance and quality control (QA/QC) parameters for all RGRP groundwater samples collected in 2010 along with the QA/QC acceptance criteria for VOC analytical methods and results are presented in Appendix G.

2.5.1 TCE Isoconcentration Contour Maps

TCE isoconcentration contour maps were created for the 2010 annual sampling event. The 2010 TCE contour maps were based on the existing 2009 TCE contour maps (Geosyntec, 2010) with contours modified as needed to reflect decreases or increases in TCE concentrations from 2009 to 2010. The TCE isoconcentration maps for 2010 are presented for the A Zone, B1 Zone, B2 Zone, B3 Zone, and C Zone in Figures 18 to 22 respectively. The same contour maps are presented at a larger scale with posted data in Appendix C.

2.5.2 Other Samples Collected This Reporting Period

DW3-219 was sampled semi-annually in 2010 (May and November) because the concentrations in this well have fluctuated near the cleanup goal of 0.8 µg/L for TCE in deep groundwater. TCE concentrations in DW3-219 in 2010 ranged from 0.6 µg/L in May to 0.8 µg/L in November.

Seven wells are sampled annually for selected metals per the schedules in the O&M manuals for the RGRP, and as follows: 22A and 10B2 (arsenic), 42A (antimony, cadmium), 54A (cadmium), SIL12A (antimony), and RW-1(B1) and RW-2(B1) (lead). Current and historical results are provided in Appendix E.

Additional parameters were also analyzed for at 52 of the RGRP program wells as part of a MNA evaluation. The results of the MNA sampling and evaluation will be provided in a separate report submitted in 2011.

2.5.3 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.

In the 2010 annual monitoring event all of the RGRP wells sampled had TCE concentrations that were within or below historical ranges, except monitoring well 122B1[10].

VOC versus time graphs are presented in Appendix D. Based on Mann-Kendall statistical analysis the TCE concentrations are stable, decreasing or have no trend in 95% of the RGRP wells.[11] Approximately 47% of the RGRP wells display decreasing TCE concentration trends and 48% show no trend or are stable. All of the 30 RRWs operational in 2010 display decreasing TCE concentration trends.

During the 2010 and 2009 monitoring rounds, TCE concentrations in all B3 Zone wells were below the cleanup goal of 5 µg/L (Figure 21). Furthermore, no other VOCs have been detected in any B3 Zone monitoring wells since 2007. Therefore, the cleanup goals have been achieved in the B3 Zone and the sole recovery well operating in the B3 Zone (well 65B3, Figure 26) should be turned off.

The small percentage of wells that have recent increasing TCE concentration trends include the following:

- A-Zone: 21A, 79A, 14E14A, and R46A;
- B1-Zone: R13B1, W89-14, and R6B1;
- B2-Zone: 17B2, 51B2, and R30B2; and,
- C-Deep Zone: 11C.

The TCE concentration increase in each of these wells was less than an order of magnitude over the last 5 years. Four of these wells (14E14A, R13B1, 17B2 and 11C) had TCE concentrations less than the cleanup goal of 5 µg/L in 2010.

[10] TCE was detected at 122B1 during the 2010 event at a concentration of 12 µg/L, in comparison to historical results of 10 µg/L; Based on Mann-Kendall statistical analysis of TCE concentrations over the last 10 years well 122B1 displays no trend.

[11] A Mann-Kendall statistical analysis was performed on all RGRP wells using the TCE concentration data from 2000 to 2010 to evaluate the concentration trends.

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

The spatial distribution of VOC monitoring data can also be used to assess remedy performance. Figures 23 through 27 present maps of the A Zone, B1 Zone, B2 Zone, B3 Zone, and C Zone, respectively, with the November 2010 hydraulic capture zones (Section 2.4, Figures 8, 10, 12, 14, and 16) overlain on the November 2010 TCE isoconcentration maps. In addition, Figures 28 and 29 present the area of the TCE in groundwater that is the responsibility of MEW parties.[12] These figures illustrate nearly complete hydraulic capture, with only a few fringe areas of low TCE concentrations outside of the capture zones.

The following two wells, located within the area of RGRP responsibility, are downgradient of the hydraulic capture zones and have TCE concentrations above 5 µg/L in 2010:

- WU4-19 (B1/A2 Zone): The TCE concentration is 90 µg/L and the concentration trend is stable based on Mann Kendall analysis. This indicates that the current remedies are effective in this area despite the apparent gap in the capture zone overlay.
- Well 51B2 (B2 Zone): The TCE concentration is 31 µg/L. Although an increasing TCE concentration trend is observed over the last ten years, TCE concentrations have decreased in 51B2 in the last 3 years.

2.6 Compliance

The RGRP GETS discharge treated groundwater to the local storm drain systems under an NPDES permit. The RGRP NPDES permit (CAG912003/Order No. R2-2004-0055) expired on 30 September 2009 and was renewed (CAG912003/Order No. R2-2009-0059) effective 1 October 2009 through 30 September 2014. All field measurements and samples required under the NPDES were collected. Permit compliance reports are issued quarterly to the Water Board and requirements are summarized on Table 3.

[12] North of Highway 101 the areas of responsibility have been allocated between the MEW parties, Navy, and NASA based on negotiated allocation agreements.

Both systems operated within the effluent limits established by the NPDES permits for the entire period. VOC results from samples collected for NPDES compliance are summarized in Table 6. NPDES permit CAG912003 includes "trigger" effluent criteria that are not discharge criteria, but which require additional sampling and evaluation of GETS influent and treatment processes if exceeded. Samples from the North of 101 system exceeded effluent "triggers" for copper and selenium in November 2009. As a result, monthly effluent samples were collected in the first quarter of 2010 in accordance with Provision VI, C of permit CAG912003. The general Waste Discharge Requirements (WDRs) recognize that some inorganic compounds, including selenium and copper, are in treatment system effluent primarily due to background concentrations in the extracted groundwater. The Water Board has determined that the Bay-wide loading of inorganic compounds from VOC-cleanup discharges will cause no impairment of beneficial uses or potential exceedance of inorganic compound objectives in receiving waters.

The North of 101 system operated in compliance with BAAQMD Permit to Operate #11384.

3. OTHER ACTIVITIES

3.1 Water Reuse

The MEW ROD specifies that extracted groundwater should be reused to the maximum extent feasible. Currently, treated water from the RGRP North of 101 groundwater treatment system is designated for reuse by NASA or discharge to Stevens Creek. The North of 101 system has a bypass valve that allows treated groundwater to be diverted, further treated by microfiltration and reverse osmosis, and then reused by NASA's Unitary Wind Tunnel Cooling Tower or Arc Jet Facilities when needed. NASA reused approximately 1,101,213 gallons of treated NASA and MEW groundwater in 2010.

During 2010, the RGRP coordinated with NASA on their plans to expand water reuse that may include additional N101 effluent, as well as NASA and Navy treatment system effluent. NASA submitted a Notice of Intent to the Water Board for a NPDES discharge permit as part of preliminary engineering, with final design in 2011.

3.2 Air/Vapor Intrusion

On 8 March 2006, EPA sent a letter to the MEW Companies, NASA, and the Navy requesting a Supplemental Remedial Investigation/Feasibility Study (RI/FS) Work Plan and a RI/FS Report for vapor intrusion (EPA, 2006). The following actions have been taken in response to the EPA request in 2010.

- EPA issued a Record of Decision (ROD) Amendment for the Vapor Intrusion Pathway on 16 August 2010.
- The MEW Companies submitted the Draft Indoor Air Sampling and Analysis Work Plan for Existing Unsampled Commercial Buildings to EPA on 15 December 2010.

3.3 Soil Settlement Survey

An annual survey has been conducted at the Site since 1998 to monitor soil settlement elevations. The purpose of these annual measurements is to evaluate whether survey data and associated groundwater elevation data indicate that there has been soil settlement associated with the MEW groundwater withdrawal.

Kier and Wright Civil Engineers & Surveyors, Inc. surveyed the Settlement Measurement Points (SMPs) in December 2010 using the City of Mountain View vertical control benchmark No. 111-46. The results of the survey are presented in Appendix H.

Geosyntec reviewed the historical settlement and water level elevation data and concluded that the small amplitude ground elevation fluctuations do not appear to be related to groundwater extraction operations.

Consistent with this finding, if pumping is maintained at current rates, Geosyntec considers that future monitoring can be reduced to every two years, with the possibility for future reductions in monitoring frequency if the observed trends remain consistent.

4. PROBLEMS ENCOUNTERED

Section 2.2 summarizes the non-routine O&M events that occurred at the North of 101 and South of 101 treatment systems. No other problems related to operation of the treatment systems were encountered.

5. TECHNICAL ASSESSMENT

The following assessment of the groundwater remedy performance was made based on data collected through 2010.

- The remedy is functioning as intended. An Annual Remedy Performance Checklist and summary of recommendations from the 2009 five year remedy review is included in Appendix A.
- 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 of the regional plume.
- VOC concentrations are decreasing over time. Appendix D shows that most RGRP wells have stable or decreasing TCE concentrations.
- Cleanup goals in groundwater have been reached in the B3 Zone. Since 2009, the concentration of TCE has been less than 5 μg/L and no other VOCs have been detected.
- The 2010 groundwater elevation data indicate that vertical gradients are consistent with historical trends. (Figure 7).

While concentrations within the core of the TCE plume have historically decreased by an order of magnitude or more, the perimeter extent of TCE concentrations has largely stabilized and treatment system influent concentrations have generally declined.

6. CONCLUSIONS AND RECOMMENDATIONS

During 2010, the RGRP treatment systems removed a total of 959 pounds of VOCs from 93 million gallons of extracted groundwater. The North of 101 and South of 101 treatment systems operated on a nearly continuous basis (99% and 99.5%, respectively) and no significant problems related to the system operations were noted in 2010.

The technical assessment concludes that the groundwater remedy is performing as intended. Vapor issues are being addressed in the independent process described in Section 3.2.

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 of the regional plume.

Trend analyses indicate stable or decreasing concentrations in 95% of the RGRP wells.

The cleanup goals for groundwater have been reached in the B3 Zone and it is recommended that RRW 65B3 be turned off.

7. UPCOMING WORK IN 2011 AND PLANNED FUTURE ACTIVITIES

January	• Pump and Treat System O&M
February	• Pump and Treat System O&M • Submit 4th Quarter and Annual NPDES report
March	• Pump and Treat System O&M • Quarterly system effluent sampling (NPDES) • Groundwater level measurements
April	• Pump and Treat System O&M
May	• Pump and Treat System O&M • Submit 1st Quarter NPDES report
June	• Pump and Treat System O&M • Quarterly system effluent sampling (NPDES) • Submit Annual Progress Report to EPA
July	• Pump and Treat System O&M
August	• Pump and Treat System O&M • Submit 2nd Quarter NPDES report
September	• Pump and Treat System O&M • Quarterly system effluent sampling (NPDES)
October	• Pump and Treat System O&M
November	• Pump and Treat System O&M • Groundwater level measurements • Groundwater sampling South of 101 • Submit 3rd Quarter NPDES report
December	• Pump and Treat System O&M • Quarterly system effluent sampling (NPDES) • Groundwater sampling North of 101

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TABLES

Table 1A
2010 RGRP Wells North of 101 Listed by Owner
MEW Regional Groundwater Remediation Program
Mountain View, California

Owner: Fairchild (North of 101)					
A/A1	**A2/B1**	**B2**	**B3**	**C**	**Deep**
65A	46B1	17B2			
72A	47B1	51B2			
73A	48B1	54B2			
74A	49B1	82B2			
75A	50B1	123B2			
81A	68B1				
82A	78B1				
88A	79B1				
89A	81B1				
92A [1]	83B1				
93A	87B1				
95A	139B1				
	154B1 [1]				
	155B1 [1]				

Owner: MEW RGRP (North of 101)					
A/A1	**A2/B1**	**B2**	**B3**	**C**	**Deep**
REG-2A	REG-5B(1)				
REG-3A	REG-6B(1)				
REG-4A	REG-7B(1)				
REG-5A	REG-8B(1)				
REG-6A	REG-9B(1)				
REG-7A	REG-10B(1)				
REG-8A	REG-12B(1)				
REG-9A	W89-13B1-R				
W89-03A-R					
W89-04A-R					

Owner: NASA (North of 101)					
A/A1	**A2/B1**	**B2**	**B3**	**C**	**Deep**
14D02A					
14D09A					
14D13A					
14E14A					
15H05A					

Owner: Navy (North of 101)					
A/A1	**A2/B1**	**B2**	**B3**	**C**	**Deep**
W9-16	W9-17				
W9-38	W9-25				
W12-6	W9-41				
W14-3	W9SC-20				
W60-2	W14-5				
W89-1	W89-11				
W89-2	W89-12				
W89-5	W89-14				
W89-7	WNB-14				
W89-8	WU4-2				
W89-9	WU4-4				
WT14-1	WU4-5				
WU4-1	WU4-6				
WU4-3	WU4-7				
WU4-16	WU4-12				
WU4-18	WU4-13				
	WU4-19				

Notes:
[1] Voluntary well added to RGRP in 2010.

Table 1B
2010 RGRP Wells South of 101 Listed by Owner
MEW Regional Groundwater Remediation Program
Mountain View, California

Owner: Fairchild (South of 101)					
A/A1	**A2/B1**	**B2**	**B3**	**C**	**Deep**
1A	8B1	6B2	28B3	6C	DW3-551
20A	13B1	15B2	30B3	8C	
21A	14B1	16B2	44B3	9C	
23A	26B1	36B2	133B3	10C	
26A	32B1	37B2		11C	
29A	33B1	40B2		DW2-234	
45A	56B1	43B2			
61A [1]	67B1 [1]	62B2			
62A	74B1	75B2			
77A	77B1	76B2			
78A	91B1	89B2			
79A	92B1	113B2			
99A	98B1	125B2			
109A	103B1	129B2			
134A [1]	105B1	132B2			
142A	112B1	134B2			
144A	119B1				
153A	122B1				
162A	124B1				
173A	140B1				
	143B1				
	RW-2(B1)				
	RW-4(B1) [1]				

Owner: Intel (South of 101)					
A/A1	**A2/B1**	**B2**	**B3**	**C**	**Deep**
IM9A	I9B1				
	IM5B(1)				
	IM9B(1)				

Owner: MEW RGRP (South of 101)					
A/A1	**A2/B1**	**B2**	**B3**	**C**	**Deep**
REG-1A	ME1B1	38B2	65B3	DW3-219	DW3-244
REG-10A	ME2B1	NEC8B2			DW3-334
REG-11A	NEC8B1	NEC18B2			DW3-364
REG-12A	NEC14B1	REG-1B(2)			DW3-505R
REG-MW-1A	NEC18B1	REG-3B(2)			
REG-MW-2A	REG-1B(1)	REG-MW-1B(2)			
RW-9A	REG-2B(1)	RW-9(B2)			
	REG-3B(1)				
	REG-4B(1)				
	REG-11B(1)				
	REG-MW-1B(1)				
	REG-MW-2B(1)				
	RW-9(B1)R				

Owner: Raytheon (South of 101)					
A/A1	**A2/B1**	**B2**	**B3**	**C**	**Deep**
R22A	R6B1	R13B2	R5B3	DW1-230	
R24A	R13B1	R30B2	R9B3	R4C	
R25A	R16B1	R40B1(B2)	R27B3		
R29A	R22B1	R41B2	R54B3		
R31A	R46B1	R50B2	R56B3		
R32A	RP22B	R52B2	R61B3		
R43A		R55B2			
R46A					
R57A					
R59A					

Owner: Siltec (South of 101)					
A/A1	**A2/B1**	**B2**	**B3**	**C**	**Deep**
SIL4A [1]					
SIL12A [1]					

Owner: Silva (South of 101)					
A/A1	**A2/B1**	**B2**	**B3**	**C**	**Deep**
	RW-13B(1) [1]			RW-1C [1]	

Notes:
[1] Voluntary well added to RGRP in 2010.

Table 2
2010 Monitoring and Reporting Schedule
MEW Regional Groundwater Remediation Program
Mountain View, California

System / Wells	Analysis[1]	Frequency
Wells		
Wells	Water Level	March, November
Wells	VOCs by EPA Method 8260B	November or December[7]
Wells	Standard Observations (pH, Temperature, Specific Conductivity)	November or December
Wells	Sampling for Selected Metals[2]	November or December
North of 101 Treatment System		
System Influent (before AS 1)[3]	VOCs by EPA Method 8260B	Monthly
System Influent (before AS 1)	pH and Temp	Monthly
System Influent (before AS 1)	1,4-Dioxane by EPA Method 8270C SIM	15 Times in 2010
System Influent (before AS 1)	Cu and Se by EPA Method 200.8	3 Times in 2010
System Midpoint (AS 1&2)	VOCs by EPA Method 8260B	Monthly
System Midpoint (AS 1&2)	pH, Temp, Specific Conductivity	Monthly
System Effluent (after AS 2)	VOCs by EPA Method 8260B	Monthly
System Effluent (after AS 2)	pH, Temp, Specific Conductivity	Bimonthly
System Effluent (after AS 2)	1,4-Dioxane by EPA Method 8270C SIM[5]	Bimonthly
System Effluent (after AS 2)	Metals[4] by EPA Method noted	Six Times in 2010
System Effluent (after AS 2)	Fish Toxicity, 96-Hr by US EPA-821-R-02-012 Test, Method 2019.0	October
System Effluent (after AS 2)	Turbidity by EPA Method 180.1	October
System Effluent (after AS 2)	Hardness and Salinity by standard methods	October
South of 101 Treatment System		
System Influent (before GAC 1)[6]	VOCs by EPA Method 8260B	Quarterly
System Influent (before GAC 1)	1,4 Dioxane by EPA Method 8270C SIM	May
System Influent (before GAC 1)	pH, Temp, Specific Conductivity	Quarterly
Midpoint 1 (GAC 1&2)	VOCs by EPA Method 8260B	Monthly
Midpoint 1 (GAC 1&2)	pH,Temp, Specific Conductivity	Monthly
Midpoint 2 (GAC 2&3)	VOCs by EPA Method 8260B	Five Times in 2010
Midpoint 2 (GAC 2&3)	pH,Temp, Specific Conductivity	Five Times in 2010
System Effluent (after GAC 3)	VOCs by EPA Method 8260B	Monthly
System Effluent (after GAC 3)	1,4-Dioxane by EPA Method 8270C SIM	May
System Effluent (after GAC 3)	pH, Temp, Specific Conductivity	Monthly
System Effluent (after GAC 3)	Fish Toxicity, 96-Hr by US EPA-821-R-02-012 Test, Method 2019.0	October
System Effluent (after GAC 3)	Turbidity by EPA Method 180.1	October
System Effluent (after GAC 3)	Hardness and Salinity by standard methods	October

Notes:

1 EPA Methods used reflect transition from Order No. R2-2004-055 to Order No. R2-2009-0059, NPDES Permit No. CAG912003

2 Metals analyzed at following wells locations:
- Arsenic (As) = 22A, 10B2
- Antimony (Sb) = 42A, SIL12A
- Cadmium (Cd) = 42A, 54A
- Lead (Pb) = RW-1(B1), RW-2(B1)

3 AS = Air Stripper

4 US EPA Method 200.8 for Cr, and Se.

5 SIM = selective ion mode

6 GAC = Granular Activated Carbon

7 RRW DW3-219 was sampled in May and December 2010 (bi-annually per criteria for Silva RRW shut-down).

Table 3
Regional Recovery Wells and Associated Treatment Systems
MEW Regional Groundwater Remediation Program
Mountain View, California

Treatment System	Regional Recovery Wells By Aquifer				
	A	**B1**	**B2**	**B3**	**C/Deep**
Regional Remediation Program Treatment Systems					
North of 101	REG-2A REG-3A REG-4A REG-5A REG-6A REG-7A REG-8A REG-9A	REG-5B(1) REG-6B(1) REG-7B(1) REG-8B(1) REG-9B(1) REG-10B(1) REG-12B(1)			
South of 101	REG-1A REG-10A REG-11A REG-12A	REG-1B(1) REG-2B(1) REG-3B(1) REG-11B(1)	REG-1B(2) REG-3B(2)		
Fairchild Treatment Systems					
System 1		REG-4B(1)	38B2		
System 3	RW-9A	RW-9(B1)	RW-9(B2)		
System 19				65B3	DW3-219 [1] DW3-244 [2] DW3-334 [2] DW3-364 [2] DW3-505R [3]

Notes:
1. Well was originally turned off in 2002, operated temporarily from 29 July 2005 through 19 June 2006, and has remained off since that time with EPA approval.
2. Well was turned off with EPA approval in November 2006.
3. Well was turned off with EPA approval in 2002.

Table 4
2010 Monthly VOC Mass Removal
MEW Regional Groundwater Remediation Program
Mountain View, CA

	Total Groundwater Extracted[1] (gallons)	Influent VOC Concentration[2] (mg/L)	Total VOC Mass Removed[3] (pounds)
North of 101			
January	6,003,082	0.95	47.4
February	4,356,304	1.02	36.9
March	5,651,539	0.87	41.1
April	4,375,794	1.08	39.2
May	2,817,900	1.02	24.0
June	5,879,077	0.97	47.4
July	4,662,266	0.96	37.2
August	4,250,162	0.92	32.6
September	4,736,870	0.73	28.8
October	4,845,708	0.88	35.5
November	4,357,357	1.02	37.1
December	5,603,980	0.96	45.0
2010 Cumulative	57,540,039		452.3
South of 101			
January	2,877,118		40.0
February	2,537,930	1.67	35.3
March	3,372,543		46.9
April	2,905,470		44.4
May	2,905,250	1.84	44.4
June	3,520,200		53.9
July	2,734,140		44.3
August	2,917,644	1.94	47.2
September	2,711,106		43.9
October	2,756,040		33.2
November	2,529,170	1.45	30.5
December	3,533,330		42.6
2010 Cumulative	35,299,941		506.6

Notes:

1. Total groundwater extracted each month was obtained from the NPDES quarterly reports.

2. Influent VOC concentrations were obtained from the NPDES quarterly reports. System influent samples are analyzed monthly for North of 101 System and quarterly for South of 101 System.

3. Total VOC Mass Removed is calculated by multiplying Total Groundwater Extracted (gallons) by the influent VOC concentration (mg/L) and a Unit Conversion factor of 0.00000833, based on 3.785 L/gal and $2.2X10^{-6}$ lbs/mg.

4. Abbreviations: mg/L = milligrams per liter lbs/mg = pounds per milligram; L/gal = liters per gallon

Table 5
2010 Treatment System VOC Sampling Results
MEW Regional Groundwater Remediation Program
Mountain View, California

Well	Date	Constituent (concentration in micrograms per liter, ug/L and method is 8260B)												
		Chloro-form	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,4-Dioxane[1]	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride
North 101														
Air Stripper I Influent	1/20/2010	<13	<6.3	<6.3	9.3	230	<6.3	3.0	<25	<250	<6.3	<6.3	710	<6.3
Air Stripper I Influent	2/17/2010	<8.3	6.2	<4.2	11	250	<4.2	2.3	<17	<170	<4.2	<4.2	750	<4.2
Air Stripper I Influent	3/17/2010	<10	6.0	<5	8	220	<5	1.9	<20	<200	<5	<5	640	<5
Air Stripper I Influent	4/21/2010	<10	5.6	<5	9.7	210	<5		<20	<20	<5	<5	850	<5
Air Stripper I Influent	4/22/2010							3.3						
Air Stripper I Influent	5/19/2010	<10	6.1	<5	8.1	210	<5	2.5	<20	<20	<5	<5	800	<5
Air Stripper I Influent	6/2/2010							2.2						
Air Stripper I Influent	6/16/2010	<10	<5	<5	9	160	<5	2.6	<20	<20	<5	<5	800	<5
Air Stripper I Influent	6/30/2010							3.0						
Air Stripper I Influent	7/14/2010							2.7						
Air Stripper I Influent	7/28/2010	<10	<5	<5	11	180	<5	2.4	<20	<20	6.8	<5	760	<5
Air Stripper I Influent	8/11/2010							3.1						
Air Stripper I Influent	8/18/2010	<10	<5	<5	7	150	5.1	2.7	<20	<20	<5	<5	760	<5
Air Stripper I Influent	8/25/2010							2.8						
Air Stripper I Influent	9/16/2010	<10	<5	<5	9.9	170	<5		<20	<20	<5	<5	550	<5
Air Stripper I Influent	10/20/2010	<8.3	5.5	<4.2	9.4	200	5.3		19	<17	<4.2	<4.2	640	<4.2
Air Stripper I Influent	11/17/2010	<4.2	4.7	<4.2	7.5	200	<4.2	2.4	<17	<17	<4.2	<4.2	810	<4.2
Air Stripper I Influent	12/15/2010	<8.3	4.7	<4.2	9.2	190	<4.2	2.1	<17	<17	<4.2	<4.2	760	<4.2
Air Stripper 2 Influent	1/20/2010	<1	<0.5	<0.5	<0.5	0.5	<0.5		<2	<20	<0.5	<0.5	<0.5	<0.5
Air Stripper 2 Influent	2/17/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<20	<0.5	<0.5	<0.5	<0.5
Air Stripper 2 Influent	3/17/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<20	<0.5	<0.5	<0.5	<0.5
Air Stripper 2 Influent	4/21/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
Air Stripper 2 Influent	5/19/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
Air Stripper 2 Influent	6/16/2010	<1	<0.5	<0.5	<0.5	0.9	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
Air Stripper 2 Influent	7/28/2010	<1	<0.5	<0.5	<0.5	0.6	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
Air Stripper 2 Influent	8/18/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
Air Stripper 2 Influent	9/16/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
Air Stripper 2 Influent	10/20/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
Air Stripper 2 Influent	11/17/2010	<0.5	<0.5	<0.5	<0.5	0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
Air Stripper 2 Influent	12/15/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	1/20/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5	3.4	<2	<20	<0.5	<0.5	<0.5	<0.5
System Effluent	1/20/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5	3.4	<2	<20	<0.5	<0.5	<0.5	<0.5
System Effluent	2/17/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5	2.2	<2	<20	<0.5	<0.5	<0.5	<0.5
System Effluent	2/17/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5	2.5	<2	<20	<0.5	<0.5	<0.5	<0.5
System Effluent	3/3/2010							2.9						
System Effluent	3/3/2010							3.1						
System Effluent	3/17/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5	2.2	<2	<20	<0.5	<0.5	<0.5	<0.5
System Effluent	3/17/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5	2.0	<2	<20	<0.5	<0.5	<0.5	<0.5
System Effluent	3/31/2010							2.2						
System Effluent	3/31/2010							2.4						
System Effluent	4/14/2010							4.5						
System Effluent	4/14/2010							4.2						

Table 5
2010 Treatment System VOC Sampling Results
MEW Regional Groundwater Remediation Program
Mountain View, California

Well	Date	Constituent (concentration in micrograms per liter, ug/L and method is 8260B)												
		Chloro-form	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,4-Dioxane[1]	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride
System Effluent	4/21/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	4/21/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	4/22/2010							3.5						
System Effluent	4/22/2010							3.2						
System Effluent	5/5/2010							2.8						
System Effluent	5/5/2010							3.1						
System Effluent	5/19/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	5/19/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5	2.3	<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	6/2/2010							2.2						
System Effluent	6/16/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	6/16/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5	2.7	<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	6/30/2010							3.2						
System Effluent	7/14/2010							3.3						
System Effluent	7/28/2010							2.1						
System Effluent	7/28/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	7/28/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5	2.1	<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	8/11/2010							3.1						
System Effluent	8/18/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5	2.9	<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	8/18/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5	2.7	<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	8/25/2010							2.9						
System Effluent	9/8/2010							2.4						
System Effluent	9/16/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	9/16/2010							2.1						
System Effluent	9/16/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5	1.6	<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	9/16/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	9/22/2010							2.7						
System Effluent	10/6/2010							3.0						
System Effluent	10/20/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5	2.2	<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	10/20/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	10/20/2010							2.6						
System Effluent	11/3/2010							2.4						
System Effluent	11/17/2010							2.6						
System Effluent	11/17/2010	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	2.2	<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	11/17/2010	<0.5	<0.5	<0.5	<0.5	0.9	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	12/1/2010							2.2						
System Effluent	12/15/2010	<1	<0.5	<0.5	<0.5	0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	12/15/2010							1.9						
System Effluent	12/15/2010	<1	<0.5	<0.5	<0.5	0.6	<0.5	3.6	<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	12/29/2010							2.6						
South 101														
System Influent	2/17/2010	<20	<10	<10	<10	77	<10		93	<400	<10	<10	1500	<10
System Influent	5/19/2010	<20	<10	<10	<10	58	<10	<0.96	79	<40	<10	<10	1700	<10
System Influent	8/30/2010	<20	<10	<10	<10	50	<10		94	<40	<10	<10	1800	<10
System Influent	11/24/2010	<20	<10	<10	<10	37	<10		110	<40	<10	<10	1300	<10

Table 5
2010 Treatment System VOC Sampling Results
MEW Regional Groundwater Remediation Program
Mountain View, California

Well	Date	Constituent (concentration in micrograms per liter, ug/L and method is 8260B)												
		Chloro-form	1,1-DCA	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,4-Dioxane[1]	Freon 113	Methylene Chloride	PCE	1,1,1-TCA	TCE	Vinyl Chloride
System Midpoint I	1/21/2010	<1	<0.5	<0.5	<0.5	1	<0.5		<2	<20	<0.5	<0.5	<0.5	<0.5
System Midpoint I	2/17/2010	<1	<0.5	<0.5	<0.5	1.1	<0.5		<2	<20	<0.5	<0.5	<0.5	<0.5
System Midpoint I	3/17/2010	<1	<0.5	<0.5	<0.5	1	<0.5		<2	<20	<0.5	<0.5	<0.5	<0.5
System Midpoint I	4/21/2010	<1	<0.5	<0.5	<0.5	0.8	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Midpoint I	5/19/2010	<1	<0.5	<0.5	<0.5	1	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Midpoint I	6/16/2010	<1	<0.5	<0.5	<0.5	1.9	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Midpoint I	7/22/2010	<1	2.1	<0.5	<0.5	7.8	<0.5		<2	<2	<0.5	<0.5	0.7	<0.5
System Midpoint I	8/30/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Midpoint I	9/16/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Midpoint I	10/21/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Midpoint I	11/24/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Midpoint I	12/15/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Midpoint 2	2/17/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<20	<0.5	<0.5	<0.5	<0.5
System Midpoint 2	5/19/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Midpoint 2	8/30/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Midpoint 2	9/10/2010	<1	<0.5	<0.5	<0.5	1	<0.5		<2	<2	<0.5	<0.5	1.5	<0.5
System Midpoint 2	11/24/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	2.5	<0.5
System Effluent	1/21/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<20	<0.5	<0.5	<0.5	<0.5
System Effluent	1/21/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<20	<0.5	<0.5	<0.5	<0.5
System Effluent	2/17/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<20	<0.5	<0.5	<0.5	<0.5
System Effluent	2/17/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<20	<0.5	<0.5	<0.5	<0.5
System Effluent	3/17/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<20	<0.5	<0.5	<0.5	<0.5
System Effluent	3/17/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<20	<0.5	<0.5	<0.5	<0.5
System Effluent	4/21/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	5/19/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.96	<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	6/16/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	7/22/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	8/30/2010	<1	<0.5	<0.5	<0.5	1	<0.5		<2	<2	<0.5	<0.5	1.7	<0.5
System Effluent	10/21/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	11/24/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5
System Effluent	12/15/2010	<1	<0.5	<0.5	<0.5	<0.5	<0.5		<2	<2	<0.5	<0.5	<0.5	<0.5

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

(1) 1,4-dioxane analyzed by method 8270C SIM

Table 6
Target and 2010 Average Recovery Well Flow Rates
MEW Regional Groundwater Remediation Program
Mountain View, CA

Extraction Wells	Target Flow Rate[1] (gpm)	Average 2010 Flow Rate[2] (gpm)
North of 101		
REG-2A	10.6	8.3
REG-3A	7.0	6.8
REG-4A	9.0	8.0
REG-5A	19.3	15.6
REG-8A	6.9	7.2
REG-5B(1)	17.3	17.0
REG-6B(1)	8.0	5.0
REG-7B(1)	12.0	12.5
REG-6A	4.9	3.5
REG-7A	12.8	12.6
REG-9A	7.7	8.1
REG-8B(1)	11.3	5.4
REG-9B(1)	5.3	6.0
REG-10B(1)	12.8	11.1
REG-12B(1)	10.4	8.0
South of 101		
REG-1A	11.4	11.3
REG-10A	3.0	2.7
REG-11A	4.5	4.4
REG-2B(1)	3.5	4.5
REG-3B(1)	6.0	5.6
REG-11B(1)	5.2	3.9
REG-3B(2)	4.5	3.9
REG-12A	10.0	9.9
REG-1B(1)	15.4	14.6
REG-1B(2)	3.5	1.9

Notes:

1. Target flow rates were assigned in August 2007 based on the January 2006 average flow rates (Weiss, 2006). Since that time, target flow rates for four wells have been adjusted based on well yield. Target rates for REG-7B(1) and REG-10A were increased in October 2008 to reduce required maintenance. Target rates for wells REG-3A and REG-4A were decreased in October 2008 because the yield from these wells had decreased despite redevelopment.

2. Average 2010 flow rate was calculated by dividing the total volume of groundwater recovered by the time in minutes between the totalizer readings. The North of 101 and South of 101 totalizer readings were recorded on 28 December 2009 and 27 December 2010.

Table 7

2010 Monthly Average Recovery Well Flow Rates

MEW Regional Groundwater Remediation Program

Mountain View, CA

Extraction Well	2010 Average Monthly Flow Rate[1] (gpm)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
North of 101												
REG-2A	8.5	7.8	7.7	8.5	9.0	7.0	9.0	7.7	7.9	9.8	9.6	7.6
REG-3A	7.4	6.8	6.7	7.4	7.8	6.1	7.8	6.6	6.7	7.0	6.8	5.3
REG-4A	8.5	7.9	7.7	8.5	8.2	7.0	9.0	7.7	7.9	8.7	8.9	7.1
REG-5A	18.3	17.5	17.2	19.0	18.2	13.6	16.3	13.6	13.7	14.9	14.7	11.8
REG-8A	7.6	6.8	6.9	7.6	8.0	6.2	8.1	6.9	7.0	7.8	8.0	6.3
REG-5B(1)	18.4	16.6	16.7	12.9	19.2	15.0	19.3	16.4	16.9	18.7	19.4	15.3
REG-6B(1)	5.7	5.1	5.1	5.3	5.5	4.4	5.4	4.6	4.7	5.1	5.2	4.3
REG-7B(1)	13.1	12.1	11.8	13.0	13.9	10.8	13.9	11.8	12.2	13.4	13.9	11.0
REG-6A	3.3	3.9	3.7	4.2	4.3	2.9	4.0	3.5	3.3	3.4	3.5	2.7
REG-7A	13.7	12.7	12.4	13.7	14.5	11.2	14.6	12.0	12.0	12.9	12.8	9.6
REG-9A	8.5	7.9	7.7	8.5	9.0	7.0	9.1	7.7	7.9	8.8	9.0	7.1
REG-8B(1)	6.2	5.8	5.5	5.8	6.0	4.6	5.8	4.9	5.0	5.4	5.6	4.6
REG-9B(1)	6.3	5.8	5.7	6.3	6.7	5.2	6.7	5.7	5.9	6.5	6.7	5.3
REG-10B(1)	11.5	9.8	11.0	13.5	14.3	9.6	11.2	9.6	9.8	12.2	12.5	9.3
REG-12B(1)	3.4	8.0	7.8	8.6	9.2	7.1	9.2	7.8	7.7	9.6	10.0	7.7
South of 101												
REG-1A	8.2	9.2	11.1	13.0	13.4	10.7	13.3	10.9	11.4	11.5	13.1	10.0
REG-10A	2.9	3.2	2.7	3.1	3.0	2.4	3.0	2.8	2.7	2.5	2.4	1.7
REG-11A	3.7	3.7	4.0	5.5	5.6	4.1	4.6	3.7	4.0	4.2	5.4	4.4
REG-2B(1)	5.3	4.0	3.8	4.8	5.3	4.4	5.6	4.4	4.6	4.5	4.8	3.6
REG-3B(1)	5.7	6.2	5.1	6.6	6.3	4.8	5.5	4.2	5.4	6.0	6.7	5.1
REG-11B(1)	3.6	3.8	3.5	4.4	5.2	3.7	4.0	3.2	3.6	3.7	4.1	4.2
REG-3B(2)	3.2	4.3	4.0	4.6	4.9	3.8	3.9	3.0	4.6	3.8	3.3	3.6
REG-12A	9.3	10.0	8.9	10.5	11.1	8.8	11.3	9.1	10.0	10.2	12.4	8.3
REG-1B(1)	7.8	16.3	14.6	17.3	17.8	14.2	16.4	13.4	13.4	15.1	17.4	13.2
REG-1B(2)	2.3	2.4	1.4	2.0	2.6	1.7	2.1	1.9	1.9	1.8	2.0	1.5

Notes:

1. Monthly average extraction well flow rate for each well was calculated by dividing the volume of groundwater extracted by the time (minutes) between the effluent totalizer readings (generally taken last Monday of each month).

gpm = gallons per minute

Table 8A
Summary of 2010 Non-Routine Operation and Maintenance Activities North of 101
MEW Regional Groundwater Remediation Program
Mountain View, CA

Date	Component	Comments	Regulatory Notification
January 6 & 12, 2010	REG-10B(1)	Well REG-10B(1) was off-line for a total of approximately 14 hours due to low flow alerts. The pumping rate was reduced to 10 gallons per minute (gpm) to stabilize flow in the well.	Not Required
January 19, 2010	REG-12B(1)	Well REG-12B(1) was off-line for approximately 10 hours due to low flow and pump fault alerts caused by low voltage due to storms.	Not Required
January 23, 2010	REG-5A	Well REG-5A was off-line for approximately 24 hours due to low flow alerts.	Not Required
February 15, 2010	Treatment System	The treatment system was off-line for approximately 7 hours due to a power failure in the system control.	Not Required
February 16, 2010	Treatment System	The treatment system was off-line for approximately 2 hours for a routine carbon change.	Not Required
February 21, 2010	Treatment System	The treatment system was off-line for approximately 20 hours due to a pad flood caused by air in the sump pump.	Not Required
March 11, 2010	REG-6A	Well REG-6A was off-line for approximately 9 hours due to a low flow alert caused by a malfunctioning sensor.	Not Required
April 8, 2010	Treatment System	The treatment system was off-line for approximately one hour due to an electrical fault.	Not Required
April 14-15, 2010	REG-5B(1)	REG-5B(1) was off-line for approximately 26 hours due to a variable frequency drive (VFD) that tripped repeatedly due to a motor overload. The VFD was repaired.	Not Required
May 3-4, 2010	REG-4A	Well REG-4A was off-line for approximately 15 hours due to a low flow alert.	Not Required
May 12-14, 2010	REG-4A	Well REG-4A was off-line for approximately 50 hours due to flow control issues, troubleshooting and repair.	Not Required
May 26, 2010	REG-10B(1)	Well REG-10B(1) was off-line for approximately 2 hours due to a low flow alert.	Not Required
June 5-6, 2010	REG-10B(1)	Well REG-10B(1) was off-line for approximately 9 hours due to a low flow alert.	Not Required
June 10-12, 2010	REG-10B(1)	Well REG-10B(1) was off-line for approximately 21 hours due to low flow alerts.	Not Required
July 29, 2010	Treatment System	Treatment system was off-line for approximately 5 hours during a routine carbon change.	Not Required
August 5, 2010	Treatment System	Treatment system was off-line for approximately 2 hours during acid pump maintenance.	Not Required
August 29-30, 2010	REG-6A	Well REG-6A was off-line for approximately 16 hours due to a low flow alert.	Not Required
September 13, 2010	Treatment System	Treatment system was off-line for approximately 3 hours during the annual system inspection.	Not Required
September 15-16, 2010	Treatment System	Treatment system was off-line for approximately 24 hours during the annual cleaning of the air stripper.	Not Required
September 23-29, 2010	REG-6B(1)	Well REG-6B(1) was off-line for approximately 23 hours due to multiple low flow alerts.	Not Required
October 1 - December 25, 2010	REG-6B(1)	Well REG-6B(1) was off-line for a total of approximately 88 hours due to multiple low flow alerts as a result of a failing pump. A replacement pump was ordered and installed January 18, 2011. At no time was the well off-line for 72 continuous hours.	Not Required
October 18 - November 18, 2010	REG-10B(1)	Well REG-10B(1) was off-line for a total of approximately 10 hours due to multiple low flow alerts.	Not Required
November 14, 2010	Treatment System	Treatment system was off-line for approximately 10 hours due to a vault flood alert.	Not Required
December 17, 2010	Treatment System	Treatment system was off-line for less than 1 hour for an air filter replacement.	Not Required
December 18, 2010	Treatment System	Treatment system was off-line for approximately 13 hours due to a power failure.	Not Required

Table 8B
Summary of 2010 Non-Routine Operation and Maintenance Activities South of 101
MEW Regional Groundwater Remediation Program
Mountain View, CA

Date	Component	Comments	Regulatory Notification
January 19, 2010	Treatment System	The treatment system was off-line for approximately 2 hours due a power surge during a storm.	Not Required
February 26, 2010	REG-1A and REG-11B(1)	Wells REG-1A and REG-11B(1) were off-line for approximately 3 hours each for pump replacements.	Not Required
March 2, 2010	Treatment System	The treatment system was off-line for approximately 2 hours due to a pad flood alert.	Not Required
March 4, 2010	REG-1B(2)	Well REG-1B(2) was off-line for a total of approximately 12 hours due to pump saver amperage setting that caused it to cycle off.	Not Required
March 16-20, 2010	REG-1B(2)	Well REG-1B(2) was off-line for a total of approximately 31 hours due to low flow alerts.	Not Required
March 16-17, 2010	REG-11A	Well REG-11A was off-line for a total of 9 hours due to a low flow alert.	Not Required
March 17-24, 2010	REG-3B(1)	Well REG-3B(1) was off-line a total of approximately 54 hours due to low flow and pump fault alerts.	Not Required
March 25-29, 2010	REG-1B(2)	Well REG-1B(2) was off-line for approximately 15 hours due to low flow alerts.	Not Required
April 3-5, 2010	REG-1B(2)	Well REG-1B(2) was off-line for a total of approximately 66 hours as a result of low flow alerts.	Not Required
April 12, 2010	REG-1B(2)	Well REG-1B(2) was off-line for approximately 7 hours due to a low flow alert.	Not Required
April 15, 2010	REG-1B(2)	Well REG-1B(2) was off-line for approximately 3 hours while a new pump was installed.	Not Required
April 27, 2010	REG-1B(2)	Well REG-1B(2) was off-line for approximately 14 hours due to a low flow alert.	Not Required
May 3-4, 2010	REG-1B(2)	Well REG-1B(2) was off-line for approximately 5 hours due to low flow alerts.	Not Required
May 3, 2010	REG-3B(2)	Well REG-3B(2) was off-line for less than 1 hour due to a low flow alert.	Not Required
May 3-4, 2010	REG-3B(1)	Well REG-3B(1) was off-line for approximately 18 hours due to a low flow alert.	Not Required
May 8-9, 2010	REG-1B(2)	Well REG-1B(2) was off-line for approximately 22 hours due to a low flow alert.	Not Required
May 19-20, 2010	REG-1B(2)	Well REG-1B(2) was off-line for approximately 30 hours due to a low flow alert and additional difficulty with the flow meter when it was restarted.	Not Required
June 29-30, 2010	REG-1B(2)	Well REG-1B(2) was off-line for approximately 10 hours due to a low flow alert.	Not Required
July 1-2, 2010	REG-1B(1), REG-1B(2)	Wells REG-1B(1) and REG-1B(2) and were off-line for approximately 30 hours due to a motor failure at REG-1B(1) which also affected the operation of REG-1B(2). The pump in REG-1B(1) was replaced.	Not Required
July 14-15, 2010	REG-10A	Well REG-10A was off-line for approximately 31 hours due to a low flow alert.	Not Required
July 24, 2010	Treatment System	The treatment system was off-line for a total of approximately 27 hours due to vault flood alerts at leak-detect Vaults 5 and 6 due to irrigation water.	Not Required
July 25-August 9, 2010	REG-3B(2)	Well REG-3B(2) went off-line due to electrical issues in wiring within the conduit from the electrical box to the well. An electrician was hired to run new wires through approximately 400 feet of conduit before the well could be restarted. During the repairs, the treatment system was off-line for approximately 8 hours, and the well was off for a total of 15 days.	EPA Notification 7/30/2010
August 11, 2010	REG-3B(2)	Well REG-3B(2) was off-line for approximately 20 hours due to a low flow alert due to additional electrical issues at the junction box diagnosed and fixed in November 2010.	Not Required
August 18-25, 2010	REG-3B(2)	Well REG-3B(2) was off-line for approximately 31 hours due to additional electrical issues at the junction box diagnosed and fixed in November 2010.	Not Required
August 23, 2010	REG-1B(2)	Well REG-1B(2) was off-line for approximately 23 hours due to a low flow alert.	Not Required
August 25-26, 2010	Treatment System	The treatment system was off-line for approximately 26 hours during a routine carbon change.	Not Required
August 25-30, 2010	REG-3B(1)	Well REG-3B(1) was off-line multiple times due to low flow alerts until an electrician was able to	Not Required
September 8-10, 2010	REG-3B(1)	Well REG-3B(1) was off-line for approximately 40 hours due to a low flow alert that would not immediately restart without additional troubleshooting.	Not Required
September 29, 2010	REG-11A	Well REG-11A was off-line for approximately 56 hours due to a pump motor saver failure.	Not Required
October 22– November 13, 2010	REG-11B(1), REG-3B(2)	Wells REG-11B(1) and REG-3B(2) were off-line for a total of approximately 186 hours each between October 22 and November 13, 2010 due to multiple low flow alerts due to an electrical short circuit at the junction box and pump saver issues at each of the two wells. Both of these wells have run continuously after repairs were completed November 13. The wells were never off-line for 72 consecutive hours.	Not Required
November 30, 2010	Treatment System	The treatment system was off-line for approximately 2 hours due to a treatment pad flood alert.	Not Required

Table 9

RGRP Monitoring Well and Extraction Well Construction Summary

MEW Regional Groundwater Remediation Program

Mountain View, California

Well Name	Year Installed	Owner	TOC Elevation (ft msl)	Diameter (inches)	Well Depth (ft bgs)	Screen Interval (ft bgs)	Sand Pack Interval (ft bgs)	Well Type
A/A1 Zone								
65A	1982	Fairchild (North of 101)	28.04	4	29	19 - 29	7 - 29	Monitoring Well
72A	1985	Fairchild (North of 101)	32.82	4	27	20 - 25	15 - 27	Monitoring Well
73A	1985	Fairchild (North of 101)	21.62	4	27	15 - 25	9 - 27	Monitoring Well
74A	1985	Fairchild (North of 101)	27.96	4	27	15 - 25	9 - 27	Monitoring Well
75A	1985	Fairchild (North of 101)	29.97	4	30	18 - 28	16 - 30	Monitoring Well
81A	1985	Fairchild (North of 101)	21.89	4	25	13 - 23	11 - 25	Monitoring Well
82A	1985	Fairchild (North of 101)	27.69	4	33	15 - 30	13 - 33	Monitoring Well
88A	1986	Fairchild (North of 101)	20.21	4	32	20 - 30	16 - 32	Monitoring Well
89A	1986	Fairchild (North of 101)	17.20	4	30	18 - 28	16 - 30	Monitoring Well
92A	1986	Fairchild (North of 101)	6.67	4	35	18 - 33	16 - 35	Monitoring Well
93A	1986	Fairchild (North of 101)	5.90	4	30	18 - 28	16 - 30	Monitoring Well
95A	1986	Fairchild (North of 101)	6.65	4	30	18 - 28	16 - 30	Monitoring Well
1A	1982	Fairchild (South of 101)	58.55	4	40	20 - 40	10 - 40	Monitoring Well
20A	1982	Fairchild (South of 101)	51.37	2	30	15 - 30	15 - 30	Monitoring Well
21A	1982	Fairchild (South of 101)	53.72	2	30	14 - 30	12 - 30	Monitoring Well
23A	1982	Fairchild (South of 101)	50.56	2	30	14 - 30	14 - 30	Monitoring Well
26A	1982	Fairchild (South of 101)	47.20	2	30	12 - 30	10 - 30	Monitoring Well
29A	1982	Fairchild (South of 101)	46.08	2	30	15 - 30	10 - 30	Monitoring Well
45A	1982	Fairchild (South of 101)	43.70	2	25	13 - 25	13 - 25	Monitoring Well
61A	1982	Fairchild (South of 101)	37.18	2	31	16 - 31	10 - 31	Monitoring Well
62A	1982	Fairchild (South of 101)	37.88	2	30	10 - 30	10 - 30	Monitoring Well
77A	1985	Fairchild (South of 101)	52.59	4	30	23 - 28	21 - 30	Monitoring Well
78A	1985	Fairchild (South of 101)	46.44	4	34	22 - 32	18.5 - 34	Monitoring Well
79A	1985	Fairchild (South of 101)	36.61	4	24	13 - 23	10 - 24	Monitoring Well
99A	1986	Fairchild (South of 101)	48.26	4	29	9.5 - 24.5	8 - 29	Monitoring Well
109A	1986	Fairchild (South of 101)	41.61	4	28	12 - 27	7.5 - 28	Monitoring Well
134A	1986	Fairchild (South of 101)	53.44	4	32	20 - 30	18 - 32	Monitoring Well
142A	1986	Fairchild (South of 101)	57.27	4	29	22 - 27	20 - 29	Monitoring Well
144A	1986	Fairchild (South of 101)	59.41	4	40	23 - 38	20 - 40	Monitoring Well
153A	1991	Fairchild (South of 101)	45.70	4	23	13 - 23	12 - 25	Monitoring Well

Table 9

RGRP Monitoring Well and Extraction Well Construction Summary

MEW Regional Groundwater Remediation Program

Mountain View, California

Well Name	Year Installed	Owner	TOC Elevation (ft msl)	Diameter (inches)	Well Depth (ft bgs)	Screen Interval (ft bgs)	Sand Pack Interval (ft bgs)	Well Type
162A	2000	Fairchild (South of 101)	36.47	4	28	8 - 28	7 - 31	Monitoring Well
173A	2002	Fairchild (South of 101)	50.83		30.0	19 - 29		Monitoring Well
IM9A	1986	Intel (South of 101)	64.66		44.7	27.8 - 37.8	26 - 39.8	Monitoring Well
REG-2A	1998	MEW RGRP (North of 101)	32.33	6	25	10 - 25	9 - 27	Recovery Well
REG-3A	1998	MEW RGRP (North of 101)	24.26	6	28	13 - 28	12 - 30.5	Recovery Well
REG-4A	1998	MEW RGRP (North of 101)	25.22	6	31	16 - 31	14 - 33	Recovery Well
REG-5A	1998	MEW RGRP (North of 101)	29.40	6	29	14 - 29	13 - 30.5	Recovery Well
REG-6A	1998	MEW RGRP (North of 101)	13.45	6	29	24 - 29	21 - 31	Recovery Well
REG-7A	1998	MEW RGRP (North of 101)	17.11	6	27	12 - 27	11 - 28.5	Recovery Well
REG-8A	1998	MEW RGRP (North of 101)	28.72	6	31	21 - 31	18 - 34	Recovery Well
REG-9A	1998	MEW RGRP (North of 101)	24.14	6	27	17 - 27	15 - 28.5	Recovery Well
W89-03A-R		MEW RGRP (North of 101)	33.23					Monitoring Well
W89-04A-R		MEW RGRP (North of 101)	33.25					Monitoring Well
REG-1A	1997	MEW RGRP (South of 101)	35.60	6	42	22 - 42	19 - 45	Recovery Well
REG-10A	1997	MEW RGRP (South of 101)	34.83	6	40	15 - 40	12 - 42	Recovery Well
REG-11A	1997	MEW RGRP (South of 101)	35.15	6	49	29 - 49	26 - 50	Recovery Well
REG-12A	1997	MEW RGRP (South of 101)	38.04	6	28	12 - 27	11 - 30	Recovery Well
REG-MW-1A	1997	MEW RGRP (South of 101)	41.00	6	36	20 - 35	17 - 37	Monitoring Well
REG-MW-2A	1997	MEW RGRP (South of 101)	38.11	6	29.5	18.5 - 28.5	15.5 - 29.5	Monitoring Well
RW-9A	1997	MEW RGRP (South of 101)	37.83	6	25	13 - 23	10 - 25	Recovery Well
14D02A	1988	NASA (North of 101)	10.15	8	25	5 - 25	5 - 25	Monitoring Well
14D09A	1990	NASA (North of 101)	15.81	8	16.5	6 - 15	5 - 10.5	Monitoring Well
14D13A	1991	NASA (North of 101)	13.19	8	17	7 - 17	6 - 17	Monitoring Well
14E14A	1990	NASA (North of 101)	21.64	8	21.5		7 - 19	Monitoring Well
15H05A	1988	NASA (North of 101)	18.69	8	31.5		5 - 31	Monitoring Well
R22A	1985	Raytheon (South of 101)	73.00		47.5	27 - 47	25 - 47.5	Monitoring Well
R24A	1985	Raytheon (South of 101)	70.05		38	17 - 37	15 - 38	Monitoring Well
R25A	1985	Raytheon (South of 101)	59.20		34	14 - 34	12 - 34	Monitoring Well
R29A	1985	Raytheon (South of 101)	36.00		26	6 - 26	4 - 26	Monitoring Well
R31A	1985	Raytheon (South of 101)	34.00		24	14 - 24	12 - 24	Monitoring Well
R32A	1985	Raytheon (South of 101)	35.61		29	9 - 29	7 - 29	Monitoring Well

Table 9

RGRP Monitoring Well and Extraction Well Construction Summary

MEW Regional Groundwater Remediation Program

Mountain View, California

Well Name	Year Installed	Owner	TOC Elevation (ft msl)	Diameter (inches)	Well Depth (ft bgs)	Screen Interval (ft bgs)	Sand Pack Interval (ft bgs)	Well Type
R43A	1985	Raytheon (South of 101)	46.00		31	10 - 30	7 - 31	Monitoring Well
R46A	1987	Raytheon (South of 101)	73.00		45	32 - 41	29 - 43	Monitoring Well
R57A	1987	Raytheon (South of 101)	53.71		33	20.5 - 32	18.5 - 33	Monitoring Well
R59A	1987	Raytheon (South of 101)	54.69		27.3	14.5 - 26	12.5 - 27.3	Monitoring Well
SIL4A	1985	Siltec (South of 101)	44.15		27	12 - 27	6 - 27	Monitoring Well
SIL12A	1985	Siltec (South of 101)	43.25		36	16 - 36	13 - 36	Monitoring Well
W9-16		U.S. Navy (North of 101)	22.42	4	30.5	19 - 29	17 - 30	Monitoring Well
W9-38		U.S. Navy (North of 101)	22.59	4	28.7	13 - 23	9 - 23	Monitoring Well
W12-6		U.S. Navy (North of 101)	7.5	4	30	20 - 25		Monitoring Well
W14-3	1988	U.S. Navy (North of 101)	31.37	4	35	15 - 30	13 - 33	Monitoring Well
W60-2		U.S. Navy (North of 101)	31.42	4	35.5	20 - 35.5		Monitoring Well
W89-1	1990	U.S. Navy (North of 101)	33.57	12	30	17.5 - 27.5	15.5 - 30	Monitoring Well
W89-2	1990	U.S. Navy (North of 101)	30.98	12	30	17 - 27	15 - 30	Monitoring Well
W89-5	1990	U.S. Navy (North of 101)	25.61	12	25	15 - 25	13 - 25	Monitoring Well
W89-7	1990	U.S. Navy (North of 101)	24.15	12	25	15 - 25	13 - 25	Monitoring Well
W89-8	1990	U.S. Navy (North of 101)	21.77	12	27	17 - 27	15 - 27	Monitoring Well
W89-9	1990	U.S. Navy (North of 101)	21.78	12	25	14.5 - 24.5	12.5 - 24.5	Monitoring Well
WT14-1	1990	U.S. Navy (North of 101)	24.80	10	18	7.8 - 17.8	6 - 0	Monitoring Well
WU4-1		U.S. Navy (North of 101)	34.97	4	30	18.8 - 28.8		Monitoring Well
WU4-3		U.S. Navy (North of 101)	25.21	4	31	25.5 - 30.5		Monitoring Well
WU4-16		U.S. Navy (North of 101)	13.89	4	27.5	17 - 27.5		Monitoring Well
WU4-18		U.S. Navy (North of 101)	8.17	4	24.5	9 - 24		Monitoring Well
A2/B1 Zone								
46B1	1985	Fairchild (North of 101)	22.13	4	50	38 - 48	35.5 - 50	Monitoring Well
47B1	1985	Fairchild (North of 101)	21.51	4	64	57 - 62	53 - 64	Monitoring Well
48B1	1985	Fairchild (North of 101)	28.07	4	55	48 - 53	46 - 55	Monitoring Well
49B1	1985	Fairchild (North of 101)	27.89	4	71	64 - 68	62 - 71	Monitoring Well
50B1	1985	Fairchild (North of 101)	27.79	4	83	72 - 82	70 - 83	Monitoring Well
68B1	1985	Fairchild (North of 101)	29.85	4	52	46 - 51	44 - 52	Monitoring Well
78B1	1986	Fairchild (North of 101)	20.64	4	51	39 - 49	37 - 51	Monitoring Well
79B1	1986	Fairchild (North of 101)	17.08	4	54	42 - 52	38 - 54	Monitoring Well

Table 9

RGRP Monitoring Well and Extraction Well Construction Summary

MEW Regional Groundwater Remediation Program

Mountain View, California

Well Name	Year Installed	Owner	TOC Elevation (ft msl)	Diameter (inches)	Well Depth (ft bgs)	Screen Interval (ft bgs)	Sand Pack Interval (ft bgs)	Well Type
81B1	1986	Fairchild (North of 101)	9.20	4	50	38 - 48	35.5 - 50	Monitoring Well
83B1	1986	Fairchild (North of 101)	5.80	4	58	46 - 56	37.5 - 58	Monitoring Well
87B1	1986	Fairchild (North of 101)	25.10	4	57	45 - 55	43 - 57	Monitoring Well
139B1	1988	Fairchild (North of 101)	7.06	4	70	55 - 70	51 - 73	Monitoring Well
154B1	2001	Fairchild (North of 101)	12.78	2	42	32 - 42	31 - 44	Monitoring Well
155B1	2001	Fairchild (North of 101)	19.74	2	62			Monitoring Well
8B1	1982	Fairchild (South of 101)	40.96	4	78	68 - 78	50 - 78	Monitoring Well
13B1	1985	Fairchild (South of 101)	34.80	4	69	62 - 67	55.5 - 69	Monitoring Well
14B1	1985	Fairchild (South of 101)	35.68	4	64	51 - 61	47.5 - 64	Monitoring Well
26B1	1985	Fairchild (South of 101)	52.61	4	65	58 - 63	56.5 - 65	Monitoring Well
32B1	1985	Fairchild (South of 101)	38.03	4	76	64 - 74	59 - 76	Monitoring Well
33B1	1985	Fairchild (South of 101)	46.30	4	70		54 - 70	Monitoring Well
56B1	1985	Fairchild (South of 101)	42.14	4	60	56 - 59	52 - 60	Monitoring Well
67B1	1985	Fairchild (South of 101)	36.93	4	67	56 - 62	52 - 67	Monitoring Well
74B1	1986	Fairchild (South of 101)	51.84	4	68	56 - 66	53 - 68	Monitoring Well
77B1	1986	Fairchild (South of 101)	40.96	4	60.5	53 - 58	50 - 60.5	Monitoring Well
91B1	1986	Fairchild (South of 101)	48.44	4	60	48 - 58	43 - 60	Monitoring Well
92B1	1986	Fairchild (South of 101)	46.99	4	68	55 - 65	50 - 68	Monitoring Well
98B1	1986	Fairchild (South of 101)	54.10	4	68	57 - 66	46 - 68	Monitoring Well
103B1	1986	Fairchild (South of 101)	55.20	4	82	70 - 80	67 - 82	Monitoring Well
105B1	1986	Fairchild (South of 101)	40.88	4	72	60 - 70	57 - 72	Monitoring Well
112B1	1986	Fairchild (South of 101)	46.00	4	69	62 - 67	60 - 69	Monitoring Well
119B1	1986	Fairchild (South of 101)	42.96		64	52 - 62	50 - 64	Monitoring Well
122B1	1986	Fairchild (South of 101)	59.53	4	71	64 - 69	62 - 71	Monitoring Well
124B1	1986	Fairchild (South of 101)	46.91	4	64	57 - 62	54 - 64	Monitoring Well
140B1	1986	Fairchild (South of 101)	48.91	4	85	65 - 85	63 - 86	Monitoring Well
143B1	1986	Fairchild (South of 101)	38.88	4	70	60 - 70	56 - 76	Monitoring Well
RW-2(B1)	1986	Fairchild (South of 101)	48.18	6	59	46 - 56	45 - 59	Recovery Well
RW-4(B1)	1985	Fairchild (South of 101)	42.61	6	63	50 - 60	49 - 63	Recovery Well
I9B1	1984	Intel (South of 101)	70.92		80	56 - 80	56 - 80	Monitoring Well
IM5B(1)	1986	Intel (South of 101)	60.16		62.2	49 - 59	47.2 - 62.2	Monitoring Well

Table 9

RGRP Monitoring Well and Extraction Well Construction Summary

MEW Regional Groundwater Remediation Program

Mountain View, California

Well Name	Year Installed	Owner	TOC Elevation (ft msl)	Diameter (inches)	Well Depth (ft bgs)	Screen Interval (ft bgs)	Sand Pack Interval (ft bgs)	Well Type
IM9B(1)	1986	Intel (South of 101)	65.04		71	58 - 68	55.5 - 71	Monitoring Well
REG-5B(1)	1998	MEW RGRP (North of 101)	33.20	6	47	37 - 47	34 - 50	Recovery Well
REG-6B(1)	1998	MEW RGRP (North of 101)	24.65	6	59	49 - 59	46 -60.5	Recovery Well
REG-7B(1)	1998	MEW RGRP (North of 101)	24.32	6	58	48 - 58	47 - 60	Recovery Well
REG-8B(1)	1998	MEW RGRP (North of 101)	20.03	6	54	34 - 54	31 - 56	Recovery Well
REG-9B(1)	1998	MEW RGRP (North of 101)	13.60	6	42	32 - 42	31 - 44	Recovery Well
REG-10B(1)	1998	MEW RGRP (North of 101)	19.64	6	52	32 - 52	29 - 53.5	Recovery Well
REG-12B(1)		MEW RGRP (North of 101)	32.38	6		60 - 65		Recovery Well
W89-13B1-R		MEW RGRP (North of 101)	33.19					Monitoring Well
ME1B1	1985	MEW RGRP (South of 101)			79	69 - 74	65.3 - 79	Monitoring Well
ME2B1	1985	MEW RGRP (South of 101)			79	64 - 74	61.2 - 79	Monitoring Well
NEC8B1	1983	MEW RGRP (South of 101)	42.68	2	58	38 - 58	37 - 58	Monitoring Well
NEC14B1	1989	MEW RGRP (South of 101)	46.82	4	71	59 - 69	57 - 71	Monitoring Well
NEC18B1	1989	MEW RGRP (South of 101)	59.87	4	70.5	63 - 67	61 - 70.5	Monitoring Well
REG-1B(1)	1997	MEW RGRP (South of 101)	38.15	6	76	59 - 74	56 - 76	Recovery Well
REG-2B(1)	1997	MEW RGRP (South of 101)	35.15	6	64	39 - 64	36 - 66	Recovery Well
REG-3B(1)	1996	MEW RGRP (South of 101)	34.17	18	75	57 - 72	54 - 75	Recovery Well
REG-4B(1)		MEW RGRP (South of 101)	37.70	6				Recovery Well
REG-11B(1)	1997	MEW RGRP (South of 101)	35.65	6	68	58 - 68	55 - 68	Recovery Well
REG-MW-1B(1)	1997	MEW RGRP (South of 101)	40.81	6	74	53 - 73	50 - 74.5	Monitoring Well
REG-MW-2B(1)		MEW RGRP (South of 101)	41.43			57 - 67		Monitoring Well
RW-9(B1)R	1986	MEW RGRP (South of 101)	38.59	6	69	59 - 69	58 - 71.5	Recovery Well
R6B1	1985	Raytheon (South of 101)	46.00		67	54 - 65	36 - 67	Monitoring Well
R13B1	1985	Raytheon (South of 101)	35.00		48	38 - 48	36 - 48	Monitoring Well
R16B1	1985	Raytheon (South of 101)	47.00		64	58 - 64	56 - 64	Monitoring Well
R22B1	1986	Raytheon (South of 101)	62.73		73	52 - 70	50 - 73	Monitoring Well
R46B1	1987	Raytheon (South of 101)	58.00		66	56 - 65	54 - 66	Monitoring Well
RP22B	1985	Raytheon (South of 101)	63.5		57	54 - 56	52 - 57	Monitoring Well
RW-13B(1)		Silva (South of 101)	53.20					Recovery Well
W9-17		U.S. Navy (North of 101)	19.31	4	36	33 - 38	31 - 40	Monitoring Well
W9-25		U.S. Navy (North of 101)	15.26	4	42	29.5 - 39.5	27.5 - 42	Monitoring Well

Table 9

RGRP Monitoring Well and Extraction Well Construction Summary

MEW Regional Groundwater Remediation Program

Mountain View, California

Well Name	Year Installed	Owner	TOC Elevation (ft msl)	Diameter (inches)	Well Depth (ft bgs)	Screen Interval (ft bgs)	Sand Pack Interval (ft bgs)	Well Type
W9-41		U.S. Navy (North of 101)	22.56	4	54.5	34 - 44	32 - 46	Monitoring Well
W9SC-20	1995	U.S. Navy (North of 101)	22.20	2	52.3	41.8 - 51.8		Monitoring Well
W14-5	1988	U.S. Navy (North of 101)	31.25	4	58.7	44.9 - 49.9	43 - 52	Monitoring Well
W89-11	1990	U.S. Navy (North of 101)	33.26	10	63	52 - 62	50 - 63	Monitoring Well
W89-12	1990	U.S. Navy (North of 101)	31.23	10	65	54 - 64	51 - 65	Monitoring Well
W89-14	1990	U.S. Navy (North of 101)	25.58	10	61	50 - 60	48 - 61	Monitoring Well
WNB-14	1992	U.S. Navy (North of 101)	12.35	12	61	24 - 29	22 - 61	Monitoring Well
WU4-2		U.S. Navy (North of 101)	32.55	4	60.8	54.5 - 59.5		Monitoring Well
WU4-4		U.S. Navy (North of 101)	25.21	4	59	54 - 59		Monitoring Well
WU4-5		U.S. Navy (North of 101)	33.88	4	60	53.5 - 58.5		Monitoring Well
WU4-6		U.S. Navy (North of 101)	28.46	4		59 - 64		Monitoring Well
WU4-7		U.S. Navy (North of 101)	24.00	4	54	48.5 - 53.5		Monitoring Well
WU4-12		U.S. Navy (North of 101)	21.88	4		34.5 - 44.5		Monitoring Well
WU4-13		U.S. Navy (North of 101)	22.68	4	45	34.5 - 44.5		Monitoring Well
WU4-19		U.S. Navy (North of 101)	11.39	4	41.5	36 - 41		Monitoring Well
B2 Zone								
17B2	1985	Fairchild (North of 101)	27.96	4	94	87 - 92	85.5 - 94	Monitoring Well
51B2	1985	Fairchild (North of 101)	22.07	4	99	92 - 97	88 - 99	Monitoring Well
54B2	1985	Fairchild (North of 101)	28.00	4	86	79 - 84	77 - 86	Monitoring Well
82B2	1986	Fairchild (North of 101)	6.56	4	88	71 - 86	67 - 88	Monitoring Well
123B2	1986	Fairchild (North of 101)	15.46	4	96	84 - 94	79 - 96	Monitoring Well
6B2	1982	Fairchild (South of 101)	58.83	4	91	71 - 91	63 - 91	Monitoring Well
15B2	1985	Fairchild (South of 101)	70.70	4	101	90 - 100	88.3 - 101	Monitoring Well
16B2	1985	Fairchild (South of 101)	47.18	4	87	79 - 84	77 - 87	Monitoring Well
36B2	1985	Fairchild (South of 101)	37.65	4	92.5	86 - 91	81.5 - 92.5	Monitoring Well
37B2	1985	Fairchild (South of 101)	52.57	4	95	88 - 95	85.5 - 95	Monitoring Well
40B2	1985	Fairchild (South of 101)	54.59	4	93	87 - 92	83.5 - 93	Monitoring Well
43B2	1985	Fairchild (South of 101)	36.28	4	93.5	85.5 - 91	84 - 93.5	Monitoring Well
62B2	1985	Fairchild (South of 101)	34.93	4	91	80 - 90	78 - 91	Monitoring Well
75B2	1986	Fairchild (South of 101)	46.59	4	89	82 - 87	77 - 89	Monitoring Well
76B2	1986	Fairchild (South of 101)	55.12	4	102	90 - 100	86.5 - 102	Monitoring Well

Table 9

RGRP Monitoring Well and Extraction Well Construction Summary

MEW Regional Groundwater Remediation Program

Mountain View, California

Well Name	Year Installed	Owner	TOC Elevation (ft msl)	Diameter (inches)	Well Depth (ft bgs)	Screen Interval (ft bgs)	Sand Pack Interval (ft bgs)	Well Type
89B2	1986	Fairchild (South of 101)	48.43	4	92	80 - 90	77 - 92	Monitoring Well
113B2	1986	Fairchild (South of 101)	39.01		86	69 - 84	67 - 86	Monitoring Well
125B2	1986	Fairchild (South of 101)	46.74	4	101	94 - 99	91 - 101	Monitoring Well
129B2	1987	Fairchild (South of 101)	56.87	4	112	95 - 110	92 - 112	Monitoring Well
132B2	1987	Fairchild (South of 101)	49.21	4	91	79 - 89	78 - 91	Monitoring Well
134B2	1987	Fairchild (South of 101)	47.85	4	90	83 - 88	78 - 90	Monitoring Well
38B2	1985	MEW RGRP (South of 101)	44.09	4	90	78 - 88	71 - 90	Recovery Well
NEC8B2	1985	MEW RGRP (South of 101)	42.50	4	107	98.2 - 103	96 - 107	Monitoring Well
NEC18B2	1989	MEW RGRP (South of 101)	59.87	4	97.5	90 - 95	88 - 97.5	Monitoring Well
REG-1B(2)		MEW RGRP (South of 101)	38.20	6	92	82 - 92	80 - 93	Recovery Well
REG-3B(2)		MEW RGRP (South of 101)	34.84	6	85	75 - 85	72 - 88	Recovery Well
REG-MW-1B(2)		MEW RGRP (South of 101)	40.89	6	90	79 - 89	78 - 90	Monitoring Well
RW-9(B2)	1985	MEW RGRP (South of 101)	37.88	6	95	82.6 - 92.6	80 - 95	Recovery Well
R13B2	1985	Raytheon (South of 101)	35.00		82	65 - 82	63 - 82	Monitoring Well
R30B2	1986	Raytheon (South of 101)	63.00		101.5	78 - 100.5	76 - 101.5	Monitoring Well
R40B1(B2)	1986	Raytheon (South of 101)	54.06		85	74.5 - 84.5	73 - 85	Monitoring Well
R41B2	1987	Raytheon (South of 101)	57.00		92.5	82 - 92.5	79 - 92.5	Monitoring Well
R50B2	1987	Raytheon (South of 101)	60.00		123	118 - 122.5	116 - 123	Monitoring Well
R52B2	1987	Raytheon (South of 101)	64.24		111	100 - 109.5	98 - 111	Monitoring Well
R55B2	1987	Raytheon (South of 101)	64.21		124.5	116.5 - 123	114 - 124.5	Monitoring Well
B3 Zone								
28B3	1985	Fairchild (South of 101)	46.85	4	134	122 - 132	120 - 134	Monitoring Well
30B3	1985	Fairchild (South of 101)	58.18	4	132	120 - 130	118.5 - 132	Monitoring Well
44B3	1985	Fairchild (South of 101)	37.62	4	147	129 - 144	123 - 147	Monitoring Well
133B3	1987	Fairchild (South of 101)	49.26		134	127 - 132	122 - 134	Monitoring Well
65B3	1985	MEW RGRP (South of 101)	43.36	4	133	111 - 131	108 - 133	Recovery Well
R5B3	1986	Raytheon (South of 101)	50.20		136	125 - 135	122 - 136	Monitoring Well
R9B3	1985	Raytheon (South of 101)	69.64		163	137 - 162	134 - 163	Monitoring Well
R27B3	1986	Raytheon (South of 101)	51.37		141	121.5 - 134	119 - 134	Monitoring Well
R54B3	1987	Raytheon (South of 101)	64.52		148	145 - 147.5	143 - 148	Monitoring Well

Table 9

RGRP Monitoring Well and Extraction Well Construction Summary

MEW Regional Groundwater Remediation Program

Mountain View, California

Well Name	Year Installed	Owner	TOC Elevation (ft msl)	Diameter (inches)	Well Depth (ft bgs)	Screen Interval (ft bgs)	Sand Pack Interval (ft bgs)	Well Type
R56B3	1987	Raytheon (South of 101)	64.13		155	149 - 153.5	146.5 - 155	Monitoring Well
R61B3	1987	Raytheon (South of 101)	58.41		138.5	131.5 - 137	129.5 - 138.5	Monitoring Well
C Zone								
6C	1985	Fairchild (South of 101)	38.65	4	220	174.5 - 210	188 - 208	Monitoring Well
8C	1986	Fairchild (South of 101)	55.03	4	219	193 - 213	187 - 219	Monitoring Well
9C	1986	Fairchild (South of 101)	60.21	4	218	189.8 - 214.8	185 - 218	Monitoring Well
10C	1986	Fairchild (South of 101)	59.44	4	218	201 - 216	195 - 218	Monitoring Well
11C	1987	Fairchild (South of 101)	49.21	4	216	209 - 214	204 - 216	Monitoring Well
DW2-234	1986	Fairchild (South of 101)	59.79	4	234	200 - 230	195 - 234	Monitoring Well
DW3-219	1986	MEW RGRP (South of 101)	48.67	4	219	185 - 215	181 - 219	Recovery Well
DW1-230	1985	Raytheon (South of 101)	62.38	4	230	194 - 229	187 - 230	Monitoring Well
R4C	1986	Raytheon (South of 101)	72.00		221	200 - 220	193 - 221	Monitoring Well
RW-1C		Silva (South of 101)	53.20					Recovery Well
Deep Zone								
DW3-551	1988	Fairchild (South of 101)	47.14	6	549	544 - 549	539 - 551.5	Monitoring Well
DW3-244	1986	MEW RGRP (South of 101)	48.29	4	244	230 - 240	226 - 244	Recovery Well
DW3-334	1986	MEW RGRP (South of 101)	48.69	4	334	315 - 330	311 - 334	Recovery Well
DW3-364	1986	MEW RGRP (South of 101)	48.39	4	364	350 - 360	345.5 - 364	Recovery Well
DW3-505R	1997	MEW RGRP (South of 101)	48.92	6	503	490 - 500	488 - 505	Recovery Well

Notes:
TOC = Top of Casing
ft msl = Feet Mean Sea Level
ft bgs = Feet Below Ground Surface
MW = Monitoring Well
RW = Recovery Well

Table 10

Calculation of Predicted Capture Widths Based on Combined Flow Rate

MEW Regional Groundwater Remediation Program

Mountain View, CA

Parameter	A-Zone	B1-Zone	B2-Zone	B3-Zone
Q = Combined pumping rate (gpm)	159	153	26	6
b = saturated aquifer thickness (ft)	15	25	35	40
i = regional hydraulic gradient (ft/ft)	0.004	0.003	0.004	0.002
K = hydraulic conductivity (ft/day)	40	40	5	40
Calculated Capture Width (ft) = Q/(K x b x i)	12800	9800	7200	400
Measured plume width at widest point (ft)	2400	2800	2500	0

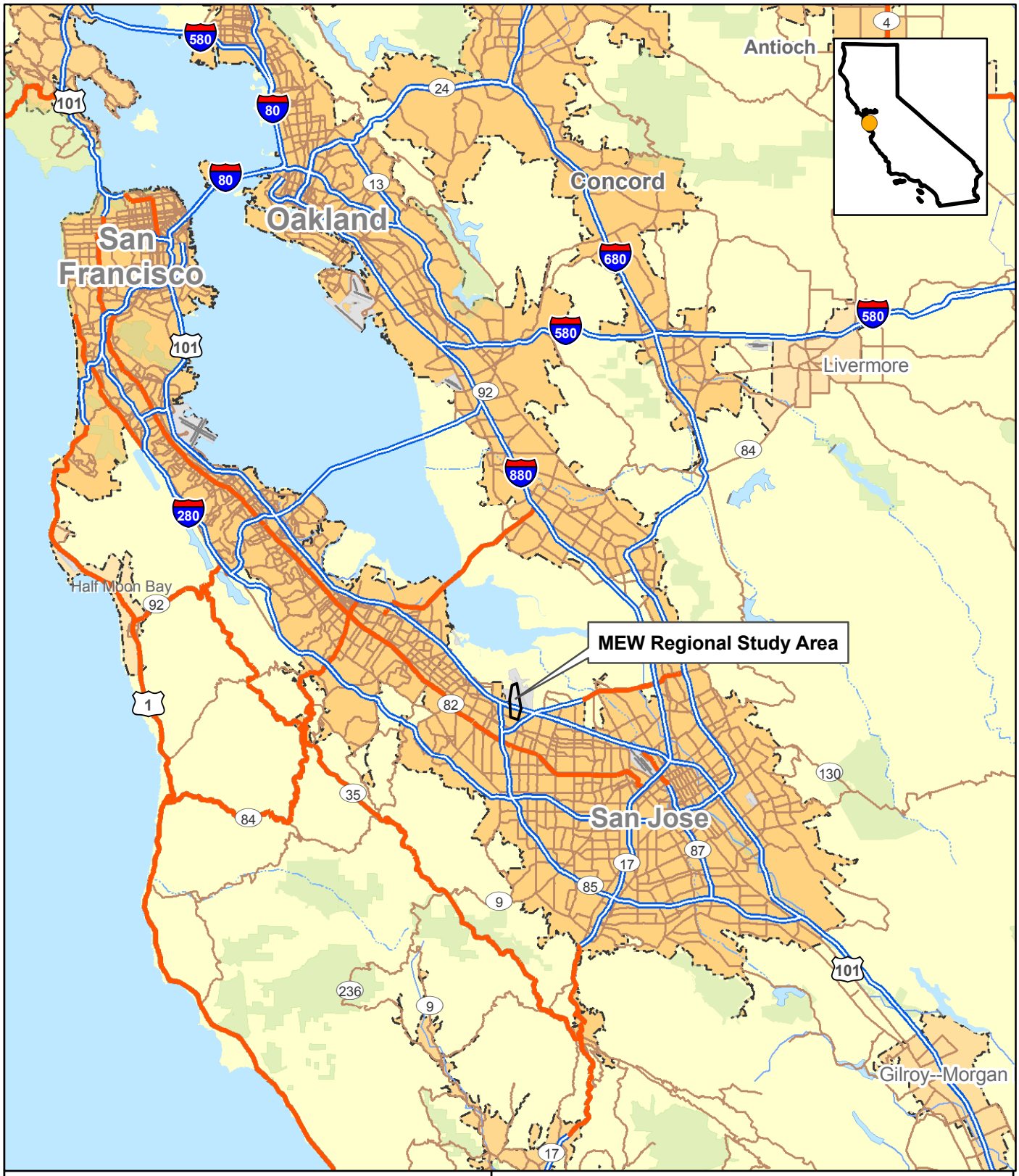
Notes:

1. gpm = gallons per minute; ft = feet
2. The combined pumping rate equals the summed average 2010 flow rates of all extraction wells located within the RGRP target capture area that are outside the slurry walls
3. Hydraulic conductivity values used for each aquifer zone are from the numerical model included as Appendix B to the 2008 Optimization Report
4. 1 cubic foot = 7.48 gallons
5. 1 day = 1440 minutes

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

FIGURES



N

0 80,000 Feet

Site Location Map

MEW Regional Groundwater Remediation Program
Mountain View, California

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Figure 1

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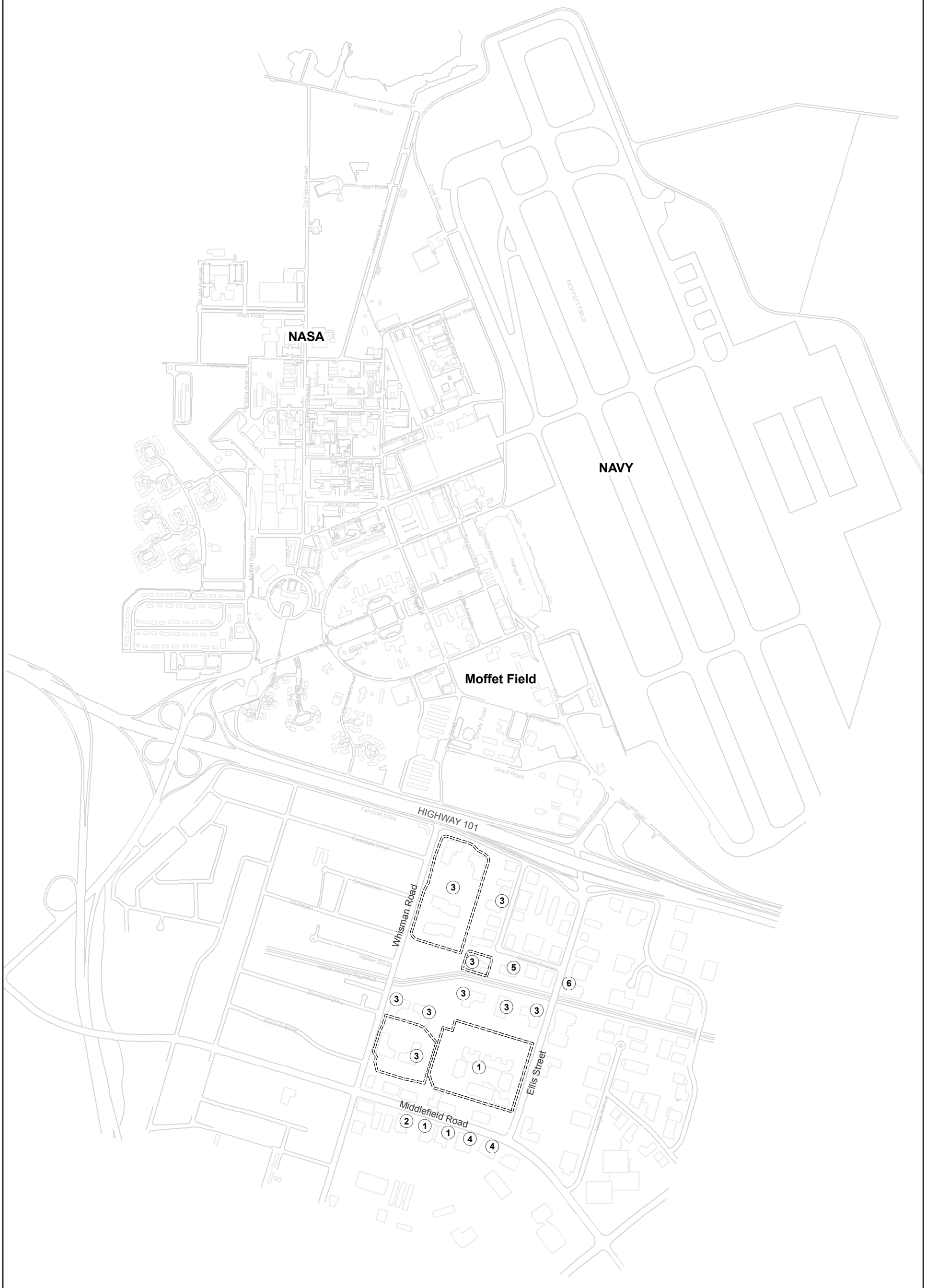

Legend

==== Slurry Wall

Building

Road

MEW Sites

1. Former Raytheon Company
2. Former Intel Corporation
3. Former Fairchild Semiconductor Corporation
4. SMI Holding; LLC
5. Vishay GSI, Inc, Inc/Sumco Phoenix Corporation
6. NEC Electronics America, Inc

N

1,000 500 0 1,000 Feet

Locations of the MEW Sites

MEW Regional Groundwater Remediation Program
Mountain View, California

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Figure **2**

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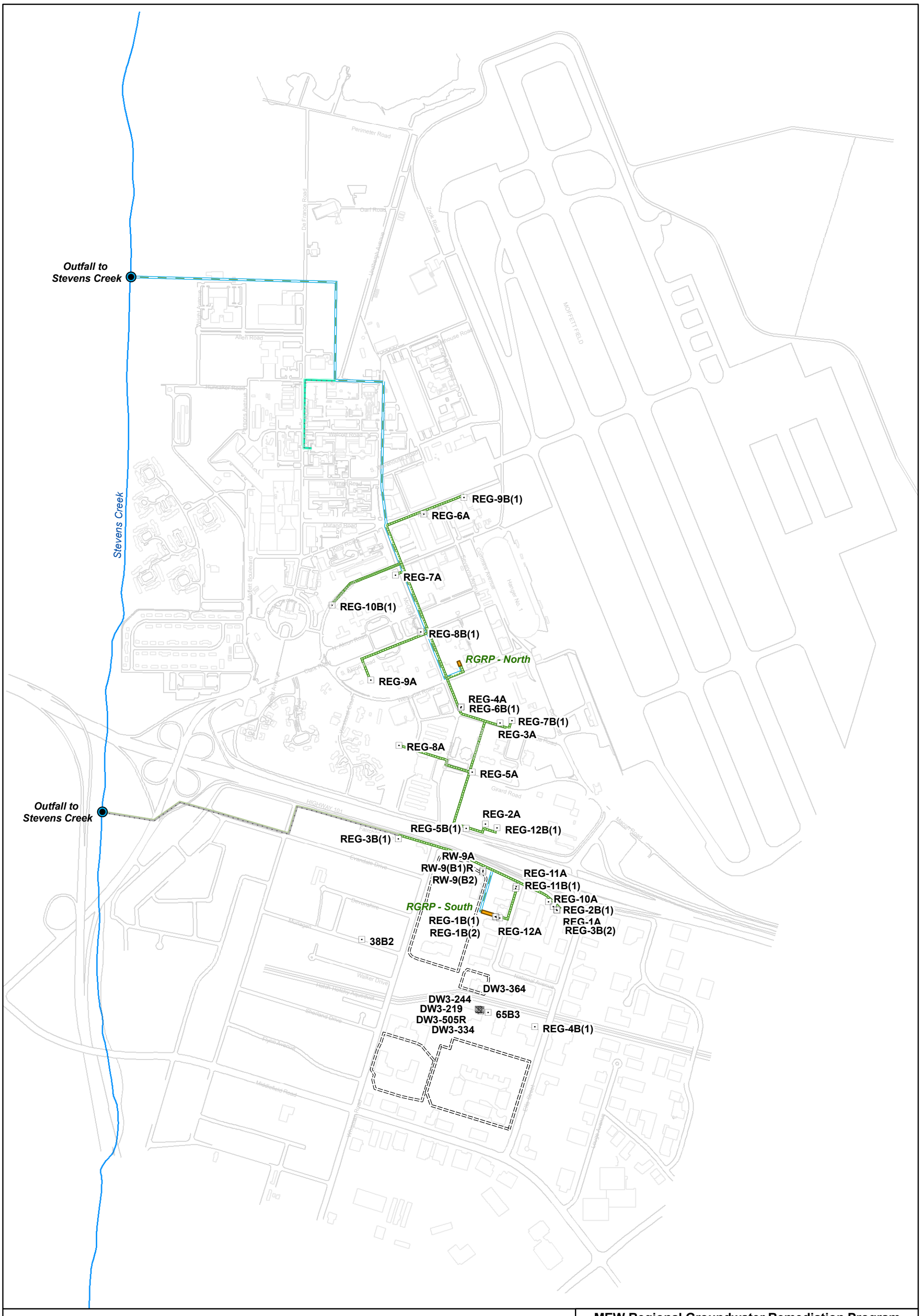

MEW Regional Groundwater Remediation Program
Groundwater Treatment Systems
North and South of Highway 101

MEW Regional Groundwater Remediation Program
Mountain View, California

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Figure **3**

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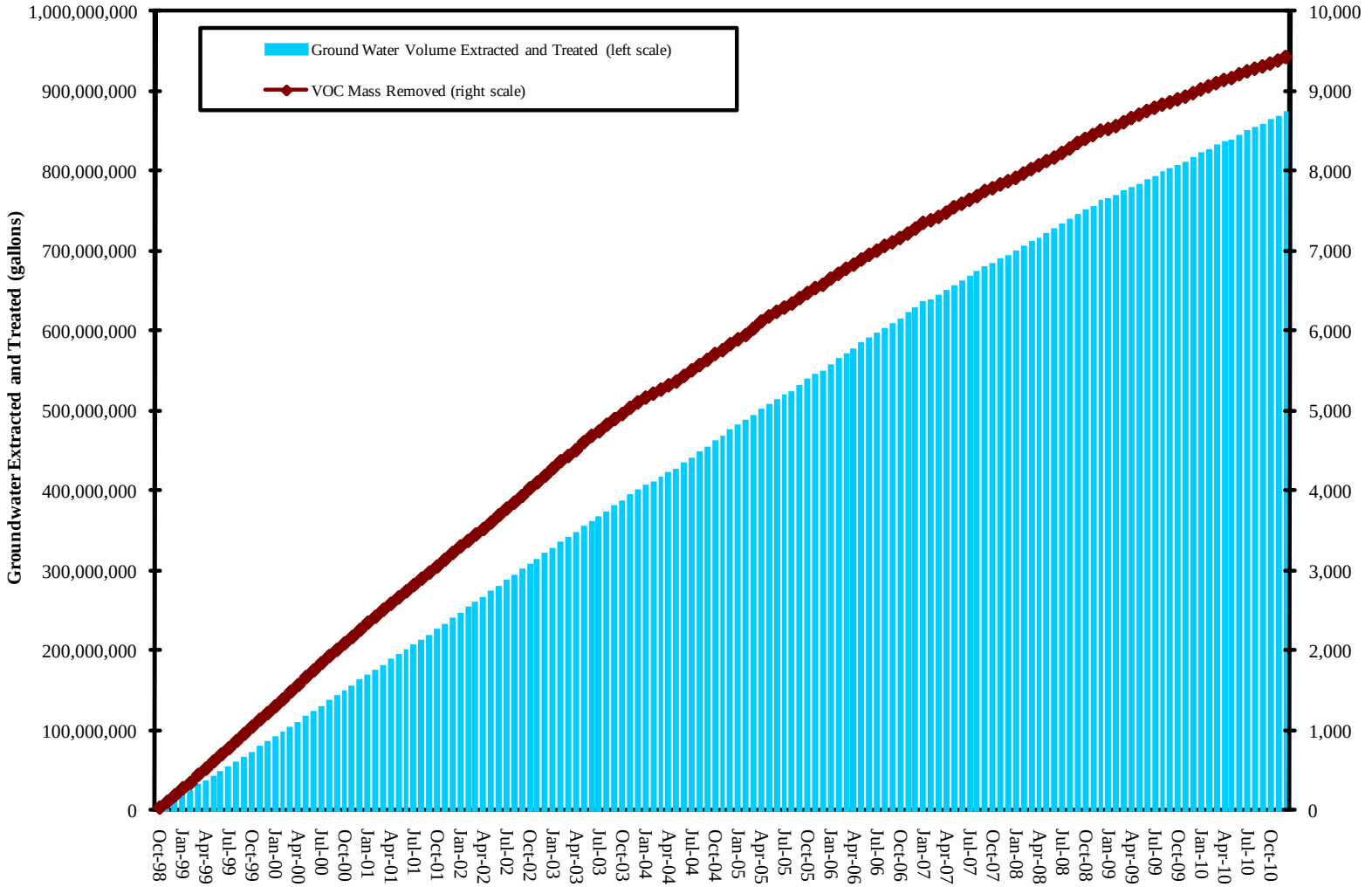

* Refer to Table 4 for VOC Mass Removed in kilograms

Cumulative Groundwater Extracted and VOC Mass Removed, North of 101

MEW Regional Groundwater Remediation Program
Mountain View, California

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Figure **4**

Source: 2010 Annual Self-Monitoring Report, MEW RGRP Treatment System, North 101 (Weiss, 2010b)

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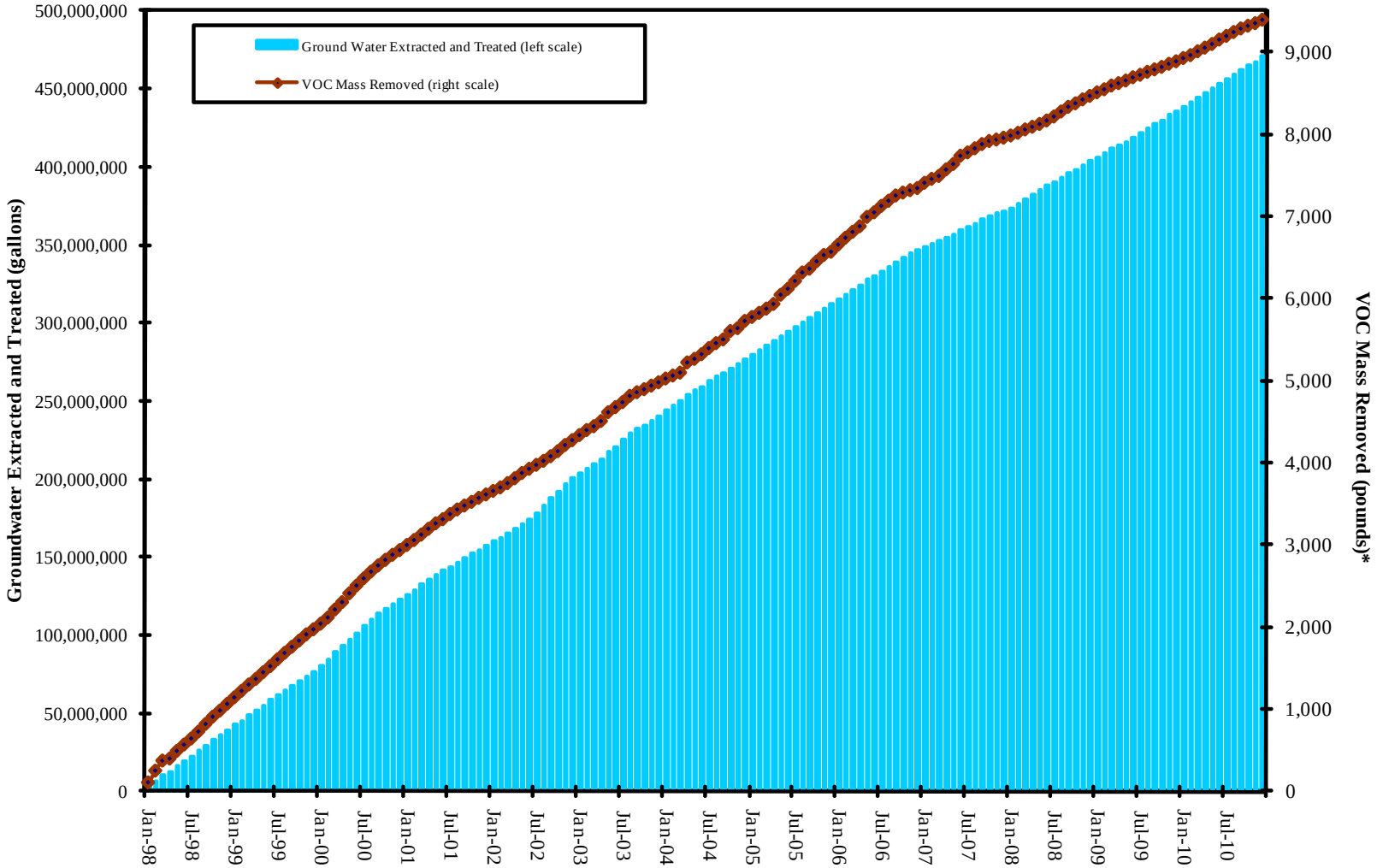

* Refer to Table 4 for VOC Mass Removed in kilograms

Cumulative Groundwater Extracted and VOC Mass Removed, South of 101

MEW Regional Groundwater Remediation Program
Mountain View, California

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Figure 5

Source: 2010 Annual Self-Monitoring Report, MEW RGRP Treatment System, South 101 (Weiss, 2010a)

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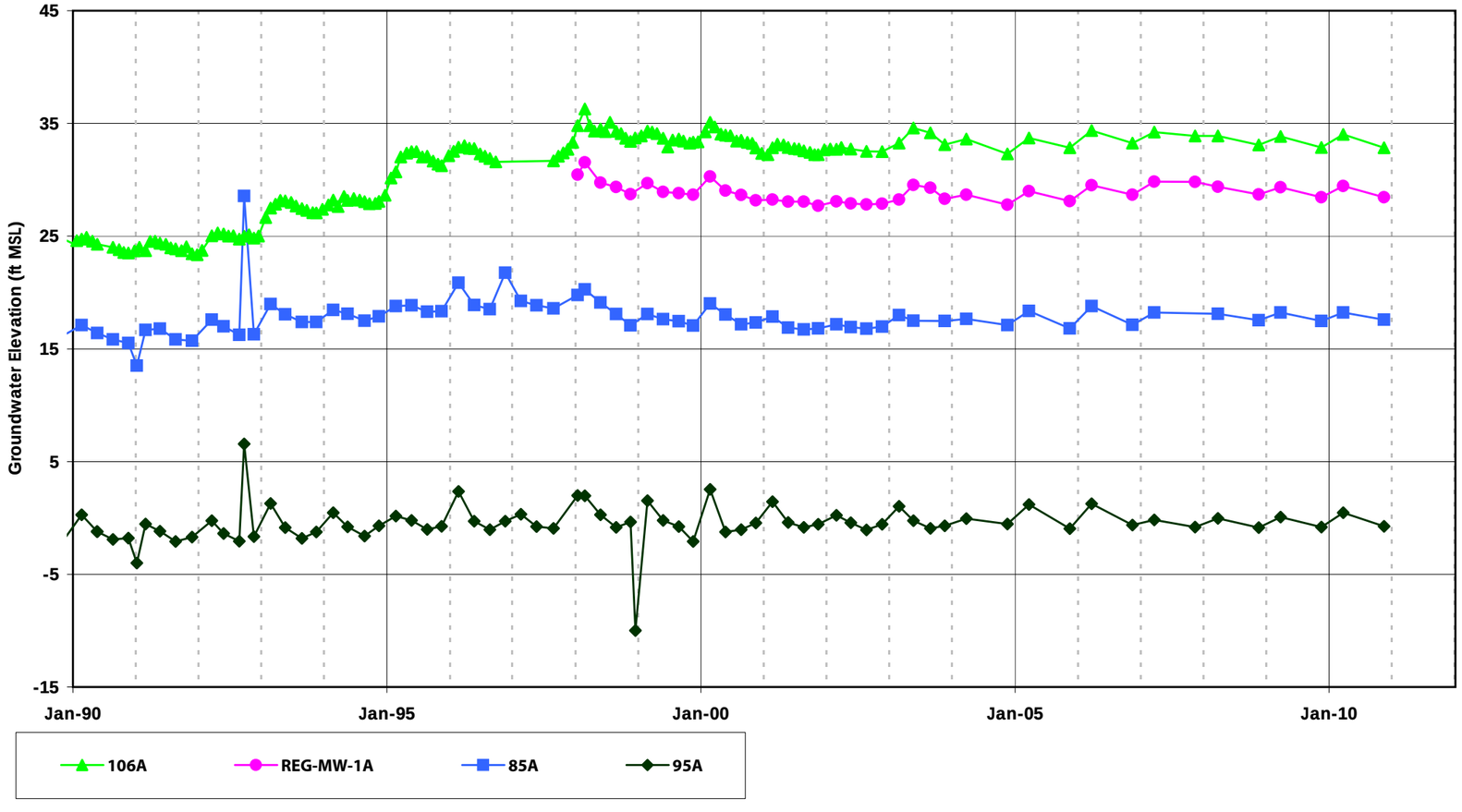

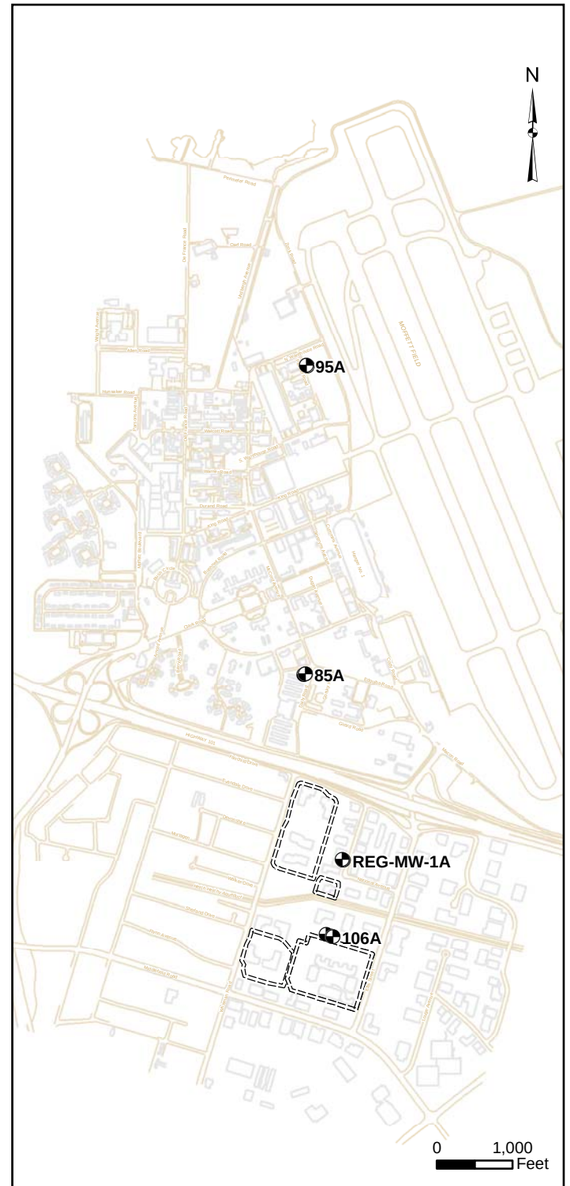

Hydrograph of Selected A Zone Wells
January 1990 through December 2010

MEW Regional Groundwater Remediation Program
Mountain View, California

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Figure **6**

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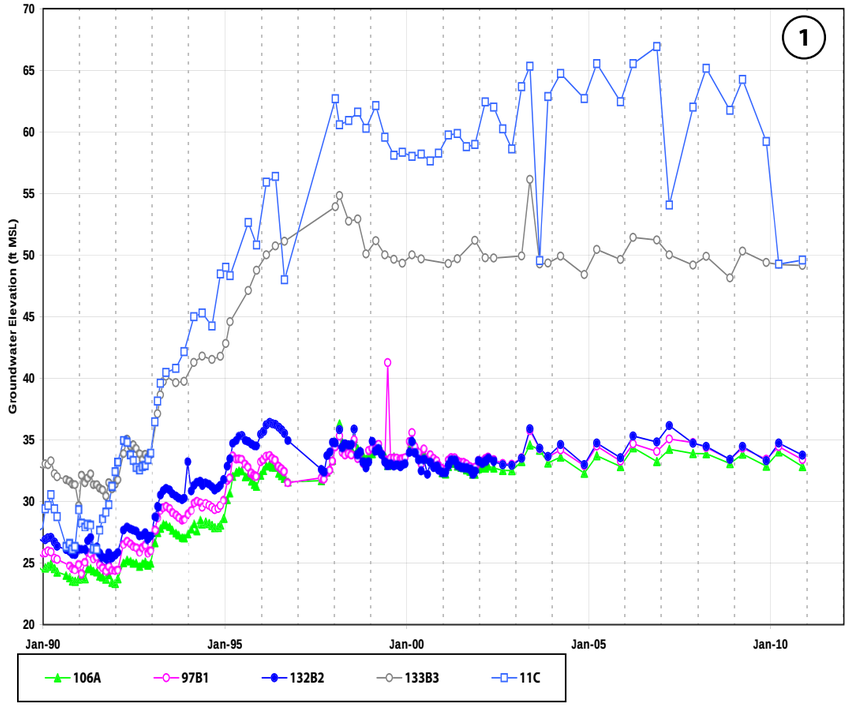

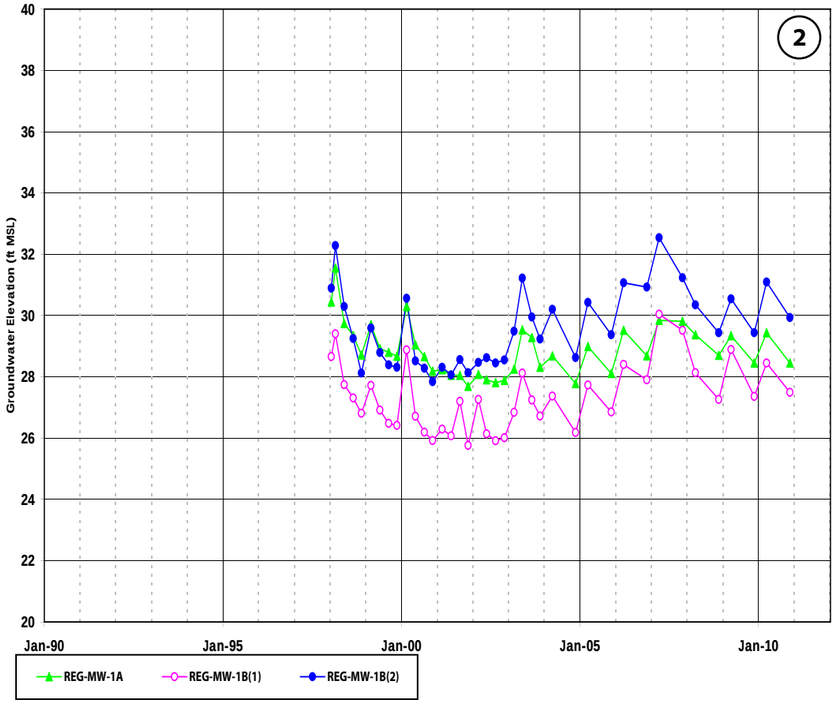

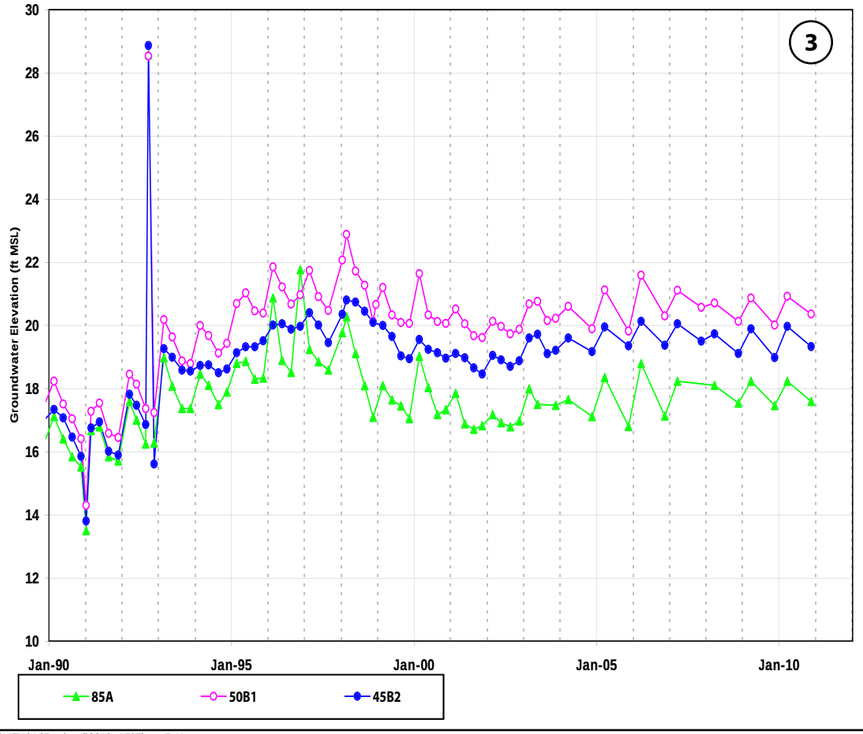

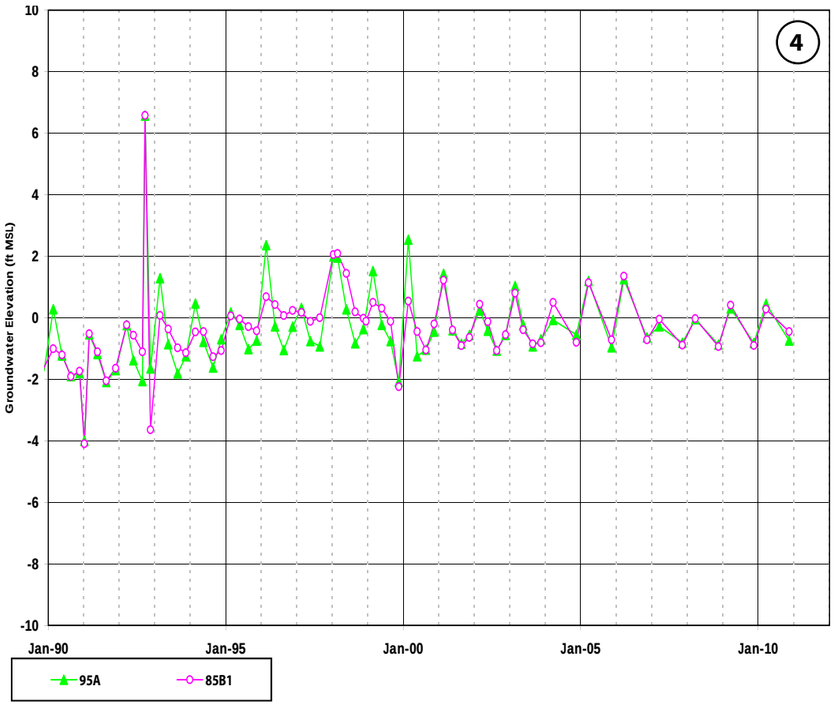

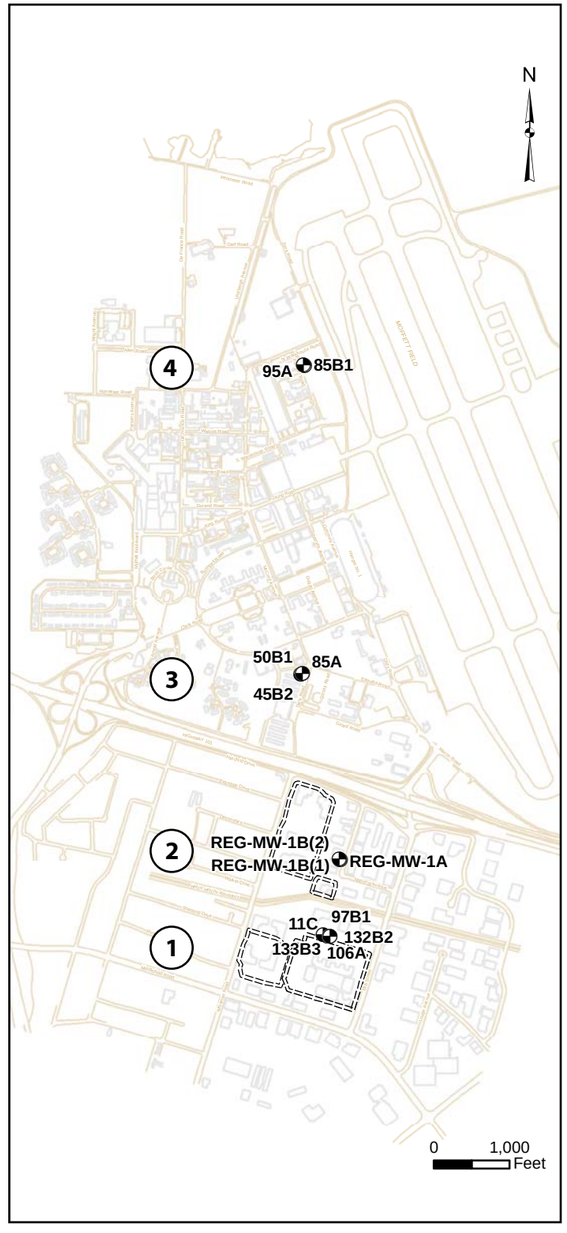

Hydrograph of Selected Wells Across Water-Bearing Zones
January 1990 through December 2010

MEW Regional Groundwater Remediation Program
Mountain View, California

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Figure **7**

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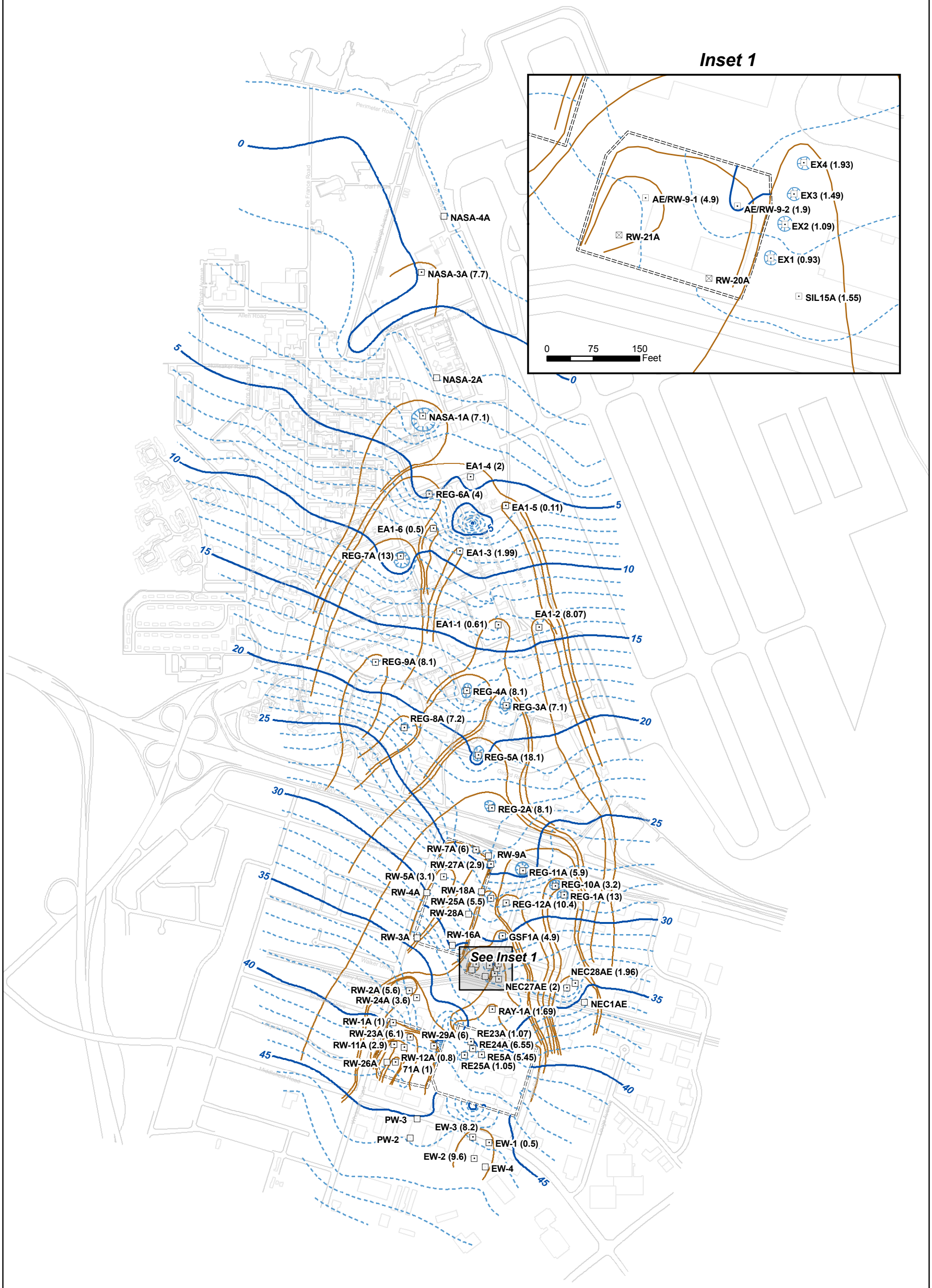

Legend

- Recovery Well On
- Recovery Well Off
- **(8.2)** Pumping Rate in gallons per minute, calculated from weekly totalizer readings ending week of 25 March 2010

Groundwater Elevation Contours

- 1 foot interval
- 5 foot interval

- Estimated Capture Zone
- Slurry Wall
- Building
- Road

N

1,000 500 0 1,000 Feet

Note:
Groundwater elevation contour map with posted data provided in Appendix B.

A/A1 Zone Groundwater Elevation Contours and Estimated Capture Zones 25 March 2010

MEW Regional Groundwater Remediation Program
Mountain View, California

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Figure 8

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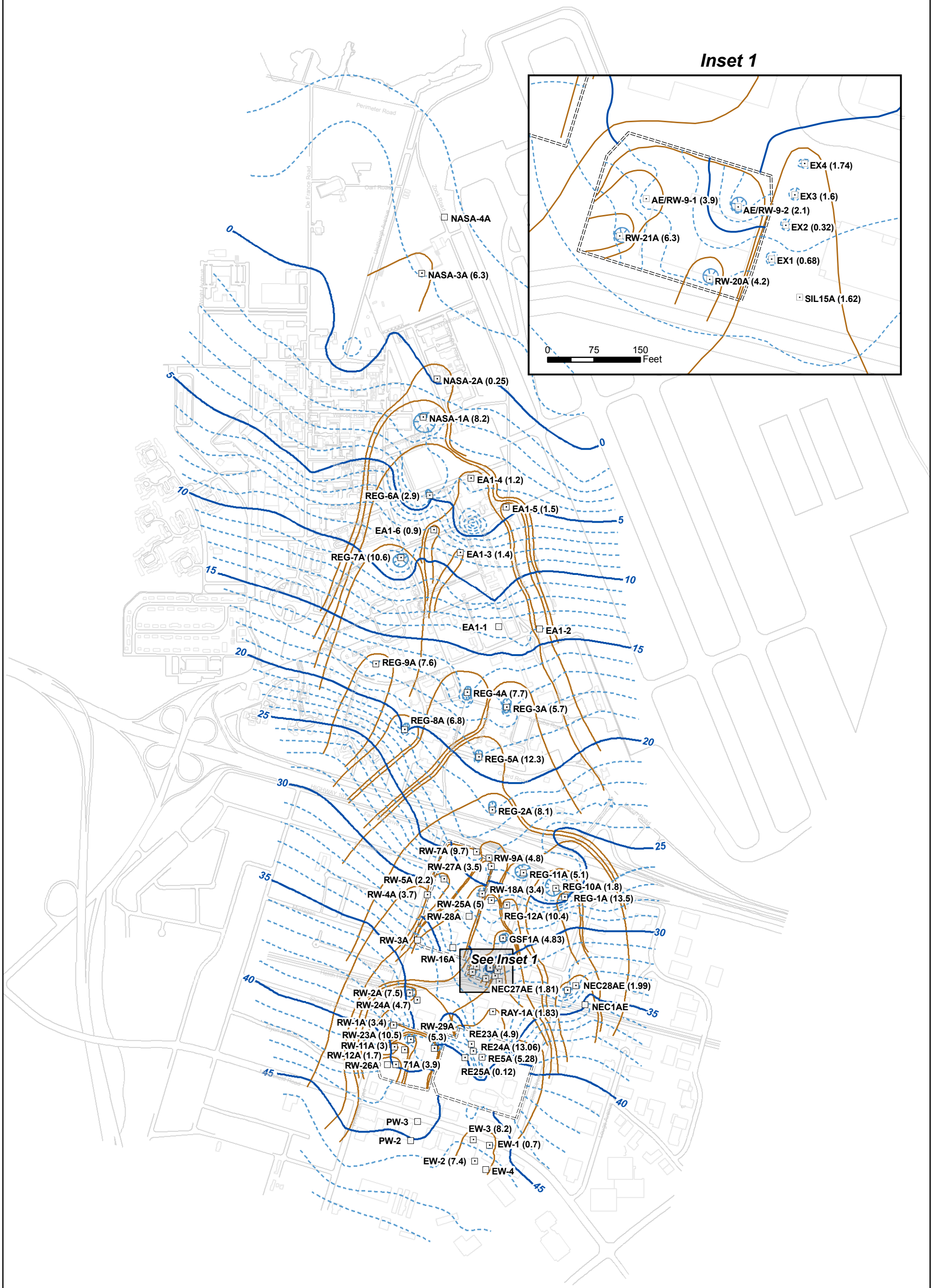

Legend

- Recovery Well On
- Recovery Well Off
- (7.4) Pumping Rate in gallons per minute, calculated from weekly totalizer readings ending week of 18 November 2010

Groundwater Elevation Contours

- 1 foot interval
- 5 foot interval

- Estimated Capture Zone
- Slurry Wall
- Building
- Road

N

1,000 500 0 1,000 Feet

Note:
Groundwater elevation contour map with posted data provided in Appendix B.

A/A1 Zone Groundwater Elevation Contours and Estimated Capture Zones 18 November 2010

MEW Regional Groundwater Remediation Program
Mountain View, California

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Figure **9**

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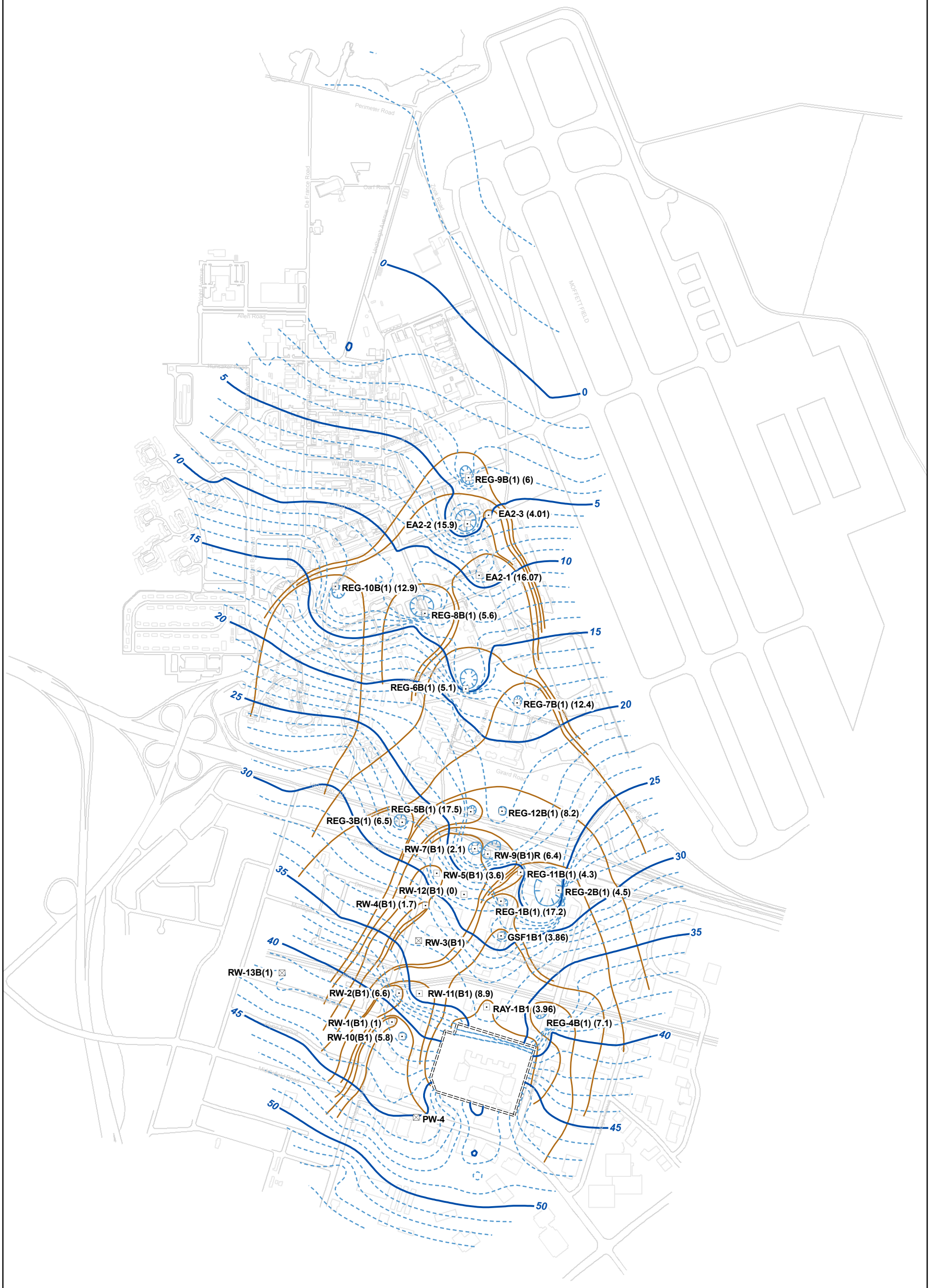

Legend

- Recovery Well On
- Recovery Well Off
- **Groundwater Elevation Contours**
  - 1 foot interval
  - 5 foot interval
- Estimated Capture Zone
- Slurry Wall
- Building
- Road

(5.8) Pumping Rate in gallons per minute, calculated from weekly totalizer readings ending week of 25 March 2010

Note:
Groundwater elevation contour map with posted data provided in Appendix B.

N

1,000 500 0 1,000 Feet

B1/A2 Zone Groundwater Elevation Contours and Estimated Capture Zones 25 March 2010

MEW Regional Groundwater Remediation Program
Mountain View, California

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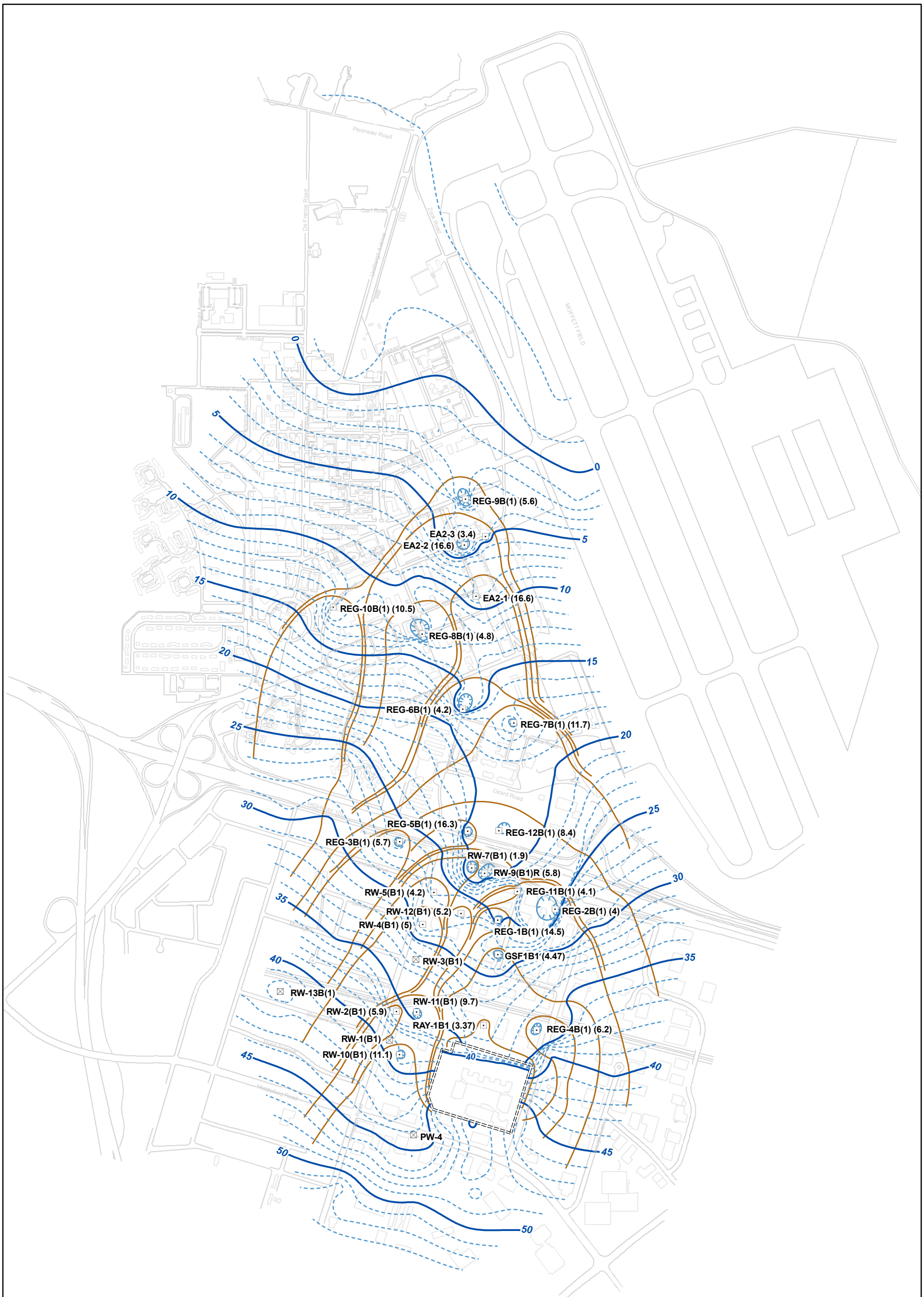
Figure **10**

P:\GIS\MEW\Project\Regional\2010_AR\POT\GGW_B1A2_Mar2010_CZ.mxd



Legend

- Recovery Well On
- Recovery Well Off
- **Groundwater Elevation Contours**
  - 1 foot interval
  - 5 foot interval
- Estimated Capture Zone
- Slurry Wall
- Building
- Road

(11.1) Pumping Rate in gallons per minute, calculated from weekly totalizer readings ending week of 18 November 2010

Note:
Groundwater elevation contour map with posted data provided in Appendix B.

N

1,000 500 0 1,000 Feet

B1/A2 Zone Groundwater Elevation Contours and Estimated Capture Zones 18 November 2010

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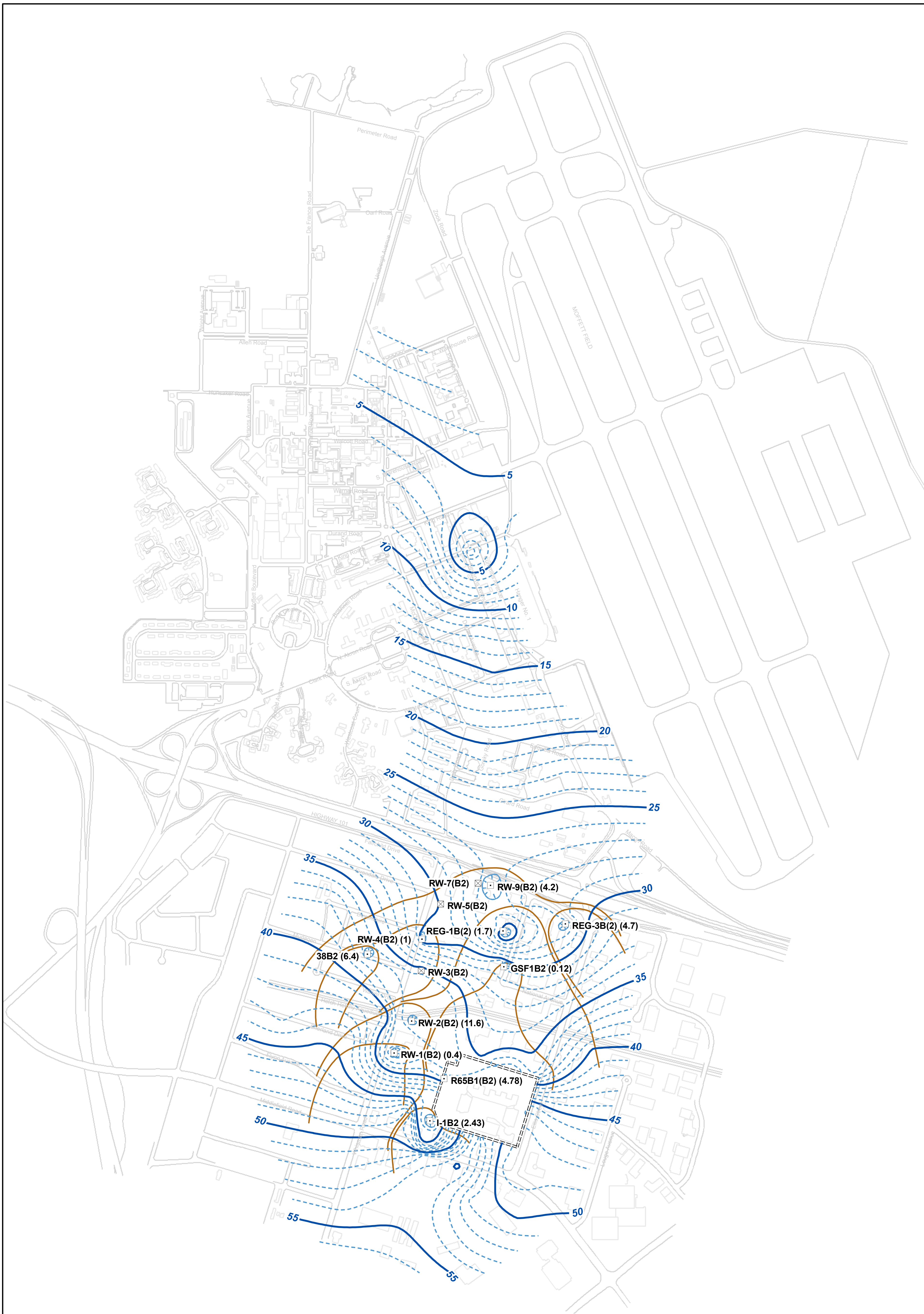
Figure **11**

P:\GIS\MEW\Project\Regional\2010_AR\POT\GGW_B1A2_Nov2010_CZ.mxd



Legend

Recovery Well On
Recovery Well Off

Groundwater Elevation Contours
1 foot interval
5 foot interval

Estimated Capture Zone
Slurry Wall
Building
Road

(2.43) Pumping Rate in gallons per minute, calculated from weekly totalizer readings ending week of 25 March 2010

Note:
Groundwater elevation contour map with posted data provided in Appendix B.

1,000 500 0 1,000 Feet

B2 Zone Groundwater Elevation Contours and Estimated Capture Zones 25 March 2011

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Mountain View, California

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Figure **12**

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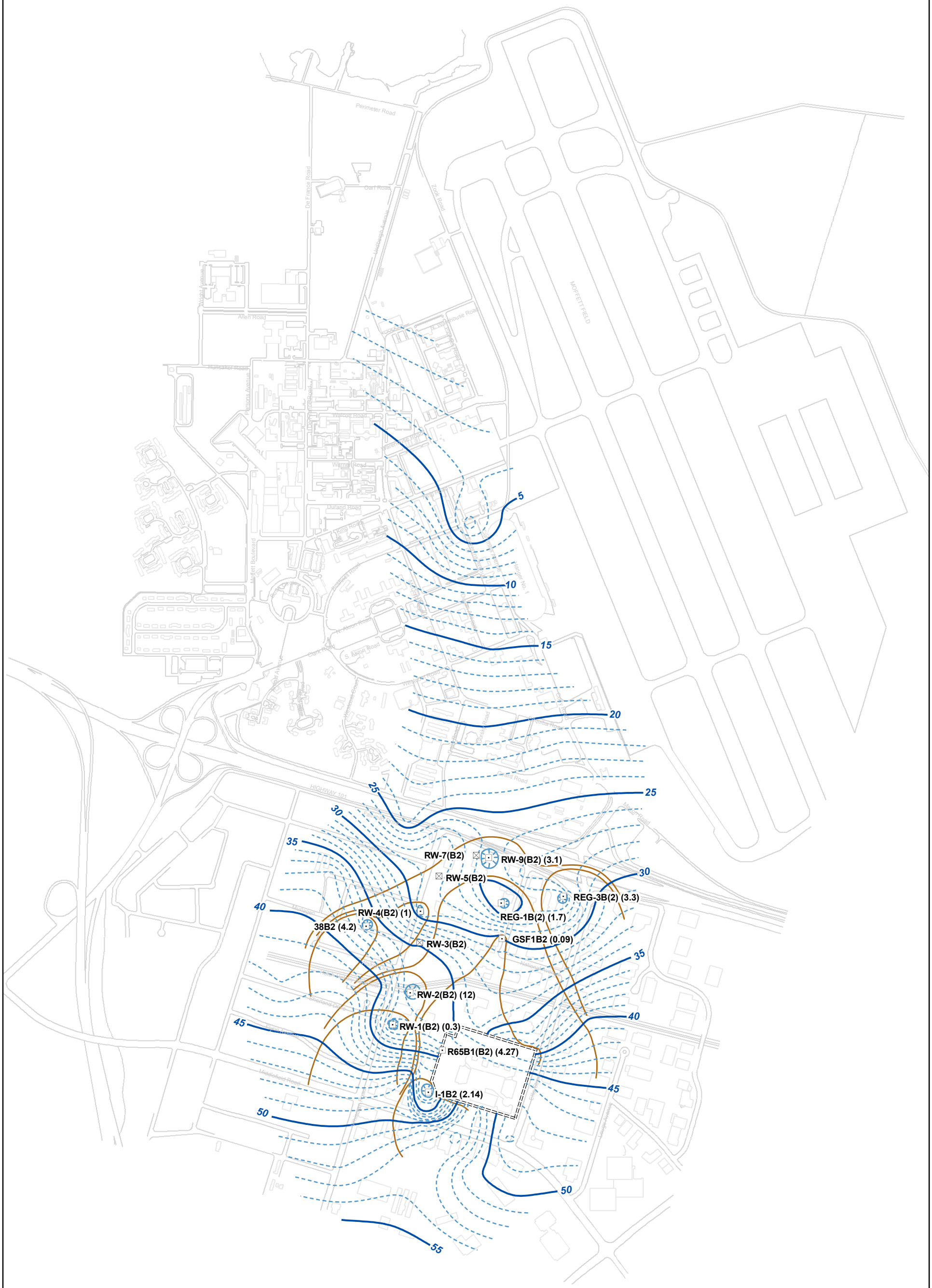
P:\GIS\MEW\Project\Regional\2010_AR\POT\GGW_B2_Mar2010_CZ.mxd



Legend

- Recovery Well On
- Recovery Well Off

Groundwater Elevation Contours

- 1 foot interval
- 5 foot interval

- Estimated Capture Zone
- Slurry Wall
- Building
- Road

(0.3) Pumping Rate in gallons per minute, calculated from weekly totalizer readings ending week of 18 November 2010

Note:
Groundwater elevation contour map with posted data provided in Appendix B.

N

1,000 500 0 1,000 Feet

B2 Zone Groundwater Elevation Contours and Estimated Capture Zones 18 November 2010

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Figure 13

P:\GIS\MEW\Project\Regional\2010_AR\POT\GGW_B2_Nov2010_CZ.mxd

Legend

- Recovery Well On
- Recovery Well Off

Groundwater Elevation Contours

- 1 foot interval
- 5 foot interval

- Estimated Capture Zone
- Building
- Road

(7.3) Pumping Rate in gallons per minute, calculated from weekly totalizer readings ending week of 25 March 2010

Note:
Groundwater elevation contour map with posted data provided in Appendix B.

N

1,000 500 0 1,000 Feet

B3 Zone Groundwater Elevation Contours and Estimated Capture Zones 25 March 2010

MEW Regional Groundwater Remediation Program Mountain View, California

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Figure 14

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P:\GIS\MEW\Project\Regional\2010_AR\POT\GGW_B3_Mar2010_CZ.mxd

Legend

- Recovery Well Active
- Recovery Well Off
- **Groundwater Elevation Contours**
  - 1 foot interval
  - 5 foot interval
- Estimated Capture Zone
- Building
- Road

(6.4) Pumping Rate in gallons per minute, calculated from weekly totalizer readings ending week of 18 November 2010

Note:
Groundwater elevation contour map with posted data provided in Appendix B.

N

1,000 500 0 1,000 Feet

B3 Zone Groundwater Elevation Contours and Estimated Capture Zones 18 November 2010

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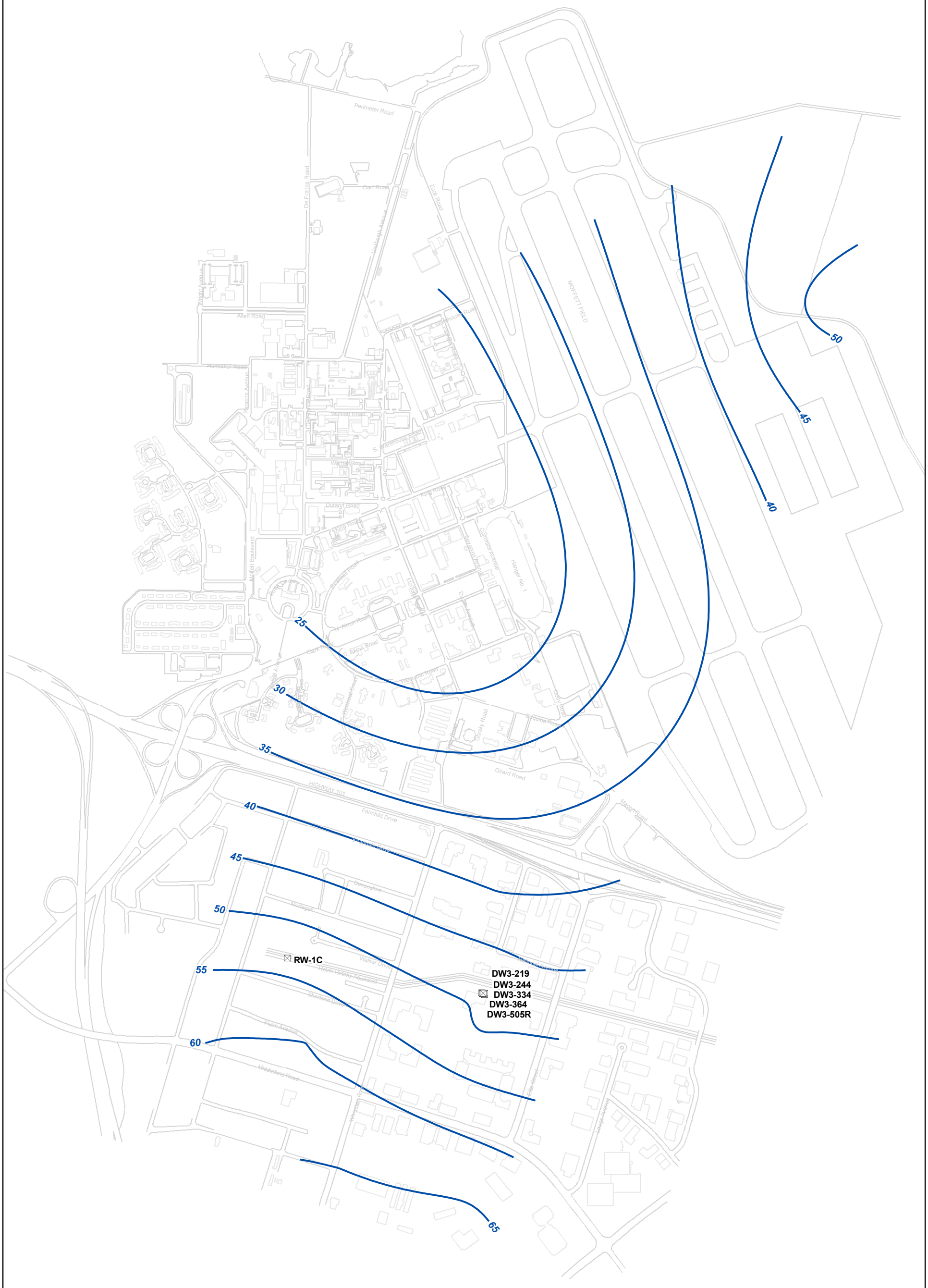
Figure **15**

P:\GIS\MEW\Project\Regional\2010_AR\POT\GGW_B3_Nov2010_CZ.mxd



Legend

- Recovery Well On
- Recovery Well Off

Groundwater Elevation Contours

- 1 foot interval
- 5 foot interval

- Estimated Capture Zone
- Building
- Road

N

1,000 500 0 1,000 Feet

Note:
Groundwater elevation contour map with posted data provided in Appendix B.

C and Deep Zone Groundwater Elevation Contours
25 March 2010

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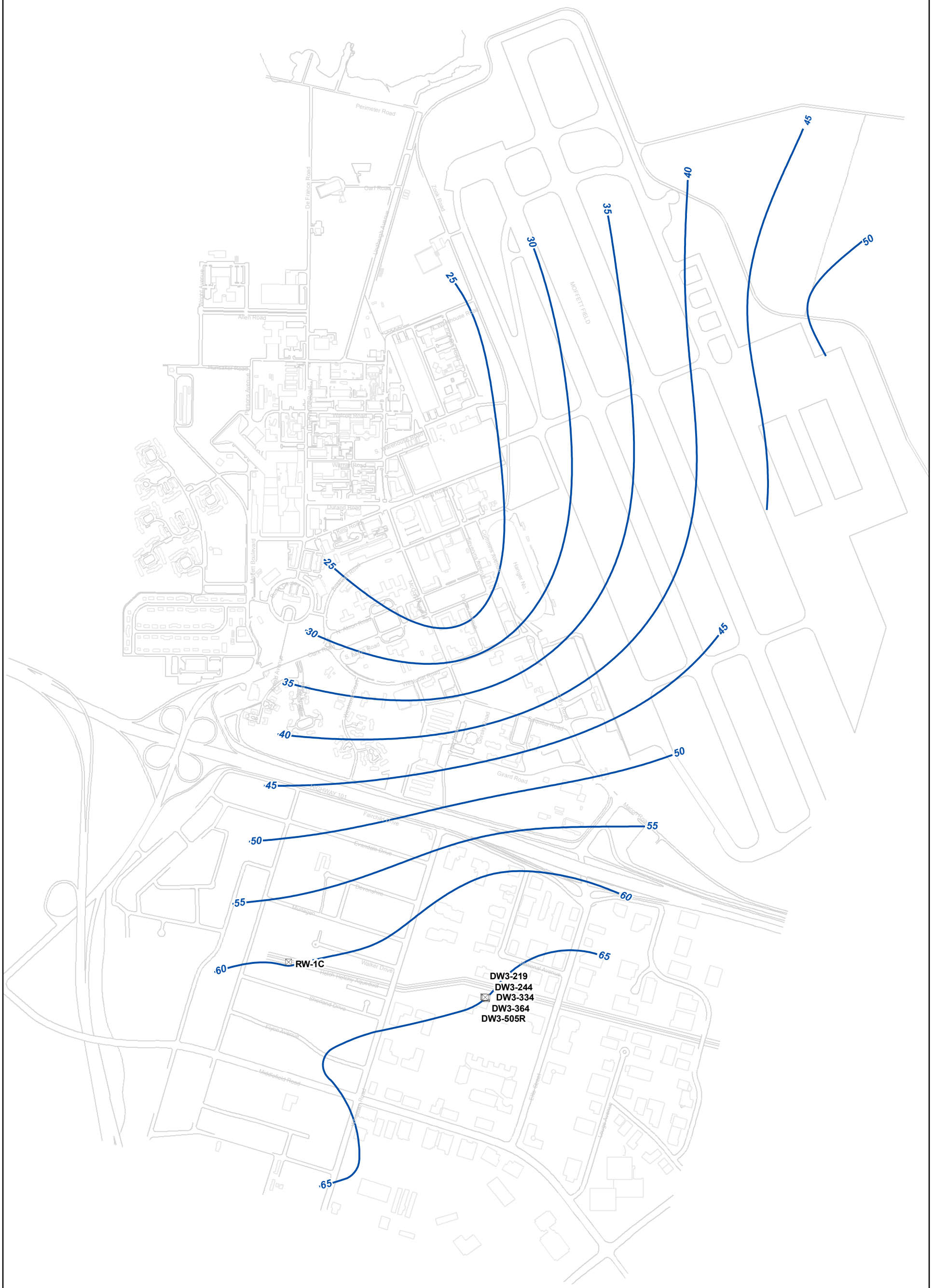
Figure **16**

P:\GIS\MEW\Project\Regional\2010_AR\POT\GGW_CDeep_Mar2010_CZ.mxd



Legend

- Recovery Well On
- Recovery Well Off

Groundwater Elevation Contours

- 1 foot interval
- 5 foot interval

- Estimated Capture Zone
- Building
- Road

N

1,000 500 0 1,000 Feet

Note:
Groundwater elevation contour map with posted data provided in Appendix B.

C and Deep Zone Groundwater Elevation Contours 18 November 2010

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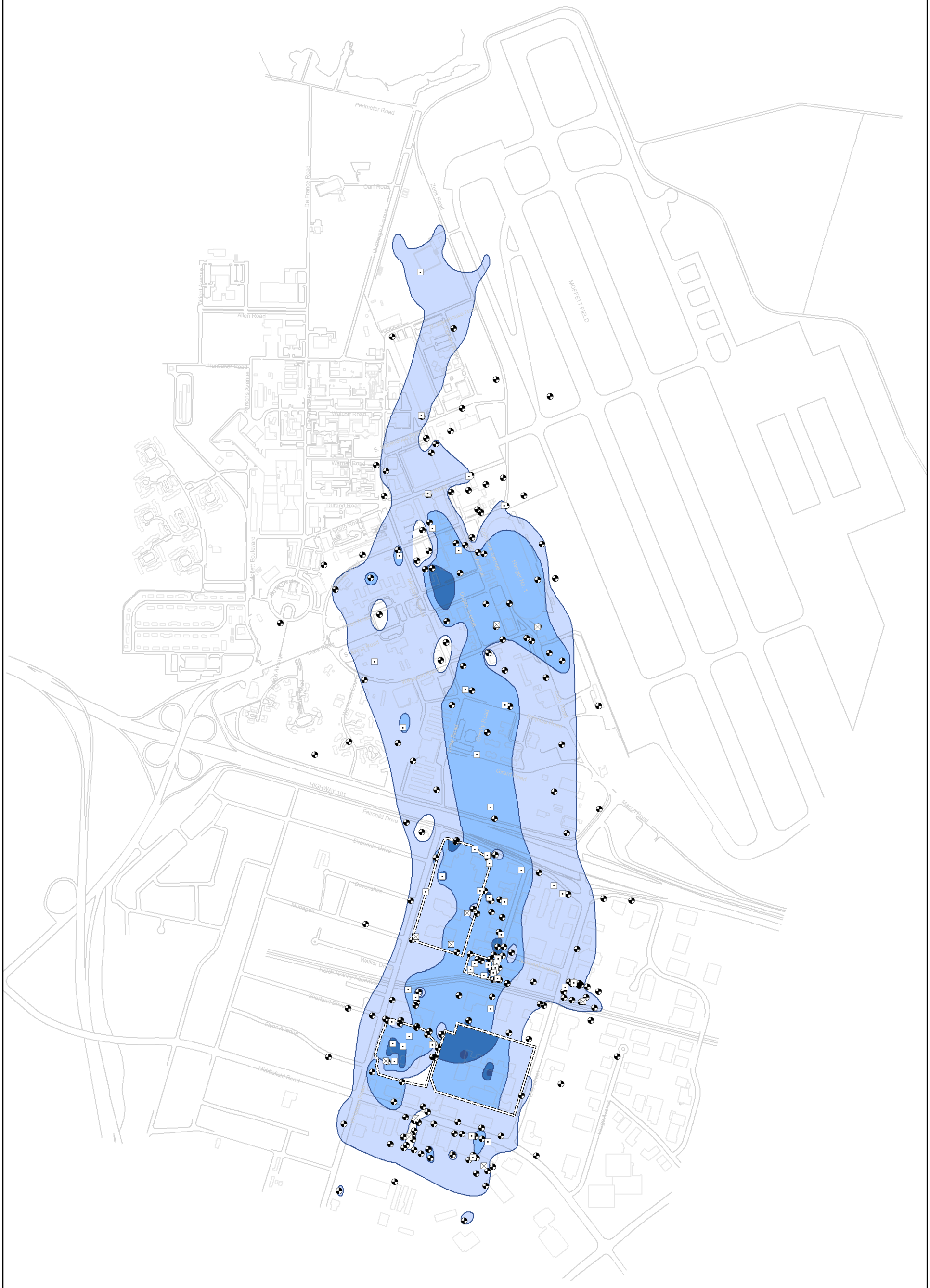
Figure **17**

P:\GIS\MEW\Project\Regional\2010_AR\POT\GGW_CDeep_Nov2010_CZ.mxd



Legend

- Recovery Well On
- Recovery Well Off
- Monitoring Well

TCE Concentration

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

- ==== Slurry Wall
- Building
- Road

N

1,000 500 0 1,000 Feet

Notes:
TCE = Trichloroethene
ug/L = micrograms per liter
TCE isoconcentration contour map with posted data provided in Appendix C.
Figure shows only those wells sampled in 2010.

A/A1 Zone TCE Concentrations November/December 2010

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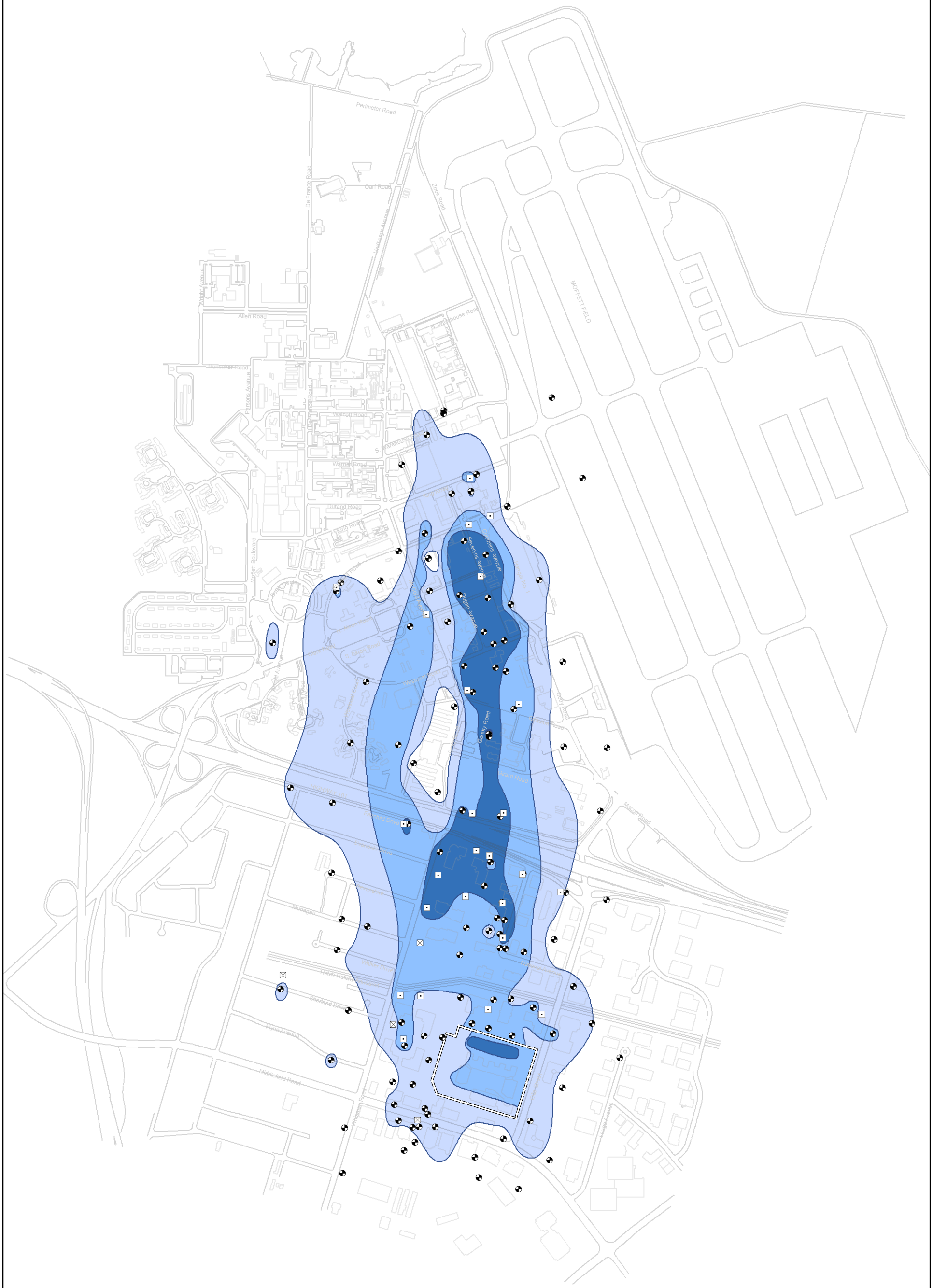
Figure **18**

P:\GIS\MEW\Project\Regional\2010_AR\TCE\TCE_AA1_Nov2010.mxd



Legend

- Recovery Well On
- Recovery Well Off
- Monitoring Well

TCE Plume

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

- ==== Slurry Wall
- Building
- Road

Notes:
TCE = Trichloroethene
ug/L = micrograms per liter
TCE isoconcentration contour map with posted data provided in Appendix C.
Figure shows only those wells sampled in 2010.

B1/A2 Zone TCE Concentrations November/December 2010

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Figure **19**

P:\GIS\MEW\Project\Regional\20010_AR\TCE\TCE_B1A2_Nov2010.mxd

Legend

- Recovery Well On
- Recovery Well Off
- Monitoring Well

TCE Plume

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

==== Slurry Wall

Building

Road

N

1,000 500 0 1,000 Feet

Notes:
TCE = Trichloroethene
ug/L = micrograms per liter
TCE isoconcentration contour map with posted data provided in Appendix C.
Figure shows only those wells sampled in 2010.

B2 Zone TCE Concentrations November/December 2010

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Figure **20**

P:\GIS\MEW\Project\Regional\2010_AR\TCE\TCE_B2_Nov2010.mxd

Legend

- Recovery Well On
- Recovery Well Off
- Monitoring Well

TCE Concentration

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

- Building
- Road

Notes:
TCE = Trichloroethene
ug/L = micrograms per liter
TCE isoconcentration contour map with posted data provided in Appendix C.
TCE not detected above 5 ug/L
Figure shows only those wells sampled in 2010.

N

1,000 500 0 1,000 Feet

B3 Zone TCE Concentrations November/December 2010

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Figure **21**

P:\GIS\MEW\Project\Regional\2010_AR\TCE\TCE_B3_Nov2010.mxd

Legend

- Recovery Well On
- Recovery Well Off
- Monitoring Well

TCE Plume

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

- Building
- Road

N

1,000 500 0 1,000 Feet

Notes:
TCE = Trichloroethene
ug/L = micrograms per liter
TCE isoconcentration contour map with posted data provided in Appendix C.
Figure shows only those wells sampled in 2010.

C and Deep Zone TCE Concentrations November/December 2010

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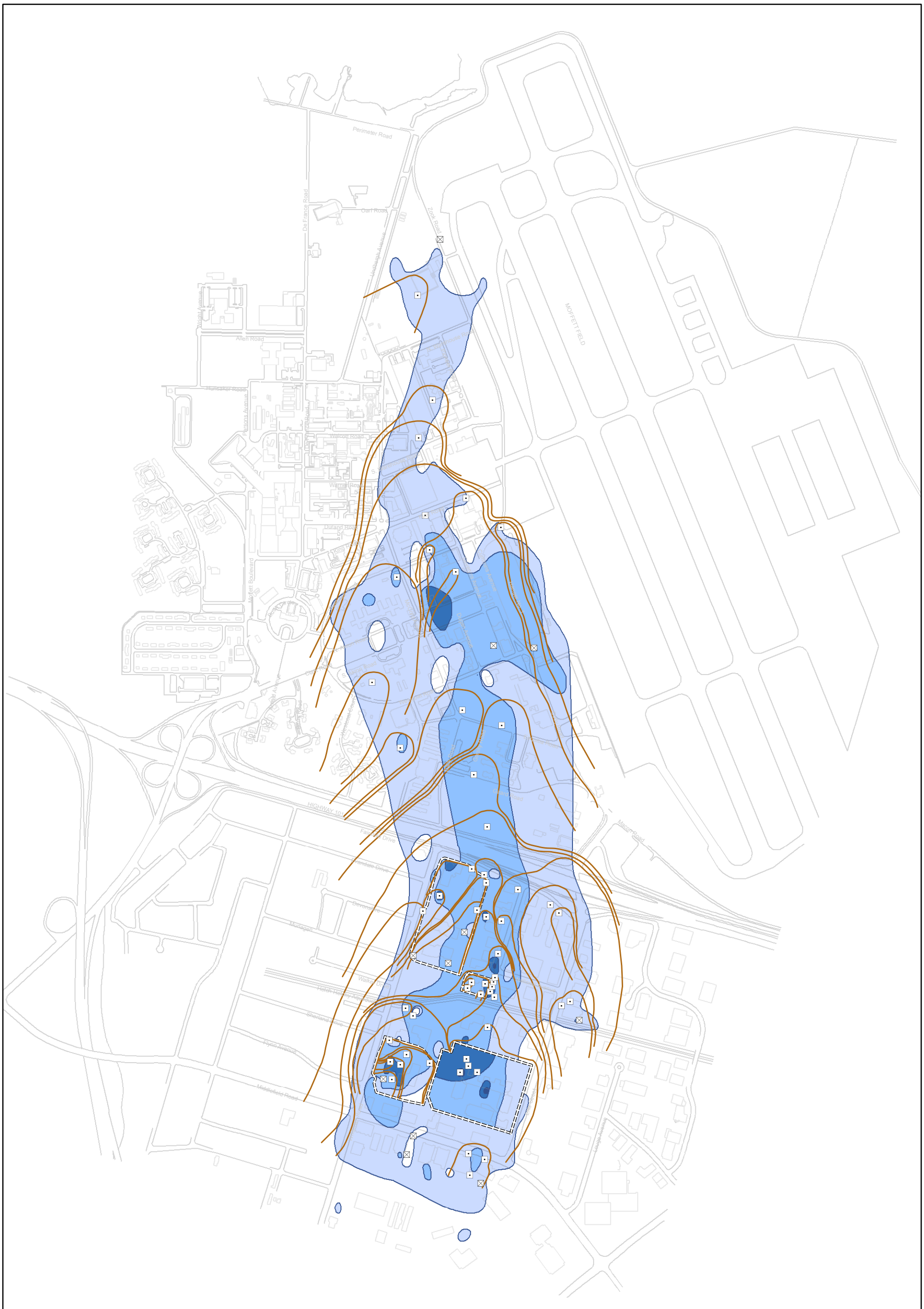
Figure **22**

P:\GIS\MEW\Project\Regional\2010_AR\TCE\TCE_CDeep_Nov2010.mxd



Legend

- 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

N

1,000 500 0 1,000 Feet

Notes:
TCE = Trichloroethene
ug/L = micrograms per liter

A/A1 Zone TCE Concentrations and Estimated Capture Zones November/December 2010

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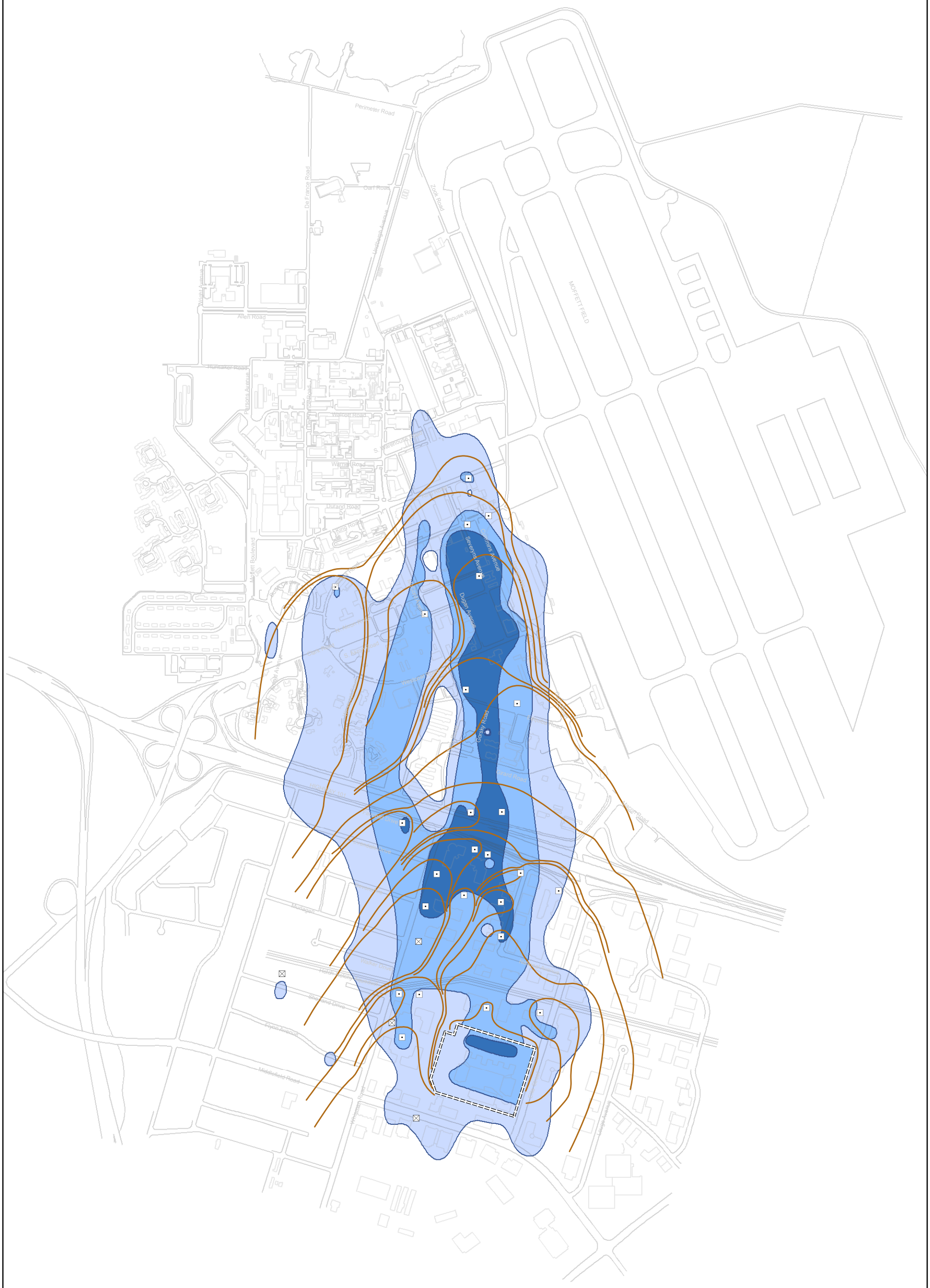
Figure **23**

P:\GIS\MEW\Project\Regional\2010_AR\TCE\TCE_AA1_Nov2010_CZ.mxd



B1/A2 Zone TCE Concentrations and Estimated Capture Zones November/December 2010

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Figure **24**

P:\GIS\MEW\Project\Regional\2010_AR\TCE\TCE_B1A2_Nov2010_CZ.mxd

Legend

- 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

- Capture Zone
- ==== Slurry Wall
- Building
- Road

N

1,000 500 0 1,000 Feet

Notes:
TCE = Trichloroethene
ug/L = micrograms per liter

B2 Zone TCE Concentrations and Estimated Capture Zones November/December 2010

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Figure **25**

P:\GIS\MEW\Project\Regional\2010_AR\TCE\TCE_B2_Nov2009_CZ.mxd

Legend

- 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
- Building
- Road

N

1,000 500 0 1,000 Feet

Notes:
TCE = Trichloroethene
ug/L = micrograms per liter
TCE not detected above 5 ug/L

B3 Zone TCE Concentrations and Estimated Capture Zones November/December 2010

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Figure **26**

P:\GIS\MEW\Project\Regional\2010_AR\TCE\TCE_B3_Nov2010_CZ.mxd

Legend

- 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

- Building
- Road

N

1,000 500 0 1,000 Feet

Notes:
TCE = Trichloroethene
ug/L = micrograms per liter
No estimated capture zone in C and Deep Aquifer because recovery wells are off.

C and Deep Zone TCE Concentrations and Estimated Capture Zones November/December 2010

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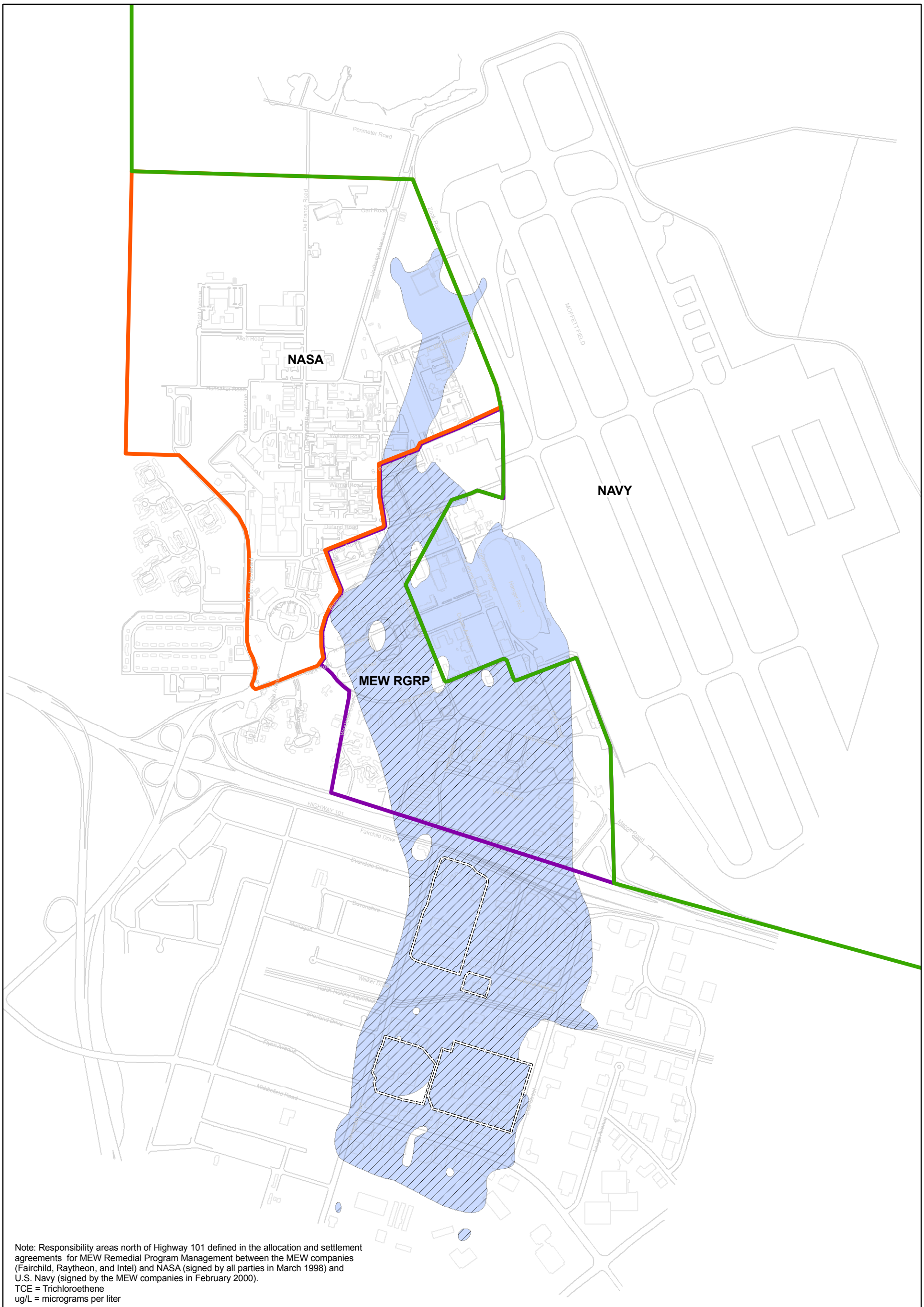
Figure **27**

P:\GIS\MEW\Project\Regional\2009_AR\TCE\TCE_CDeep_Nov2010_CZ.mxd



Note: Responsibility areas north of Highway 101 defined in the allocation and settlement agreements for MEW Remedial Program Management between the MEW companies (Fairchild, Raytheon, and Intel) and NASA (signed by all parties in March 1998) and U.S. Navy (signed by the MEW companies in February 2000).
TCE = Trichloroethene
ug/L = micrograms per liter

Legend

- MEW RGRP Target Capture Area
- TCE Plume Boundary
- NASA Area of Responsibility
- U.S. Navy Area of Responsibility
- MEW RGRP (North of 101) Area of Responsibility
- ==== Slurry Wall
- Building
- Road

N

1,000 500 0 1,000 Feet

Target Capture Area, A/A1 Zone

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Mountain View, California

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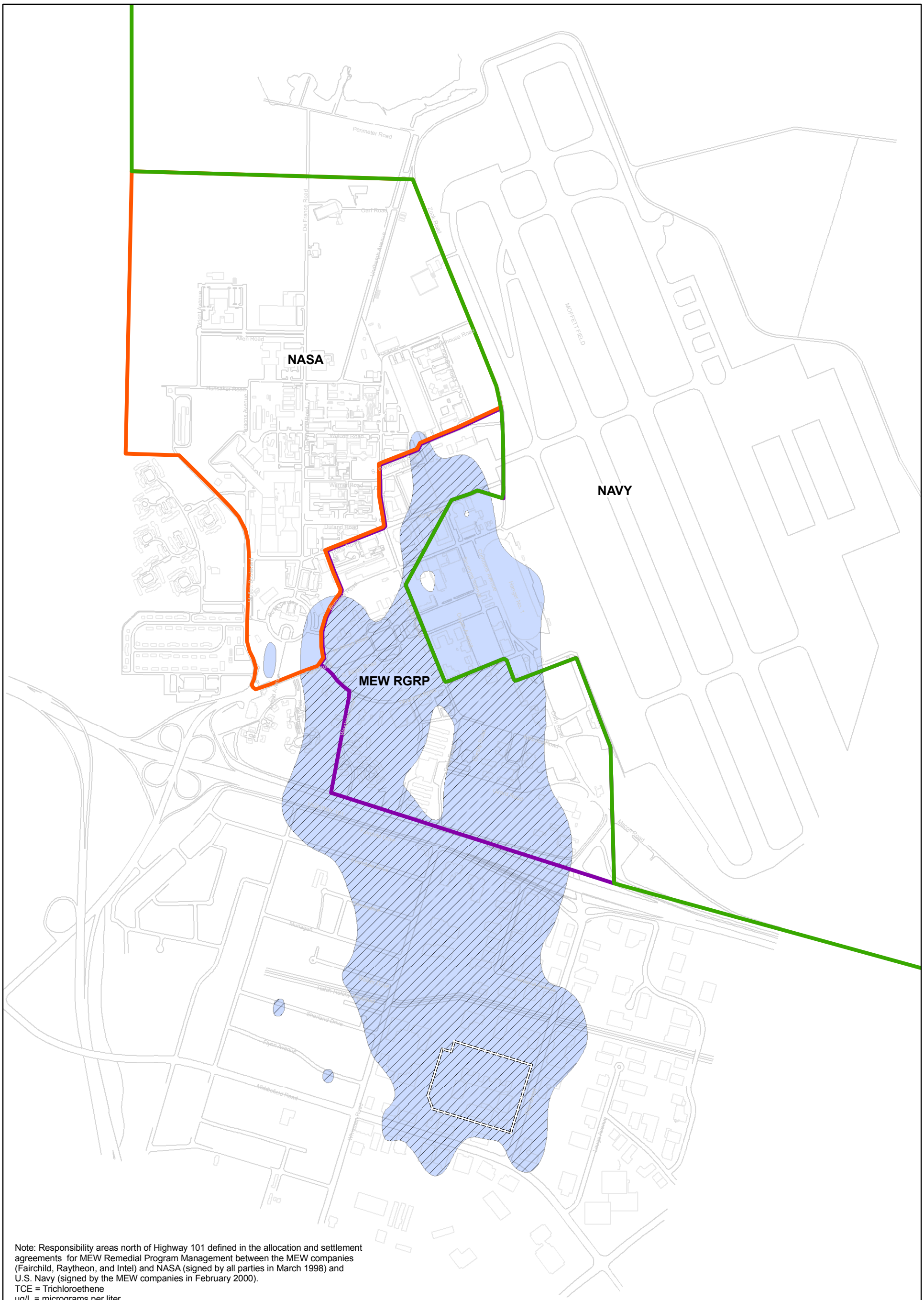
Figure **28**

P:\GIS\MEW\Project\Regional\2010_AR\Target_Capture_AA1.mxd



Note: Responsibility areas north of Highway 101 defined in the allocation and settlement agreements for MEW Remedial Program Management between the MEW companies (Fairchild, Raytheon, and Intel) and NASA (signed by all parties in March 1998) and U.S. Navy (signed by the MEW companies in February 2000).
TCE = Trichloroethene
ug/L = micrograms per liter

Legend

- NASA Area of Responsibility
- U.S. Navy Area of Responsibility
- MEW RGRP (North of 101) Area of Responsibility
- MEW RGRP Target Capture Area
- TCE Plume Boundary
- ==== Slurry Wall
- Building
- Road

N

1,000 500 0 1,000 Feet

Target Capture Area, B1/A2 Zone

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Figure **29**