Report

2009 Annual Progress Report

Former Raytheon Facilities
350 Ellis Street
Mountain View, California

Prepared for:
Raytheon Company

15 April 2010

Project No. 23016-2100

Locus TECHNOLOGIES

Raytheon Company
Environmental, Health & Safety
2000 E. El Segundo Blvd. E07/S175
El Segundo, CA 90245
Direct Tel: 310- 647-2495
Direct Fax 310- 616-1042
e-mail : gstaylor@raytheon.com

Raytheon

15 April 2010

Ms. Alana Lee
Project Manager
Superfund Division SFD-7-3
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

RE: Raytheon Site Specific 2009 Annual Progress Report
Former Raytheon Facilities
350 Ellis Street, Mountain View, California
Project Number 23016-2100

Dear Ms. Lee:

Enclosed are three copies of the 2009 Annual Progress Report for the Raytheon site specific work performed from 1 January through 31 December 2009 at the groundwater treatment system located at 350 Ellis Street in Mountain View, California.

If you have any questions regarding this transmittal, please contact me.

Very truly yours,

Greg S. Taylor
Environmental Program Manager

GST/lm

Enclosure

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Joe Ferguson, Schlumberger Oilfield Services
Richard C. Coffin, Esq., Barg Coffin Lewis & Trapp, LLP
Tess Byler, Weiss Associates
Joyce Adams, Weiss Associates
John D. Gallinatti, Geosyntec Consultants
Deepa Gandhi, Geosyntec Consultants
Maria P. Hoye, Esq., Latham & Watkins
Harold Rush, AMEC Geomatrix Consultants, Inc.
Mary Stallard, Weiss Associates
Anja Verce, Weiss Associates
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Dr. Ann H. Clarke, NASA-Ames Research Center
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Diane MacMillian, NAVY
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Eric Suchomel, GeoSyntec Consultants
Peter Weinberg, NEC Electronics America, Inc.
Gordon C. Atkinson, Esq., Cooley Godward Kronish LLP
Kathleen Goodhart, Esq., Cooley Godward Kronish LLP
Elie H. Haddad, P.E., Haley & Aldrich
Wes (John) Hawthorne, Locus Technologies
Greg Taylor, Raytheon Company
Susan Gahry, PES Environmental, Inc.
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Gary Jones, SMI Holding LLC
Greg Hedger, SUMCO Phoenix Corporation
Dina C. Kuykendall, Baker Hughes Incorporated
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Tom Gieck, The Dow Chemical Company
Alana Lee, USEPA Region IX
Joe Sterling, CH2MHILL
Rich Howard, TechLaw Inc.
Jean Agostinelli, GTE Operations Support, Inc.
Brenda Rian, AOL
Robert Balas, Iris Environmental
Lenny Siegel, MEW TAG Administrator, Center for Public Environment Oversight
Jonathan Bauer, Hewlett Packard
Peter Strauss, MEW TAG Advisor, PM Strauss & Associates
Candace Bowers, Mountain View Public Library

Robert Teed, Symantec Workplace Solutions
George Cook, Santa Clara Valley Water District
Elizabeth Wells, San Francisco Bay Water Board
Kevin Woodhouse, Office of the City manager
Barbara Cook, Department of Toxic Substance Control

2009 Annual Progress Report

Former Raytheon Facilities
350 Ellis Street, Mountain View, California

Prepared by:

Luxy Martin
Jennifer Morris, P.G

Approved by:

J. Wesley Hawthorne, P.E.,P.G

www.locustec.com

HEADQUARTERS: SILICON VALLEY

299 Fairchild Drive
Mountain View, California 94043
Ph. (650) 960-1640
Fax (650) 960-0739

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FORMER RAYTHEON FACILITIES
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

1. INTRODUCTION

This Annual Progress Report was prepared by Locus Technologies on behalf of Raytheon Company (Raytheon) for the former Raytheon facilities located at 350 Ellis Street in Mountain View, California (CIWQS Place Identification: 202473) (Figure 1). This progress report contains a summary of site activities and data from January 1, 2009, through December 31, 2009. On May 6, 2005, the U.S. Environmental Protection Agency (EPA) agreed to change the reporting frequency for the Middlefield-Ellis-Whisman (MEW) site to annual, and requested specific items to be included in the report. This annual report fulfills the provisions specified in the May 6, 2005 EPA correspondence.

1.1. Site Background

The former Raytheon site located at 350 Ellis Street in Mountain View, California is approximately 18 acres (Figure 1). Mountain View is a town of approximately 70,000 residents, located in Santa Clara County. The former Raytheon facilities are part of the MEW site, where a number of companies were involved in activities requiring storage, handling, and use of chemicals. These companies are referred to as the MEW Companies in this document.

The facility at 350 Ellis Street was constructed around 1959 and was operated by Raytheon from 1961 to 1997 as a semiconductor manufacturing facility. Raytheon also occupied the property at 415 East Middlefield Road (Lot 5) from 1968 to 1983 as a semiconductor manufacturing facility. An acid neutralization system was located at 401 East Middlefield Road (Lot 4) and was jointly used by both Intel Corporation and Raytheon from 1968 to 1974, when Intel ceased the use of the system and commenced the use of its own system. Raytheon continued to use the acid neutralization system until approximately 1980. This document reports activities and data for the 350 Ellis Street site. Information on 401/415 East Middlefield Road can be found in the annual report submitted by Intel Corporation.

Agricultural development in this area began in the mid-1800s. Until about 1960, orchards, low crops, and greenhouse gardening dominated the area. North of U.S. Highway 101, Moffett Federal Airfield (Moffett Field) was commissioned in 1933. Ames Research Center, also north of the highway, was originally opened in 1940 adjacent to Moffett Field as a laboratory of the National Advisory Committee on Aeronautics.

Several buildings at the MEW site have changed ownership and occupancy. For the former Raytheon site at 350 Ellis Street, the property was sold to Fairchild Semiconductor Corporation in 1997. The facility was demolished in 2000, when Veritas Software Corporation purchased the property and built an office campus consisting of five buildings (A, B, C, D and E) and a multi-level garage. Symantec acquired Veritas in 2005 and now owns the property.

1.2. Local Hydrogeology

Aquifers in the MEW area include of shallow and deep aquifer systems separated by a laterally extensive aquitard approximately 40 feet thick. The shallow aquifer system is generally less than 160 feet below ground surface (bgs) south of U.S. Highway 101, and generally less than 100 feet bgs north of U.S. Highway 101. Subdivisions within the shallow aquifer have been designated the "A", "B1", "B2", and "B3" Aquifers. The regional aquitard is designated the "B/C" Aquitard. The water-bearing zones below the "B/C" Aquitard are termed the "C" Aquifer and the Deep Aquifer.

The direction of groundwater flow at the MEW site is generally to the north. However, the presence of various groundwater extraction systems near the former Raytheon sites and the slurry walls at 350 Ellis Street and 369 North Whisman Road has altered the local direction of the groundwater gradient. At 350 Ellis Street, the groundwater in the "A" and "B1" Aquifers is contained by the slurry wall enclosure and groundwater extraction wells RAY-1A and RAY-1B1 (Figure 2).

1.3. Summary of Onsite Remedial Actions

The record of decision (ROD) for the MEW site was issued in May 1989. Remedial Action Objectives (RAOs) were developed as a result of data collected during the Remedial Investigation (HLA, 1988) to aid in the development and screening of remedial alternatives to be considered for the ROD. The Feasibility Study (Canonie, 1988) for the MEW site lists the RAOs to be:

1. Protection of potential potable water supply;
2. Remediation or control of relatively elevated concentrations of chemicals present in localized vadose zone soils below the ground surface that could migrate into the shallow groundwater system;

3. Remediation or control of groundwater, which contains elevated concentrations of chemicals, including control of discharge of such groundwater into surface water.

For the vadose soils, the ROD selects two remedial technologies: 1) in situ soil vapor extraction (SVE) with treatment by vapor-phase granular activated carbon (GAC), and/or 2) excavation with treatment by aeration. The cleanup levels for soils containing TCE have been established in the ROD to be 1 milligram per kilogram (mg/kg) for soils contained within slurry wall enclosures, and 0.5 mg/kg for soils outside slurry walls.

For groundwater, the ROD proposes remediation and hydraulic control using groundwater extraction and groundwater treatment by air stripping or liquid-phase GAC. The cleanup level for groundwater containing TCE at the site is 5 micrograms per liter (µg/L) in the shallow aquifers, and 0.8 µg/L in the deep aquifers.

Remediation at the former Raytheon facility locations includes mitigation measures that have addressed chemicals in the groundwater, soils, and air. These mitigation measures are implemented according to specifications.

1.3.1. Soil

Soil Vapor Extraction Pilot Test (1992): In November 1992, Raytheon conducted a soil vapor extraction **(**SVE) pilot study that involved both operation of individual wells and a combination of several wells. Following the study, SVE was selected for soil remediation at the site.

Soil Vapor Extraction: A SVE system was installed and began operating in 1996 at the 350 Ellis Street property and off the property, immediately north of the slurry wall. This system included 135 vapor extraction wells and a vapor treatment system consisting of two 8,000-pound vapor-phase GAC units (GT, 1996). The SVE system was decommissioned in 2000 after it had removed approximately 3,000 pounds of VOCs from the soils.

Soil Excavation: TCE contaminated soil was discovered adjacent to the eastern and southern walls of the former loading dock in March 2000, during the demolition of the slab and foundation of the former building. Approximately 438 tons of soil were excavated, characterized, and transported to Forward Landfill (a class II facility) for disposal.

1.3.2. Groundwater

Groundwater Extraction: Groundwater extraction wells were first installed at the site in the "B1" Aquifer in March 1986 and in the "A" Aquifer in July 1986. Until 2000, extracted groundwater was

treated onsite using air stripping followed by a liquid-phase carbon adsorption system to remove volatile organic chemicals (VOCs). The air stripper operated under a permit from the BAAQMD, and discharge of the treated effluent was made pursuant to a National Pollutant Discharge Elimination System (NPDES) permit. Treated water was discharged to Stevens Creek via the storm sewer system.

In 1996, Raytheon added three additional extraction wells outside the slurry wall (RAY-1A, RAY-1B1, and I-1B2) as part of implementation of its facility-specific remedial design plans (GT, 1995). Due to the redevelopment of the area in year 2000, the groundwater treatment system was relocated to the southwest corner of the property. The relocated treatment system consisted of a low-profile air stripper with two liquid phase GAC vessels. The off-gas from the air stripper was treated through vapor phase GAC vessels. The locations of extraction wells, conveyance piping, and groundwater treatment system are shown on Figure 3.

On May 5, 2003, Raytheon received EPA's approval to shut down the air stripper and the carbon system so that the treatment train could be modified. Between May 20, 2003 and October 13, 2003, a temporary liquid phase carbon system consisting of two 5,000-pound (lb) vessels and one 2,000-lb vessel was operated to treat the extracted groundwater. The treatment compound was modified in fall 2003, and a new oxidation system was installed and began operations in December 2003. Because the system oxidizes the VOCs, no hazardous wastes are generated, and no VOCs are emitted into the air. The oxidation system is followed by a 2,000-lb liquid phase GAC vessel. Effluent is discharged under an NPDES permit to Stevens Creek via the storm sewer system.

To date, more than 14,976 lbs of VOCs have been removed from the groundwater at 350 Ellis Street. Influent concentrations have decreased since the current groundwater extraction regime (extraction well locations and pumping rates) was implemented in 2001 (Figure 4). Influent concentrations have been approaching asymptotic levels since 2005.

Slurry Wall: Slurry wall construction began at the site on June 12, 1987 and continued through the completion of backfilling on September 30, 1987. Details of the construction and test results are presented in the Raytheon Slurry Wall Construction Report (Golder, 1988). In summary, the wall was constructed to a depth of 100 feet below ground surface around the site perimeter, encompassing all potential chemical source areas at the facility. Backfill material consisted of a low permeability soil-bentonite mixture. The slurry wall penetrated the "A" and "B1" Aquifers, and partially penetrated the "B2" Aquifer. Laboratory permeability test results of over 190 backfill material samples ranged from 2×10^{-9} centimeters per second (cm/s) to 8×10^{-8} cm/s, indicating that the design specification of less than 1×10^{-7} cm/s was achieved.

The integrity of the slurry wall was verified by a program of *in situ* testing conducted during February 1988 to determine the geotechnical and hydraulic properties of the barrier material. Permeabilities estimated from the dissipation of pore pressure range between 1.5×10^{-9} and 5.3×10^{-8} cm/s, significantly better than the specified design maximum of 1×10^{-7} cm/s.

Potassium Permanganate Injection: Two rounds of potassium permanganate ($KMnO_4$) injection tests were performed on April 21, 1999, and July 9, 1999 (IT, 2000). The objective was to evaluate the effectiveness of $KMnO_4$ in removing VOCs in groundwater and saturated soil using the SVE wells before the property redevelopment construction started. The test was implemented in the northwest corner of the 350 Ellis Street site. A total of six temporary wells, two vapor extraction wells, and three existing monitoring/extraction wells were used during this study. Soil and groundwater sampling was performed before and after the $KMnO_4$ injection to assess the changes in VOC concentrations.

On an average, the TCE concentrations in soil decreased by approximately 19 percent after the $KMnO_4$ injection. Reductions in TCE concentrations in groundwater were noticed in three of the wells while two of the wells showed only minor changes overall and others showed increasing TCE concentrations. The TCE concentration reduction in wells away from the injection points was less than expected in both magnitude and extent. The concentration of metals and most field parameters in soils and groundwater experienced little change after the $KMnO_4$ injection.

The results of the sampling events indicated that a 30% VOC reduction was achieved and no adverse effects on groundwater quality were observed.

1.3.3. Air

On October 3, 2002, the EPA requested a work plan "to conduct a human health risk assessment to evaluate the groundwater-to-indoor air exposure pathway." Subsequently, the MEW Companies submitted a unified work plan on December 2, 2002 (Locus, 2002), and a revision on April 16, 2003 (Locus, 2003a), to respond to EPA's February 17, 2003 comments.

A report documenting and interpreting the spring 2003 air sample results for the site was submitted to EPA on August 15, 2003 (Locus, 2003b); a report documenting the fall results was submitted on January 9, 2004 (Locus, 2004a). During the fall sampling event, some buildings showed indoor air concentrations slightly higher than EPA's interim action level for TCE of 2.7 $\mu g/m^3$ because these buildings were not ventilated (these buildings were either vacant or sampled on the weekend). In such instances, additional samples collected after the ventilation systems were re-started showed concentrations below the interim action level. Additional samples collected on weekdays during normal occupancy showed TCE concentrations significantly below the interim action level.

Some pathway samples collected in unoccupied utility rooms at the Ellis Street property during the initial 2003 sampling showed concentrations of TCE above the interim action level. Although exposure in these utility rooms is infrequent and is limited in duration, Raytheon implemented voluntary mitigation measures in these utility rooms. Conduits in the utility rooms at the Ellis Street property are connected directly to vaults outside the buildings. Raytheon collected air samples from the vaults, and the results showed concentrations similar to those in the utility rooms, suggesting the outside vaults as the source. Accordingly, in August 2003 Raytheon sealed utility conduits entering the utility rooms from exterior vaults, and collected confirmation samples. This mitigation measure resulted in a significant decrease in concentrations in these utility rooms by up to two orders of magnitude. TCE concentrations in some utility rooms remained slightly above the interim action level. The action level, however, assumes an exposure period of 10 hours per day, 250 days per year, for 21 years, which is not representative of the usage of these utility rooms, where exposure is limited, and where the utility rooms are accessed only on an as-needed basis. Nonetheless, an evaluation of alternatives to further decrease concentrations was conducted. Air purification canisters were installed in the four utility rooms that showed TCE concentrations higher than the interim action level. The first unit was installed in 2004 as a trial phase; the additional three units were installed in 2005. Confirmation sampling has shown further decreases in TCE concentrations to below the interim action level.

Because the majority of the indoor air samples at the Ellis property were collected on the weekend while the ventilation system was off, an additional round of indoor, outdoor and pathway samples was collected on a weekday in September 2006. All indoor TCE concentrations were significantly below the interim action level.

To further confirm the results of weekday sampling, a total of 45 air samples were collected over a 10-hour period at 350-380 Ellis Street (Locus, 2008d) on February 20, 2008. This included 21 indoor, 10 outdoor, and 12 pathway samples. The analytical results confirmed previous findings that concentrations during normal weekday occupancy are below long-term exposure goals. One February 2008 sample collected in utility room D106 contained 6.4 $\mu g/m^3$ TCE, which is higher than the interim action level. Another air sample was collected from utility room D106 on July 9, 2008. The July 2008 sample contained only 1.7 $\mu g/m^3$ TCE, less than the interim action level of 2.7 $\mu g/m^3$. This utility room is not occupied. The results indicate that risks from inhalation exposure due to vapor intrusion of VOCs should not be concern to occupants of the property (Locus, 2008d; Locus, 2009a).

On June 29 2009, the Final Supplemental Remedial Investigation Report and Feasibility Study for the VI pathway for MEW Study area were submitted to EPA (Haley&Aldrich, 2009). On July 23, 2009, EPA conducted a public meeting to address the potential vapor intrusion pathway for the MEW

Superfund Study Area. The air purification units installed at the 350 Ellis Street property continued to be maintained and operated throughout 2009.

Appendix A, the annual remedy performance checklist, contains a summary of all past and current onsite remedial actions.

1.4. Summary of 2009 Activities and Deliverables

The following activities were completed at the 350 Ellis Street facility during this reporting period:

January	♦ 14th – 2,000-lb liquid-phase GAC vessel was changed out; the system was shut down for approximately 27 hours. ♦ 15th – MEW All Parties meeting attended by Raytheon and Locus representatives. ♦ 20th – Monthly treatment system sampling. ♦ 20th – Clean Harbors picked up two containers of spent carbon and filters for disposal. ♦ 21st – Notice of Intent application was submitted for NPDES permit renewal. ♦ 30th – 2008 Annual NPDES report was submitted to the RWQCB.
February	♦ 2nd – The pump in extraction well RAY-1B1 became inoperable. ♦ 11th and 12th – RE-25A was shut down for the first rehabilitation attempt, to improve declining yields that had been observed since late 2008. Two-and-half gallons of LBA™, a liquid chelating agent certified to NSF/ANSI Standard 60 – Drinking Water Treatment Chemicals – Health Effects, were poured to the well and were allowed to sit overnight. The following day, a driller redeveloped the well by surging and bailing. While the well was being treated, the pump was cleaned and the meter in RE-25A was replaced. ♦ 12th – The pumps and motors in RAY-1B1 and RAY-1A were replaced and set to 1.5 gpm and 4.5 gpm, respectively. ♦ 13th – RE-25A was restarted. ♦ 18th – Monthly treatment system sampling.
March	♦ 11th – 2,000-lb liquid-phase GAC vessel was changed out; the system was shut down for approximately 31 hours. ♦ 16th – Monthly treatment system sampling.

	♦ 23rd – City of Mountain View 2009 Environmental Compliance Plan (ECP) application and the annual fees were submitted. ♦ 26th -- Measured semiannual water elevations for the regional monitoring program and for well pairs at 350 Ellis Street.
April	• 2nd –City of Mountain View 2009 Environmental Compliance Plan (ECP) and Hazardous Materials and Waste Storage permit was received. • 15th – 2008 Annual Report was submitted to EPA (Locus, 2009a). • 20th -- Monthly treatment system sampling. • 27th – Five year report data submittal provided to EPA. • 30th – Submitted first quarter 2009 NPDES report to RWQCB (Locus, 2009b).
May	• 6th – 2,000-lb liquid–phase GAC vessel was changed out; the system was shut down for approximately 30 hours. • 12th – As part of the Second Five year review report for MEW Superfund area, EPA completed a site inspection and interview. • 18th – Monthly treatment system sampling. • 28th – Measured quarterly water elevations at the Raytheon well pairs.
June	• 15th – Monthly treatment system sampling.
July	• 9th – 2,000 lb liquid–phase GAC vessel was changed out; the system was shut down for approximately 30 hours. • 9th and 10th – Additional RE-25A rehabilitation activities were conducted during the system shutdown for the carbon change-out to improve well yield. LBA™ was poured into the well, supplemented by SC200™, a wetting agent to help disperse the treatment chemical, according to the manufacturer's instructions. A driller then redeveloped the well by surging and bailing for approximately 4 hours, removing about 200 gallons of water. The purge water was disposed through the groundwater treatment system. This procedure was repeated the following day, and a new pump was installed. The well was restarted on July 10, 2009. • 20th – Monthly treatment system sampling. • 30th – Submitted second quarter 2009 NPDES report to RWQCB (Locus, 2009c).
August	• 17th – Monthly treatment system sampling. • 27th – Measured quarterly water elevations at the Raytheon well pairs. • 31st – A video camera was inserted into RE-25A to inspect the condition of the screen. There did not appear to be any damage or encrustation on the screen that

	would inhibit water from flowing into the well.
September	• 2nd – 2,000 lb liquid–phase GAC vessel was changed out; the system was shutdown for approximately 30 hours. • 14th – RE-25A was treated with DPA™ a dry penetrating agent (certified to NSF/ANSI Standard 60 – Drinking Water Treatment Chemicals – Health Effects) designed to remove mineral scale. The following day, the well was surged and bailed, and about 200 gallons of water were removed and disposed in the groundwater treatment system. • 15th – RE-25A was restarted. • 21st – Monthly treatment system sampling. • 22nd – Inspection of the air purification units at the property. The meter in room A112 was not working, and needed replacement.
October	• 2nd – Submitted BAAQMD permit application. • 19th – Monthly treatment system sampling. • 22nd – A new meter was installed in the air purification unit in room A112. • 27th – Received the Final Second Five-Year Review Report for MEW Superfund Study Area. • 28th – 2,000-lb liquid–phase GAC vessel was changed out; the system was shutdown for approximately 29 hours. • 30th – Submitted third quarter 2009 NPDES report to RWQCB (Locus, 2009d).
November	• 16th – Monthly treatment system sampling. • 19th – Measured semiannual water elevations per the regional monitoring program and well pairs at Raytheon.
December	• 1st and 2nd – Annual site-specific monitoring well sampling. • 1st – Replaced carbon canister of the air purification unit in room A106. • 5th to 10th – MEW RGRP annual sampling event. • 21st – Monthly treatment system sampling.

2. GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

2.1. System Description and Performance

The groundwater treatment system consists of a hydrogen peroxide/ozone oxidation system and a liquid-phase GAC unit. The oxidation system consists of one skid-mounted high-pressure oxidation (HiPOx™) unit, designed and manufactured by Applied Process Technology, Inc., followed by one 2,000-lb liquid-phase GAC vessel. The hydrogen peroxide/ozone oxidation system operates by injecting 25% hydrogen peroxide and ozone generated from liquid oxygen into ten 2-inch pipeline reactors. During the oxidation process, the VOCs and 1, 4-dioxane are oxidized. Following oxidation, the treated groundwater flows through a 2,000-lb GAC vessel for final polish. Treated effluent from the groundwater treatment system is conveyed to Stevens Creek for discharge under the NPDES permit.

The oxidation system was installed in late November 2003 and began full operation in December 2003. A start-up report was submitted to the RWQCB and EPA in January 2004. All sampling procedures and start-up procedures were in accordance with the RWQCB's *Self-Monitoring Program for Discharges of Extracted and Treated Groundwater Resulting From the Cleanup of Groundwater Polluted by Volatile Organic Compounds, NPDES No. CAG912003, Order No. 99-051*.A new NPDES permit NPDES No. CAG912003, *Order No. R2-2009-0059* was issued on November 17, 2009. The sampling conducted after November 2009 was performed based on new permit requirements.

Groundwater is extracted from eight extraction wells and treated at the groundwater treatment system. Five extraction wells are located inside, and three outside, of the slurry wall enclosure (Figures 2 and 3). In 2009, the groundwater treatment system operated at approximately 27 gpm. Groundwater flow rates for the extraction wells and the average monthly treatment system flow rates are presented in Table 1.

2.1.1. Treatment System Sampling and Mass Removal

Monthly treatment system samples are collected from the influent (RAYINF), effluent of the HiPOx™ system (RAYMID), and system effluent (RAYEFT). Monthly samples are analyzed for VOCs using

EPA Method 8260B for the EPA 8010 analyte list. Results for the system influent and effluent sampling points are presented in Table 2.

Approximately 380 lbs of VOCs were removed by the treatment system in 2009. A total of 14,976 lbs of VOCs have been removed by the groundwater extraction system since 1986. Table 3 and Figures 5 and 6 present a summary of the VOC influent concentration and cumulative VOC mass removed for the Raytheon groundwater treatment system since 1986.

2.1.2. System Performance

The treatment system operated continuously during 2009, except during scheduled carbon change-outs, system maintenance, and unexpected shutdowns for well and/or system repairs.

2.2. Treatment System Operations and Maintenance

Raytheon is conducting long-term monitoring and maintenance activities in accordance with the current operation and maintenance (O&M) manual (Locus, 2004b). The primary activities associated with O&M include:

- Monthly groundwater treatment system sampling, in accordance with NPDES permit requirements. Laboratory analytical reports for sampling conducted in 2009 are included in Appendix B.
- Semiannual groundwater elevation measurements of all accessible monitoring wells, and quarterly groundwater elevation measurements of slurry wall well pairs (defined as a pair of wells, one on the inside and one on the outside of the wall to monitor direction of groundwater gradient across the wall), and vertical well clusters (wells located near each other but screened in different hydraulic units to monitor the direction of the groundwater gradient between the units). Historical well hydrographs are included in Appendix C.
- Groundwater sampling of a network of monitoring wells. Laboratory analytical reports are included in Appendix B. Historical water quality concentrations from 1992 to the present are included in Appendix D for the chemicals of concern. Also included in Appendix D are concentration trend plots for TCE, cis-1, 2-DCE and vinyl chloride.
- Inspecting the conditions of the groundwater monitoring and extraction wells (Figures 2 and 3).
- Inspecting and monitoring the treatment system operation.

Soil cleanup was achieved by implementing a SVE system. The system met its cleanup objective and was decommissioned in 2000. In 2004, EPA confirmed that soil cleanup at the MEW site is complete (EPA, 2004). Therefore, there are no ongoing O&M activities for SVE or the soil cleanup actions. The remaining component of the cleanup is groundwater extraction, as chemicals still remain in the groundwater at the site. The primary O&M activities include monitoring the groundwater and inspecting and maintaining the groundwater treatment system.

Raytheon has historically maintained inward hydraulic gradients across the slurry wall. Since 2000, when the property was developed, an outward gradient has been observed across the northern slurry wall. Although outward gradients have been observed, the RAOs will not be impacted for the following reasons:

1. Raytheon has installed extraction wells in the "A" and "B1" Aquifers immediately downgradient of the slurry wall (RAY-1A and RAY-1B1). Capture zone analyses have demonstrated that these wells provide an adequate capture of the groundwater immediately downgradient of the slurry wall.
2. The slurry wall is a low-permeability wall that results in minimal chemical migration across its walls, even if the gradient is outward. The flux of chemicals across a low-permeability wall is small. Furthermore, groundwater and chemicals tend migrate along easier pathways: inside the slurry wall enclosure, chemicals would preferentially move towards extraction wells RE-23A, RE-24A, RE-25A, and RE-5A rather than through the low-permeability slurry wall.

The slurry wall and the pumping activities within its enclosure and the groundwater extraction well immediately downgradient of the slurry wall physically contain chemicals.

2.3. Hydraulic Control and Capture Zone Analysis

2.3.1. Methodology

Hydraulic control and groundwater capture at 350 Ellis Street is evaluated according to EPA's 2008 guidance, *A Systematic Approach for Evaluation of Capture Zones at Pump and Treat Systems, Final Project Report* (EPA, 2008a). Multiple lines of evidence are used in this evaluation:

- Groundwater elevations are used to assess slurry wall gradients within the same aquifer and to assess vertical gradients across aquitards;
- Comparison of interpreted capture zone to target capture zone using potentiometric surface maps, capture zone width calculations, and flow budget calculations; and
- Groundwater concentration trends.

2.3.2. Estimated Capture Zones

Table 4 summarizes the groundwater level measurement data for this reporting period. Groundwater elevation contours for the semiannual measurements, collected in March and November 2009, are included on Figures 7 through 10 for the "A" and "B1" Aquifers and Figures 11 through 16 for the Upper "B2", Lower "B2", and "B3" Aquifers.

The capture zones for March and November 2009 were estimated using capture zone width calculations (and evaluation of the groundwater elevation contours).

The extent of a capture zone upgradient of an extraction well (X_0) is determined by (EPA, 2008a):

$$X_0 = \frac{-Q}{2\pi Ti};$$

Where:

Q is the well's extraction rate (gpd),
T is the transmissivity of the aquifer (gpd/ft),
i is the hydraulic gradient of the aquifer (unitless).

The distance from the well to the lateral extent of the capture zone (Y_{well}), perpendicular to the direction of groundwater flow, is determined by (EPA, 2008a):

$$Y_{well} = \frac{\pm Q}{4Ti}.$$

The width of the capture zone at the well location is $2Y_{well}$. EPA (2008a) also describes an equation to determine the maximum width of the capture zone. However, this calculation is not applicable to this site because of the presence of the slurry wall upgradient of the well. The results of the capture zone width calculations are shown in Table 5. The capture zones of wells RAY-1A and RAY-1B1 are depicted on Figures 7 through 10.

RAY-1A and RAY-1B1 were placed to capture groundwater along the downgradient boundary of the Raytheon slurry wall (GT, 1995). This evaluation of the capture zones indicates that these wells effectively capture the groundwater in the target capture zone.

2.3.2.1.Flow Budget Calculations

Water balance calculations were performed to verify the estimated capture zones for the 350 Ellis Street site by comparing the groundwater flux flowing into the site with the volume of groundwater removed from extraction wells RAY-1A and RAY-1B1.

Theoretically, inflow to the aquifer could be caused by aerial recharge from precipitation, recharge from surface water bodies, lateral inflow from upgradient areas, or vertical flow between aquifer zones. Outflow is the rate of groundwater flow being removed from the aquifer. Outflow of water from the aquifer system could be caused by vertical leakage between aquifers and groundwater extraction.

As demonstrated in the Feasibility Study for the MEW site (Canonie, 1988), aerial recharge is considered to be negligible at the MEW site because most of the surface is covered by impermeable features such as paving and buildings. Infiltration is further limited by clays, which extend to a depth of approximately 10 to 15 feet at the site. With other inflow pathways being negligible, groundwater flow at the site is mostly attributed to the lateral flow from upgradient areas.

The estimated hydraulic gradients used in the water balance calculations are shown on Figures 7 through 10. The estimated groundwater flow into the aquifer and the estimated pumping required for adequate capture are calculated in Table 6. The estimated flow rate into the capture zone is calculated from (EPA, 2008a):

$$Q = K \cdot (b \cdot w) \cdot i \cdot \ factor \ .$$

The variables are defined as follows:

Q = flow rate (gpd);
K = hydraulic conductivity (gpd/ft);
b = saturated aquifer thickness (ft). Note that transmissivity $T = K \cdot b$;
w = width of capture zone (ft);
i = hydraulic gradient (unitless);
factor = 1.5 - 2 is the "rule of thumb" value used to account for other contributions to the pumping well, such as flux from a river or induced vertical flow from another groundwater unit.

Because RAY-1A and RAY-1B1 are immediately downgradient of the slurry wall, groundwater removed from these wells must originate from incoming groundwater flux around the slurry wall. Consequently, the "w" factor in the formula above is interpreted as the width of the groundwater pathway to the east and west of the slurry wall that is eventually captured by the wells.

RAY-1A: Pumping rates in March and November were 0.84 gpm and 2.99 gpm, respectively. With an estimated width of the groundwater pathway around the approximately 850-ft wide slurry wall and an assumed factor of 1.5, the interpreted capture zones correspond to estimated pumping rates of 0.86 gpm in March and 2.87 gpm in November. These values are in good agreement with actual pumping rates. (Table 6).

RAY-1B1: In March and November 2009, pumping rates were 4.70 and 3.93 gpm, respectively. The interpreted capture zones correspond to estimated pumping rates of 4.44 gpm in March and 3.70 gpm in November, which is in good agreement with actual pumping rates (Table 6).

2.3.2.2. Well Loss Calculations

The two factors used to determine well loss are the extraction rate and the well loss coefficient, which is dependent on well condition. RAY-1A and RAY-1B1 were properly designed and well developed, but it is possible that mild deterioration has occurred. Given the conditions of the wells, the well loss coefficient, C, is estimated to range from 0.5 – 1 min^2/m^5. In 2009, extraction rates ranged from 0.28 to 3.38 gpm in RAY-1A and 3.01 to 5.52 gpm in RAY-1B1. Table 7 presents potential losses in each well assuming a range of extraction rates and loss coefficients. For all cases, the well losses are not significant and adjustments to groundwater levels in the two extraction wells are not necessary.

2.3.3. Horizontal (Slurry Wall) and Vertical (Aquitard) Groundwater Gradients

In March, May, August, and November, groundwater levels were measured to monitor the direction of the groundwater gradient across the slurry wall and the aquitards. A total of 7 well pairs are used to evaluate groundwater gradient directions across the slurry wall, and 15 well pairs are used to evaluate the vertical gradient directions across the aquitards (Figure 17).

Although outward gradients have been observed, the RAOs are not impacted because Raytheon has installed extraction wells in the "A" and "B1" Aquifers immediately downgradient of the slurry wall (RAY-1A and RAY-1B1). Capture zone analyses have demonstrated that these wells provide an adequate capture of the groundwater immediately downgradient of the slurry wall. Furthermore, the slurry wall is a low-permeability wall that results in minimal chemical migration across its walls, even if the gradient is outward. The flux of chemicals across a low-permeability wall is small. Groundwater and chemicals tend migrate along easier pathways: inside the slurry wall enclosure, chemicals would preferentially move towards extraction wells RE-23A, RE-24A, RE-25A, and RE-5A rather than through the low-permeability slurry wall. The slurry wall, the pumping activities within its enclosure, and the groundwater extraction wells immediately downgradient of the slurry wall physically contain chemicals.

Slurry Wall: In 2009, the groundwater extraction system and all eight extraction wells were operating. The quarterly water level measurements show that an inward gradient across the slurry wall has been maintained except in well pairs R-55A/RE-07A and R-05B1/RP-23B, which are located along the northern slurry wall (Table 8). Plots of the differences in hydraulic head across the slurry wall are shown on Figures 18 and 19.

Vertical Gradient Directions: The differences in water elevations between the "B1" and "A" Aquifers are shown in Table 9 and on Figure 20. In 2009, upward gradients were observed in nine of the ten well pairs that are used to monitor the "A/B1" Aquitard gradient directions. The quarterly water level measurements show a slight downward gradient in R-67A/R-68B1. Slight downward gradients were also observed in well pairs R-60A/R-63B1 and RE-08A/R-67B1 for the March, May and August events, R-60A/ RP-19B for the May event, and R-72A/RP-43B for the March event. For each event, the gradient across the "B1/B2" Aquitard and between the Upper "B2" and Lower "B2" Aquifers were consistently upward. Onsite, the "A" Aquifer and "B1" Aquifer are entirely enclosed within the slurry wall, and the upward gradients across the "B1/B2" Aquitard (Table 9, Figure 21) and between the upper "B2" and lower "B2" Aquifers (Table 9, Figure 22) indicate that groundwater (and chemicals) will flow upward from the "B2" Aquifer into the "B1" Aquifer, and not downwards from the "B1" Aquifer to the "B2" Aquifer. Therefore, the chemicals present in the "A" and "B1" Aquifers are contained onsite.

2.4. Onsite VOC Concentrations

Eleven site-specific monitoring wells are sampled annually, and twenty-four are sampled on five-year intervals (Table 10). The annual sampling event for the Raytheon site-specific wells was conducted in December 2009. The 5-year "A" Aquifer and "B1" Aquifer site-specific wells inside the slurry wall were most recently sampled in December 2006, and the results were included in the 2007 annual report. The 5-year "B2" Aquifer site-specific wells were most recently sampled on March 31, 2008. The analytical results for the 2009 samples are summarized in Table 11. A total of 11 site-specific wells on the monitoring plan were sampled and analyzed for VOCs using EPA Method 8260, following the QA/QC procedures specified in the 1991 Unified Quality Assurance Project Plan (UQAPP).

2.4.1. Chemical Data Evaluation and Trend Analysis

The concentrations in monitoring wells sampled in 2009 are consistent with or lower than the concentrations measured in recent years. Table 11 summarizes the analytical results for the annual sampling event. TCE concentrations and contours for the "A", "B1" and "B2" Aquifers are shown on

Figures 23 through 26. Appendix D shows concentration trends for TCE, cis-1,2-dichloroethene, and vinyl chloride for selected wells in each aquifer since 1992.

2.4.2. Historical Data Summary

Groundwater monitoring has been conducted at Raytheon's former facility since the early 1980s. In general, most concentrations were detected at their highest levels early in the investigation and removal period. These levels were followed by a significant drop in concentrations in the "A", "B1", and "B2" Aquifers as a result of mitigation measures that have contained and/or removed sources in the groundwater and the unsaturated soils.

Influent treatment system data indicate that TCE comprises the majority of the chemicals being treated. Historical VOC concentrations are included in Appendix D.

2.5. Quality Assurance/ Quality Control

A total of 41 water samples, three field blanks, three field duplicates, thirteen trip blanks, and three rinseate blanks were collected and analyzed for VOCs using EPA Methods 8260B during this reporting period. The rinseate blanks were collected from the site-specific well 7B1, R61B3, and RP22B. No rinseate blanks were collected with treatment system samples because no sampling equipment other than the collection container was used to retrieve these samples. All quality assurance/quality control (QA/QC) followed the procedures specified in the 1991 UQAPP (Canonie, 1991). The quality of the entire data during this reporting period is still acceptable and valid. Appendix E presents the QA/QC report for this reporting period.

3. ADDITIONAL ACTIVITIES CONDUCTED IN 2009

No additional activities were conducted in 2009.

4. PROBLEMS ENCOUNTERED

This section documents specific issues encountered during 2009.

4.1. Extraction Well Flow Rates

Towards the second half of 2008, decreasing extraction rates were observed in RAY-1B1 and RAY-1A. Upon inspection of the wells, field personnel determined that the pumps and motors in those wells needed to be replaced. In February 2009, new pump and motor were installed in these wells, and after the wells were restarted they were returned to their target flow rates.

Declining groundwater yields were observed in extraction well RE25A compared to previous years, and several efforts were made over the course of 2009 to improve groundwater extraction from this well. On February 11 and 12, 2009, RE-25A was shut down for rehabilitation. Two-and-half gallons of LBA™, a liquid chelating agent certified to NSF/ANSI Standard 60 – Drinking Water Treatment Chemicals – Health Effects, were poured to the well and were allowed to sit overnight. The following day, a driller redeveloped the well by surging and bailing, removing about 100 gallons of water. The purge water was disposed through the groundwater treatment system. While the well was being treated, the pump was cleaned and the meter in RE-25A was replaced. After the well was restarted, pumping rates increased for approximately 5 months before beginning to decrease again.

By June 2009, the flowrate reduced below 1.0 gpm. On July 9 and 10, 2009, rehabilitation activities were conducted during a system shutdown for a carbon change-out. LBA™ was poured into the well, supplemented by SC200™, a wetting agent to help disperse the treatment chemical, according to the manufacturer's instructions. A driller then redeveloped the well by surging and bailing for approximately 4 hours, removing about 200 gallons of water. The purge water was disposed through the groundwater treatment system. This procedure was repeated the following day, and a new pump was installed. The well and the treatment system were restarted on July 10, 2009. There was no noticeable improvement in the extraction rate following this treatment.

On August 31, 2009, a video camera was inserted into the well to investigate the state of the well casing. There was no visible damage or encrustation on the well screen that appeared to have the potential to inhibit groundwater flow into the well. Though the casing appeared to be in good condition, encrustation in the filter pack may have inhibited water flow. On September 14 and 15, 2009, RE-25A was treated with DPA™ a dry penetrating agent (certified to NSF/ANSI Standard 60 –

Drinking Water Treatment Chemicals – Health Effects) designed to remove mineral scale. The DPA™ was placed in the well on September 14, 2009, according to the manufacturer's instructions. The following day, the well was surged and bailed, and about 200 gallons of water were removed and disposed in the groundwater treatment system. This treatment did not noticeably improve the performance of the well.

The initial success of the LBA™ treatment suggests that the reduced flow rate in RE-25A is not inherent to the well, and that it may respond to treatment. Additional well rehabilitation efforts are in progress to improve the extraction rate from well RE25A and thus increase the mass removal rate for the overall treatment system.

4.2. Treatment System Operation

With the exception of treatment system of scheduled carbon change, system maintenance, and unexpected shutdowns for well and/or system repairs, the treatment system operated 97% of the time.

5. TECHNICAL ASSESSMENT

5.1. Is the Remedy Functioning as Intended?

The review of documents, ARARs, risk assumptions, and the results of the site inspection indicate that the remedy is functioning as intended by the ROD, as modified by the Explanation of Significant Differences. The Feasibility Study (Canonie, 1988) for the MEW site lists the RAOs to be:

1. Protection of potential potable water supply;
2. Remediation or control of relatively elevated concentrations of chemicals present in localized vadose zone soils below the ground surface that could migrate to enter into the shallow groundwater system;
3. Remediation or control of groundwater, which contains elevated concentrations of chemicals, including control of discharge of such groundwater into surface water.

Several mitigation measures have been implemented at the 350 Ellis Street property to protect potential potable water supply in the shallow aquifer zone. The SVE system installed and operated at the 350 Ellis Street property achieved soil cleanup goals by remediating chemicals present in the vadose zone soils. The installation of a slurry wall at 350 Ellis Street effectively isolated the source areas, and, combined with pumping actions, resulted in a significant decrease in concentrations in the areas within and outside the slurry walls. The slurry wall and the pumping activities inside and outside the slurry wall achieved the third RAO by controlling sources.

In January 2003, 1,4-dioxane concentrations above RWQCB criteria were detected in the effluent of the treatment system. The treatment system was modified in the fall of 2003 by replacing the air stripper with an oxidation system that is capable of destroying 1,4-dioxane, and reducing the overall concentrations to below the RWQCB criteria.

The ROD for the MEW site defines cleanup goals for the soils and groundwater. Soil remediation goals were achieved through the implementation of the SVE system. Groundwater remediation goals have not yet been achieved, so groundwater extraction and treatment is ongoing.

5.2. Are Capture Zones Adequate?

Comprehensive water level measurements were collected semiannually. Capture zones are determined as recommended in the 2008 EPA guidance, by calculating plume widths, evaluation of flow lines based on groundwater elevation contours, and by water-balance calculations. If a pumping well does not provide adequate capture, the pumping rate is increased. If a capture zone exceeds the design requirements, then the pumping rate may be reduced.

Field measurements of water elevations from monitoring wells reflect site conditions. These data would translate the actual conditions of the aquifer into water elevation data from which water elevation contours and capture zones are estimated. These estimates are dynamic in that they reflect hydrological changes in the aquifer (such as seasonal changes to water elevations and flow direction, and changes to pumping rates in regional and source control recovery wells).

As depicted in Figures 7 through 10, and calculated in Tables 5 and 6, the overall capture of the plume at the former Raytheon facilities continues to be adequate.

5.3. Are Vertical Gradients Inside and Gradients Across the Slurry Walls Appropriate?

In March, May, August, and November, groundwater levels were measured to monitor the direction of the groundwater gradient across the slurry wall and the aquitards. A total of 7 well pairs are used to evaluate groundwater gradient directions across the slurry wall, and 15 well pairs are used to evaluate the vertical gradient directions across the aquitards (Figure 17).

In 2009, upward gradients were observed in nine of the ten well pairs that are used to monitor the "A/B1" Aquitard gradient directions. The quarterly water level measurements show a slight downward gradient in R-67A/R-68B1. Slight downward gradients were also observed in well pairs R-60A/R-63B1, RE-08A/R-67B1 for the March, May and August events, R-60A/ RP-19B for the May event, and R-72A/RP-43B for the March event. For each event, the gradient across the "B1/B2" Aquitard and between the Upper "B2" and Lower "B2" Aquifers were consistently upward. Onsite, the "A" Aquifer and "B1" Aquifer are entirely enclosed within the slurry wall, and the upward gradients across the "B1/B2" Aquitard (Table 9, Figure 21) and between the upper "B2" and lower "B2" Aquifers (Table 9, Figure 22) indicate that groundwater (and chemicals) will flow upward from the "B2" Aquifer into the "B1" Aquifer, and not downwards from the "B1" Aquifer to the "B2" Aquifer. Therefore, the chemicals present in the "A" and "B1" Aquifers are contained onsite.

It is generally desirable that the hydraulic gradient across slurry walls be inward. Until 2000, gradients had been mostly inward with a few exceptions that may have been due to the temporary shutdown of some extraction wells. During property redevelopment in 2000, several extraction wells were relocated. Since then, outward gradients have been observed in well pairs along the northern (downgradient) portion of the slurry wall. Although outward gradients have been observed, the RAOs will not be impacted because Raytheon has installed extraction wells in the "A" and "B1" Aquifers immediately downgradient of the slurry wall (RAY-1A and RAY-1B1). Capture zone analyses have demonstrated that these wells provide an adequate capture of the groundwater immediately downgradient of the slurry wall. Also, the slurry wall is a low-permeability wall that results in minimal chemical migration across its walls, even if the gradient is outward. The flux of chemicals across a low-permeability wall is small. Furthermore, groundwater and chemicals tend to migrate along easier pathways: inside the slurry wall enclosure, chemicals would preferentially move towards extraction wells RE-23A, RE-24A, RE-25A, and RE-5A rather than through the low-permeability slurry wall.

The slurry wall, the pumping activities within its enclosure, and the groundwater extraction wells immediately downgradient of the slurry wall physically contain chemicals.

5.4. Are Concentrations Decreasing Over Time?

Decreasing TCE concentrations have been observed in most wells. Increases in TCE concentrations have been observed in four wells in the "B1" Aquifer: R-67B1, RP-19B, RP-21B, and RP-24B. All of these wells are located within the slurry wall enclosure. The slurry wall surrounding the site prevents lateral migration of chemicals offsite, and the upward gradient across the "B1/B2" Aquifer indicates that chemicals are unlikely to migrate into the "B2" Aquifer. Thus, the RAOs are not negatively impacted by this observation. Appendix D provides concentration plots for wells on the monitoring schedule.

6. CONCLUSIONS AND RECOMMENDATIONS

The current remedial actions at Raytheon's former facilities are protective of human health and the environment. Soil remediation is complete and the ongoing groundwater remediation has removed more than 14,976 pounds of VOCs. Since 2005, the groundwater treatment system has operated approximately 97% of the time. The capture zone evaluations at the site have shown that the extraction wells provide adequate capture. Outward gradients have been observed in the wells pairs along the northern (downgradient) portion of the slurry wall, but inward gradients persist along the west, east, and south walls. Upward gradients are observed across the aquitards and between the upper and lower "B2" Aquifer. In some locations, downward gradients are observed across the "A/B1" Aquitard. The monthly treatment system sampling reveals that the effluent consistently meets NPDES requirements, and there have been no violations since the current treatment system started operations in December 2003. The system also operates within the design flow rate. Overall, the current treatment system is functioning as intended.

In summary, the VOC concentrations in the site have generally decreased, but appear to have reached asymptotic levels in many wells. The rate of removal is expected to decrease annually, and the costs to operate the system are expected to increase by the inflation rate. Therefore, the cost per pound removed is expected to increase in future. The life-cycle assessment of the existing remedy indicates that many decades would be required to achieve the cleanup standards established in the ROD. Therefore, a pilot test of an alternative remedial technology is recommended. A workplan for an ISCO pilot test was submitted to EPA on December 1, 2008 (Locus, 2008h).

Air sampling conducted during February 2008 and July 2008 demonstrated that the TCE concentrations at the site were below EPA's interim action level of 2.7 $\mu g/m^3$, and the implementation of the interim remedial actions targeting the vapor intrusion pathway have reduced indoor air concentrations to below vapor intrusion long-term exposure goals (Locus, 2008b). The results indicate that the interim remedial actions implemented at the Site have successfully reduced the TCE concentrations to below the interim action level (Locus, 2008d).

7. ACTIVITIES PLANNED FOR 2010

The following site-specific activities are planned for 2010:

- Continued operation and maintenance of the groundwater treatment system.
- Continued well pair groundwater level measurements to evaluate the direction of the hydraulic gradient across the slurry wall and the aquitards.
- Collection of semiannual groundwater elevation measurements (in March and November) as part of the regional groundwater monitoring program.
- Collection of groundwater samples will be conducted in November / December for the Raytheon site-specific program and the regional groundwater monitoring program.
- Implementation of RPO recommendations, pending EPA approval.
- Implementation of the ISCO pilot test and associated activities described in the December 1, 2008 workplan (Locus, 2008h), pending EPA approval.
- Continued evaluation and implementation of rehabilitation measures in RE-25A, including an application of Cotey Chemical Corporation's Liquid Acid Descaler in April 2010.

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TABLES

TABLE 1
AVERAGE EXTRACTION WELL FLOW RATES
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Extraction Wells	January	February	March	April	May	June	July	August	September	October	November	December
RAY-1A	0.28	0.55	0.84	1.65	2.88	2.74	2.55	2.41	3.38	3.07	2.99	2.88
RAY-1B1	5.52	3.01	4.70	4.63	3.92	4.13	4.00	3.90	3.73	3.85	3.93	3.82
I-1B2	2.76	2.69	2.68	2.87	2.96	2.48	2.26	2.21	2.31	2.15	2.38	3.63
R-65B2	5.03	4.78	4.70	4.91	4.70	4.69	4.77	4.92	4.33	3.84	3.90	3.76
RE-05A	5.66	5.35	5.21	5.44	5.19	5.21	5.30	5.53	5.26	5.32	5.45	5.21
RE-23A	3.62	3.43	3.33	3.90	5.47	5.17	4.93	4.65	4.15	3.68	3.28	2.74
RE-24A	13.80	12.81	12.11	11.94	11.86	11.81	12.20	11.46	11.62	11.61	11.17	9.84
RE-25A	1.04	2.79	3.62	2.64	2.08	2.19	1.61	0.68	0.65	0.46	0.49	0.52
Average GWTS Discharge Flow Rate	**30**	**27**	**28**	**28**	**29**	**29**	**28**	**26**	**26**	**25**	**25**	**24**

Notes:

1. Flow rates are calculated averages based on the total monthly flow from each well and through the treatment system, in gallons per minute (gpm).

TABLE 2
2009 GROUNDWATER TREATMENT SYSTEM ANALYTICAL DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

	Date		1/20/2009		2/18/2009		3/16/2009		4/20/2009		5/18/2009
	Location	RAYEFT	RAYINF	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYEFT
	Sample Purpose	REG	FD	REG	REG	REG	REG	REG	REG	REG	REG
Parameter	Units										
Analytical Method: EPA 8260B											
1,1,1,2-TETRACHLOROETHANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
1,1,1-TRICHLOROETHANE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
1,1,2,2-TETRACHLOROETHANE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
1,1,2-TRICHLOROETHANE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
1,1-DICHLOROETHANE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
1,1-DICHLOROETHENE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
1,1-DICHLOROPROPENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
1,2,3-TRICHLOROBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
1,2,3-TRICHLOROPROPANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
1,2,4-TRICHLOROBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
1,2,4-TRIMETHYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
1,2-DIBROMO-3-CHLOROPROPANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
1,2-DIBROMOETHANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
1,2-DICHLOROBENZENE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
1,2-DICHLOROETHANE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
1,2-DICHLOROPROPANE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
1,3,5-TRIMETHYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
1,3-DICHLOROBENZENE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
1,3-DICHLOROPROPANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
1,4-DICHLOROBENZENE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
2,2-DICHLOROPROPANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
2-BUTANONE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.010
2-CHLOROETHYL VINYL ETHER	mg/l	ND 0.0010	ND 0.050	ND 0.050	ND 0.0010	ND 0.050	ND 0.0010	ND 0.050	ND 0.0010	ND 0.050	ND 0.010
2-HEXANONE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.010
4-CHLOROTOLUENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
4-METHYL-2-PENTANONE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.010
ACETONE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.010
BENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
BROMOBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
BROMOCHLOROMETHANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
BROMODICHLOROMETHANE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
BROMOFORM	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0010
BROMOMETHANE	mg/l	ND 0.0010	ND 0.050	ND 0.050	ND 0.0010	ND 0.050	ND 0.0010	ND 0.050	ND 0.0010	ND 0.050	ND 0.0010

Notes:
ND - denotes result was below the detection limit
NT - sample not tested for the given parameter

TABLE 2
2009 GROUNDWATER TREATMENT SYSTEM ANALYTICAL DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

	Date		1/20/2009		2/18/2009		3/16/2009		4/20/2009		5/18/2009
	Location	RAYEFT	RAYINF	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYEFT
	Sample Purpose	REG	FD	REG	REG	REG	REG	REG	REG	REG	REG
Parameter	Units										
CARBON DISULFIDE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
CARBON TETRACHLORIDE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
CHLOROBENZENE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
CHLOROETHANE	mg/l	ND 0.0010	ND 0.050	ND 0.050	ND 0.0010	ND 0.050	ND 0.0010	ND 0.050	ND 0.0010	ND 0.050	ND 0.0010
CHLOROFORM	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
CHLOROMETHANE	mg/l	ND 0.0010	ND 0.050	ND 0.050	ND 0.0010	ND 0.050	ND 0.0010	ND 0.050	ND 0.0010	ND 0.050	ND 0.0010
CIS-1,2-DICHLOROETHENE	mg/l	ND 0.0005	1.1	0.93	ND 0.0005	1.2	ND 0.0005	1.1	ND 0.0005	1.1	ND 0.0005
CIS-1,3-DICHLOROPROPENE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
DIBROMOCHLOROMETHANE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
DIBROMOMETHANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
DICHLORODIFLUOROMETHANE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0010
ETHYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
FREON 113	mg/l	ND 0.0050	ND 0.25	ND 0.25	ND 0.0050	ND 0.25	ND 0.0050	ND 0.25	ND 0.0050	ND 0.25	ND 0.0050
HEXACHLOROBUTADIENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
ISOPROPYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
m,p-XYLENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
METHYL-T-BUTYL ETHER	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
METHYLENE CHLORIDE	mg/l	ND 0.0050	ND 0.25	ND 0.25	ND 0.0050	ND 0.25	ND 0.0050	ND 0.25	ND 0.0050	ND 0.25	ND 0.0050
N-BUTYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
N-PROPYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
NAPHTHALENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
o-XYLENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
PARA-ISOPROPYL TOLUENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
SEC-BUTYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
STYRENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
TERT- BUTYLBENZENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
TETRACHLOROETHENE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	0.029	ND 0.0005	ND 0.025	ND 0.0005
TOLUENE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.0005
TRANS-1,2-DICHLOROETHENE	mg/l	ND 0.0005	0.064	0.051	ND 0.0005	0.064	ND 0.0005	0.061	ND 0.0005	0.069	ND 0.0005
TRANS-1,3-DICHLOROPROPENE	mg/l	ND 0.0005	ND 0.025	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005
TRICHLOROETHENE	mg/l	ND 0.0005	4.1	3.3	ND 0.0005	4.7	ND 0.0005	3.5	ND 0.0005	3.0	ND 0.0005
TRICHLOROFLUOROMETHANE	mg/l	ND 0.0010	ND 0.050	ND 0.050	ND 0.0010	ND 0.050	ND 0.0010	ND 0.050	ND 0.0010	ND 0.050	ND 0.0010
VINYL ACETATE	mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND 0.010
VINYL CHLORIDE	mg/l	ND 0.0005	0.075	0.055	ND 0.0005	0.054	ND 0.0005	0.058	ND 0.0005	0.063	ND 0.0005

Notes:

ND - denotes result was below the detection limit

NT - sample not tested for the given parameter

TABLE 2
2009 GROUNDWATER TREATMENT SYSTEM ANALYTICAL DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Parameter	Date	5/18/2009	6/15/2009		7/20/2009			8/17/2009		9/21/2009	
	Location	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF
	Sample Purpose	REG	REG	REG	REG	FB	REG	REG	REG	REG	REG
	Units										
1,1,1,2-TETRACHLOROETHANE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,1,1-TRICHLOROETHANE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
1,1,2,2-TETRACHLOROETHANE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
1,1,2-TRICHLOROETHANE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
1,1-DICHLOROETHANE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	0.013	ND 0.0005	ND 0.010	ND 0.0005	0.016
1,1-DICHLOROETHENE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	0.011	ND 0.0005	0.011	ND 0.0005	ND 0.010
1,1-DICHLOROPROPENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,2,3-TRICHLOROBENZENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,2,3-TRICHLOROPROPANE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,2,4-TRICHLOROBENZENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,2,4-TRIMETHYLBENZENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,2-DIBROMO-3-CHLOROPROPANE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,2-DIBROMOETHANE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,2-DICHLOROBENZENE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	0.015	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
1,2-DICHLOROETHANE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
1,2-DICHLOROPROPANE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
1,3,5-TRIMETHYLBENZENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,3-DICHLOROBENZENE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
1,3-DICHLOROPROPANE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
1,4-DICHLOROBENZENE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
2,2-DICHLOROPROPANE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
2-BUTANONE	mg/l	ND 0.25	NT	NT	NT	NT	NT	NT	NT	NT	NT
2-CHLOROETHYL VINYL ETHER	mg/l	ND 0.25	ND 0.0010	ND 0.050	ND 0.0010	ND 0.0010	ND 0.020	NT	NT	NT	NT
2-HEXANONE	mg/l	ND 0.25	NT	NT	NT	NT	NT	NT	NT	NT	NT
4-CHLOROTOLUENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
4-METHYL-2-PENTANONE	mg/l	ND 0.25	NT	NT	NT	NT	NT	NT	NT	NT	NT
ACETONE	mg/l	ND 0.25	NT	NT	NT	NT	NT	NT	NT	NT	NT
BENZENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
BROMOBENZENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
BROMOCHLOROMETHANE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
BROMODICHLOROMETHANE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
BROMOFORM	mg/l	ND 0.025	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
BROMOMETHANE	mg/l	ND 0.025	ND 0.0010	ND 0.050	ND 0.0010	ND 0.0010	ND 0.020	ND 0.0010	ND 0.020	ND 0.0010	ND 0.020

Notes:
ND - denotes result was below the detection limit
NT - sample not tested for the given parameter

TABLE 2
2009 GROUNDWATER TREATMENT SYSTEM ANALYTICAL DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

	Date	5/18/2009	6/15/2009			7/20/2009		8/17/2009		9/21/2009	
	Location	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF
	Sample Purpose	REG	REG	REG	REG	FB	REG	REG	REG	REG	REG
Parameter	Units										
CARBON DISULFIDE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
CARBON TETRACHLORIDE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
CHLOROBENZENE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
CHLOROETHANE	mg/l	ND 0.025	ND 0.0010	ND 0.050	ND 0.0010	ND 0.0010	ND 0.020	ND 0.0010	ND 0.020	ND 0.0010	ND 0.020
CHLOROFORM	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0010	ND 0.020
CHLOROMETHANE	mg/l	ND 0.025	ND 0.0010	ND 0.050	ND 0.0010	ND 0.0010	ND 0.020	ND 0.0010	ND 0.020	ND 0.0010	ND 0.020
CIS-1,2-DICHLOROETHENE	mg/l	0.80	ND 0.0005	1.2	ND 0.0005	ND 0.0005	0.78	ND 0.0005	0.73	ND 0.0005	0.81
CIS-1,3-DICHLOROPROPENE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
DIBROMOCHLOROMETHANE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
DIBROMOMETHANE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
DICHLORODIFLUOROMETHANE	mg/l	ND 0.025	NT	NT	NT	NT	NT	NT	NT	NT	NT
ETHYLBENZENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
FREON 113	mg/l	ND 0.13	ND 0.0050	ND 0.25	ND 0.0050	ND 0.0050	ND 0.10	ND 0.0050	ND 0.10	ND 0.0020	ND 0.040
HEXACHLOROBUTADIENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
ISOPROPYLBENZENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
m,p-XYLENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
METHYL-T-BUTYL ETHER	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
METHYLENE CHLORIDE	mg/l	ND 0.13	ND 0.0050	ND 0.25	ND 0.0050	ND 0.0050	ND 0.10	ND 0.0050	ND 0.10	ND 0.020	ND 0.40
N-BUTYLBENZENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
N-PROPYLBENZENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
NAPHTHALENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
o-XYLENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
PARA-ISOPROPYL TOLUENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
SEC-BUTYLBENZENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
STYRENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
TERT- BUTYLBENZENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
TETRACHLOROETHENE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
TOLUENE	mg/l	ND 0.013	NT	NT	NT	NT	NT	NT	NT	NT	NT
TRANS-1,2-DICHLOROETHENE	mg/l	0.057	ND 0.0005	0.074	ND 0.0005	ND 0.0005	0.061	ND 0.0005	0.059	ND 0.0005	0.078
TRANS-1,3-DICHLOROPROPENE	mg/l	ND 0.013	ND 0.0005	ND 0.025	ND 0.0005	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
TRICHLOROETHENE	mg/l	1.8	ND 0.0005	3.2	ND 0.0005	ND 0.0005	1.5	ND 0.0005	1.5	ND 0.0005	1.4
TRICHLOROFLUOROMETHANE	mg/l	ND 0.025	ND 0.0010	ND 0.050	ND 0.0010	ND 0.0010	ND 0.020	ND 0.0010	ND 0.020	ND 0.0010	ND 0.020
VINYL ACETATE	mg/l	ND 0.25	NT	NT	NT	NT	NT	NT	NT	NT	NT
VINYL CHLORIDE	mg/l	0.051	ND 0.0005	0.10	ND 0.0005	ND 0.0005	0.063	ND 0.0005	0.044	ND 0.0005	0.049

Notes:

ND - denotes result was below the detection limit

NT - sample not tested for the given parameter

TABLE 2
2009 GROUNDWATER TREATMENT SYSTEM ANALYTICAL DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

	Date	10/19/2009		11/16/2009		12/21/2009	
	Location	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF
	Sample Purpose	REG	REG	REG	REG	REG	REG
Parameter	Units						
1,1,1,2-TETRACHLOROETHANE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,1,1-TRICHLOROETHANE	mg/l	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
1,1,2,2-TETRACHLOROETHANE	mg/l	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
1,1,2-TRICHLOROETHANE	mg/l	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
1,1-DICHLOROETHANE	mg/l	ND 0.0005	0.014	ND 0.0005	0.012	ND 0.0005	0.011
1,1-DICHLOROETHENE	mg/l	ND 0.0005	0.011	ND 0.0005	0.010	ND 0.0005	0.010
1,1-DICHLOROPROPENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,2,3-TRICHLOROBENZENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,2,3-TRICHLOROPROPANE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,2,4-TRICHLOROBENZENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,2,4-TRIMETHYLBENZENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,2-DIBROMO-3-CHLOROPROPANE	mg/l	NT	NT	ND 0.0020	ND 0.040	NT	NT
1,2-DIBROMOETHANE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,2-DICHLOROBENZENE	mg/l	ND 0.0005	0.011	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
1,2-DICHLOROETHANE	mg/l	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
1,2-DICHLOROPROPANE	mg/l	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
1,3,5-TRIMETHYLBENZENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,3-DICHLOROBENZENE	mg/l	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
1,3-DICHLOROPROPANE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
1,4-DICHLOROBENZENE	mg/l	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
2,2-DICHLOROPROPANE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
2-BUTANONE	mg/l	NT	NT	ND 0.010	ND 0.20	NT	NT
2-CHLOROETHYL VINYL ETHER	mg/l	NT	NT	NT	NT	NT	NT
2-HEXANONE	mg/l	NT	NT	ND 0.010	ND 0.20	NT	NT
4-CHLOROTOLUENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
4-METHYL-2-PENTANONE	mg/l	NT	NT	ND 0.010	ND 0.20	NT	NT
ACETONE	mg/l	NT	NT	ND 0.010	ND 0.20	NT	NT
BENZENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
BROMOBENZENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
BROMOCHLOROMETHANE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
BROMODICHLOROMETHANE	mg/l	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
BROMOFORM	mg/l	ND 0.0005	ND 0.010	ND 0.0010	ND 0.020	ND 0.0005	ND 0.010
BROMOMETHANE	mg/l	ND 0.0010	ND 0.020	ND 0.0010	ND 0.020	ND 0.0010	ND 0.020

Notes:
ND - denotes result was below the detection limit
NT - sample not tested for the given parameter

TABLE 2
2009 GROUNDWATER TREATMENT SYSTEM ANALYTICAL DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

	Date	10/19/2009		11/16/2009		12/21/2009	
	Location	RAYEFT	RAYINF	RAYEFT	RAYINF	RAYEFT	RAYINF
	Sample Purpose	REG	REG	REG	REG	REG	REG
Parameter	Units						
CARBON DISULFIDE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
CARBON TETRACHLORIDE	mg/l	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
CHLOROBENZENE	mg/l	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
CHLOROETHANE	mg/l	ND 0.0010	ND 0.020	ND 0.0010	ND 0.020	ND 0.0010	ND 0.020
CHLOROFORM	mg/l	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
CHLOROMETHANE	mg/l	ND 0.0010	ND 0.020	ND 0.0010	ND 0.020	ND 0.0010	ND 0.020
CIS-1,2-DICHLOROETHENE	mg/l	ND 0.0005	0.80	ND 0.0005	0.72	ND 0.0005	1.0
CIS-1,3-DICHLOROPROPENE	mg/l	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
DIBROMOCHLOROMETHANE	mg/l	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
DIBROMOMETHANE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
DICHLORODIFLUOROMETHANE	mg/l	NT	NT	ND 0.0010	ND 0.020	NT	NT
ETHYLBENZENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
FREON 113	mg/l	ND 0.0020	ND 0.040	ND 0.0020	ND 0.040	ND 0.0020	ND 0.040
HEXACHLOROBUTADIENE	mg/l	NT	NT	ND 0.0020	ND 0.040	NT	NT
ISOPROPYLBENZENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
m,p-XYLENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
METHYL-T-BUTYL ETHER	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
METHYLENE CHLORIDE	mg/l	ND 0.020	ND 0.40	ND 0.010	ND 0.20	ND 0.020	ND 0.40
N-BUTYLBENZENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
N-PROPYLBENZENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
NAPHTHALENE	mg/l	NT	NT	ND 0.0020	ND 0.040	NT	NT
o-XYLENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
PARA-ISOPROPYL TOLUENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
SEC-BUTYLBENZENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
STYRENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
TERT- BUTYLBENZENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
TETRACHLOROETHENE	mg/l	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
TOLUENE	mg/l	NT	NT	ND 0.0005	ND 0.010	NT	NT
TRANS-1,2-DICHLOROETHENE	mg/l	ND 0.0005	0.061	ND 0.0005	0.055	ND 0.0005	0.060
TRANS-1,3-DICHLOROPROPENE	mg/l	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010	ND 0.0005	ND 0.010
TRICHLOROETHENE	mg/l	ND 0.0005	1.5	ND 0.0005	1.4	ND 0.0005	2.0
TRICHLOROFLUOROMETHANE	mg/l	ND 0.0010	ND 0.020	ND 0.0010	ND 0.020	ND 0.0010	ND 0.020
VINYL ACETATE	mg/l	NT	NT	ND 0.010	ND 0.20	NT	NT
VINYL CHLORIDE	mg/l	ND 0.0005	0.041	ND 0.0005	0.035	ND 0.0005	0.029

Notes:
ND - denotes result was below the detection limit
NT - sample not tested for the given parameter

TABLE 3
CUMULATIVE VOC MASS REMOVAL
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Date	VOC Concentration (mg/L)	Total Flow (gallons per month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
10/17/1986	12.37	2,473,490	0	0
10/27/1986	6.15	2,473,490	41.73	42
10/28/1986	4.59	2,473,490	3.11	45
10/29/1986	5.10	2,473,490	3.46	48
11/5/1986	5.05	3,452,400	33.46	82
11/12/1986	5.39	3,452,400	35.74	118
12/1/1986	5.00	2,787,540	72.64	190
12/29/1986	9.51	2,787,540	203.52	394
12/31/1986	6.36	2,787,540	9.72	403
1/19/1987	6.52	1,930,153	65.58	469
1/28/1987	7.16	1,930,153	34.09	503
2/23/1987	21.70	1,206,884	186.70	690
3/2/1987	13.24	3,775,862	95.95	786
3/13/1987	9.49	3,775,862	108.07	894
4/9/1987	9.25	3,078,120	210.78	1,105
4/22/1987	8.56	3,078,120	93.92	1,198
5/8/1987	4.88	1,837,494	39.34	1,238
5/28/1987	4.02	1,837,494	40.51	1,278
6/3/1987	4.19	2,527,500	17.42	1,296
6/8/1987	4.71	2,527,500	16.32	1,312
6/17/1987	5.42	2,527,500	33.80	1,346
6/25/1987	5.69	2,527,500	31.55	1,377
7/13/1987	4.16	3,866,196	79.38	1,457
7/31/1987	5.12	3,866,196	97.69	1,554
8/13/1987	3.86	3,740,305	51.46	1,606
8/27/1987	4.95	3,740,305	71.07	1,677
5/20/1988	4.10	217,000	65.13	1,742
6/7/1988	2.90	210,000	3.01	1,745
6/28/1988	2.80	210,000	3.39	1,749
10/3/1988	3.33	442,835	39.22	1,788
12/22/1988	2.80	442,835	27.20	1,815
3/28/1989	2.40	378,200	23.89	1,839
6/20/1989	2.80	474,000	30.57	1,869
9/21/1989	2.90	447,000	33.05	1,902
12/15/1989	2.00	461,900	21.53	1,924
3/30/1990	1.90	162,967	8.91	1,933
6/29/1990	1.80	438,000	19.67	1,953
9/28/1990	2.80	213,720	14.93	1,967
12/7/1990	1.05	1,116,000	22.49	1,990
3/28/1991	0.80	1,054,000	25.73	2,016
6/18/1991	0.66	733,740	10.89	2,027
9/16/1991	0.95	673,560	15.71	2,042
12/19/1991	0.63	737,862	11.98	2,054
3/26/1992	0.36	794,437	7.77	2,062
6/26/1992	0.48	747,060	8.97	2,071
9/24/1992	4.24	706,860	73.96	2,145
12/8/1992	8.39	846,920	146.07	2,291

TABLE 3
CUMULATIVE VOC MASS REMOVAL
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Date	VOC Concentration (mg/L)	Total Flow (gallons per month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
2/18/1993	5.93	1,011,164	118.37	2,409
3/11/1993	5.64	1,358,947	44.13	2,454
4/14/1993	4.66	1,460,100	63.43	2,517
5/25/1993	4.55	1,154,874	59.07	2,576
6/23/1993	5.24	1,353,270	56.38	2,632
7/22/1993	5.55	1,215,572	53.64	2,686
8/24/1993	6.04	1,085,279	59.31	2,745
9/23/1993	5.69	879,840	41.18	2,787
10/28/1993	6.00	877,021	50.50	2,837
11/24/1993	6.78	772,680	38.78	2,876
12/26/1993	7.48	822,988	54.01	2,930
1/13/1994	7.61	1,020,985	38.35	2,968
2/4/1994	7.47	804,160	36.23	3,004
3/4/1994	6.82	1,099,353	57.56	3,062
4/14/1994	7.19	1,035,300	83.68	3,146
5/12/1994	7.10	942,555	51.38	3,197
6/9/1994	7.11	911,880	49.77	3,247
7/14/1994	7.08	956,877	65.01	3,312
8/11/1994	5.28	1,098,640	44.53	3,356
9/15/1994	5.59	779,940	41.84	3,398
10/12/1994	5.33	877,393	34.62	3,433
11/10/1994	3.89	706,080	21.84	3,455
12/15/1994	6.10	791,926	46.36	3,501
1/6/1995	5.35	809,007	26.11	3,527
2/9/1995	4.55	975,912	41.39	3,569
3/9/1995	5.16	1,080,226	42.79	3,611
4/6/1995	5.13	967,170	38.09	3,649
5/15/1995	4.39	997,425	46.82	3,696
6/15/1995	5.04	966,390	41.40	3,738
7/13/1995	4.79	1,130,350	41.57	3,779
8/10/1995	5.54	906,720	38.56	3,818
9/18/1995	5.08	886,970	48.18	3,866
10/12/1995	5.58	830,380	30.49	3,896
11/9/1995	4.98	796,640	30.46	3,927
12/4/1995	6.23	826,780	35.31	3,962
1/31/1996	4.72	626,360	47.01	4,009
2/29/1996	5.65	705,320	31.69	4,041
3/31/1996	5.33	721,450	32.68	4,074
4/30/1996	5.56	827,560	37.85	4,111
5/23/1996	6.49	856,930	35.07	4,147
6/14/1996	4.88	1,299,060	38.24	4,185
7/11/1996	3.98	1,577,150	46.47	4,231
8/8/1996	4.43	1,068,297	36.33	4,268
9/27/1996	8.94	1,739,434	213.18	4,481
10/17/1996	6.01	2,309,683	76.12	4,557
11/17/1996	4.92	1,976,504	82.65	4,640
12/17/1996	4.33	1,704,181	60.70	4,700

TABLE 3
CUMULATIVE VOC MASS REMOVAL
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Date	VOC Concentration (mg/L)	Total Flow (gallons per month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
1/24/1997	4.64	1,874,988	236.15	4,793
2/13/1997	4.53	2,001,712	49.72	4,843
3/18/1997	4.76	2,428,607	104.60	4,947
4/16/1997	4.16	2,136,780	70.68	5,018
5/14/1997	4.57	2,280,782	80.02	5,098
6/19/1997	4.79	2,065,358	97.65	5,196
7/16/1997	5.21	2,294,318	88.49	5,284
8/20/1997	3.15	2,117,259	64.00	5,348
9/8/1997	7.11	2,382,011	88.23	5,436
10/2/1997	5.41	2,583,099	91.96	5,528
11/12/1997	4.91	2,059,288	113.66	5,642
12/11/1997	5.43	2,335,012	100.82	5,743
1/16/1998	4.34	2,320,835	99.42	5,842
2/25/1998	4.54	2,322,241	115.63	5,958
3/25/1998	4.38	2,322,667	78.10	6,036
4/10/1998	5.92	2,125,955	55.21	6,091
5/11/1998	6.66	2,181,943	123.51	6,215
6/8/1998	5.95	2,192,143	100.13	6,315
7/9/1998	2.96	2,187,687	55.04	6,370
8/4/1998	5.65	1,909,016	76.89	6,447
9/10/1998	6.31	1,837,103	117.60	6,564
10/30/1998	5.09	2,168,118	151.29	6,716
11/3/1998	5.23	2,050,814	11.76	6,727
12/3/1998	6.37	2,036,071	106.68	6,834
1/6/1999	9.38	2,371,413	207.36	7,041
2/1/1999	8.70	1,425,421	88.40	7,130
3/3/1999	6.00	1,657,431	81.80	7,212
4/6/1999	9.90	2,160,686	199.41	7,411
5/4/1999	6.34	2,113,299	102.86	7,514
6/9/1999	4.37	2,268,609	97.85	7,612
7/6/1999	6.00	1,961,659	87.13	7,699
8/3/1999	6.00	1,934,139	89.09	7,788
9/9/1999	6.00	2,474,267	150.60	7,939
10/4/1999	6.00	1,813,012	74.56	8,013
11/2/1999	6.00	1,845,816	88.06	8,101
12/6/1999	6.00	2,262,708	126.56	8,228
1/1/2000	6.00	1,539,993	65.87	8,294
3/3/2000	1.26	1,095,810	23.42	8,317
3/8/2000	1.61	1,095,810	2.42	8,320
3/22/2000	2.56	1,095,810	10.77	8,330
3/28/2000	0.84	1,095,810	1.51	8,332
5/9/2000	1.56	1,726,160	30.93	8,363
6/5/2000	1.02	838,365	6.35	8,369
6/21/2000	1.80	838,365	6.61	8,376
8/1/2000	1.52	838,365	14.31	8,390
9/5/2000	2.82	1,619,800	43.77	8,434
10/10/2000	1.35	1,947,460	25.23	8,459
11/6/2000	8.69	1,574,200	101.24	8,560
12/1/2000	10.00	1,411,950	96.80	8,657

TABLE 3
CUMULATIVE VOC MASS REMOVAL
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Date	VOC Concentration (mg/L)	Total Flow (gallons per month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
1/1/2001	3.80	1,080,750	34.31	8,691
2/1/2001	9.46	970,100	76.60	8,768
3/1/2001	8.01	1,182,000	79.04	8,847
4/1/2001	14.28	1,504,700	179.32	9,026
5/1/2001	9.90	937,150	77.43	9,104
6/1/2001	6.14	913,450	46.81	9,151
7/1/2001	6.80	575,185	32.64	9,183
8/1/2001	10.40	1,142,485	99.16	9,282
9/1/2001	10.00	1,107,530	92.43	9,375
10/1/2001	7.49	1,755,400	109.72	9,484
11/1/2001	7.35	1,453,700	89.17	9,574
12/1/2001	7.39	1,452,270	89.57	9,663
1/1/2002	7.48	1,706,930	106.55	9,770
2/1/2002	7.88	943,350	62.04	9,832
3/1/2002	5.95	1,039,650	51.58	9,883
4/1/2002	8.10	1,030,550	69.64	9,953
5/1/2002	7.86	1,395,950	91.57	10,045
6/1/2002	8.66	1,530,800	110.68	10,155
7/1/2002	9.55	957,600	76.32	10,232
8/1/2002	5.29	1,216,500	53.71	10,285
9/1/2002	6.21	1,310,900	67.94	10,353
10/1/2002	5.75	1,157,100	55.52	10,409
11/1/2002	8.05	1,086,575	73.00	10,482
12/1/2002	10.92	1,128,975	102.89	10,585
1/1/2003	9.99	1,355,675	113.03	10,698
2/1/2003	11.67	1,288,075	125.48	10,823
3/1/2003	11.07	1,434,490	132.55	10,956
4/1/2003	11.62	1,123,510	108.91	11,065
5/1/2003	8.48	663,730	46.95	11,112
6/1/2003	11.66	1,100,130	107.06	11,219
7/1/2003	10.78	993,850	89.41	11,308
8/1/2003	10.65	782,000	69.50	11,378
9/1/2003	4.14	1,208,490	41.75	11,419
10/1/2003	5.04	817,220	34.37	11,454
11/1/2003		0	0.00	11,497
12/1/2003	7.92	514,730	34.00	11,531
1/19/2004	7.17	896,910	53.67	11,585
2/24/2004	7.69	897,850	57.62	11,642
3/15/2004	7.52	922,240	57.88	11,700
4/26/2004	6.57	1,209,520	66.32	11,766
5/17/2004	7.02	1,024,285	60.01	11,826
6/21/2004	5.91	816,920	40.32	11,867
7/19/2004	3.35	586,065	16.40	11,883
8/17/2004	6.60	1,387,020	76.43	11,960
9/21/2004	6.24	1,751,543	91.15	12,051
10/19/2004	5.89	1,662,937	81.70	12,133
11/15/2004	4.10	1,343,380	46.01	12,179
12/20/2004	3.86	1,810,315	58.24	12,237

TABLE 3
CUMULATIVE VOC MASS REMOVAL
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Date	VOC Concentration (mg/L)	Total Flow (gallons per month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
1/19/2005	5.13	1,131,215	43.96	12,281
2/23/2005	4.29	1,283,835	52.75	12,333
3/21/2005	4.99	1,593,115	60.55	12,394
4/18/2005	4.95	1,672,165	69.33	12,463
5/16/2005	4.66	1,721,575	68.65	12,532
6/20/2005	4.78	1,540,810	60.53	12,593
7/18/2005	4.53	1,480,250	57.84	12,650
8/15/2005	4.43	1,801,230	67.17	12,718
9/19/2005	4.21	1,444,838	52.27	12,770
10/19/2005	4.72	1,463,479	53.23	12,823
11/21/2005	4.19	1,603,611	60.49	12,884
12/20/2005	3.81	1,377,038	46.41	12,930
1/16/2006	3.44	1,523,394	45.77	12,976
2/7/2006	3.76	1,348,990	41.69	13,017
3/15/2006	3.49	1,074,920	32.57	13,050
4/18/2006	3.22	1,328,115	37.74	13,088
5/16/2006	5.55	1,775,355	65.85	13,154
6/27/2006	5.44	1,445,663	66.78	13,220
7/20/2006	5.35	1,806,782	66.97	13,287
8/23/2006	4.70	1,262,105	68.57	13,356
9/22/2006	5.67	1,163,583	47.35	13,403
10/19/2006	5.63	1,815,987	85.61	13,489
11/15/2006	5.82	1,617,622	77.39	13,566
12/18/2006	5.33	1,649,200	77.35	13,644
1/15/2007	4.34	1,460,498	71.85	13,715
2/21/2007	4.11	1,494,310	67.55	13,783
3/20/2007	4.11	1,650,136	69.36	13,852
4/19/2007	4.44	1,427,088	71.49	13,924
5/21/2007	4.33	1,496,597	54.85	13,979
6/21/2007	4.35	1,036,802	37.46	14,016
7/18/2007	4.04	1,166,521	41.23	14,057
8/16/2007	3.38	1,658,509	52.08	14,109
9/17/2007	4.37	1,105,795	34.99	14,144
10/15/2007	4.11	1,554,429	54.95	14,199
11/21/2007	3.99	524,276	17.95	14,217
12/26/2007	3.92	145,473	4.84	14,222
1/21/2008	5.04	1,095,626	40.15	14,262
2/18/2008	4.06	991,811	39.71	14,302
3/17/2008	4.42	1,185,466	41.53	14,344
4/16/2008	4.08	1,529,220	54.31	14,398
5/20/2008	3.79	1,074,870	35.56	14,433
6/16/2008	3.64	1,185,285	32.75	14,466
7/9/2008	3.64	507,936	15.42	14,482
9/24/2008	0.59	247,343	0.19	14,482
10/15/2008	4.47	1,387,745	40.00	14,522
11/17/2008	6.13	1,086,198	49.00	14,571
12/17/2008	3.94	1,164,878	25.00	14,596

TABLE 3
CUMULATIVE VOC MASS REMOVAL
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Date	VOC Concentration (mg/L)	Total Flow (gallons per month)	Mass Removed (lbs)	Cumulative Mass Removed (lbs)
1/20/2009	4.34	1,486,450	53.73	14,650
2/18/2009	6.02	1,088,423	54.61	14,704
3/16/2009	4.75	1,074,739	42.54	14,747
4/20/2009	4.23	1,063,959	37.54	14,784
5/18/2009	2.71	1,385,381	31.28	14,815
6/15/2009	4.57	1,049,972	40.04	14,856
7/20/2009	2.44	1,226,349	24.98	14,880
8/17/2009	2.34	1,064,645	20.81	14,901
9/21/2009	2.35	1,024,120	20.09	14,921
10/19/2009	2.44	1,179,441	23.97	14,945
11/16/2009	2.23	932,094	17.34	14,969
12/21/2009	3.11	1,197,182	31.04	14,976

TABLE 4
2009 GROUNDWATER ELEVATIONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
100A	3/26/2009	N	34.48	13.54	48.02
100A	11/19/2009	N	33.4	14.62	48.02
101B1	3/26/2009	N	43.12	11.8	54.92
101B1	11/19/2009	N	41.91	13.01	54.92
106A	3/26/2009	N	33.84	15.43	49.27
106A	11/19/2009	N	32.87	16.4	49.27
114B1	3/26/2009	N	35.1	11.8	46.9
114B1	11/19/2009	N	35.75	11.15	46.9
132B2	3/26/2009	N	34.47	14.74	49.21
132B2	11/19/2009	N	33.31	15.9	49.21
134B2	3/26/2009	N	37.31	10.54	47.85
134B2	11/19/2009	N	36.11	11.74	47.85
145B1	3/26/2009	N	39.55	14.45	54
145B1	11/19/2009	N	37.38	16.62	54
156B1	3/26/2009	N	39.3	11.61	50.91
156B1	11/19/2009	N	38.21	12.7	50.91
24A	3/26/2009	N	34.49	13.93	48.42
24A	11/19/2009	N	33.42	15	48.42
26A	3/26/2009	N	37.35	9.85	47.2
26A	11/19/2009	N	36.8	10.4	47.2
7B1	3/26/2009	N	34.32	14.29	48.61
7B1	11/19/2009	N	33.41	15.2	48.61
94B1	3/26/2009	N	34.89	13.1	47.99
94B1	11/19/2009	N	33.97	14.02	47.99
97B1	3/26/2009	N	34.33	14.83	49.16
97B1	11/19/2009	N	33.43	15.73	49.16
98B1	3/26/2009	N	41.35	12.75	54.1
98B1	5/21/2009	N	41.51	12.59	54.1
98B1	8/27/2009	N	42.42	12.85	55.27
98B1	11/19/2009	N	40.2	13.9	54.1
99B1	3/26/2009	N	34.4	14.71	49.11
99B1	11/19/2009	N	33.31	15.8	49.11
C-2	3/26/2009	N	46.09	17.21	63.3
C-2	11/16/2009	N	45.42	17.88	63.3
C-3	3/26/2009	N	45.83	12.31	58.14
C-3	11/16/2009	N	45.08	13.06	58.14
EW-1	3/26/2009	N	45.43	11.96	57.39

Notes:
This table includes the weekly water level measurments collected at extraction wells at ground water treatment system.

TABLE 4
2009 GROUNDWATER ELEVATIONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
EW-1	11/16/2009	N			57.39
EW-2	3/26/2009	N	44.99	15.05	60.04
EW-2	11/16/2009	N			60.04
EW-3	3/26/2009	N	45.64	13.91	59.55
EW-3	11/16/2009	N			59.55
EW-4	3/26/2009	N	46.03	14.8	60.83
EW-4	11/16/2009	N			60.83
I-1B2	3/26/2009	N	31.85	26.91	58.76
I-1B2	7/31/2009	N	36.72	22.04	58.76
I-1B2	8/7/2009	N	36.57	22.19	58.76
I-1B2	8/14/2009	N	35.19	23.57	58.76
I-1B2	8/21/2009	N	35.22	23.54	58.76
I-1B2	8/28/2009	N	36.29	22.47	58.76
I-1B2	9/4/2009	N	33.82	24.94	58.76
I-1B2	9/11/2009	N	33.62	25.14	58.76
I-1B2	9/25/2009	N	33.55	25.21	58.76
I-1B2	10/2/2009	N	35.14	23.62	58.76
I-1B2	10/9/2009	N	35.17	23.59	58.76
I-1B2	10/16/2009	N	35.14	23.62	58.76
I-1B2	10/23/2009	N	35.16	23.6	58.76
I-1B2	10/30/2009	N	35.57	23.19	58.76
I-1B2	11/6/2009	N	35.27	23.49	58.76
I-1B2	11/13/2009	N	35.64	23.12	58.76
I-1B2	11/19/2009	N	21.23	37.53	58.76
IE10A	3/26/2009	N	45.08	14.91	59.99
IE10A	11/19/2009	N	44.24	15.75	59.99
IE24B1	3/26/2009	N	45.11	15.51	60.62
IE24B1	11/19/2009	N	43.93	16.69	60.62
IE6A	3/26/2009	N	46.01	17.82	63.83
IE6A	11/19/2009	N	45.12	18.71	63.83
IE7A	3/26/2009	N	45.97	17.98	63.95
IE7A	11/19/2009	N	45.11	18.84	63.95
IE9A	3/26/2009	N	45.07	16.04	61.11
IE9A	11/19/2009	N	44.22	16.89	61.11
IM10B(2)	3/26/2009	N	52.69	7.58	60.27
IM10B(2)	11/19/2009	N	50.37	9.9	60.27
IM18A	3/26/2009	N	45.74	15.65	61.39
IM18A	11/19/2009	N	44.86	16.53	61.39
IM19A	3/26/2009	N	45.94	17.61	63.55
IM19A	11/19/2009	N	45.1	18.45	63.55
IM19B(1)	3/26/2009	N	46.45	17.27	63.72

Notes:
This table includes the weekly water level measurments collected at extraction wells at ground water treatment system.

TABLE 4
2009 GROUNDWATER ELEVATIONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
IM19B(1)	11/19/2009	N	45.19	18.53	63.72
IM1A	3/26/2009	N	47.31	11.12	58.43
IM1A	11/19/2009	N	46.64	11.79	58.43
IM6A	3/26/2009	N	44.61	13.98	58.59
IM6A	11/19/2009	N	43.73	14.86	58.59
IM6B(1)	3/26/2009	N	44.8	14.19	58.99
IM6B(1)	11/19/2009	N	43.78	15.21	58.99
IM7A	3/26/2009	N	45.58	12.81	58.39
IM7A	11/16/2009	N	45.06	13.46	58.52
IM7A	11/19/2009	N	44.9	13.49	58.39
IM7B(1)	3/26/2009	N	46.56	12.09	58.65
IM7B(1)	11/19/2009	N	45.65	13	58.65
IM8B(1)	3/26/2009	N	46.23	17.72	63.95
IM8B(1)	11/19/2009	N	45.34	18.61	63.95
IOW1A	3/26/2009	N	45.02	14.81	59.83
IOW1A	11/19/2009	N	44.12	15.71	59.83
IOW1B1	3/26/2009	N	47.96	11.88	59.84
IOW1B1	11/19/2009	N	46.24	13.6	59.84
IOW3A	3/26/2009	N	44.45	14.29	58.74
IOW3A	11/19/2009	N	43.54	15.2	58.74
IOW3B1	3/26/2009	N	44.3	14.45	58.75
IOW3B1	11/19/2009	N	43.16	15.59	58.75
ME1A	3/26/2009	N	45.55	12.45	58
ME1A	11/19/2009	N	45	13	58
ME1B1	3/26/2009	N	48.87	9.13	58
ME1B1	11/19/2009	N	47.82	10.18	58
PW-1	3/26/2009	N	45.93	17.11	63.04
PW-1	11/19/2009	N	34.73	28.31	63.04
PW-2	3/26/2009	N	45.37	16.11	61.48
PW-2	11/19/2009	N	45.01	16.47	61.48
PW-3	3/26/2009	N	45.04	13.98	59.02
PW-3	11/19/2009	N	44.23	14.79	59.02
PW-4	3/26/2009	N	45.16	13.8	58.96
PW-4	11/19/2009	N	43.97	14.99	58.96
PW-5	3/26/2009	N	44.92	15.31	60.23
PW-5	11/19/2009	N	43.81	16.42	60.23

Notes:
This table includes the weekly water level measurments collected at extraction wells at ground water treatment system.

TABLE 4
2009 GROUNDWATER ELEVATIONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
R10A	3/26/2009	N	38.7	13.13	51.83
R10A	11/19/2009	N	36.81	15.02	51.83
R14A	3/26/2009	N	45.37	10.04	55.41
R14A	11/19/2009	N	44.72	10.69	55.41
R15A	3/26/2009	N	45.73	11.21	56.94
R15A	11/19/2009	N	45.12	11.82	56.94
R17B2	3/26/2009	N	46.65	14.04	60.69
R17B2	11/19/2009	N	43.37	17.32	60.69
R18B3	3/26/2009	N	53.3	-1.64	51.66
R18B3	11/19/2009	N	49.74	1.92	51.66
R1B1	3/26/2009	N	24.96	26.91	51.87
R1B1	11/19/2009	N	39.8	12.07	51.87
R20A	3/26/2009	N	45.73	11.27	57
R20A	11/19/2009	N	45.1	11.9	57
R21A	3/26/2009	N	46.44	17.71	64.15
R21A	11/19/2009	N	45.76	18.39	64.15
R22B1	3/26/2009	N	49.05	13.68	62.73
R22B1	11/19/2009	N	47.94	14.79	62.73
R25A	3/26/2009	N	44.25	14.95	59.2
R25A	11/19/2009	N	43.63	15.57	59.2
R27A	3/26/2009	N	35.07	12.63	47.7
R27A	11/19/2009	N	33.51	14.19	47.7
R27B2	3/26/2009	N	45.9	5.76	51.66
R27B2	11/19/2009	N	46.17	5.49	51.66
R27B3	3/26/2009	N	52.07	-0.7	51.37
R27B3	11/19/2009	N	48.98	2.39	51.37
R28B2	3/26/2009	N	54.22	3.35	57.57
R28B2	11/19/2009	N	52.2	5.37	57.57
R2A	3/26/2009	N	39.73	18.12	57.85
R2A	11/19/2009	N	39.82	18.03	57.85
R30B2	3/26/2009	N	49.87	13.13	63
R30B2	11/19/2009	N	48.58	14.42	63
R33B2	3/26/2009	N	48.31	8.33	56.64
R33B2	11/19/2009	N	47.34	9.3	56.64
R36A	3/26/2009	N	37.59	16.4	53.99
R36A	5/28/2009	N	37.35	16.64	53.99

Notes:
This table includes the weekly water level measurments collected at extraction wells at ground water treatment system.

TABLE 4
2009 GROUNDWATER ELEVATIONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
R36A	8/27/2009	N	37.08	16.91	53.99
R36A	11/19/2009	N	37.59	16.4	53.99
R36B1	3/26/2009	N	45.88	12.87	58.75
R36B1	11/19/2009	N	44.82	13.93	58.75
R37B3	3/26/2009	N	59.31	1.21	60.52
R37B3	11/19/2009	N	57.15	3.37	60.52
R39B2	3/26/2009	N	47.76	3.31	51.07
R39B2	5/28/2009	N	48.06	3.01	51.07
R39B2	8/27/2009	N	47.09	3.98	51.07
R39B2	11/19/2009	N	46.73	4.34	51.07
R3B1	3/26/2009	N	34.85	12.31	47.16
R3B1	11/19/2009	N	33.99	13.17	47.16
R40B1(B2)	3/26/2009	N	38.7	15.36	54.06
R40B1(B2)	11/19/2009	N	37.5	16.56	54.06
R41A	3/26/2009	N	37.68	13.32	51
R41A	5/28/2009	N	37.66	13.34	51
R41A	8/27/2009	N	37.22	13.78	51
R41A	11/19/2009	N	37.83	13.17	51
R41B2	3/26/2009	N	48.17	8.83	57
R41B2	11/19/2009	N	46.97	10.03	57
R42B1	3/26/2009	N	45.5	11.11	56.61
R42B1	11/19/2009	N	45.36	11.25	56.61
R44A	3/26/2009	N	45.56	12.1	57.66
R44A	11/19/2009	N	45	12.66	57.66
R46B1	3/26/2009	N	45.5	12.5	58
R46B1	11/19/2009	N	44.53	13.47	58
R48A	3/26/2009	N	46.72	20.14	66.86
R48A	11/19/2009	N	46.07	20.79	66.86
R50A	3/26/2009	N	45.16	15.27	60.43
R50A	11/19/2009	N	44.15	16.28	60.43
R50B2	3/26/2009	N	54.68	5.32	60
R50B2	11/19/2009	N	52.6	7.4	60
R51A	3/26/2009	N	45.81	14.19	60
R51A	11/19/2009	N	45.27	14.73	60
R51B3	3/26/2009	N	60.11	-0.25	59.86
R51B3	11/19/2009	N	57.49	2.37	59.86
R52A	3/26/2009	N	45.6	18.4	64

Notes:
This table includes the weekly water level measurments collected at extraction wells at ground water treatment system.

TABLE 4
2009 GROUNDWATER ELEVATIONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
R52A	11/19/2009	N	45.01	18.99	64
R52B2	3/26/2009	N	50.57	13.67	64.24
R52B2	11/19/2009	N	49.07	15.17	64.24
R53A	3/26/2009	N	42.79	15.81	58.6
R53A	11/19/2009	N	42.12	16.48	58.6
R53B2	3/26/2009	N	61.75	2.34	64.09
R53B2	11/19/2009	N	58.24	5.85	64.09
R54A	3/26/2009	N	43.11	14.07	57.18
R54A	11/19/2009	N	42.5	14.68	57.18
R54B3	3/26/2009	N	63.42	1.1	64.52
R54B3	11/19/2009	N	59.94	4.58	64.52
R55A	3/26/2009	N	33.72	14.04	47.76
R55A	5/28/2009	N	33.45	14.31	47.76
R55A	8/27/2009	N	32.98	14.78	47.76
R55A	11/19/2009	N	32.8	14.96	47.76
R55B2	3/26/2009	N	54.09	10.12	64.21
R55B2	11/19/2009	N	51.69	12.52	64.21
R56B3	3/26/2009	N	60.63	3.5	64.13
R56B3	11/19/2009	N	57.27	6.86	64.13
R57A	3/26/2009	N	42.59	11.12	53.71
R57A	5/28/2009	N	42.63	11.08	53.71
R57A	8/27/2009	N	42.19	11.52	53.71
R57A	11/19/2009	N	41.8	11.91	53.71
R57B3	3/26/2009	N	58.66	-1.66	57
R57B3	11/19/2009	N	55.76	1.24	57
R58A	3/26/2009	N	40.75	13.02	53.77
R58A	5/28/2009	N	40.44	13.33	53.77
R58A	8/27/2009	N	40.19	13.58	53.77
R58A	11/19/2009	N	40.7	13.07	53.77
R58B2	3/26/2009	N	43.85	6.73	50.58
R58B2	11/19/2009	N	42.71	7.87	50.58
R59A	3/26/2009	N	44.56	10.13	54.69
R59A	5/28/2009	N	44.66	10.03	54.69
R59A	8/27/2009	N	44.24	10.45	54.69
R59A	11/19/2009	N	43.96	10.73	54.69

Notes:
This table includes the weekly water level measurments collected at extraction wells at ground water treatment system.

TABLE 4
2009 GROUNDWATER ELEVATIONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
R59B2	3/26/2009	N	49.5	1.79	51.29
R59B2	5/28/2009	N	50.4	0.89	51.29
R59B2	8/27/2009	N	50.08	1.21	51.29
R59B2	11/19/2009	N	50.44	0.85	51.29
R5B1	3/26/2009	N	34.33	13.11	47.44
R5B1	5/28/2009	N	34.12	13.32	47.44
R5B1	8/27/2009	N	33.67	13.77	47.44
R5B1	11/19/2009	N	33.42	14.02	47.44
R5B2	3/26/2009	N	49.98	0.48	50.46
R5B2	11/19/2009	N	48.27	2.19	50.46
R5B3	3/26/2009	N	53.07	-2.87	50.2
R5B3	11/19/2009	N	48.1	2.1	50.2
R60A	3/26/2009	N	41.01	15.43	56.44
R60A	5/28/2009	N	40.92	15.52	56.44
R60A	8/27/2009	N	40.57	15.87	56.44
R60A	11/19/2009	N	38.82	17.62	56.44
R60B1	3/26/2009	N	50.42	7.59	58.01
R60B1	5/28/2009	N	50.58	7.43	58.01
R60B1	8/27/2009	N	49.99	8.02	58.01
R60B1	11/19/2009	N	49.28	8.73	58.01
R61B3	3/26/2009	N	57.67	0.74	58.41
R61B3	11/19/2009	N	56.4	2.01	58.41
R62A	3/26/2009	N	36.68	10.91	47.59
R62A	11/19/2009	N	36.02	11.57	47.59
R62B2	3/26/2009	N	54.29	2.62	56.91
R62B2	5/28/2009	N	54.73	2.18	56.91
R62B2	8/27/2009	N	53.23	3.68	56.91
R62B2	11/19/2009	N	52.22	4.69	56.91
R63A	3/26/2009	N	40.85	17.48	58.33
R63A	11/19/2009	N	40.82	17.51	58.33
R63B1	3/26/2009	N	40.72	15.8	56.52
R63B1	5/28/2009	N	40.51	16.01	56.52

Notes:
This table includes the weekly water level measurments collected at extraction wells at ground water treatment system.

TABLE 4
2009 GROUNDWATER ELEVATIONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
R63B1	8/27/2009	N	40.05	16.47	56.52
R63B1	11/19/2009	N	40.79	15.73	56.52
R64B1	3/26/2009	N	47.1	9.55	56.65
R64B1	5/28/2009	N	47.13	9.52	56.65
R64B1	8/27/2009	N	46.56	10.09	56.65
R64B1	11/19/2009	N	46.13	10.52	56.65
R65B1(B2)	3/26/2009	N	49.45	3.55	53
R65B1(B2)	5/28/2009	N	49.61	3.39	53
R65B1(B2)	7/31/2009	N	48.77	4.23	53
R65B1(B2)	8/7/2009	N	48.69	4.31	53
R65B1(B2)	8/14/2009	N	48.59	4.41	53
R65B1(B2)	8/21/2009	N	48.57	4.43	53
R65B1(B2)	8/27/2009	N	48.7	4.3	53
R65B1(B2)	8/28/2009	N	48.57	4.43	53
R65B1(B2)	9/4/2009	N	48.52	4.48	53
R65B1(B2)	9/11/2009	N	48.29	4.71	53
R65B1(B2)	9/14/2009	N	48.32	4.68	53
R65B1(B2)	9/25/2009	N	48.34	4.66	53
R65B1(B2)	10/2/2009	N	48.59	4.41	53
R65B1(B2)	10/9/2009	N	48.61	4.39	53
R65B1(B2)	10/16/2009	N	48.64	4.36	53
R65B1(B2)	10/23/2009	N	48.66	4.34	53
R65B1(B2)	10/30/2009	N	48.69	4.31	53
R65B1(B2)	11/6/2009	N	48.67	4.33	53
R65B1(B2)	11/13/2009	N	48.7	4.3	53
R65B1(B2)	11/19/2009	N	48.63	4.37	53
R66B1	3/26/2009	N	38	10.72	48.72
R66B1	11/19/2009	N	37.99	10.73	48.72
R67A	3/26/2009	N	40.98	16.6	57.58
R67A	5/28/2009	N	40.76	16.82	57.58
R67A	8/27/2009	N	40.54	17.04	57.58
R67A	11/19/2009	N	40.95	16.63	57.58
R67B1	3/26/2009	N	38.12	10.94	49.06
R67B1	5/28/2009	N	37.86	11.2	49.06
R67B1	8/27/2009	N	37.51	11.55	49.06
R67B1	11/19/2009	N	38.17	10.89	49.06
R68A	3/26/2009	N	40.49	16.95	57.44
R68A	11/19/2009	N	40.53	16.91	57.44
R68B1	3/26/2009	N	40.58	16.38	56.96
R68B1	5/28/2009	N	40.36	16.6	56.96

Notes:
This table includes the weekly water level measurments collected at extraction wells at ground water treatment system.

TABLE 4
2009 GROUNDWATER ELEVATIONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
R68B1	8/27/2009	N	40.03	16.93	56.96
R68B1	11/19/2009	N	40.53	16.43	56.96
R68B2	3/26/2009	N	56.96	-2.05	54.91
R68B2	5/28/2009	N	53.19	1.72	54.91
R68B2	8/27/2009	N	52.98	1.93	54.91
R68B2	11/19/2009	N	53.14	1.77	54.91
R69A	3/26/2009	N	39.17	17.05	56.22
R69A	5/28/2009	N	38.64	17.58	56.22
R69A	8/27/2009	N	38.39	17.83	56.22
R69A	11/19/2009	N	39.2	17.02	56.22
R69B1	3/26/2009	N	40.65	16.63	57.28
R69B1	11/19/2009	N	40.64	16.64	57.28
R69B2	3/26/2009	N	47.78	7.07	54.85
R69B2	5/28/2009	N	48.45	6.4	54.85
R69B2	8/27/2009	N	48.16	6.69	54.85
R69B2	11/19/2009	N	47.78	7.07	54.85
R6A	3/26/2009	N	46.17	9.47	55.64
R6A	5/28/2009	N	46.41	9.23	55.64
R6A	8/27/2009	N	45.91	9.73	55.64
R6A	11/19/2009	N	45.36	10.28	55.64
R70A	3/26/2009	N	40.15	17.18	57.33
R70A	11/19/2009	N	40.23	17.1	57.33
R70B1	3/26/2009	N	40.78	15.47	56.25
R70B1	5/28/2009	N	40.58	15.67	56.25
R70B1	8/27/2009	N	40.23	16.02	56.25
R70B1	11/19/2009	N	40.73	15.52	56.25
R70B2	3/26/2009	N	46.99	7.69	54.68
R70B2	11/19/2009	N	46.17	8.51	54.68
R71A	3/26/2009	N	39.74	14.79	54.53
R71A	11/19/2009	N	39.81	14.72	54.53
R71B2	3/26/2009	N	51.58	5.87	57.45
R71B2	11/19/2009	N	50.23	7.22	57.45
R72A	3/26/2009	N	39.02	17.45	56.47

Notes:
This table includes the weekly water level measurments collected at extraction wells at ground water treatment system.

TABLE 4
2009 GROUNDWATER ELEVATIONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
R72A	5/28/2009	N	38.77	17.7	56.47
R72A	8/27/2009	N	38.52	17.95	56.47
R72A	11/19/2009	N	39.05	17.42	56.47
R72B2	3/26/2009	N	47.68	9.43	57.11
R72B2	5/28/2009	N	47.97	9.14	57.11
R72B2	8/27/2009	N	47.06	10.05	57.11
R72B2	11/19/2009	N	46.9	10.21	57.11
R73A	3/26/2009	N	40.52	18.67	59.19
R73A	5/28/2009	N	40.28	18.91	59.19
R73A	8/27/2009	N	40.02	19.17	59.19
R73A	11/19/2009	N	40.58	18.61	59.19
R73B2	3/26/2009	N	48.77	8.38	57.15
R73B2	5/28/2009	N	48.97	8.18	57.15
R73B2	8/27/2009	N	48.06	9.09	57.15
R73B2	11/19/2009	N	47.68	9.47	57.15
R74A	3/26/2009	N	40.54	17.3	57.84
R74A	11/19/2009	N	40.63	17.21	57.84
R7B1	3/26/2009	N	41.36	15.11	56.47
R7B1	5/28/2009	N	40.63	15.84	56.47
R7B1	8/27/2009	N	40.28	16.19	56.47
R7B1	11/19/2009	N	40.81	15.66	56.47
RAY-1A	3/26/2009	N	33.56	11.65	45.21
RAY-1A	7/31/2009	N	32.56	12.65	45.21
RAY-1A	8/7/2009	N	32.54	12.67	45.21
RAY-1A	8/14/2009	N	32.48	12.73	45.21
RAY-1A	8/21/2009	N	32.46	12.75	45.21
RAY-1A	8/28/2009	N	32.43	12.78	45.21
RAY-1A	9/4/2009	N	32.09	13.12	45.21
RAY-1A	9/11/2009	N	32.03	13.18	45.21
RAY-1A	9/25/2009	N	32.01	13.2	45.21
RAY-1A	10/2/2009	N	32	13.21	45.21
RAY-1A	10/9/2009	N	31.98	13.23	45.21
RAY-1A	10/16/2009	N	32	13.21	45.21
RAY-1A	10/23/2009	N	31.98	13.23	45.21
RAY-1A	10/30/2009	N	32.01	13.2	45.21
RAY-1A	11/6/2009	N	31.97	13.24	45.21
RAY-1A	11/13/2009	N	31.97	13.24	45.21
RAY-1A	11/19/2009	N	32.09	13.12	45.21
RAY-1B1	3/26/2009	N	32.52	13.25	45.77

Notes:
This table includes the weekly water level measurments collected at extraction wells at ground water treatment system.

TABLE 4
2009 GROUNDWATER ELEVATIONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
RAY-1B1	7/31/2009	N	32.7	13.07	45.77
RAY-1B1	8/7/2009	N	32.06	13.71	45.77
RAY-1B1	8/14/2009	N	32.06	13.71	45.77
RAY-1B1	8/21/2009	N	32.05	13.72	45.77
RAY-1B1	8/28/2009	N	32.34	13.43	45.77
RAY-1B1	9/4/2009	N	31.88	13.89	45.77
RAY-1B1	9/11/2009	N	32	13.77	45.77
RAY-1B1	9/25/2009	N	32.06	13.71	45.77
RAY-1B1	10/2/2009	N	31.74	14.03	45.77
RAY-1B1	10/9/2009	N	31.76	14.01	45.77
RAY-1B1	10/16/2009	N	31.74	14.03	45.77
RAY-1B1	10/23/2009	N	31.73	14.04	45.77
RAY-1B1	10/30/2009	N	31.76	14.01	45.77
RAY-1B1	11/6/2009	N	31.71	14.06	45.77
RAY-1B1	11/13/2009	N	31.67	14.1	45.77
RAY-1B1	11/19/2009	N	31.71	14.06	45.77
RE10A	3/26/2009	N	40.78	17.87	58.65
RE10A	11/19/2009	N	41.33	17.32	58.65
RE11A	3/26/2009	N	36.56	12.19	48.75
RE11A	11/19/2009	N	36.68	12.07	48.75
RE12A	3/26/2009	N	37.74	10.9	48.64
RE12A	11/19/2009	N	37.75	10.89	48.64
RE1B2	3/26/2009	N	50.77	2.11	52.88
RE1B2	11/19/2009	N	48.37	4.51	52.88
RE21A	3/26/2009	N	37.53	12.35	49.88
RE21A	11/19/2009	N	37.21	12.67	49.88
RE22A	3/26/2009	N	36.48	13.33	49.81
RE22A	5/28/2009	N	36.06	13.75	49.81
RE22A	8/27/2009	N	35.83	13.98	49.81
RE22A	11/19/2009	N	36.64	13.17	49.81
RE23A	3/26/2009	N	38.35	15.31	53.66
RE23A	7/31/2009	N	37.62	16.37	53.99
RE23A	8/7/2009	N	37.54	16.45	53.99
RE23A	8/14/2009	N	37.56	16.43	53.99
RE23A	8/21/2009	N	37.61	16.38	53.99
RE23A	8/28/2009	N	37.62	16.37	53.99
RE23A	9/4/2009	N	37.77	16.22	53.99
RE23A	9/11/2009	N	37.51	16.48	53.99
RE23A	9/25/2009	N	37.57	16.42	53.99
RE23A	10/2/2009	N	37.54	16.45	53.99

Notes:
This table includes the weekly water level measurments collected at extraction wells at ground water treatment system.

TABLE 4
2009 GROUNDWATER ELEVATIONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
RE23A	10/9/2009	N	37.56	16.43	53.99
RE23A	10/16/2009	N	37.58	16.41	53.99
RE23A	10/23/2009	N	37.56	16.43	53.99
RE23A	10/30/2009	N	37.58	16.41	53.99
RE23A	11/6/2009	N	37.54	16.45	53.99
RE23A	11/13/2009	N	37.53	16.46	53.99
RE23A	11/19/2009	N	38.5	15.16	53.66
RE24A	3/26/2009	N	36.4	18.84	55.24
RE24A	7/31/2009	N	36.46	18.78	55.24
RE24A	8/7/2009	N	36.33	18.91	55.24
RE24A	8/14/2009	N	36.33	18.91	55.24
RE24A	8/21/2009	N	36.3	18.94	55.24
RE24A	8/28/2009	N	36.44	18.8	55.24
RE24A	9/4/2009	N	36.47	18.77	55.24
RE24A	9/11/2009	N	36.12	19.12	55.24
RE24A	9/25/2009	N	36.05	19.19	55.24
RE24A	10/2/2009	N	36.03	19.21	55.24
RE24A	10/9/2009	N	36.02	19.22	55.24
RE24A	10/16/2009	N	36.05	19.19	55.24
RE24A	10/23/2009	N	36.01	19.23	55.24
RE24A	10/30/2009	N	36.04	19.2	55.24
RE24A	11/6/2009	N	35.98	19.26	55.24
RE24A	11/13/2009	N	36	19.24	55.24
RE24A	11/19/2009	N	37.1	18.14	55.24
RE25A	3/26/2009	N	23.18	33.82	57
RE25A	7/31/2009	N	24.69	32.31	57
RE25A	8/7/2009	N	19.21	32.79	57
RE25A	8/14/2009	N	25.46	31.54	57
RE25A	8/21/2009	N	25.38	31.62	57
RE25A	8/28/2009	N	24.91	32.09	57
RE25A	9/4/2009	N	25.58	31.42	57
RE25A	9/11/2009	N	25.21	31.79	57
RE25A	9/25/2009	N	25.32	31.68	57
RE25A	10/2/2009	N	27.3	29.7	57
RE25A	10/9/2009	N	25.08	31.92	57
RE25A	10/16/2009	N	26.03	30.97	57
RE25A	10/23/2009	N	25.23	31.77	57
RE25A	10/30/2009	N	25.16	31.84	57
RE25A	11/6/2009	N	25.28	31.72	57
RE25A	11/13/2009	N	25.24	31.76	57
RE25A	11/19/2009	N	25.79	31.21	57
RE3B1	3/26/2009	N	37.95	10.76	48.71
RE3B1	11/19/2009	N	46.23	2.48	48.71
RE5A	3/26/2009	N	39.28	17.57	56.85
RE5A	7/31/2009	N	38.84	18.01	56.85
RE5A	8/7/2009	N	38.73	18.12	56.85

Notes:
This table includes the weekly water level measurments collected at extraction wells at ground water treatment system.

TABLE 4
2009 GROUNDWATER ELEVATIONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
RE5A	8/14/2009	N	38.72	18.13	56.85
RE5A	8/21/2009	N	38.76	18.09	56.85
RE5A	8/28/2009	N	38.77	18.08	56.85
RE5A	9/4/2009	N	38.81	18.04	56.85
RE5A	9/11/2009	N	38.51	18.34	56.85
RE5A	9/25/2009	N	38.52	18.33	56.85
RE5A	10/2/2009	N	38.43	18.42	56.85
RE5A	10/9/2009	N	38.44	18.41	56.85
RE5A	10/16/2009	N	38.42	18.43	56.85
RE5A	10/23/2009	N	38.44	18.41	56.85
RE5A	10/30/2009	N	38.42	18.43	56.85
RE5A	11/6/2009	N	38.4	18.45	56.85
RE5A	11/13/2009	N	38.44	18.41	56.85
RE5A	11/19/2009	N	39.37	17.48	56.85
RE7A	3/26/2009	N	37.28	11.33	48.61
RE7A	5/28/2009	N	37.07	11.54	48.61
RE7A	8/27/2009	N	36.71	11.9	48.61
RE7A	11/19/2009	N	37.14	11.47	48.61
RE8A	3/26/2009	N	38.52	13.14	51.66
RE8A	5/28/2009	N	38.37	13.29	51.66
RE8A	8/27/2009	N	38	13.66	51.66
RE8A	11/19/2009	N	37.82	13.84	51.66
RE9A	3/26/2009	N	40.22	18.51	58.73
RE9A	11/19/2009	N	40.72	18.01	58.73
RH1A	3/26/2009	N	45.84	16.55	62.39
RH1A	11/19/2009	N	45.13	17.26	62.39
RH1A	11/19/2009	N	45.16	17.23	62.39
RP16B	3/26/2009	N	48.49	10.14	58.63
RP16B	11/19/2009	N	47.46	11.17	58.63
RP19B	3/26/2009	N	41.09	15.38	56.47
RP19B	5/28/2009	N	40.84	15.63	56.47
RP19B	8/27/2009	N	40.6	15.87	56.47
RP19B	11/19/2009	N	40.91	15.56	56.47
RP21B	3/26/2009	N	40.7	12.64	53.34
RP21B	5/28/2009	N	40.51	12.83	53.34
RP21B	8/27/2009	N	40.18	13.16	53.34
RP21B	11/19/2009	N	40.7	12.64	53.34
RP22B	3/26/2009	N	47.52	16.55	64.07

Notes:
This table includes the weekly water level measurments collected at extraction wells at ground water treatment system.

TABLE 4
2009 GROUNDWATER ELEVATIONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	Date	Dry	Groundwater Elevation	Depth to Water	Reference Elevation
RP22B	11/19/2009	N	46.58	17.49	64.07
RP23B	3/26/2009	N	40.49	14.18	54.67
RP23B	5/28/2009	N	40.38	14.29	54.67
RP23B	8/27/2009	N	40.12	14.55	54.67
RP23B	11/19/2009	N	40.63	14.04	54.67
RP24B	3/26/2009	N	39.77	15.22	54.99
RP24B	11/19/2009	N	40.4	14.59	54.99
RP41B	3/26/2009	N	40.83	16.52	57.35
RP41B	11/19/2009	N	40.9	16.45	57.35
RP42B	3/26/2009	N	42.76	18.94	61.7
RP42B	5/28/2009	N	41.93	19.77	61.7
RP42B	8/27/2009	N	41.72	19.98	61.7
RP42B	11/19/2009	N	42.32	19.38	61.7
RP43B	3/26/2009	N	38.95	18.33	57.28
RP43B	5/28/2009	N	40.49	16.79	57.28
RP43B	8/27/2009	N	40.2	17.08	57.28
RP43B	11/19/2009	N	40.84	16.44	57.28
SOPZ-1	3/26/2009	N	46.02	16.28	62.3
SOPZ-1	11/16/2009	N	45.32	16.98	62.3
SOPZ-2	3/26/2009	N	46.47	14.19	60.66
SOPZ-2	11/16/2009	N	45.38	15.28	60.66
SOPZ-3	3/26/2009	N	45.83	15.95	61.78
SOPZ-3	11/16/2009	N	45.3	16.48	61.78

Notes:
This table includes the weekly water level measurments collected at extraction wells at ground water treatment system.

TABLE 5
2009 CAPTURE ZONE WIDTH CALCULATION
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Well	Extraction Rate Q (gpm)	Transmissivity [1] (gpd/ft)	Hydraulic Gradient [2] (ft/ft)	Distance from well to Capture Zone [3] X_o(ft)	Width of Capture Zone [4] Y_{well} (ft)
March 26, 2009					
RAY-1A	0.84	3940	0.007	6.98	10.96
RAY-1B1	4.70	3230	0.011	30.31	47.62
November 19, 2009					
RAY-1A	2.99	3940	0.007	24.84	39.03
RAY-1B1	3.93	3230	0.010	27.88	43.80

Notes:

1. The transmissivities used in the calculations were those calculated for the MEW aquifers in the 2-year evaluation report. (Note: Transmissivity, T=K*b)
2. The hydraulic gradient is calculated for each groundwater level event.
3. The distance is measured from the well to the downgradient end of the capture zone along the central line of the flow direction (calculated based on January 2008 EPA guidance on capture zone analysis).
4. The calculation is based on January 2008 EPA guidance on capture zone analysis. Y_{well} is the capture zone width at the location of well from the central line of the plume.

TABLE 6
2009 WATER BALANCE RESULTS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Well	Upgradient Width of Incoming Groundwater Flux[1] (ft)	Transmissivity [2] (gpd/ft)	Hydraulic Gradient [3] (ft/ft)	Estimated Pumping Rate [4] (gpm)	Actual Pumping Rate (gpm)
March 26, 2009					
RAY-1A	30	3940	0.007	0.86	0.84
RAY-1B1	120	3230	0.011	4.44	4.70
November 19, 2009					
RAY-1A	100	3940	0.007	2.87	2.99
RAY-1B1	110	3230	0.010	3.70	3.93

Notes:

1. The width of the controlled area is determined from the most recent concentration contours and capture zone maps.
2. The transmissivities used in the calculations were those calculated for the MEW aquifers in the 2-year evaluation report.(Note: (Transmissivity, T=K*b)
3. The hydraulic gradient is calculated for each groundwater level event.
4. The estimated flow rate is calculated based on January 2008 EPA guidance on capture zone analysis, the estimated flow rate into capture zone is calculated using the equation : Q= K x (b x w) x i x factor . A factor of 1.5 - 2 is the "rule of thumb" value used to account for other contributions to a pumping well such as flux from a river or induced vertical flow from another groundwater unit.

TABLE 7
WELL LOSS CALCULATIONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Well Loss Coefficient C (min^2/m^5)	Well Extraction Rate Q (gpm)	Calculated Well Loss $S_L = CQ^2$ (feet)
0.5	0.25	1.47E-06
1	0.25	2.94E-06
4	0.25	1.18E-05
0.5	0.5	5.88E-06
1	0.5	1.18E-05
4	0.5	4.70E-05
0.5	1	2.35E-05
1	1	4.70E-05
4	1	1.88E-04
0.5	1.5	5.29E-05
1	1.5	1.06E-04
4	1.5	4.23E-04
0.5	2	9.40E-05
1	2	1.88E-04
4	2	7.52E-04
0.5	2.5	1.47E-04
1	2.5	2.94E-04
4	2.5	1.18E-03
0.5	3	2.12E-04
1	3	4.23E-04
4	3	1.69E-03
0.5	4.5	4.76E-04
1	4.5	9.52E-04
4	4.5	3.81E-03
0.5	6	8.46E-04
1	6	1.69E-03
4	6	6.77E-03
0.5	7.5	1.32E-03
1	7.5	2.64E-03
4	7.5	1.06E-02
0.5	9	1.90E-03
1	9	3.81E-03
4	9	1.52E-02
0.5	10.5	2.59E-03
1	10.5	5.18E-03
4	10.5	2.07E-02
0.5	12	3.38E-03
1	12	6.77E-03
4	12	2.71E-02
0.5	13.5	4.28E-03
1	13.5	8.57E-03
4	13.5	3.43E-02

TABLE 8
DIFFERENTIAL WATER LEVELS IN WELL PAIRS ACROSS THE SLURRY WALL
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Well No.	3/26/2009		5/28/2009		8/27/2009		11/19/2009	
	Water Elevation (ft, MSL)	Difference (ft)	Water Elevation (ft, MSL)	Difference (ft)	Water Elevation (ft, MSL)	Difference (ft)	Water Elevation (ft, MSL)	Difference (ft)
R-06A	46.17	8.58	46.41	9.06	45.91	8.83	45.36	7.77
R-36A	37.59		37.35		37.08		37.59	
R-59A	44.56	3.81	44.66	4.22	44.24	4.05	43.96	3.26
R-58A	40.75		40.44		40.19		40.70	
R-57A	42.59	1.58	42.63	1.71	42.19	1.62	41.80	2.98
R-60A	41.01		40.92		40.57		38.82	
R-64B1	47.10	6.38	47.13	6.62	46.56	6.51	46.13	5.34
R-63B1	40.72		40.51		40.05		40.79	
R-60B1	50.42	9.06	50.58	9.95	49.99	9.71	49.28	8.47
R-07B1	41.36		40.63		40.28		40.81	
R-55A	33.72	-3.56	33.45	-3.62	32.98	-3.73	32.80	-4.34
RE-07A	37.28		37.07		36.71		37.14	
R-05B1	34.33	-6.16	34.12	-6.26	33.67	-6.45	33.42	-7.21
RP-23B	40.49		40.38		40.12		40.63	

Notes:
A positive difference indicates an inward gradient.

TABLE 9
DIFFERENTIAL WATER LEVELS IN WELL PAIRS ACROSS THE AQUITARD
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

	3/27/2009		5/28/2009		8/27/2009		11/19/2009	
Well NO.	Water Elevation (ft MSL)	Difference (ft)	Water Elevation (ft MSL)	Difference (ft)	Water Elevation (ft MSL)	Difference (ft)	Water Elevation (ft MSL)	Difference (ft)
RP-21B	40.70	3.02	40.51	2.85	40.18	2.96	40.70	2.87
R-41A	37.68		37.66		37.22		37.83	
R-59B2 (l)	49.50	1.74	50.40	2.34	50.08	2.99	50.44	3.71
R-39B2 (u)	47.76		48.06		47.09		46.73	
R-65B1B2	49.45	8.70	49.61	9.17	48.70	8.51	48.63	7.93
R-58A	40.75		40.44		40.19		40.70	
R-07B1	41.36	3.77	40.63	3.28	40.28	3.20	40.81	3.22
R-36A	37.59		37.35		37.08		37.59	
R-62B2 (l)	54.29	6.61	54.73	6.76	53.23	6.17	52.22	5.32
R-72B2 (u)	47.68		47.97		47.06		46.90	
R-63B1	40.72	-0.29	40.51	-0.41	40.05	-0.52	40.79	1.97
R-60A	41.01		40.92		40.57		38.82	
R-68B2 (l)	56.96	9.18	53.19	4.74	52.98	4.82	53.14	5.36
R-69B2 (u)	47.78		48.45		48.16		47.78	
R-73B2	48.77	8.19	48.97	8.61	48.06	8.03	47.68	7.15
R-68B1	40.58		40.36		40.03		40.53	
R-68B1	40.58	-0.40	40.36	-0.40	40.03	-0.51	40.53	-0.42
R-67A	40.98		40.76		40.54		40.95	
RP-19B	41.09	0.08	40.84	-0.08	40.60	0.03	40.91	2.09
R-60A	41.01		40.92		40.57		38.82	
RP-42B	42.76	2.24	41.93	1.65	41.72	1.70	42.32	1.74
R-73A	40.52		40.28		40.02		40.58	
RP-43B	38.85	-0.17	40.49	1.72	40.20	1.68	40.84	1.79
R-72A	39.02		38.77		38.52		39.05	
R-67B1	38.12	1.64	37.86	1.80	37.51	1.68	38.17	1.53
RE-22A	36.48		36.06		35.83		36.64	
R-67B1	38.12	-0.40	37.86	-0.51	37.51	-0.49	38.17	0.35
RE-08A	38.52		38.37		38		37.82	
R-70B1	40.78	1.61	40.58	1.94	40.23	1.84	40.73	1.53
R-69A	39.17		38.64		38.39		39.20	

Notes:

A positive difference indicates an upward gradient.

TABLE 10
MONITORING AND REPORTING SCHEDULES
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Wells Monitored Annually		
"A" Aquifer	**"B1" Aquifer**	**"B2" Aquifer**
24A	007B1	I-1B2
83A	94B1	R-17B2
100A	97B1	
R-52A	RAY-1B1	
RAY-1A		

Wells Monitored Every Five Years		
"A" Aquifer	**"B1" Aquifer**	**"B2" Aquifer**
R-36A	R-7B1	R-27B2
R-41A	R-67B1	R-39B2
R-60A	RP-19B	R-65B1B2
R-72A	RP-21B	R-68B2
RE-07A	RP-23B	RE-1B2
RE-08A	RP-24B	
RE-09A	RP-41B	
RE-10A	RP-43B	
RE-23A		
RE-24A		
RE-25A		

Reporting Schedule		
Report	**Agency**	**Frequency**
NPDES	RWQCB	Quarterly (Submitted on the 15th day of February, May, August and September of each year)
Annual Progress Report	US EPA	Annually (submitted in April of each year)

TABLE 11
SUMMARY OF 2009 SITE-SPECIFIC MONITORING WELL VOC DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Location	100A	24A	24A	7B1	83A	94B1	97B1	I-1B2	R17B2	R52A	RAY-1A	RAY-1B1
Date	12/2/2009	12/2/2009	12/2/2009	12/1/2009	12/2/2009	12/1/2009	12/1/2009	12/1/2009	12/1/2009	12/2/2009	12/1/2009	12/1/2009
Sample Purpose	REG	FD	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG
Parameter												
1,1,1-TRICHLOROETHANE	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	0.0020	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	0.0056	ND 0.0036
1,1,2,2-TETRACHLOROETHANE	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	ND 0.0017	ND 0.0036
1,1,2-TRICHLOROETHANE	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	ND 0.0017	ND 0.0036
1,1-DICHLOROETHANE	0.0053	ND 0.017	ND 0.017	ND 0.0005	0.0016	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	0.0076	ND 0.0036
1,1-DICHLOROETHENE	0.0044	ND 0.017	ND 0.017	ND 0.0005	0.0018	0.0045	0.0099	ND 0.0017	ND 0.0031	ND 0.0005	0.0046	0.0054
1,2-DICHLOROBENZENE	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	0.0059	ND 0.0036
1,2-DICHLOROETHANE	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	ND 0.0017	ND 0.0036
1,2-DICHLOROPROPANE	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	ND 0.0017	ND 0.0036
1,3-DICHLOROBENZENE	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	ND 0.0017	ND 0.0036
1,4-DICHLOROBENZENE	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	ND 0.0017	ND 0.0036
BROMODICHLOROMETHANE	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	ND 0.0017	ND 0.0036
BROMOFORM	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	ND 0.0017	ND 0.0036
BROMOMETHANE	ND 0.0025	ND 0.033	ND 0.033	ND 0.0010	ND 0.0010	ND 0.0050	ND 0.013	ND 0.0033	ND 0.0063	ND 0.0010	ND 0.0033	ND 0.0071
CARBON TETRACHLORIDE	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	ND 0.0017	ND 0.0036
CHLOROBENZENE	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	ND 0.0017	ND 0.0036
CHLOROETHANE	ND 0.0025	ND 0.033	ND 0.033	ND 0.0010	ND 0.0010	ND 0.0050	ND 0.013	ND 0.0033	ND 0.0063	ND 0.0010	ND 0.0033	ND 0.0071
CHLOROFORM	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	ND 0.0017	ND 0.0036
CHLOROMETHANE	ND 0.0025	ND 0.033	ND 0.033	ND 0.0010	ND 0.0010	ND 0.0050	ND 0.013	ND 0.0033	ND 0.0063	ND 0.0010	ND 0.0033	ND 0.0071
CIS-1,2-DICHLOROETHENE	0.22	0.37	0.36	0.012	0.029	0.029	0.077	0.0021	0.032	0.0025	0.068	0.054
CIS-1,3-DICHLOROPROPENE	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	ND 0.0017	ND 0.0036
DIBROMOCHLOROMETHANE	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	ND 0.0017	ND 0.0036
FREON 113	ND 0.0050	ND 0.067	ND 0.067	ND 0.0020	0.0060	ND 0.010	ND 0.025	ND 0.0067	ND 0.013	ND 0.0020	0.0086	ND 0.014
METHYLENE CHLORIDE	ND 0.050	ND 0.67	ND 0.67	ND 0.020	ND 0.020	ND 0.10	ND 0.25	ND 0.067	ND 0.13	ND 0.020	ND 0.067	ND 0.14
TETRACHLOROETHENE	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	0.0018	ND 0.0036
TRANS-1,2-DICHLOROETHENE	0.0044	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	0.0038	ND 0.0036
TRANS-1,3-DICHLOROPROPENE	ND 0.0013	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	ND 0.0017	ND 0.0036
TRICHLOROETHENE	0.0063	2.7	2.5	0.0023	0.075	0.34	0.84	0.23	0.60	0.11	0.37	0.44
TRICHLOROFLUOROMETHANE	ND 0.0025	ND 0.033	ND 0.033	ND 0.0010	ND 0.0010	ND 0.0050	ND 0.013	ND 0.0033	ND 0.0063	ND 0.0010	ND 0.0033	ND 0.0071
VINYL CHLORIDE	0.0018	ND 0.017	ND 0.017	ND 0.0005	ND 0.0005	ND 0.0025	ND 0.0063	ND 0.0017	ND 0.0031	ND 0.0005	ND 0.0017	ND 0.0036

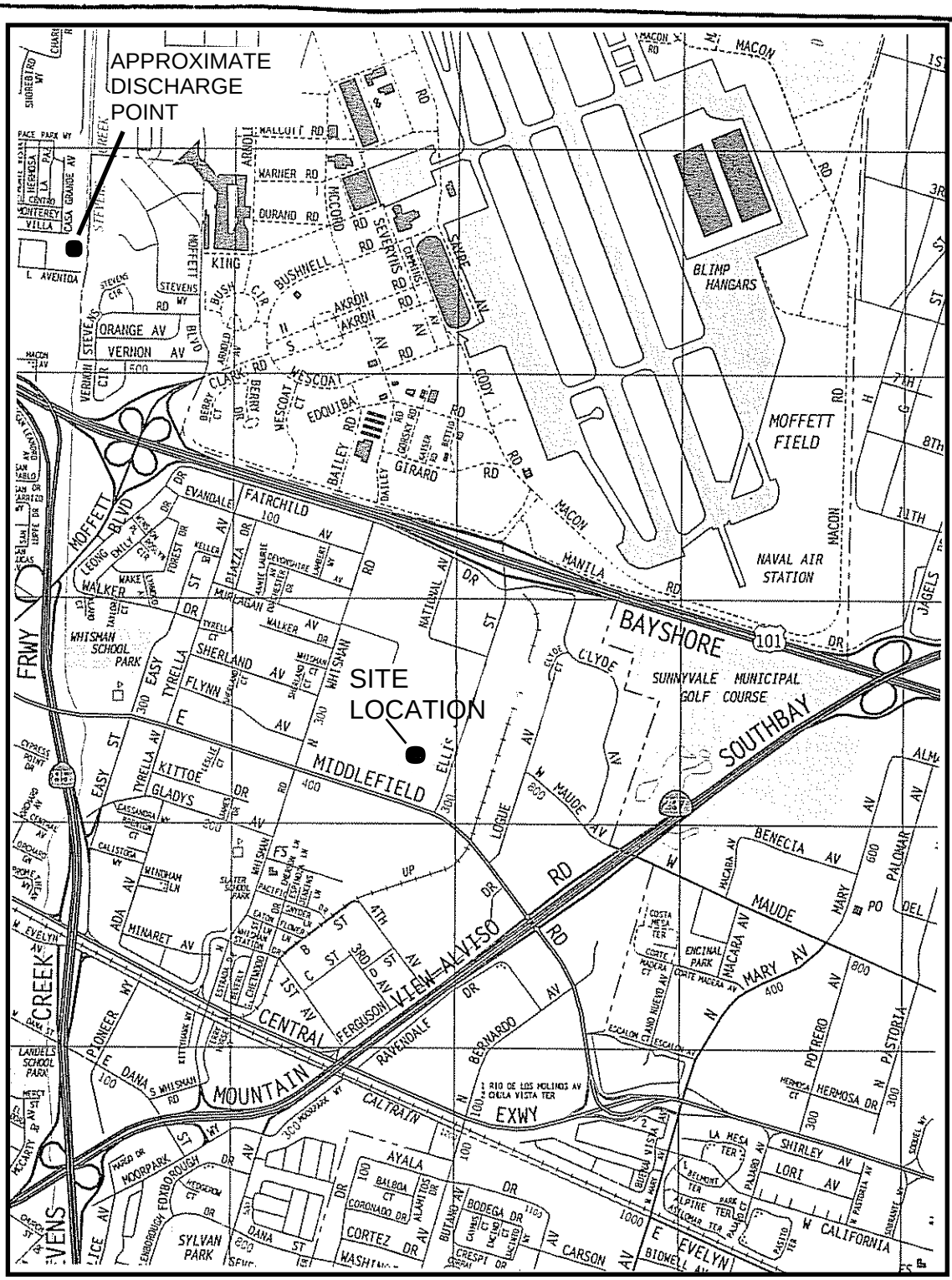
Notes:

Data are reported in milligrams per liter (mg/L)
ND - denotes result was below the detection limit
REG - regular (primary) sample
FD - field duplicate

TABLE 12
TCE CONCENTRATION COMPARISONS
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Aquifer/ Location	Average Annual Concentration (mg/L)																Concentration Comparisons											
	1986/87	1992	1995	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2006/ 1986-87	2007/ 1986-87	2008/ 1986-87	2009/ 1986-87	2006/ 1997	2007/ 1997	2008/ 1997	2009 1997	2006/ 1998	2007/ 1998	2008/ 1998	2009/ 1998
A Aquifer Within Slurry Wall																												
Wells Sampled	19	0	15	13	0	18	4	7	13	8	0	0	18	0	0	0	-81%	NA	NA	NA	-64%	NA	NA	NA	NA	NA	NA	NA
Average Conc	19.63	-	23.58	10.33	-	6.45	44.45	9.06	5.95	3.53	-	-	3.77	-	-	-												
B1 Aquifer Within Slurry Wall																												
Wells Sampled	15	0	14	9	1	12	0	1	6	3	0	0	9	0	0	0	-67%	NA	NA	NA	40%	NA	NA	NA	NA	NA	NA	NA
Average Conc	2.11	-	1.22	0.44	0.00	0.23	-	0.38	0.43	0.00	-	-	0.69	-	-	-												
B2 Aquifer																												
Wells Sampled	9	0	7	3	0	0	1	0	5	1	0	0	1	0	4	0	87%	NA	-23%	NA	NA	NA	NA	NA	NA	NA	NA	NA
Average Conc	0.11	-	0.13	0.10	-	0.23	0.22	-	0.06	0.36	-	-	0.21	-	0.09	-												
A Aquifer Outside Slurry Wall																												
Wells Sampled	3	2	0	2	4	4	4	4	4	3	4	4	3	4	3	4	-97%	-47%	-97%	-97%	NA	-23%	NA	114%	51%	-48%	43%	44%
Average Conc	22.93	0.50	-	0.35	0.52	0.73	0.74	0.76	0.55	0.91	1.13	0.39	0.78	0.27	0.74	0.74												
B1 Aquifer Outside Slurry Wall																												
Wells Sampled	3	1	0	4	4	4	4	4	4	4	4	4	4	4	4	4	-88%	-70%	-86%	-87%	NA	NA	47%	37%	-88%	-25%	-27%	-31%
Average Conc	3.08	1.50	-	0.30	0.59	0.68	0.52	0.44	0.64	0.43	0.40	0.40	0.36	0.45	0.43	0.41												

FIGURES



SITE LOCATION MAP
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE: 1998 THOMAS GUIDE,
SANTA CLARA/SAN MATEO COUNTIES.

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	13 AUG 03	ISSUED FOR REPORT	YZC		

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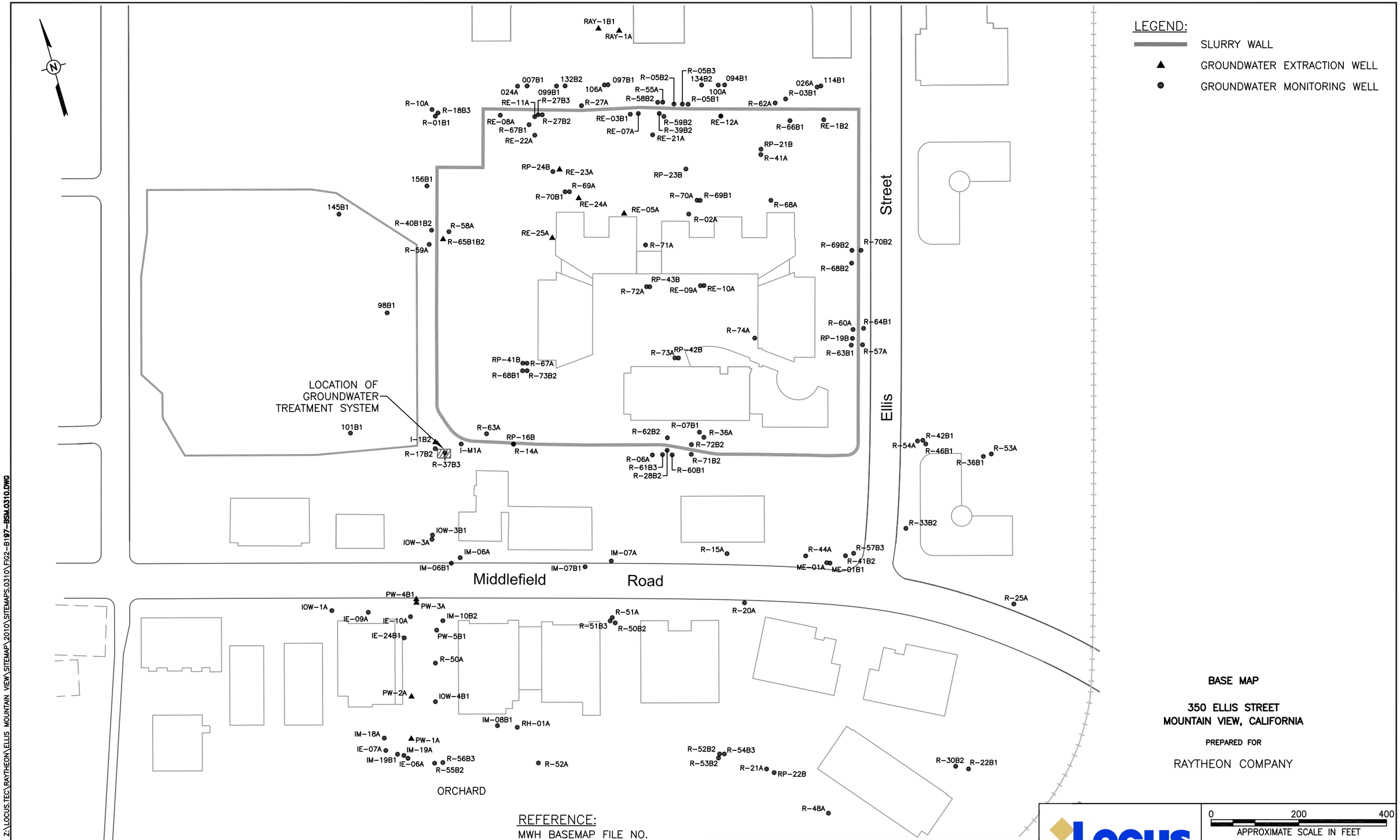
DRAWING NO. 23-016-A38

FIGURE 1

K:\23-016\A38.DWG 13 AUG 03



REFERENCE:
MWH BASEMAP FILE NO. USCKIS-INDSURNDUSTRIAL\MLUBKE\RAYTHEON SM A AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1		ISSUED FOR REPORT	CWC	AJK	JAM

BASE MAP

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

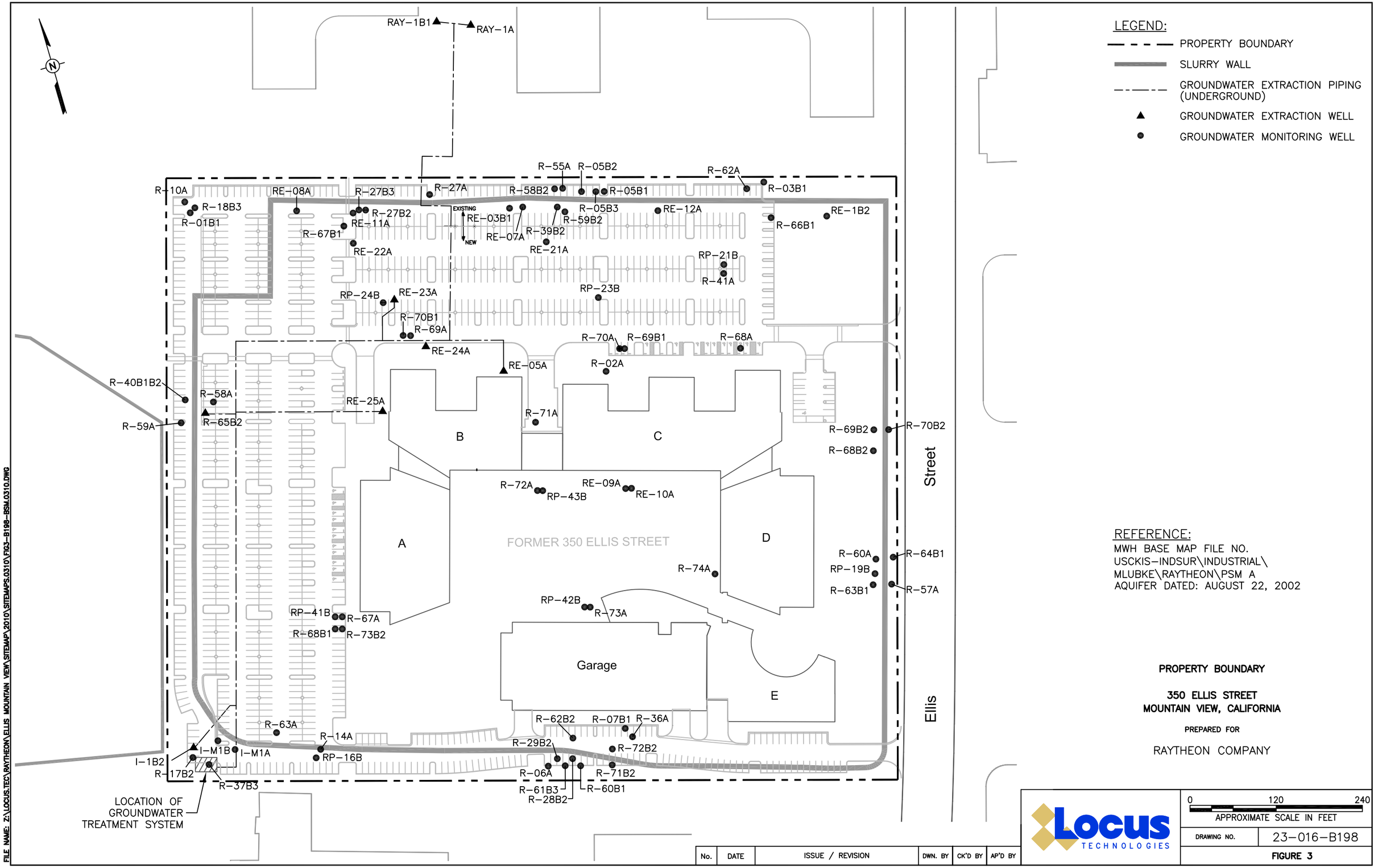
Locus TECHNOLOGIES

0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B197

FIGURE 2

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\SITEMAP\2010\SITEMAPS.0310\FIG2-B197-BSM.0310.DWG



REFERENCE:
MWH BASE MAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\PSM A
AQUIFER DATED: AUGUST 22, 2002

PROPERTY BOUNDARY

350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

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RAYTHEON COMPANY

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Locus TECHNOLOGIES

0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B198

FIGURE 3

FILE NAME: Z:\LOCUS_TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\SITEMAP\2010\SITEMAPS_0310\FIG3-B198-BSM_0310.DWG

FIGURE 4
TCE CONCENTRATIONS IN GROUNDWATER TREATMENT SYSTEM INFLUENT SINCE 2001
RAYTHEON COMPANY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

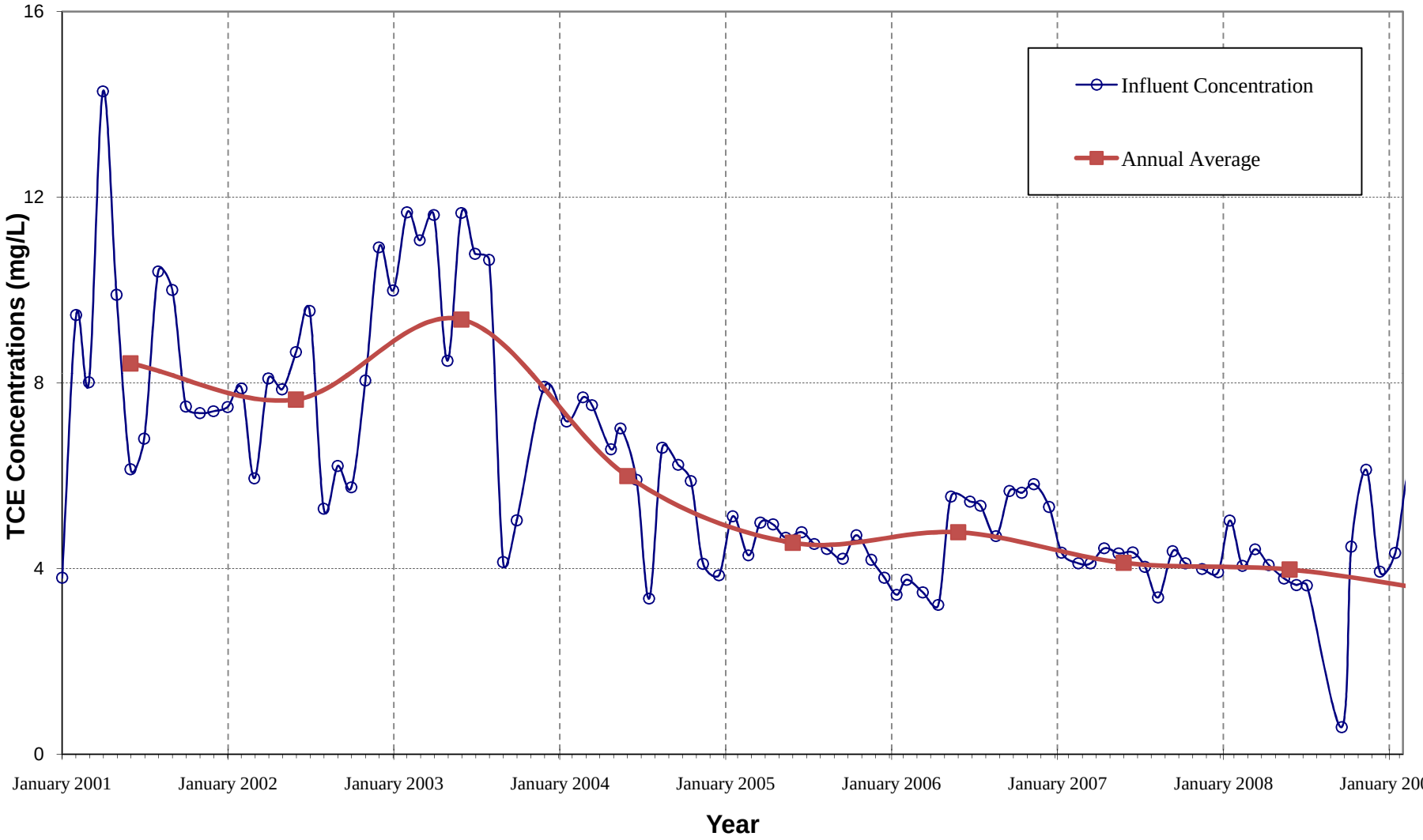


FIGURE 5
TOTAL INFLUENT GROUNDWATER CONCENTRATIONS
RAYTHEON COMPANY
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

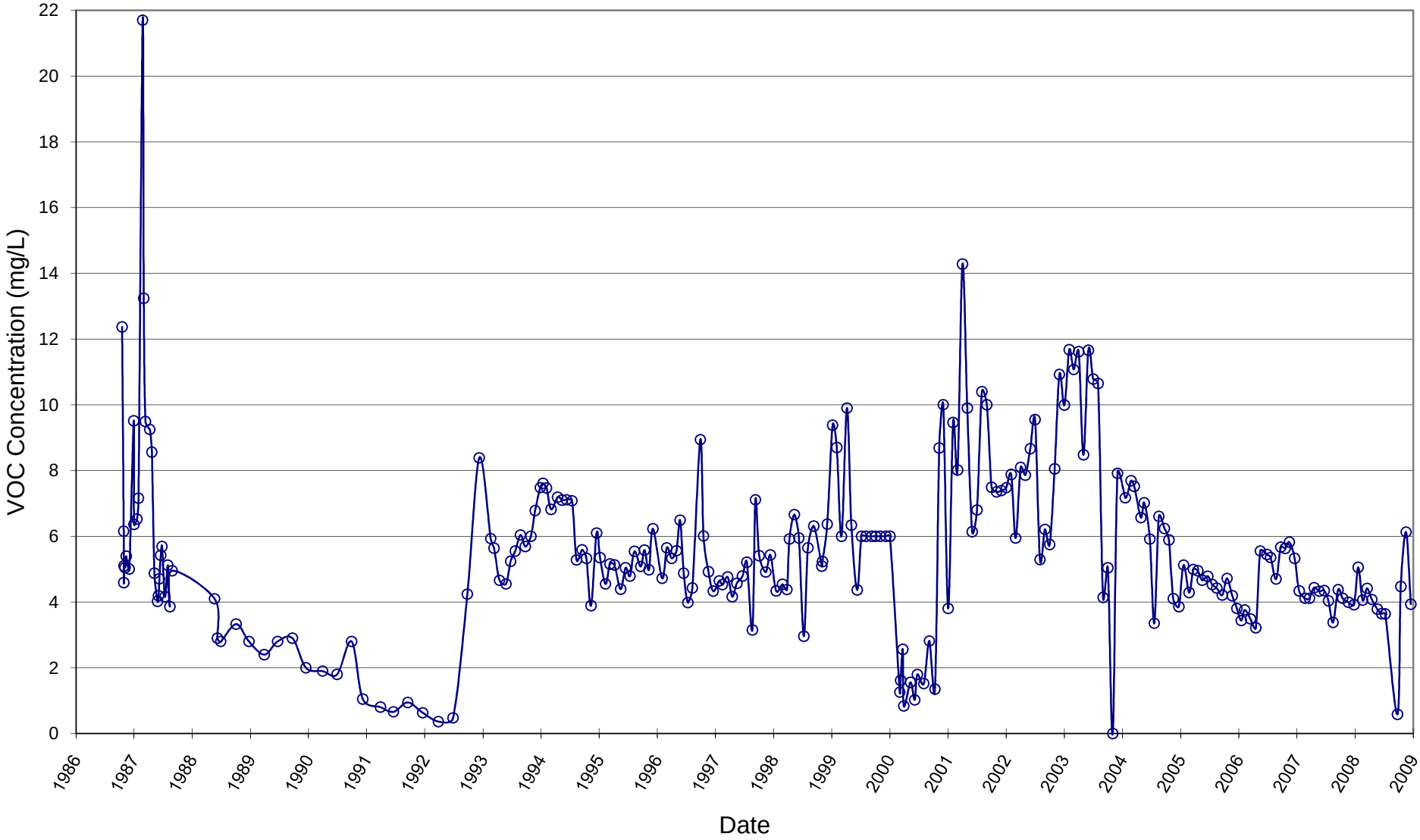
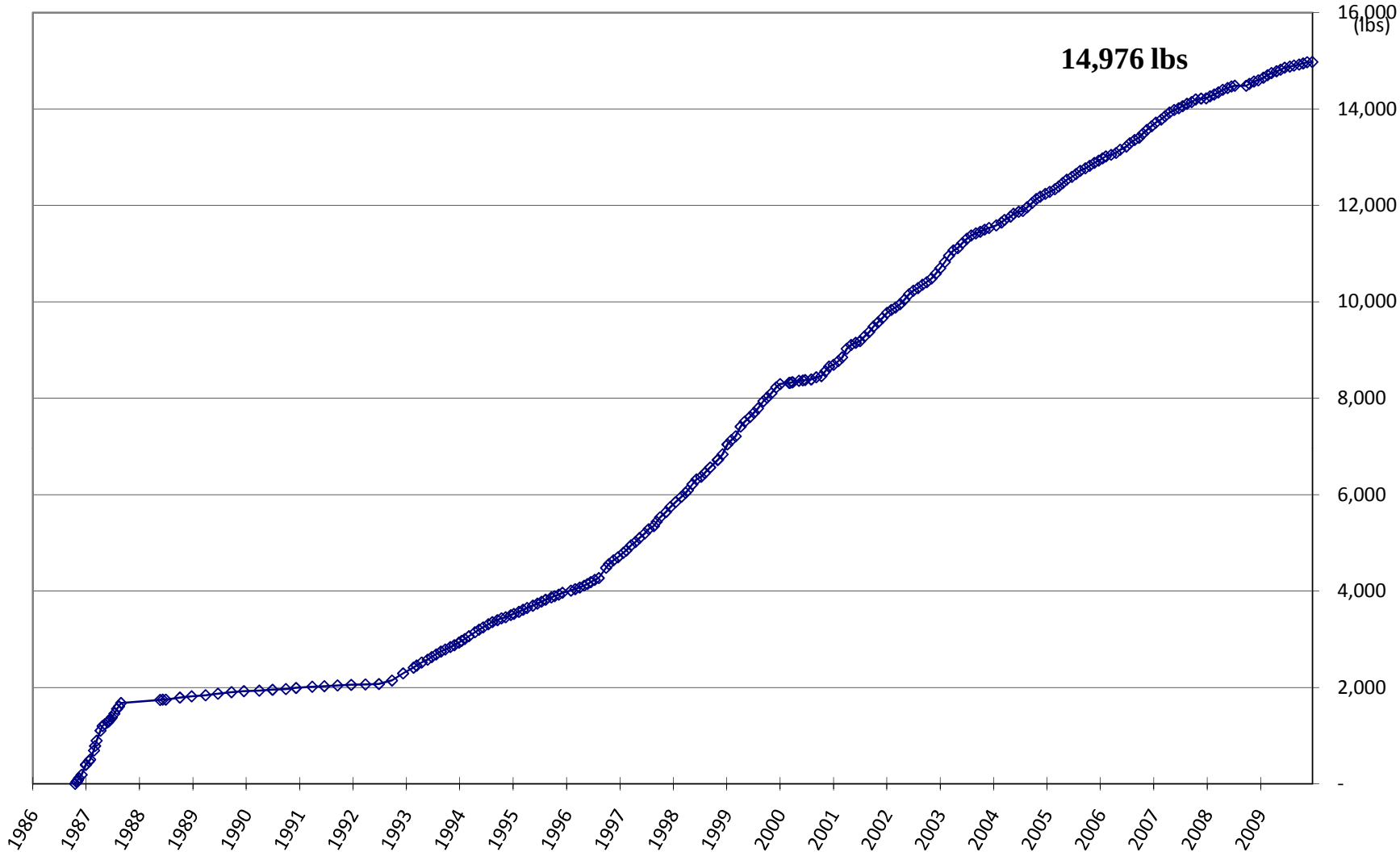
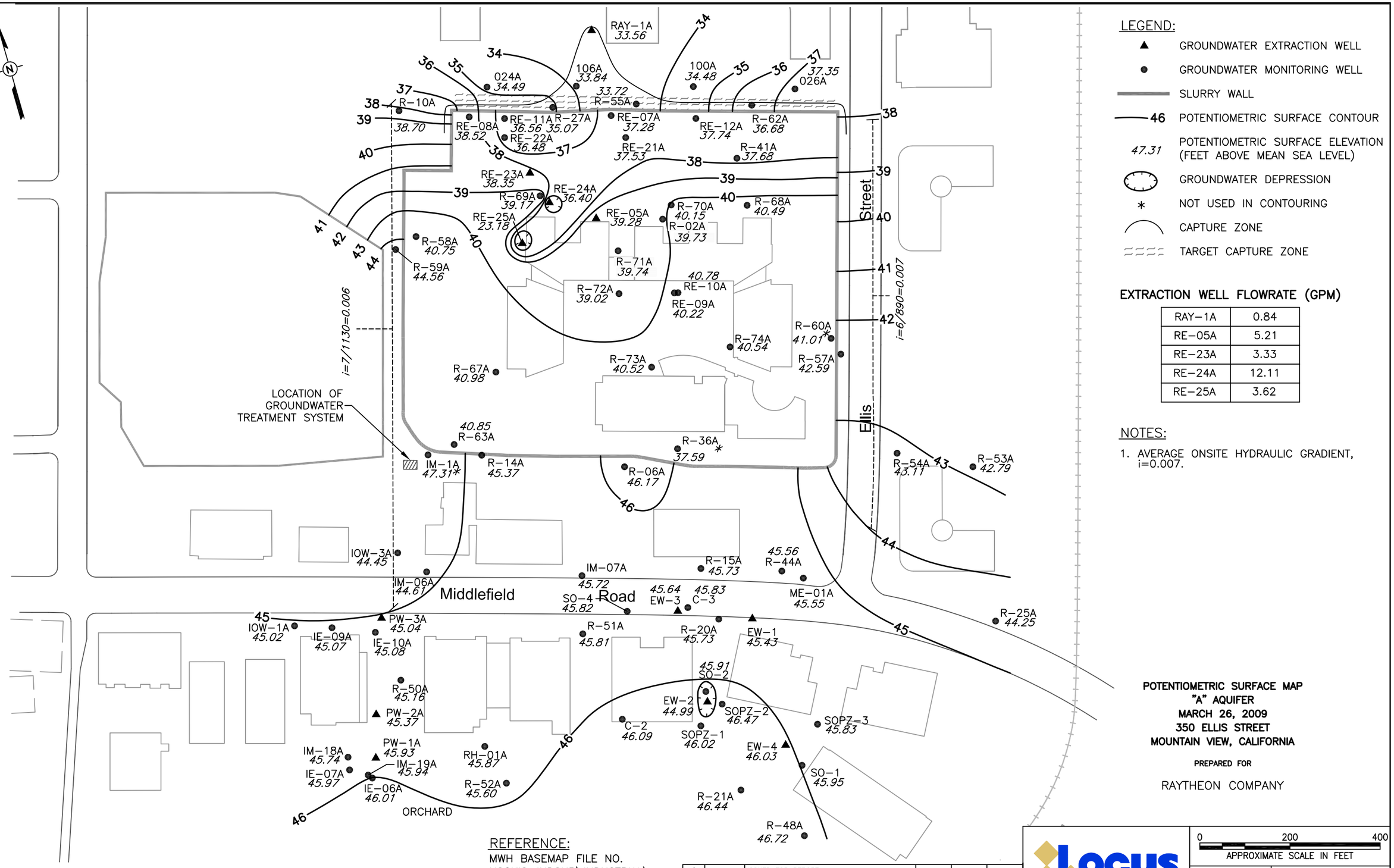


FIGURE 6: CUMULATIVE VOC MASS REMOVAL
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA





LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 46 POTENTIOMETRIC SURFACE CONTOUR
- 47.31 POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- GROUNDWATER DEPRESSION
- * NOT USED IN CONTOURING
- CAPTURE ZONE
- TARGET CAPTURE ZONE

EXTRACTION WELL FLOWRATE (GPM)

RAY-1A	0.84
RE-05A	5.21
RE-23A	3.33
RE-24A	12.11
RE-25A	3.62

NOTES:

1. AVERAGE ONSITE HYDRAULIC GRADIENT, i=0.007.

REFERENCE:
MWH BASEMAP FILE NO. USCKIS-INDSUR\INDUSTRIAL\MLUBKE\RAYTHEON\PSM A AQUIFER DATED: AUGUST 22, 2002

POTENTIOMETRIC SURFACE MAP
"A" AQUIFER
MARCH 26, 2009
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1		ISSUED FOR REPORT	CWC	AJK	JAM

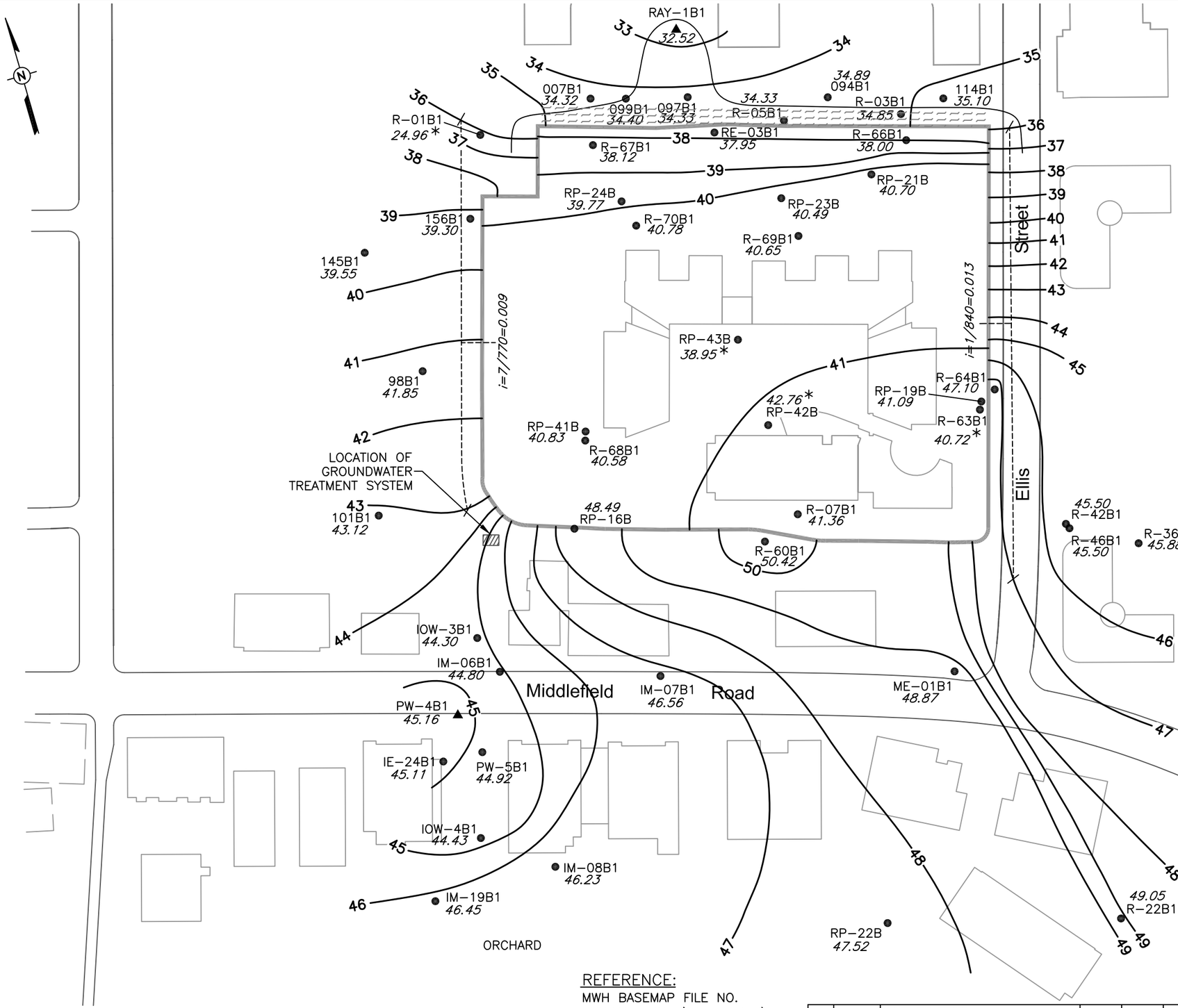
Locus TECHNOLOGIES

0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B184

FIGURE 7

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2010\POTENT.SURFACE.MAP.0310\FIG7-B184.0310.DWG



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 50 POTENTIOMETRIC SURFACE CONTOUR
- 51.58 POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- * DATA NOT USED IN CONTOURING
- CAPTURE ZONE
- TARGET CAPTURE ZONE

EXTRACTION WELL FLOWRATE (GPM)

RAY-1B1	4.70

NOTES:

1. AVERAGE ONSITE HYDRAULIC GRADIENT, i=0.011.

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\PSM B1
AQUIFER DATED: AUGUST 22, 2002

POTENTIOMETRIC SURFACE MAP
"B1" AQUIFER
MARCH 26, 2009
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1		ISSUED FOR REPORT	CWC	AJK	JAM

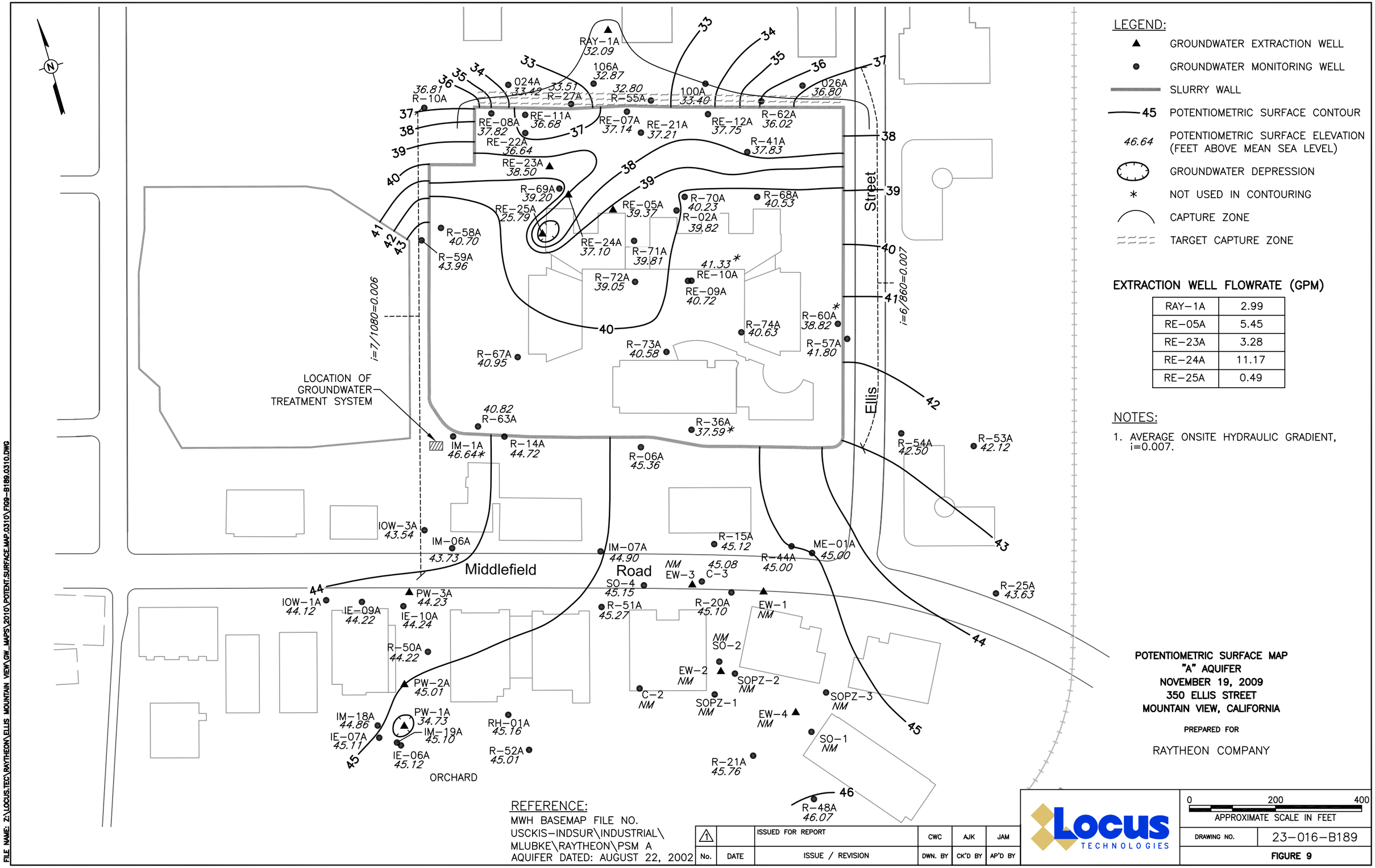
Locus TECHNOLOGIES

0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B185

FIGURE 8

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2010\POTENT.SURFACE.MAP.0310\FIG8-B185.0310.DWG



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 45 POTENTIOMETRIC SURFACE CONTOUR
- 46.64 POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- GROUNDWATER DEPRESSION
- * NOT USED IN CONTOURING
- CAPTURE ZONE
- TARGET CAPTURE ZONE

EXTRACTION WELL FLOWRATE (GPM)

RAY-1A	2.99
RE-05A	5.45
RE-23A	3.28
RE-24A	11.17
RE-25A	0.49

NOTES:

1. AVERAGE ONSITE HYDRAULIC GRADIENT, i=0.007.

REFERENCE:
MWH BASEMAP FILE NO. USCKIS-INDSUR\INDUSTRIAL\MLUBKE\RAYTHEON\PSM A AQUIFER DATED: AUGUST 22, 2002

POTENTIOMETRIC SURFACE MAP
"A" AQUIFER
NOVEMBER 19, 2009
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1		ISSUED FOR REPORT	CWC	AJK	JAM

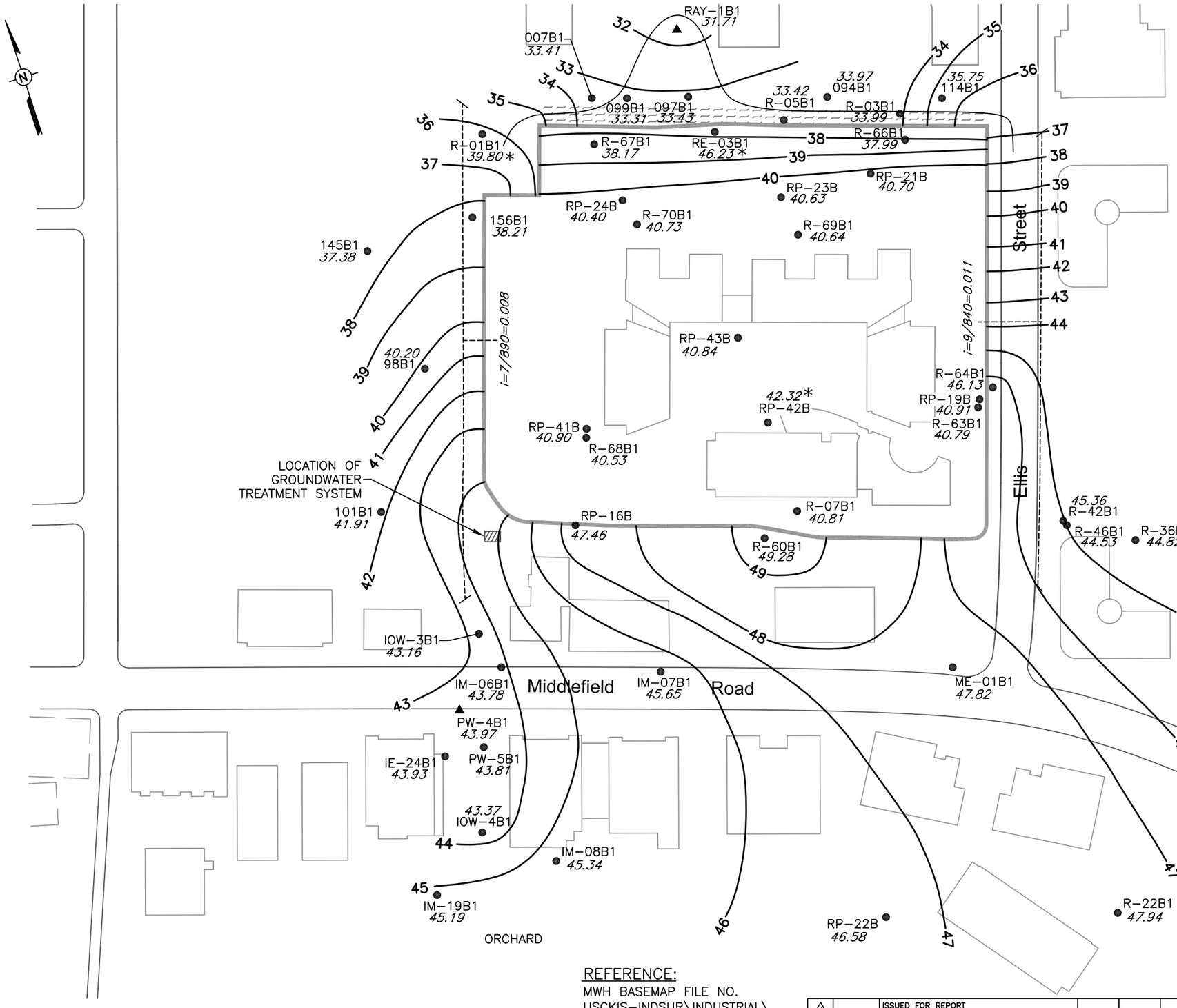
Locus TECHNOLOGIES

0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B189

FIGURE 9

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2010\POTENT.SURFACE.MAP.0310\FIG9-B189.0310.DWG



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 47 POTENTIOMETRIC SURFACE CONTOUR
- 49.28 POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- GROUNDWATER DEPRESSION
- * NOT USED IN CONTOURING
- CAPTURE ZONE
- TARGET CAPTURE ZONE

EXTRACTION WELL FLOWRATE (GPM)

RAY–1B1	3.93

NOTES:

1. AVERAGE ONSITE HYDRAULIC GRADIENT, i=0.010.

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS–INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\PSM B1
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1		ISSUED FOR REPORT	CWC	AJK	JAM

POTENTIOMETRIC SURFACE MAP
"B1" AQUIFER
NOVEMBER 19, 2009
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

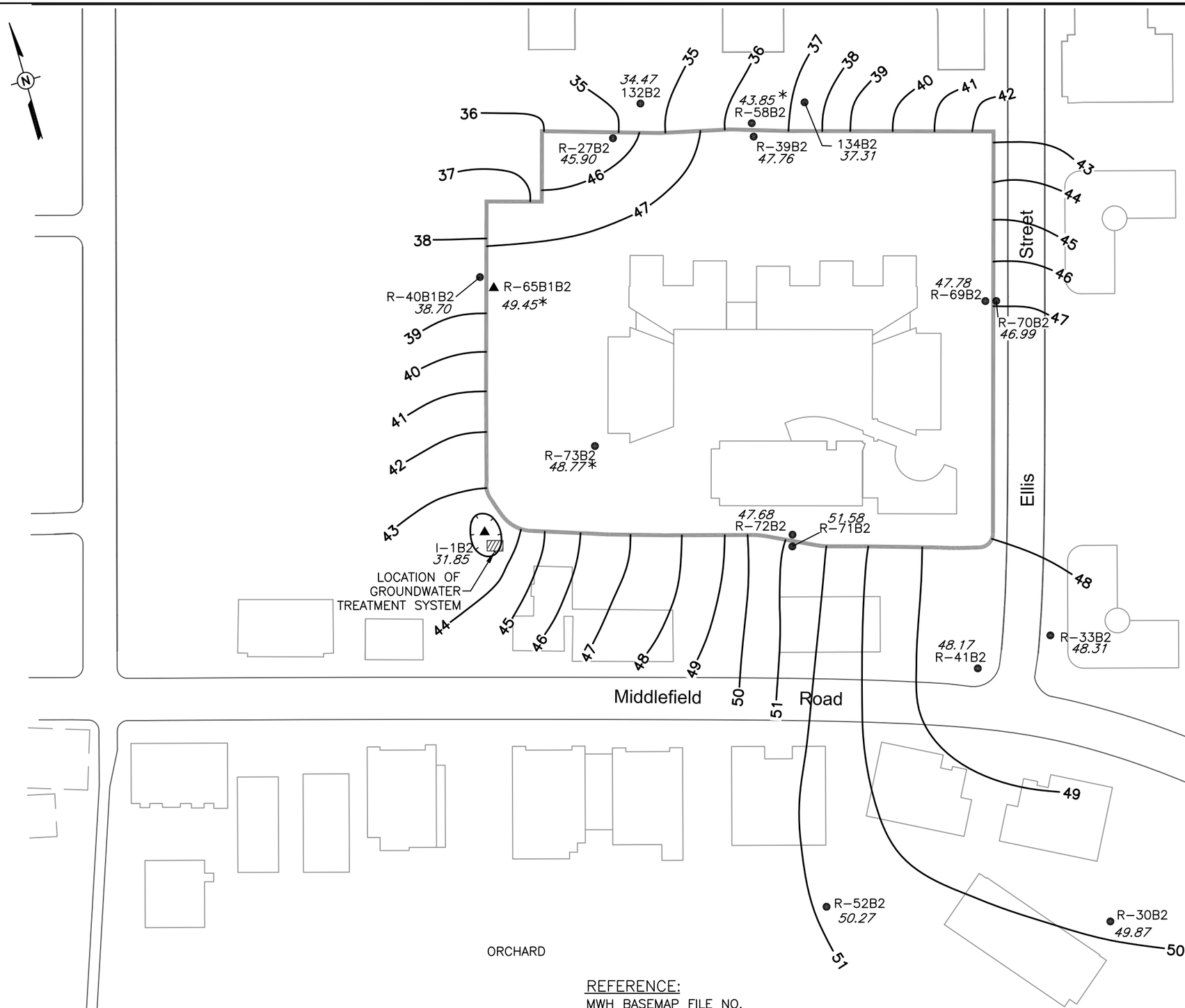
Locus TECHNOLOGIES

0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23–016–B190

FIGURE 10

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2010\POTENT.SURFACE.MAP.0310\FIG10–B190.0310.DWG



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 51 POTENTIOMETRIC SURFACE CONTOUR
- 51.58 POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- GROUNDWATER DEPRESSION
- * NOT USED IN CONTOURING

EXTRACTION WELL FLOWRATE (GPM)

I-1B2	2.68
R-65B1B2	4.70

NOTES:

1. R-65B1B2 IS LOCATED IN THE LOWER B2 AQUIFER.

REFERENCE:

MWH BASEMAP FILE NO. USCKIS-INDSUR\INDUSTRIAL\MLUBKE\RAYTHEON\PSM UB2 AQUIFER DATED: AUGUST 22, 2002

POTENTIOMETRIC SURFACE MAP
UPPER "B2" AQUIFER
MARCH 26, 2009
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1		ISSUED FOR REPORT	CWC	AJK	JAM

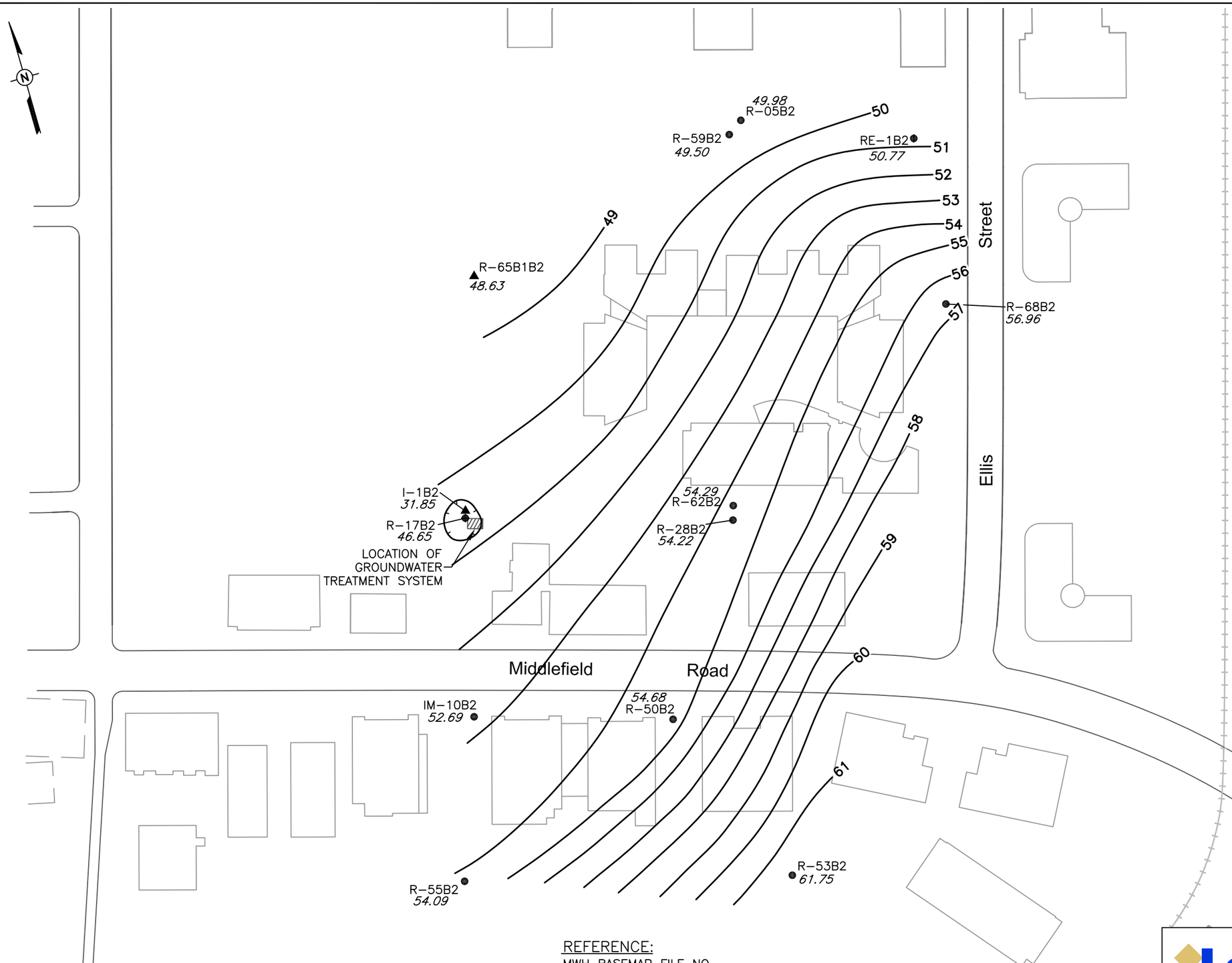
Locus TECHNOLOGIES

0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B186

FIGURE 11

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2010\POTENT.SURFACE.MAP.0310\FIG11-B186.0310.DWG



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 61 POTENTIOMETRIC SURFACE CONTOUR
- *61.75* POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- GROUNDWATER DEPRESSION
- * NOT USED IN CONTOURING

EXTRACTION WELL FLOWRATE (GPM)

I–1B2	2.68
R–65B1B2	4.70

POTENTIOMETRIC SURFACE MAP
LOWER "B2" AQUIFER
MARCH 26, 2009
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS–INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\PSM LB2
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1		ISSUED FOR REPORT	CWC	AJK	JAM

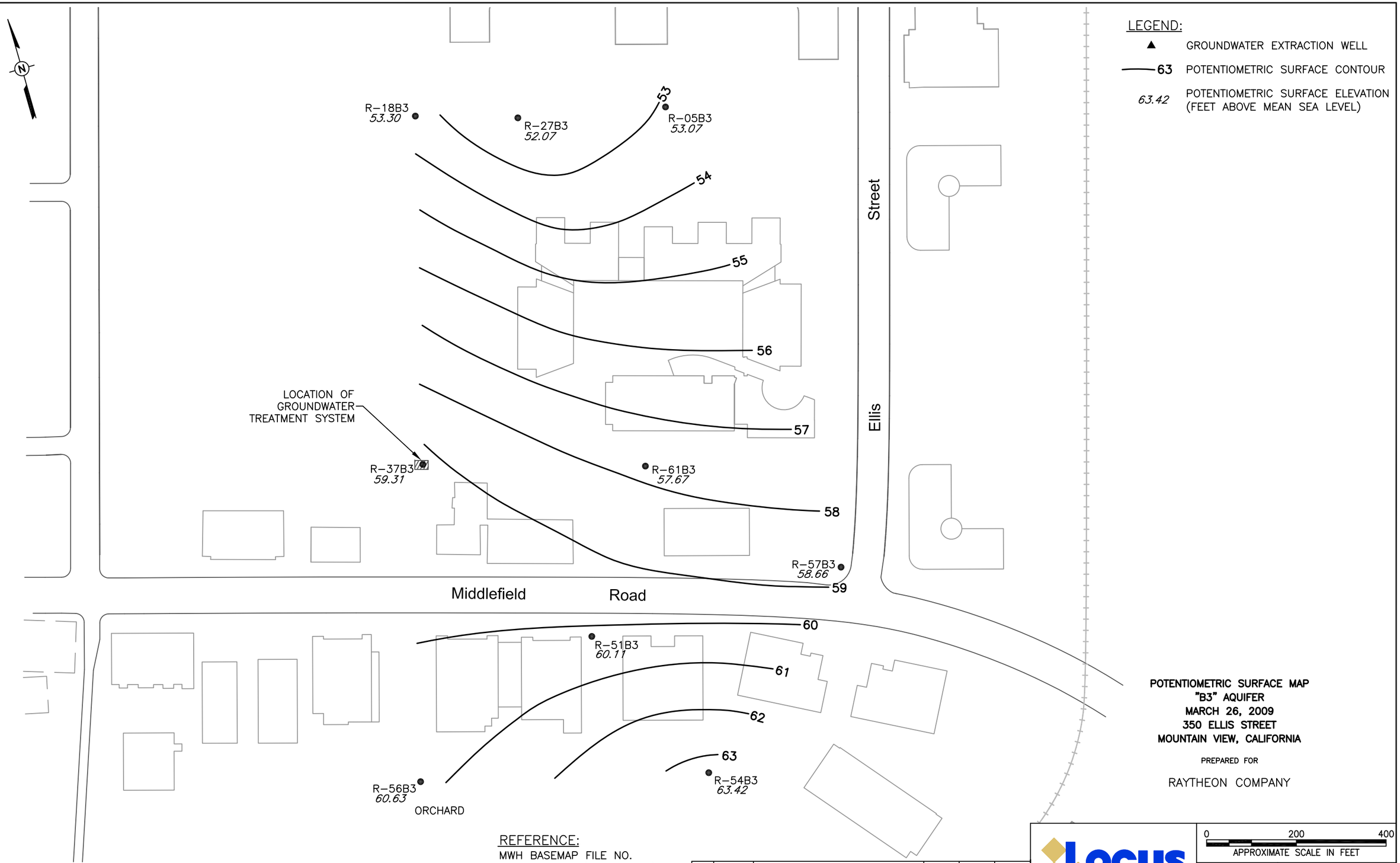
Locus TECHNOLOGIES

0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23–016–B187

FIGURE 12

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2010\POTENT.SURFACE.MAP.0310\FIG12–B187.0310.DWG



REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\PSM A
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1		ISSUED FOR REPORT	CWC	AJK	JAM

POTENTIOMETRIC SURFACE MAP
"B3" AQUIFER
MARCH 26, 2009
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

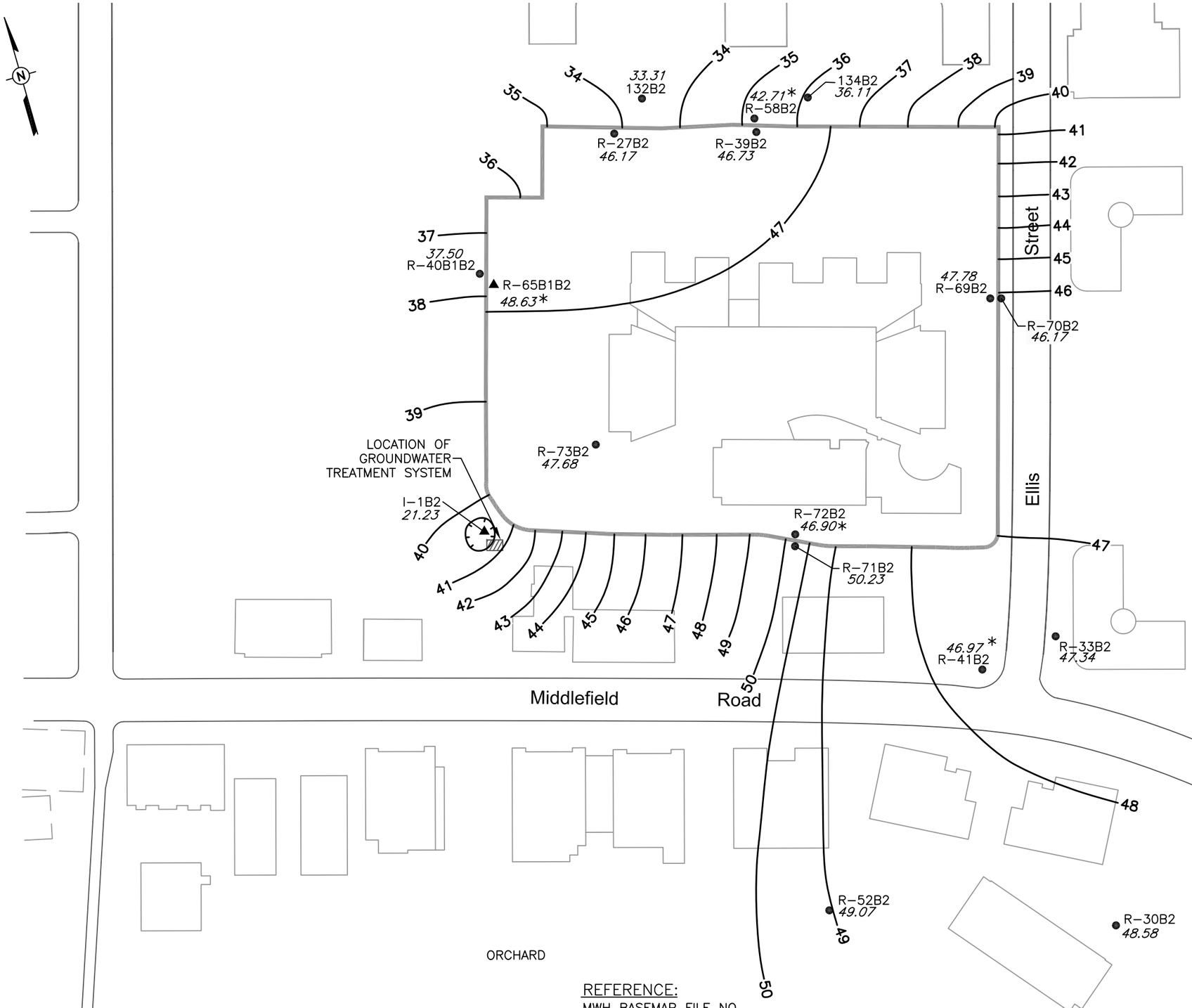
Locus TECHNOLOGIES

0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B188

FIGURE 13

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2010\POTENT.SURFACE.MAP.0310\FIG13-B188.0310.DWG



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 50 POTENTIOMETRIC SURFACE CONTOUR
- *50.23* POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- GROUNDWATER DEPRESSION
- * NOT USED IN CONTOURING

EXTRACTION WELL FLOWRATE (GPM)

1-1B2	2.38
R-65B1B2	3.90

NOTES:

1. R-65B1B2 IS LOCATED IN THE LOWER B2 AQUIFER.

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\PSM UB2
AQUIFER DATED: AUGUST 22, 2002

POTENTIOMETRIC SURFACE MAP
UPPER "B2" AQUIFER
NOVEMBER 19, 2009
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1		ISSUED FOR REPORT	CWC	AJK	JAM

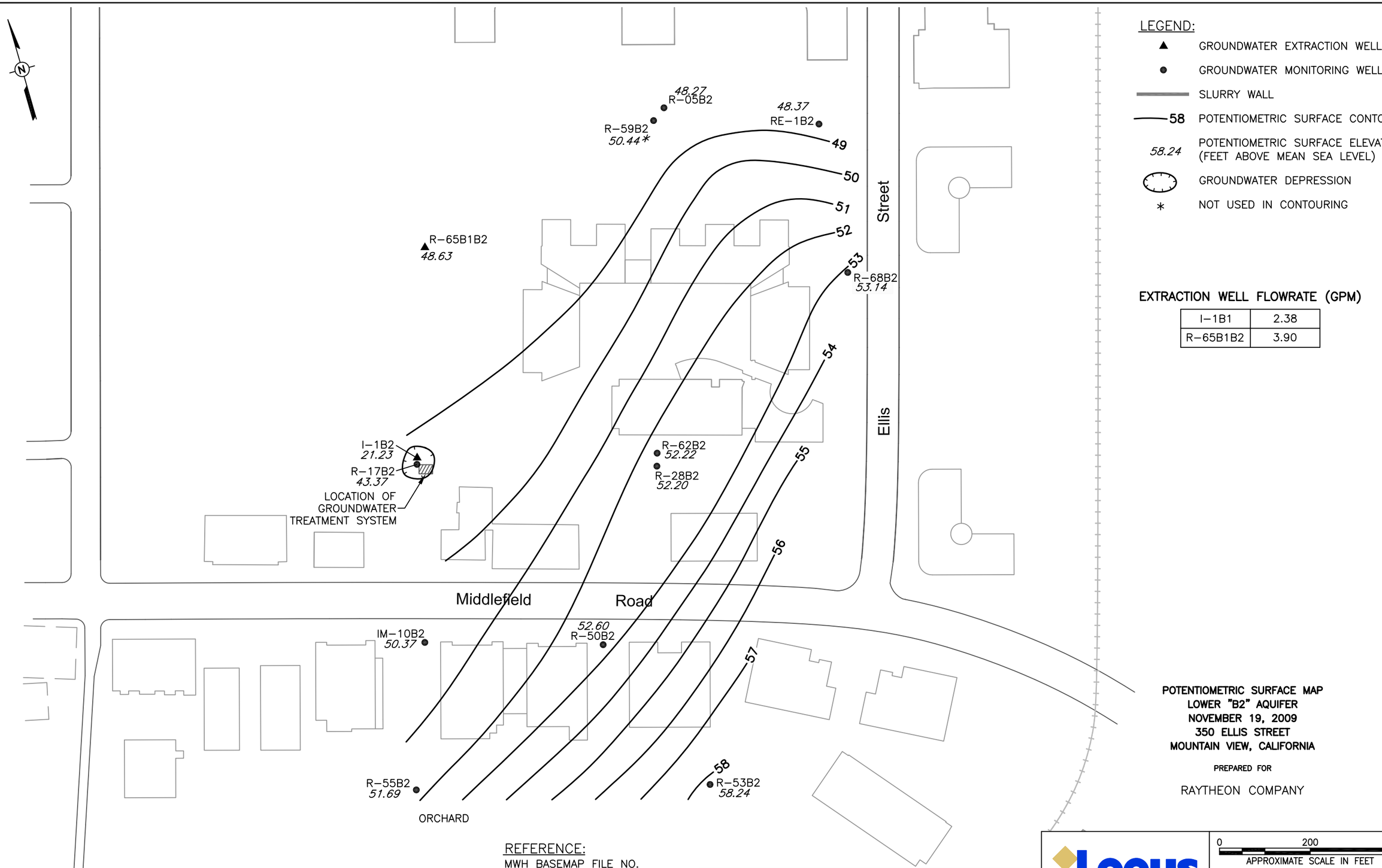
Locus TECHNOLOGIES

0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B191

FIGURE 14

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS_MOUNTAIN_VIEW\GW_MAPS\2010\POTENT.SURFACE.MAP.0310\FIG14-B191.0310.DWG



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 58 POTENTIOMETRIC SURFACE CONTOUR
- 58.24 POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- GROUNDWATER DEPRESSION
- * NOT USED IN CONTOURING

EXTRACTION WELL FLOWRATE (GPM)

I–1B1	2.38
R–65B1B2	3.90

POTENTIOMETRIC SURFACE MAP
LOWER "B2" AQUIFER
NOVEMBER 19, 2009
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS–INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\PSM LB2
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1		ISSUED FOR REPORT	CWC	AJK	JAM

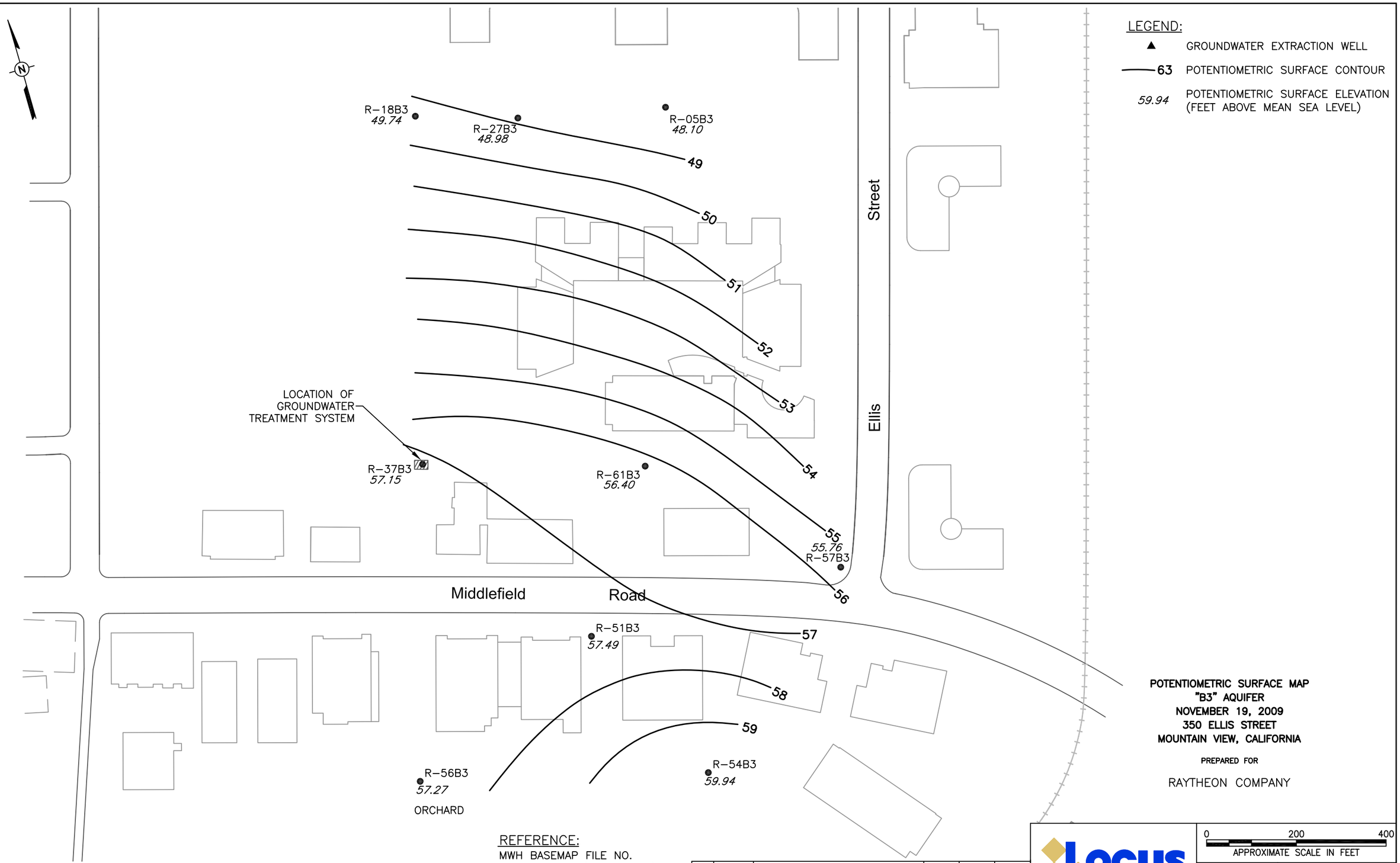
Locus TECHNOLOGIES

0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23–016–B192

FIGURE 15

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2010\POTENT.SURFACE.MAP.0310\FIG15–B192.0310.DWG



REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\PSM B3
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1		ISSUED FOR REPORT	CWC	AJK	JAM

POTENTIOMETRIC SURFACE MAP
"B3" AQUIFER
NOVEMBER 19, 2009
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

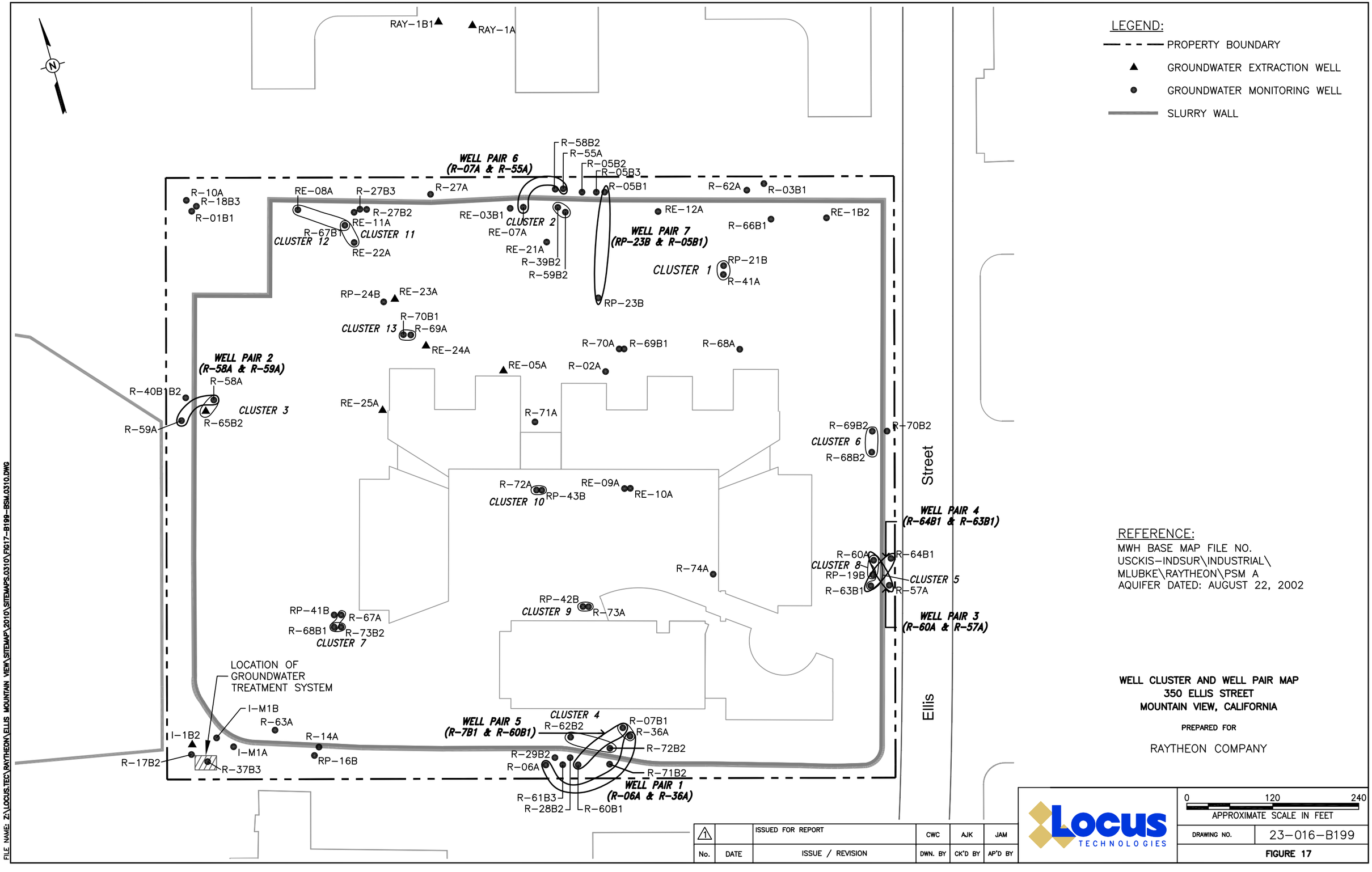
Locus TECHNOLOGIES

0 200 400
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B193

FIGURE 16

FILE NAME: Z:\LOCUS_TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2010\POTENT_SURFACE_MAP_0310\FIG16-B193_0310.DWG



REFERENCE:
MWH BASE MAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\PSM A
AQUIFER DATED: AUGUST 22, 2002

WELL CLUSTER AND WELL PAIR MAP
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1		ISSUED FOR REPORT	CWC	AJK	JAM

Locus TECHNOLOGIES

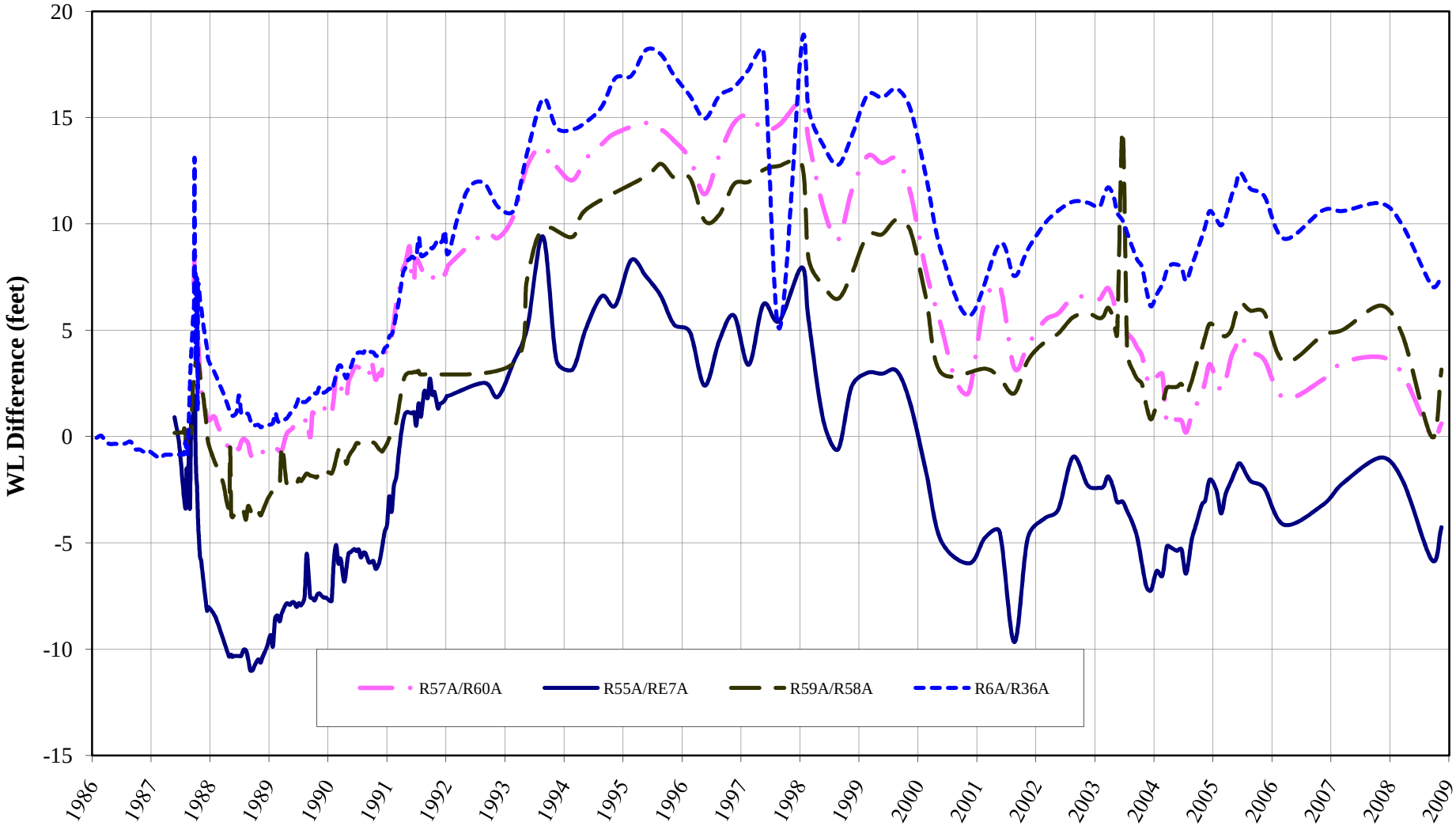
0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B199

FIGURE 17

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\SITEMAP\2010\SITEMAPS.0310\FIG17-B199-BSM.0310.DWG

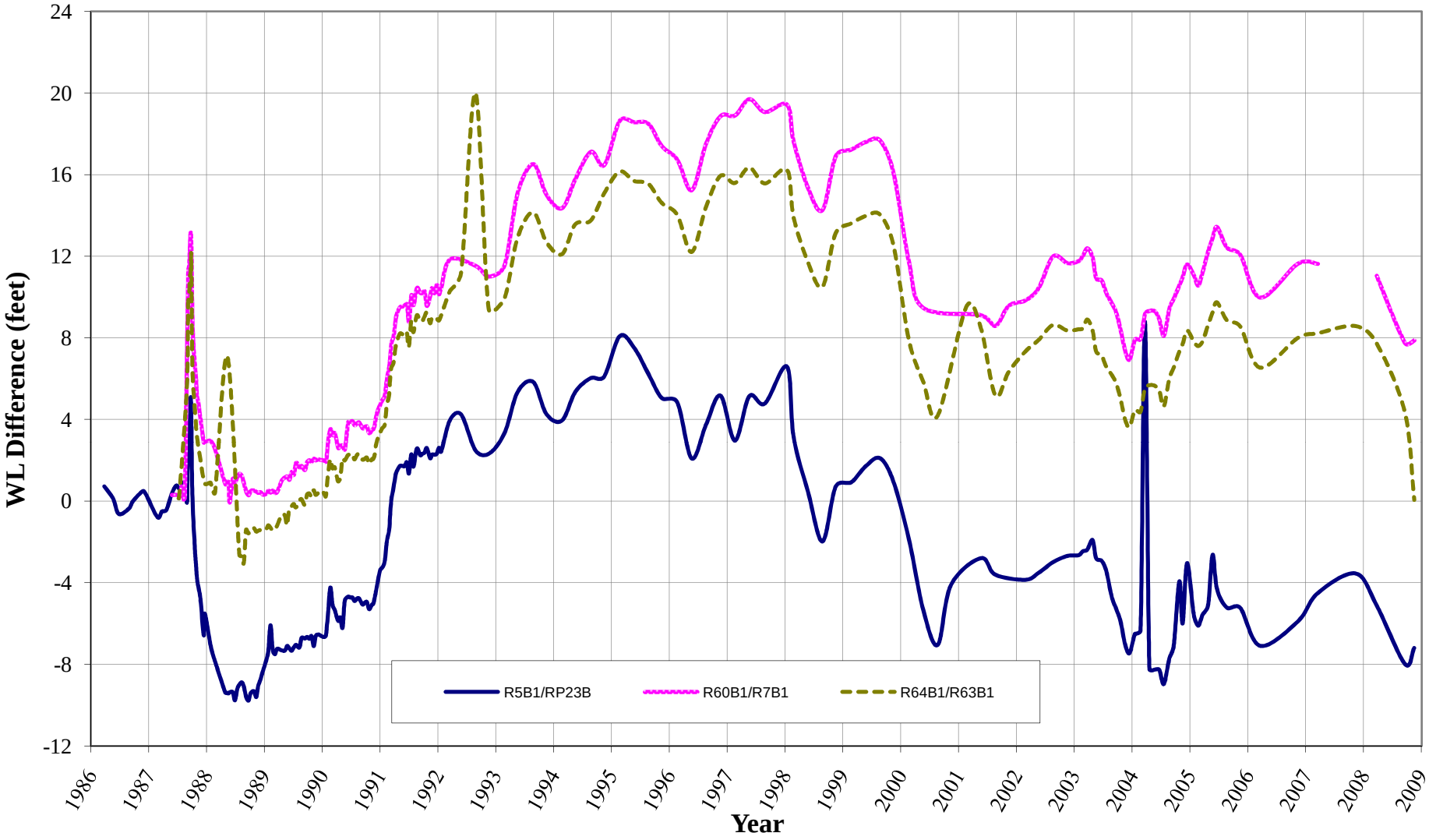
Figure 18
Water Elevation Differences Across the Slurry Wall in the "A" Aquifer
350 Ellis Street Site, Mountain View, California



Note: A positive difference indicates an inward gradient.

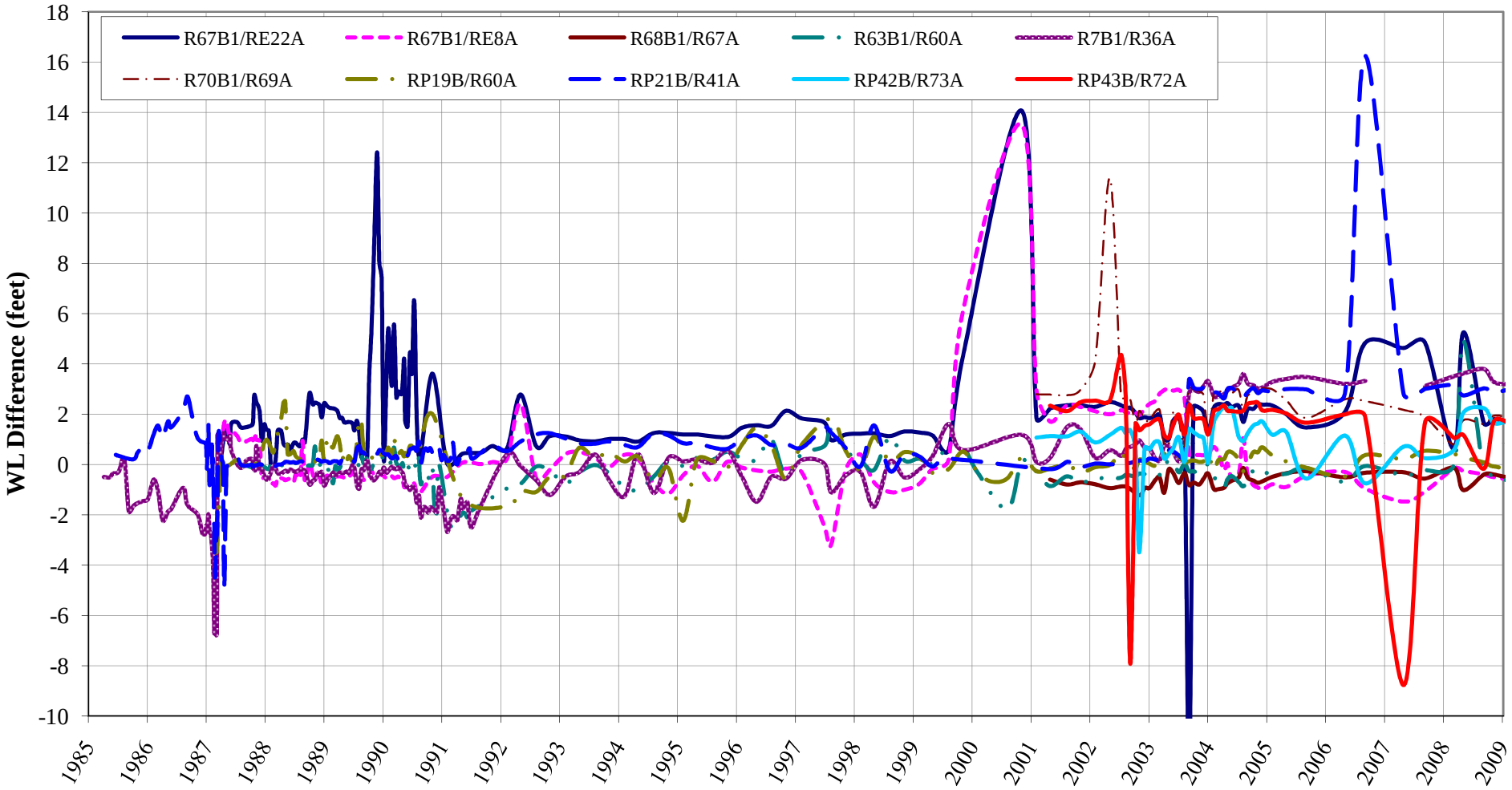
I:\23-016 Raytheon\Annual Rpts\Annual 2008\Figs 18-19 SlurryGrad.CZ.eval.Plots [Fig 18 A-Aquif.Chart] (02-Apr-09)

Figure 19
Water Elevation Differences Across the Slurry Wall in the "B1" Aquifer
350 Ellis Street Site, Mountain View, California



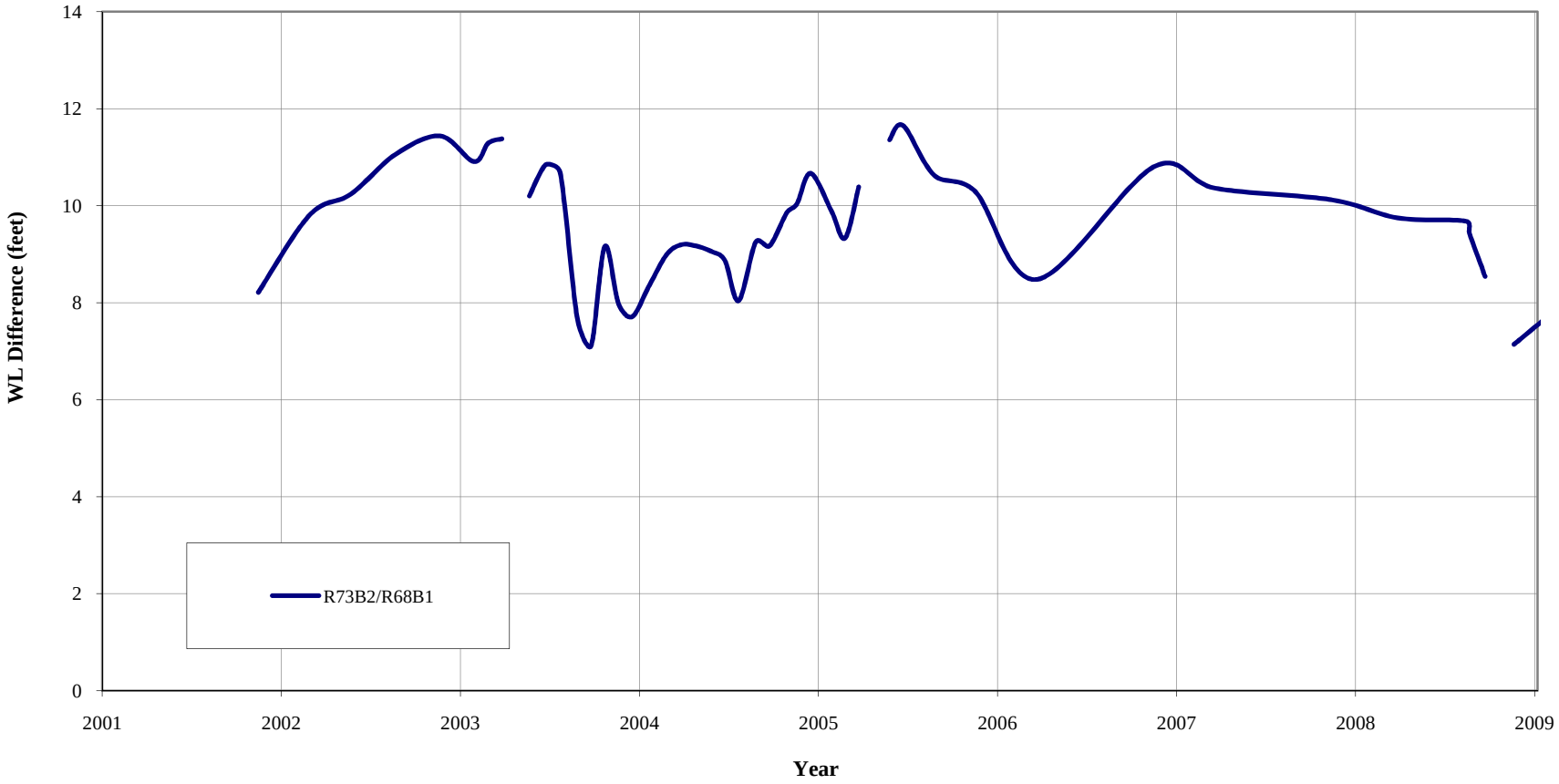
Note: A positive difference indicates an inward gradient.

Figure 20
Water Elevation Differences Across A/B1 Aquitard
350 Ellis Street Site, Mountain View, California



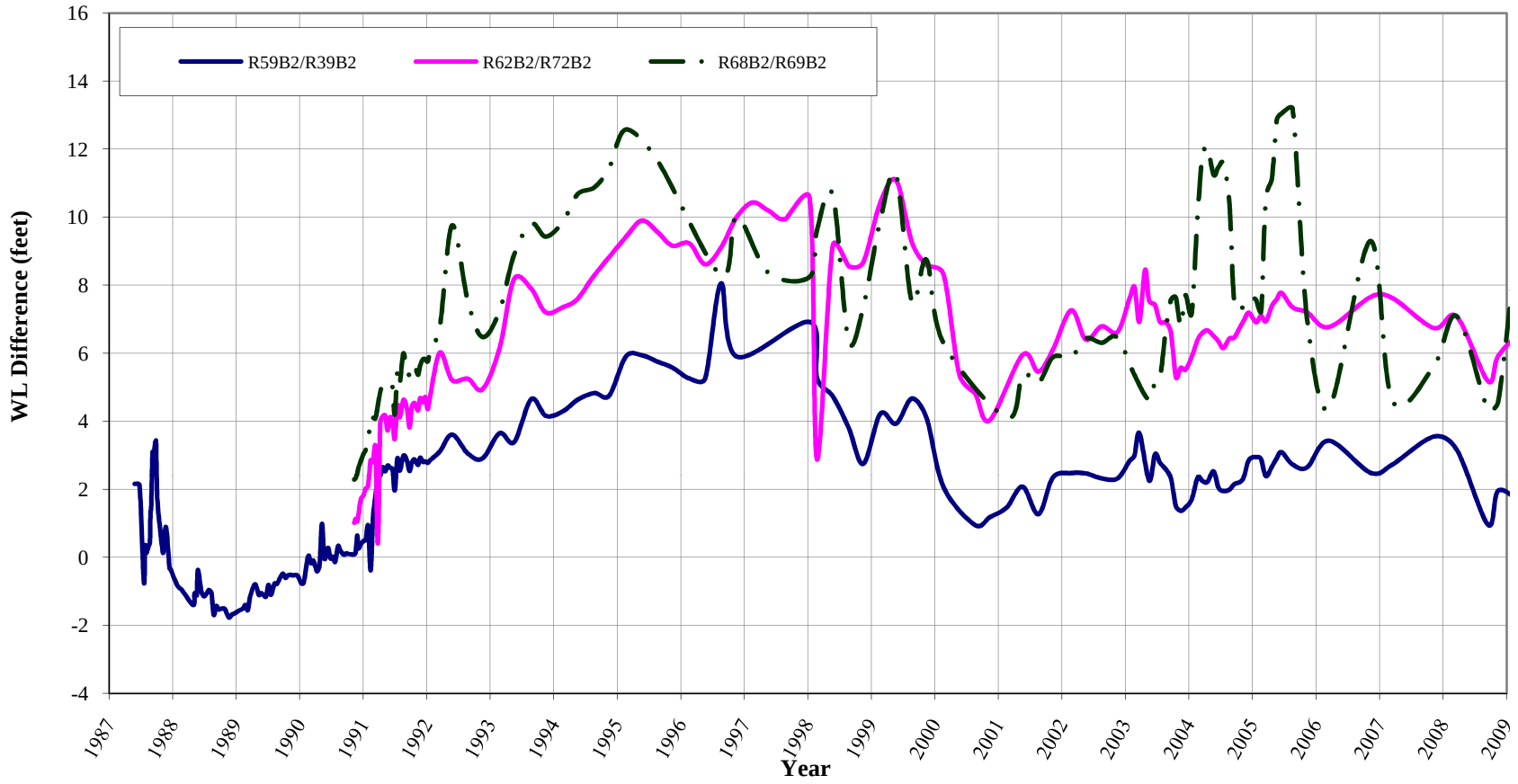
Note: A positive WL difference indicates an upward gradient.

Figure 21
Water Elevation Differences Across B1/B2 Aquitard
350 Ellis Street Site, Mountain View, California



Note: A positive WL difference indicates an upward gradient.

Figure 22
Water Elevation Differences Between the Upper and Lower B2 Aquifers
350 Ellis Street Site, Mountain View, California



Note: A positive WL difference indicates an upward gradient.

RAY-1A
370

100

1,000

5.0

024A
2700

106A

100A
6.3

026A

R-10A

R-27A

R-55A

R-62A

RE-08A
9100

RE-11A

RE-07A
1100

RE-12A

RE-21A

RE-22A

R-41A
41

RE-23A
3500

R-69A
3100

RE-24A
4900

R-70A

R-68A

RE-05A

R-02A

RE-25A
21000

R-58A

670
R-71A

100

R-59A
99

10,000

10,000

11000
RE-09A

1,000

R-72A
650

RE-10A
220

1,000

R-74A

R-67A

R-73A

R-60A

5.0

R-57A
22

LOCATION OF
GROUNDWATER
TREATMENT SYSTEM

R-63A

IM-1A

R-14A

R-36A
250

R-06A

R-54A

Street

Ellis

LEGEND:

- GROUNDWATER EXTRACTION WELL
- GROUNDWATER MONITORING WELL
- SLURRY WALL
- 100 TCE CONCENTRATION CONTOUR (µg/L)
- *21000* TCE CONCENTRATION (µg/L)

NOTES:

1. TCE CONCENTRATION CONTOURS WITHIN THE SLURRY WALL ARE BASED ON THE MOST RECENT GROUNDWATER CONCENTRATIONS, 2006.

2009 TCE CONCENTRATIONS
"A" AQUIFER
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS-INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\PSM A
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1		ISSUED FOR REPORT	CWC	AJK	JAM

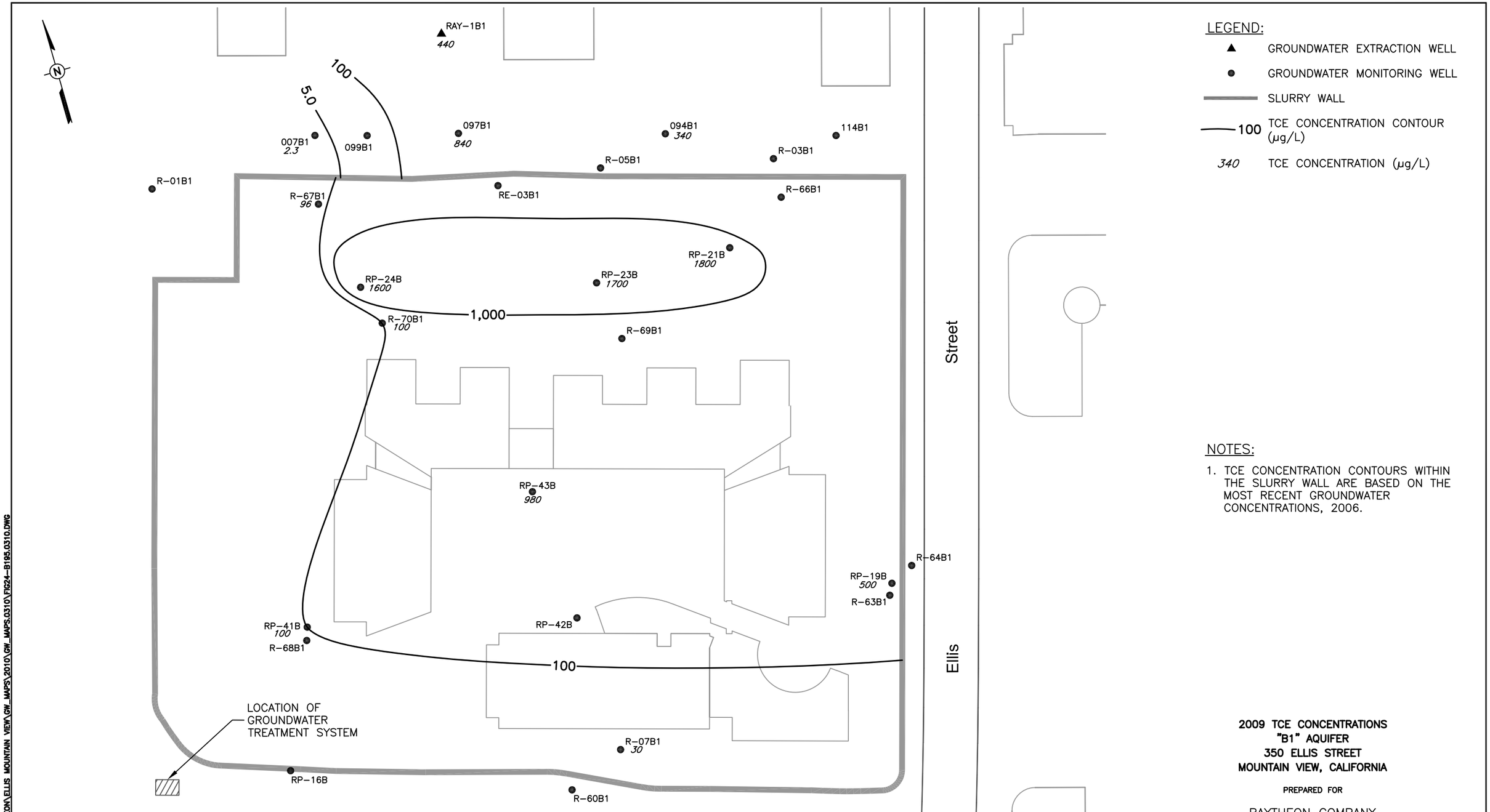
Locus TECHNOLOGIES

0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B194

FIGURE 23

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2010\GW_MAPS\0310\FIG23-B194.0310.DWG



LEGEND:

- ▲ GROUNDWATER EXTRACTION WELL
- ● GROUNDWATER MONITORING WELL
- SLURRY WALL
- 100 TCE CONCENTRATION CONTOUR (µg/L)
- *340* TCE CONCENTRATION (µg/L)

NOTES:

1. TCE CONCENTRATION CONTOURS WITHIN THE SLURRY WALL ARE BASED ON THE MOST RECENT GROUNDWATER CONCENTRATIONS, 2006.

2009 TCE CONCENTRATIONS
"B1" AQUIFER
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO.
USCKIS–INDSUR\INDUSTRIAL\
MLUBKE\RAYTHEON\PSM A
AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1		ISSUED FOR REPORT	CWC	AJK	JAM

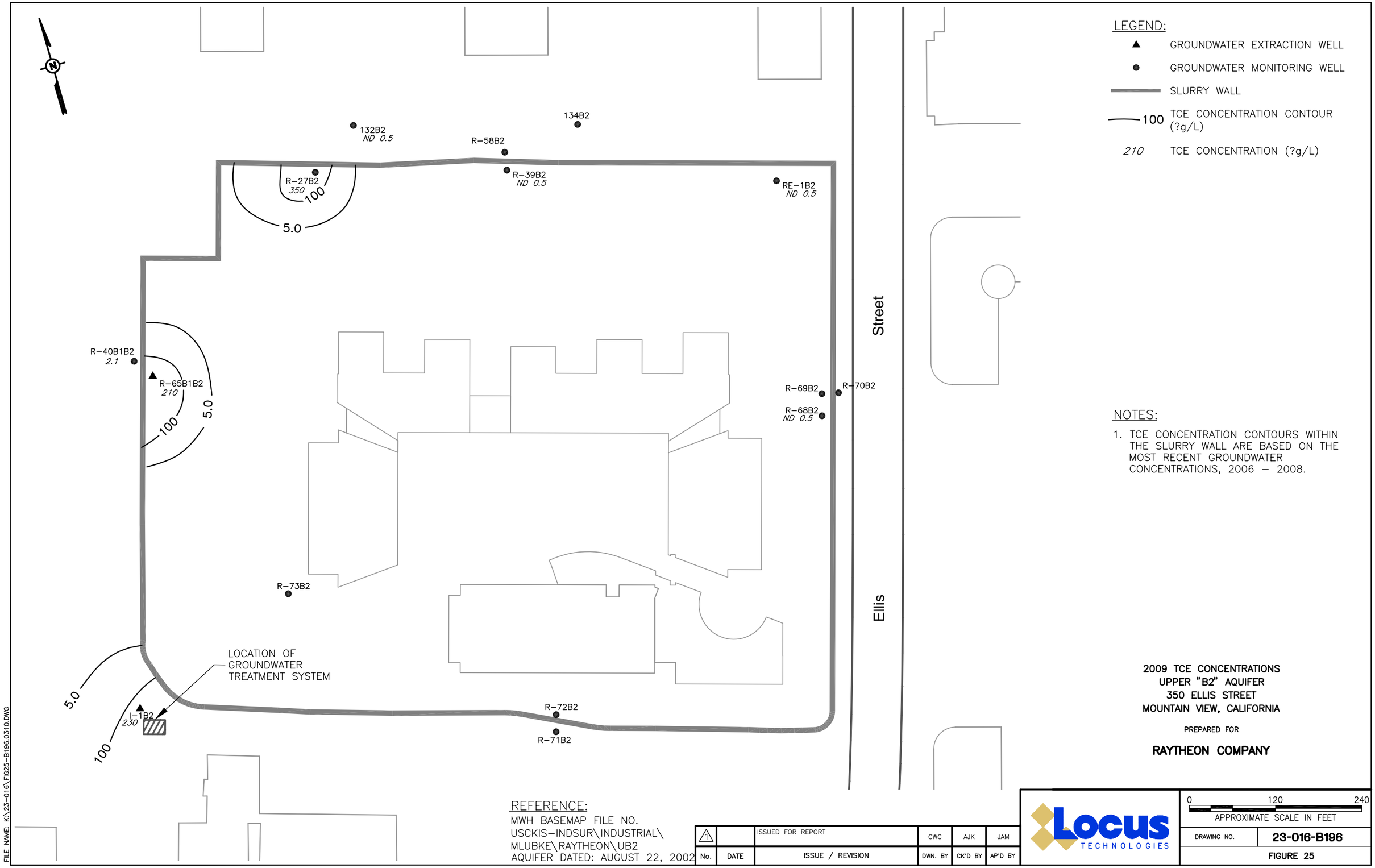
Locus TECHNOLOGIES

0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23–016–B195

FIGURE 24

FILE NAME: Z:\LOCUS.TEC\RAYTHEON\ELLIS MOUNTAIN VIEW\GW_MAPS\2010\GW_MAPS.0310\FIG24–B195.0310.DWG



NOTES:

1. TCE CONCENTRATION CONTOURS WITHIN THE SLURRY WALL ARE BASED ON THE MOST RECENT GROUNDWATER CONCENTRATIONS, 2006 – 2008.

2009 TCE CONCENTRATIONS
UPPER "B2" AQUIFER
350 ELLIS STREET
MOUNTAIN VIEW, CALIFORNIA

PREPARED FOR

RAYTHEON COMPANY

REFERENCE:
MWH BASEMAP FILE NO. USCKIS–INDSUR\INDUSTRIAL\MLUBKE\RAYTHEON\UB2 AQUIFER DATED: AUGUST 22, 2002

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1		ISSUED FOR REPORT	CWC	AJK	JAM

Locus TECHNOLOGIES

0 120 240
APPROXIMATE SCALE IN FEET

DRAWING NO. 23-016-B196

FIGURE 25

FILE NAME: K:\23-016\FIG25-B196.0310.DWG

APPENDIX A

2009 ANNUAL REPORT REMEDY PERFORMANCE CHECKLIST

2009 Annual Report Remedy Performance Checklist

I. GENERAL SITE INFORMATION

Facility Name: *Raytheon Mountain View*

Facility Address, City, State: 350 Ellis Street, Mountain View, California

Checklist completion date: April 12, 2010	EPA Site ID: CAD09205097

Site Lead: ☐ Fund ☐ PRP ☐ State ☐ State Enforcement ☐ Federal Facility
■ Other, specify: U.S. EPA, Region IX

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

Groundwater pump-and-treat system;
Groundwater containment;
Vertical barrier walls (slurry wall is 100 feet deep and extends into the B2-aquifer)

II. CONTACTS

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

PRP / Facility Representative:

Gregory Taylor, Raytheon Company
Environmental Manager
(310) 647-2495
gstaylor@raytheon.com

PRP Contractor/ Consultant:

Elie Haddad, Haley & Aldrich
Vice President
(408) 453-8703
ehaddad@haleyaldrich.com

J. Wesley Hawthorne, Locus Technologies
Vice President
(650) 960-1640
hawthornej@locustec.com

O&M Contractor:

J. Wesley Hawthorne, Locus Technologies
Vice President
(650) 960-1640
hawthornej@locustec.com

Other:

2009 Annual Report Remedy Performance Checklist

III. O&M COSTS (OPTIONAL) - CONFIDENTIAL

Total O&M costs include (1) report preparation for agencies (RWQCB, EPA), (2) sampling, analysis, data review (groundwater level monitoring, water quality sampling), (3) groundwater treatment system O&M (routine tasks for operations and maintenance of the treatment system), and (4) utilities & fees.

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

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

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

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

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

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

O&M manual, Site H&S plan, discharge records and permits are kept onsite; O&M reports, maintenance logs and training records are available at Locus Technologies' office in Mountain View.

V. INSTITUTIONAL CONTROLS (as applicable)

List institutional controls called for (and from what enforcement document):

Status of their implementation:

Where are the ICs documented and/or reported?
Governmental controls (zoning, local permits, state codes);
Environmental agreements with property owner (proprietary controls);
Informational devices (fact sheets, public meetings)

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

Additional remarks regarding ICs:

2009 Annual Report Remedy Performance Checklist

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

☐ Community Issues
☐ Vandalism
☐ Maintenance Issues
☐ Other:

Please elaborate on Significant Site Events:

VII. REDEVELOPMENT

Is redevelopment on property planned? ☐ Yes ■ No

If yes, what is planned? Please describe below.

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

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

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

Elaborate on redevelopment proposal and how it affects remedy performance:

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

Groundwater Quality Data

List the types of data that are available:	What is the source report?
Annual site-specific monitoring well data	Annual Report, Table 10
TCE isoconcentration maps	Annual Report, Figures 22 – 24

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

Groundwater Pump & Treat Extraction Well and Treatment System Data

List the types of data that are available:	What is the source report?
Monthly GWTS data, influent and effluent	NPDES reports and Annual report, Table 2

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

Discharge Data

List the types of data that are available:	What is the source report?
Monthly data on TS effluent	NPDES reports and Annual report, Table 2

■ The system is in compliance with discharge permits.

2009 Annual Report Remedy Performance Checklist

Slurry Wall Data

List the types of data that are available:	What is the source report?
Quarterly WL monitoring data from monitoring well pairs	Annual Report, Tables 7 and 8
Capture zone maps	Annual Report, Figures 6 – 9

Is slurry wall operating as designed? ■ Yes ☐ No

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

Elaborate on technical data and/or other comments

Since 2000, when the 350 Ellis Street property was developed, an outward gradient has been observed along the northern slurry wall. However, these gradients do not have a significant impact on remediation because: 1) Raytheon installed two recovery wells in the "A" and "B1" aquifers immediately downgradient of the slurry wall; the wells provide an adequate capture of the area immediately downgradient of the slurry wall, and 2) the slurry wall is a low-permeability wall that allows only minimal chemical migration across its walls, even if the gradient is outward. That combined with the fact that chemicals tend to take the easier pathway and migrate towards recovery wells within the wall enclosure, rather than across the low-permeability wall, would minimize outward chemical migration. Therefore, the slurry wall and the pumping activities within its enclosure physically contain chemicals. If a small flux of chemicals migrates through the slurry wall, it is captured immediately downgradient of the wall.

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

Walkthroughs/Surveys: In September, an inspection was conducted of the air purification units at the property, and a faulted meter was replaced in room A112. Another inspection was conducted in December to replace the carbon canister of the air purification unit in room A106.

Air testing/monitoring conducted: None required in 2009.

Summary of Results:

Problems Encountered: No problems were encountered.

Recommendations/Next Steps: None.

Schedule: Currently, no further sampling is scheduled.

2009 Annual Report Remedy Performance Checklist

X. REMEDY PERFORMANCE ASSESSMENT

A. Groundwater Remedies

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

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

Table 11 of the Annual Report provides a comparison of the average TCE concentration for each aquifer at different time periods. The concentrations have decreased significantly, but are approaching asymptotic levels.

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

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

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

The plume is not expanding and capture is adequate.

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

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

As explained above, concentrations have decreased significantly since remedial measures were begun. Concentrations are approaching asymptotic levels, indicating that using the current remedy reaching MCLs will require many decades.

B. Vertical Migration

Have you done an assessment of vertical gradients? ■ Yes ☐ No; If Yes, what does it show? (Is it inconclusive due to inadequate data? Are the concentrations increasing or decreasing? Explain and provide source document reference.

Fifteen well pairs are used to monitor the vertical gradient direction across the "A/B1" and "B1/B2" Aquitards, and from the lower to upper "B2" aquifer. The differences in water elevations between the "B1" and "A" Aquifers are shown in Table 8 and on Figure 19 of the Annual Report. Upward gradients were observed in nine of the ten well pairs that are used to monitor the "A/B1" Aquitard gradient directions. For each event, the gradient across the "B1/B2" Aquitard and between the Upper "B2" and Lower "B2" Aquifers were consistently upward. Onsite, the "A" Aquifer and "B1" Aquifer are entirely enclosed within the slurry wall, and the upward gradients across the "B1/B2" Aquitard (Table 9, Figure 21) and between the upper "B2" and lower "B2" Aquifers (Table 9, Figure 22) indicate that groundwater (and chemicals) will flow upward from the "B2" Aquifer into the "B1" Aquifer, and not downwards from the "B1" Aquifer to the "B2" Aquifer. Therefore, the chemicals present in the "A" and "B1" Aquifers are contained onsite.

2009 Annual Report Remedy Performance Checklist

C. Source Control Remedies

What are the remedial goals for source control?

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

XI. PROJECTIONS

Administrative Issues

Dates of next monitoring and sampling events for next annual reporting period:

March 25 and November 18, 2010 – Semiannual water elevation measurement events.

May 27 and August 26, 2010 – Water elevation measurement events for the slurry wall and vertical well pairs.
November / December 2010 – Annual groundwater monitoring for site-specific wells.

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

Remedy Projections for **the upcoming year (2010)**

☐ No significant changes projected.
☐ Groundwater remedy will be converted to monitored natural attenuation. Target date:
☐ Groundwater Pump & Treat will be shut down. Target date:
☐ Groundwater cleanup standards to be modified. Target date:
■ PRP will request remedy modification. Target date of request: *Work Plan for oxidation pilot test was submitted December 1, 2008. Pilot test will be implemented after EPA's approval.*
☐ Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☐ Change in the number and/or types of analytes being analyzed. ■ Increasing or ☐ decreasing? Target date: *In a subset of wells after implementation of pilot test.*
■ Change in groundwater extraction system. Expansion or minimization (i.e., number of extraction wells and/or pumping rate)? Target date: *Remediation Process Optimization (RPO) report and Work Plan for Pilot Study were submitted on August 29, 2008, and December 1, 2008, respectively. The recommended change to the treatment system will be implemented after EPA's approval.*
☐ Modification on groundwater treatment? Elaborate below. Target date:
☐ Change in discharge location. Target date:
☐ Other modification(s) anticipated:_____ Elaborate below. Target date:

Elaborate on Remedy Projections:

Remedy Projections for **the long-term** (Check all that apply)

■ No significant changes projected.
☐ Groundwater remedy will be converted to monitored natural attenuation. Target date:
☐ Groundwater Pump & Treat will be shut down. Target date:
☐ Groundwater cleanup standards to be modified. Target date:
☐ PRP will request remedy modification. Target date of request:
☐ Change in the number of monitoring wells. ☐ Increasing or ☐ decreasing? Target date:
☐ Change in the number and/or types of analytes being analyzed. ☐ Increasing or ☐ decreasing? Target date:

2009 Annual Report Remedy Performance Checklist

☐ Change in groundwater extraction system. Expansion or minimization (i.e., number of extraction wells and/or pumping rate)? Target date:
☐ Modification on groundwater treatment? Elaborate below. Target date:
☐ Change in discharge location. Target date:
☐ Other modification(s) anticipated:_____ Elaborate below. Target date:

Elaborate on Remedy Projections:

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

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

Elaborate on Remedy Projections:

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

Elaborate on Remedy Projections:

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

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

An optimization report was prepared and submitted to EPA in August 2008. The optimization report suggests modifications to pumping regime within the slurry wall enclosure to optimize mass removal rate, and preparation of a work plan for an alternative remedy pilot study. The work plan was submitted to EPA on December 1, 2008. We are waiting for EPA comments on optimization report and the pilot study.

XII. ADMINISTRATIVE ISSUES
Check all that apply:

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

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

2009 Annual Report Remedy Performance Checklist

XII. RECOMMENDATIONS

Recommendations were included in the August 29, 2008 Remedial Process Optimization report and the December 1, 2008, Work Plan for Pilot Test. The recommended activities will be implemented after EPA's approval of the documents.

APPENDIX B

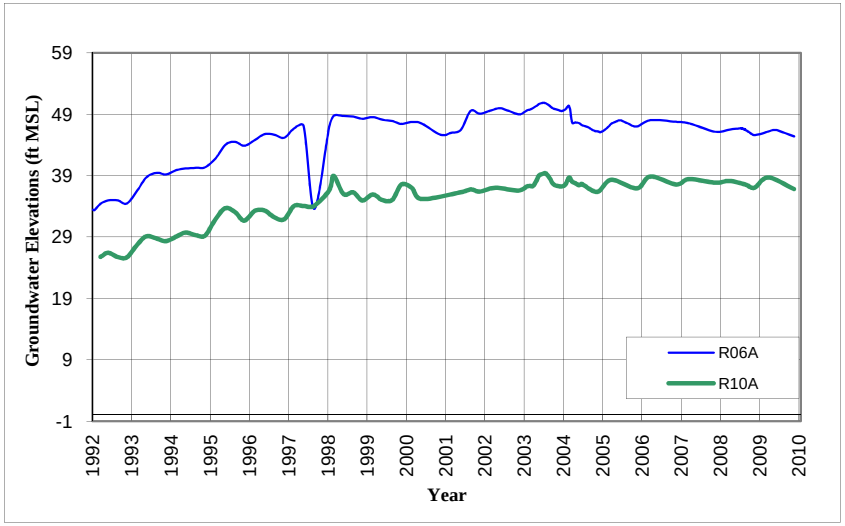
LABORATORY ANALYTICAL REPORTS

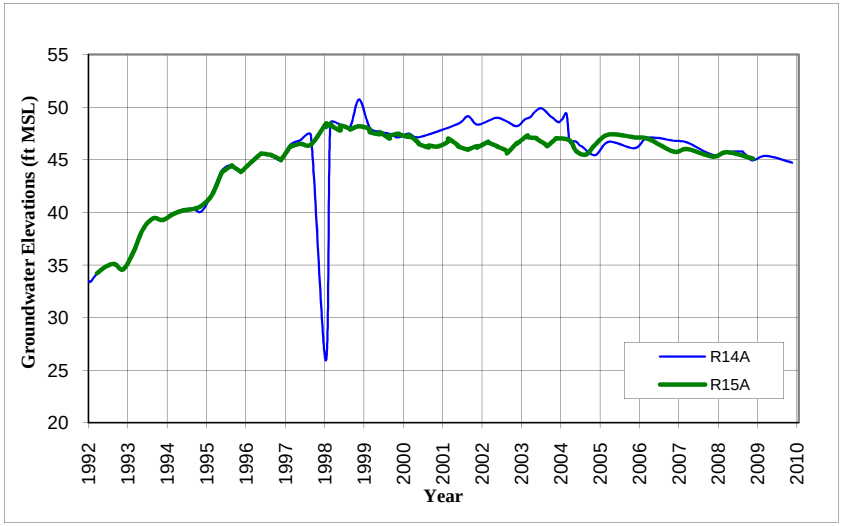
LABORATORY ANALYTICAL REPORTS ARE NOT INCLUDED IN THIS TRANSMITTAL BUT ARE AVAILABLE UPON REQUEST

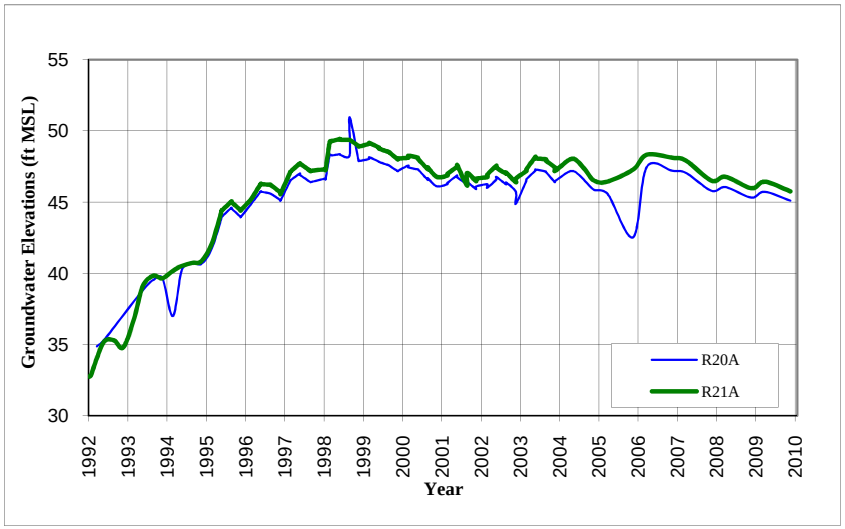
APPENDIX C

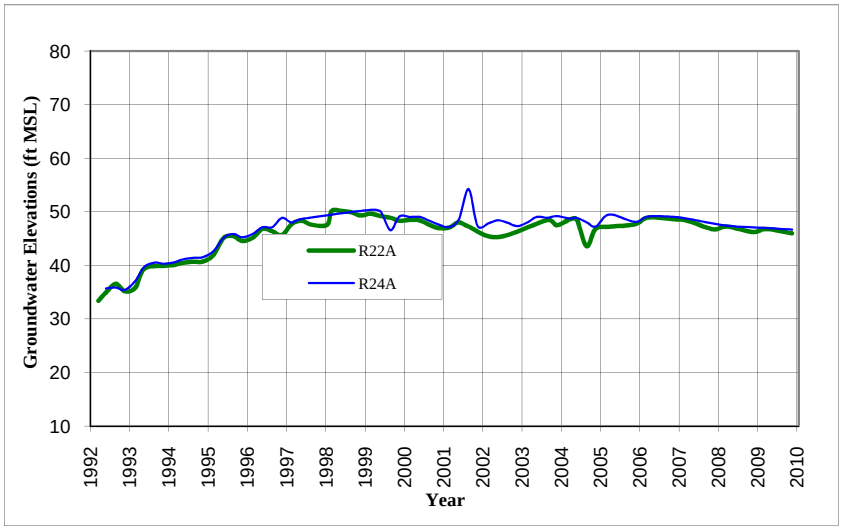
GROUNDWATER HYDROGRAPHS

APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN "A" AQUIFER WELLS









APPENDIX C
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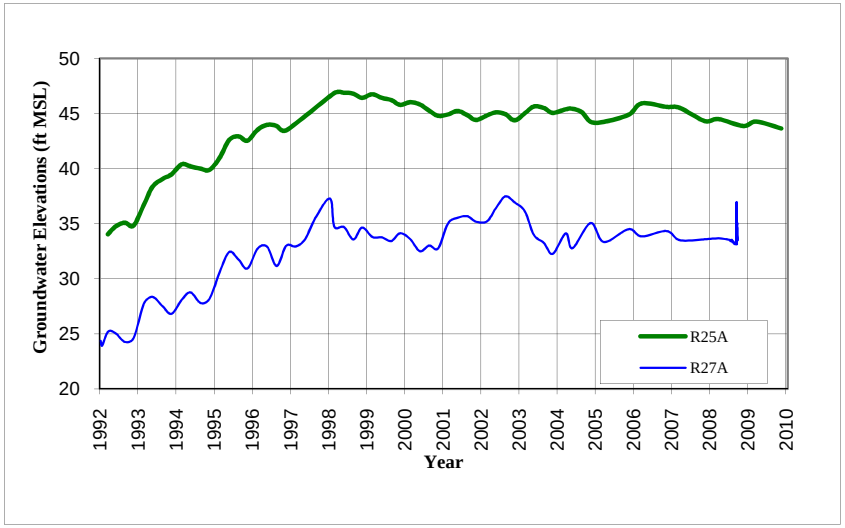

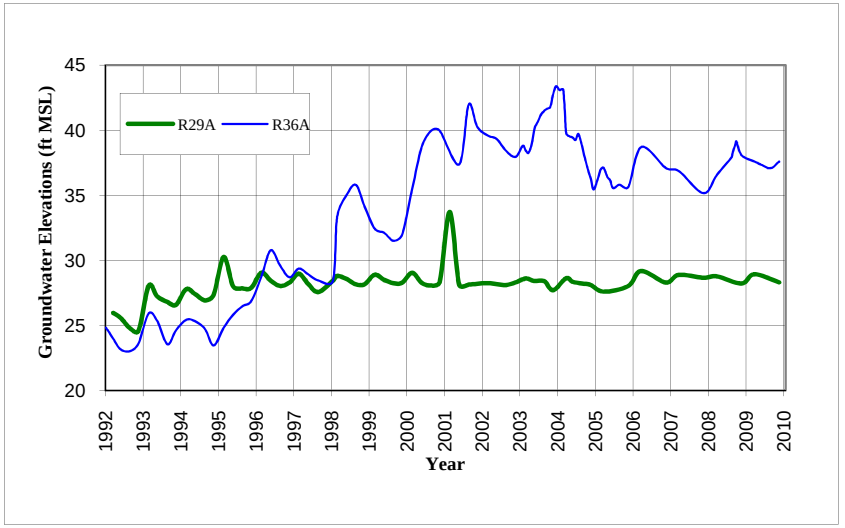

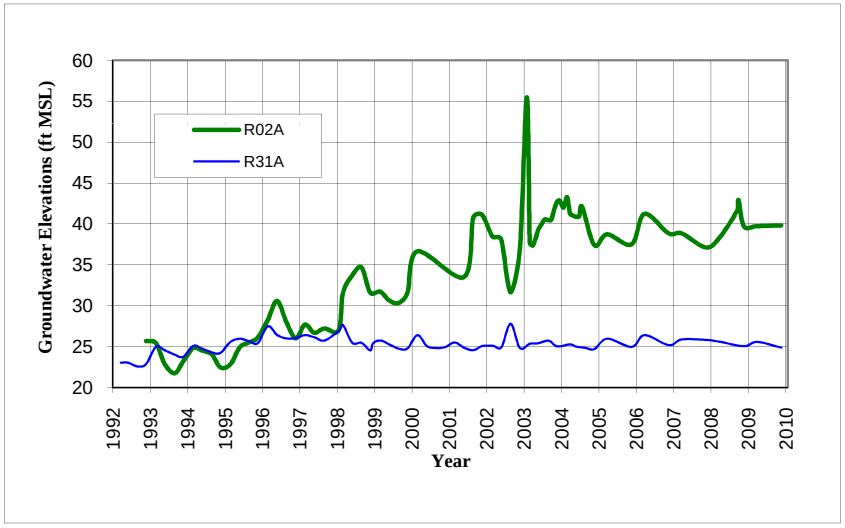

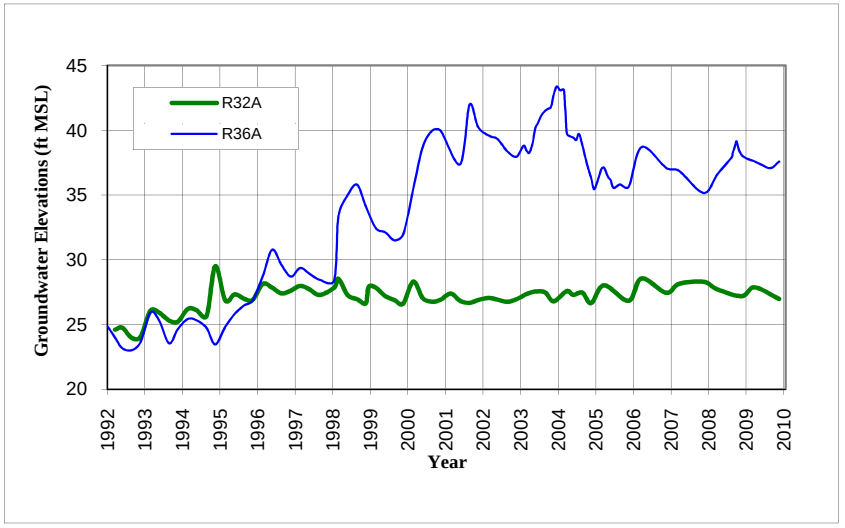

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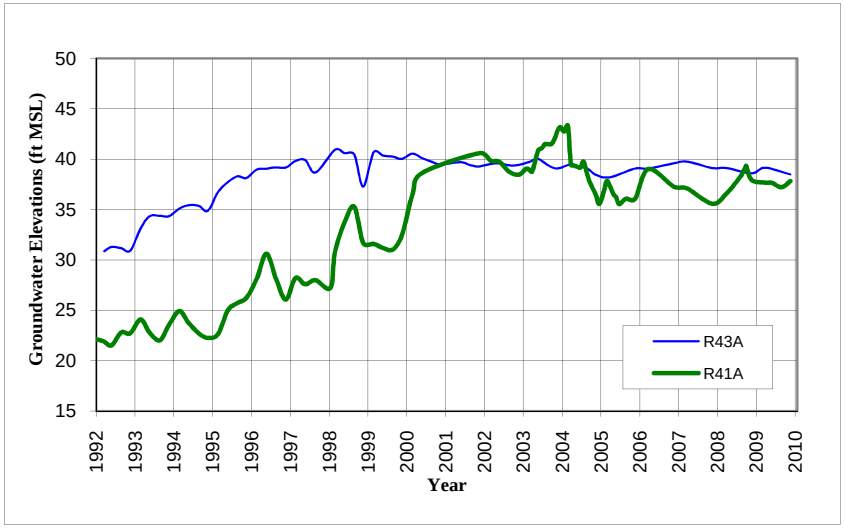

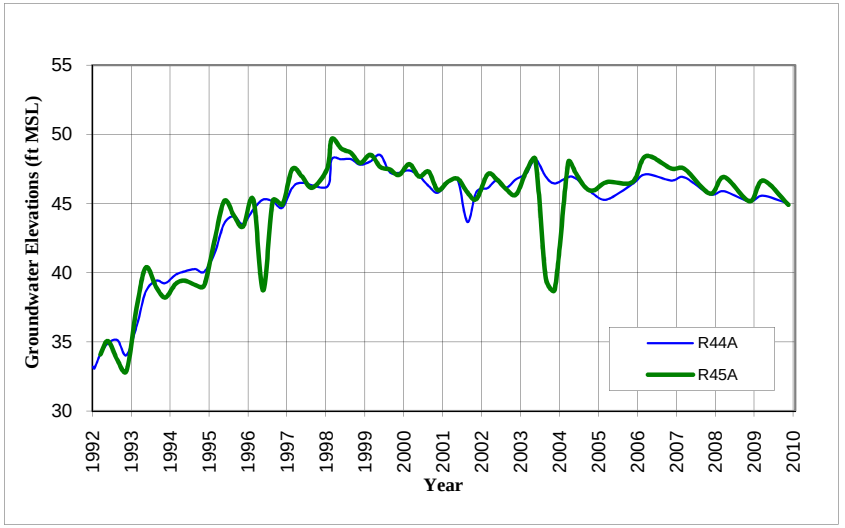

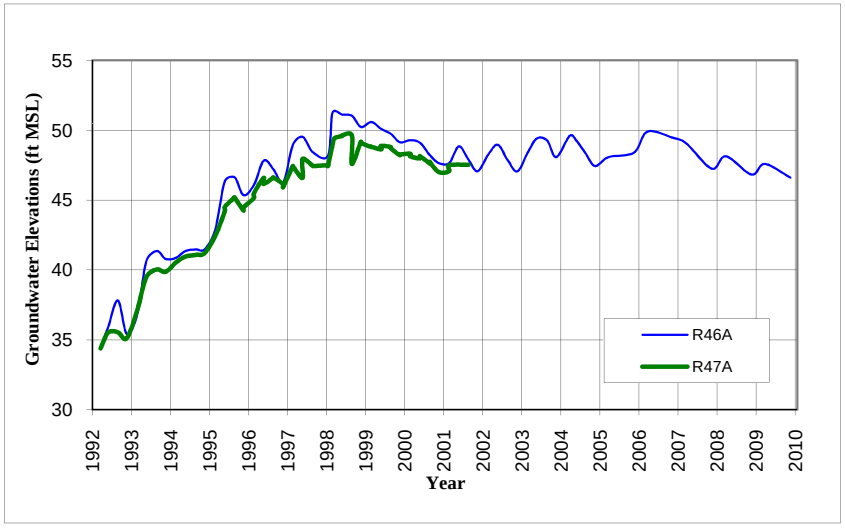

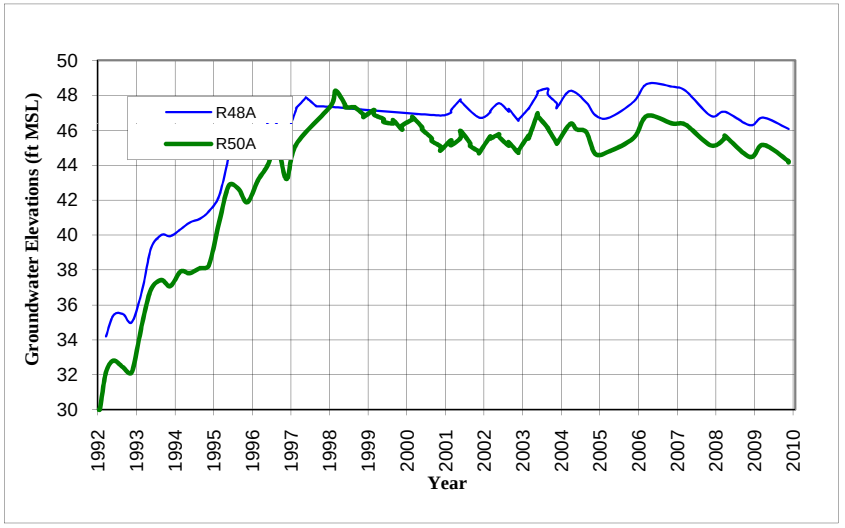

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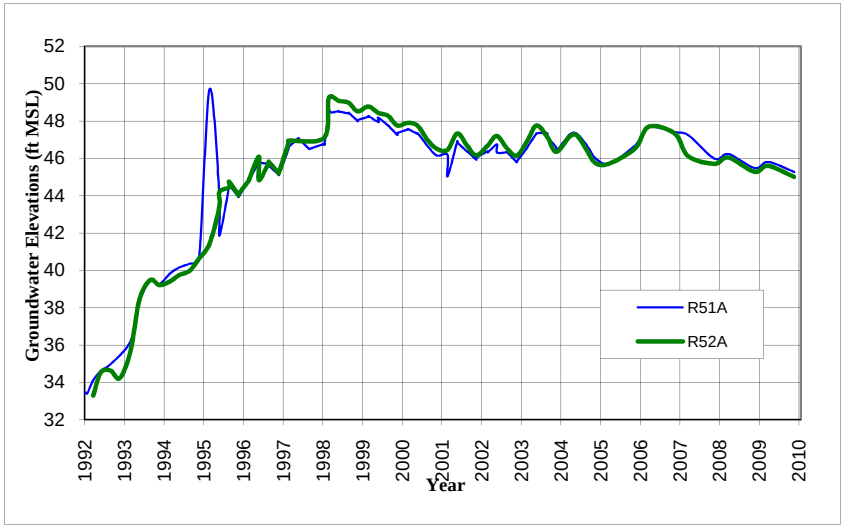

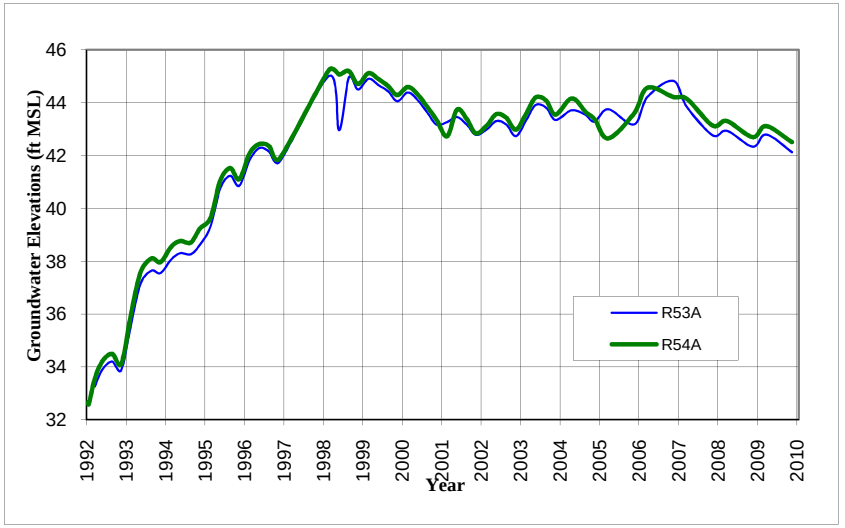

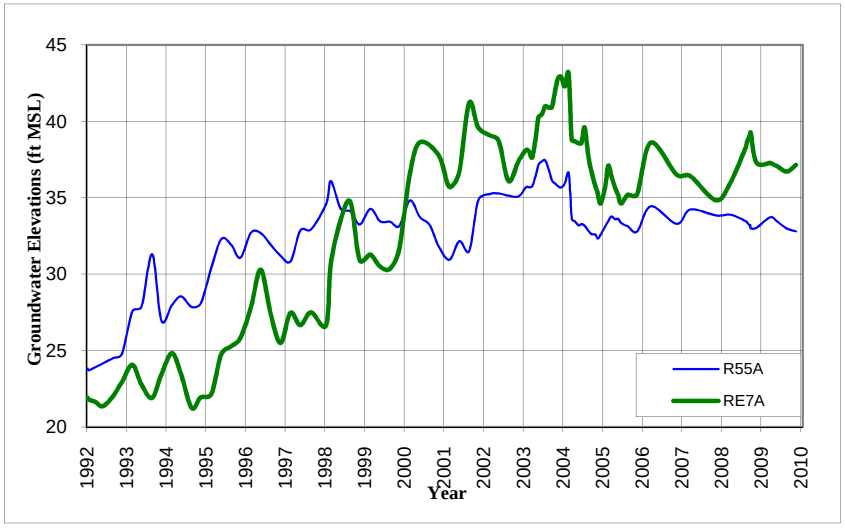

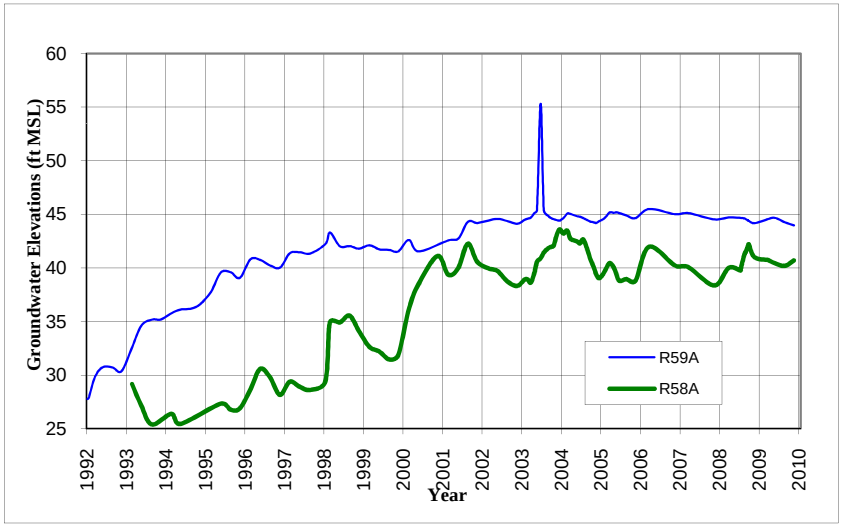

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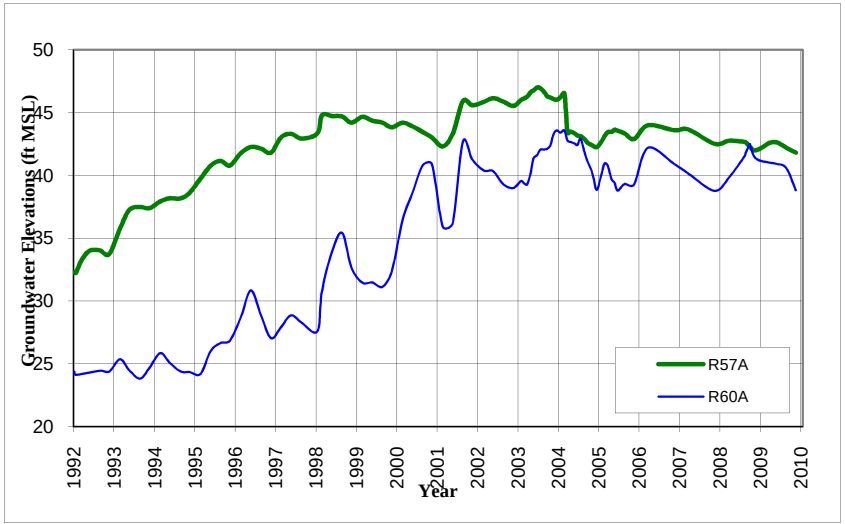

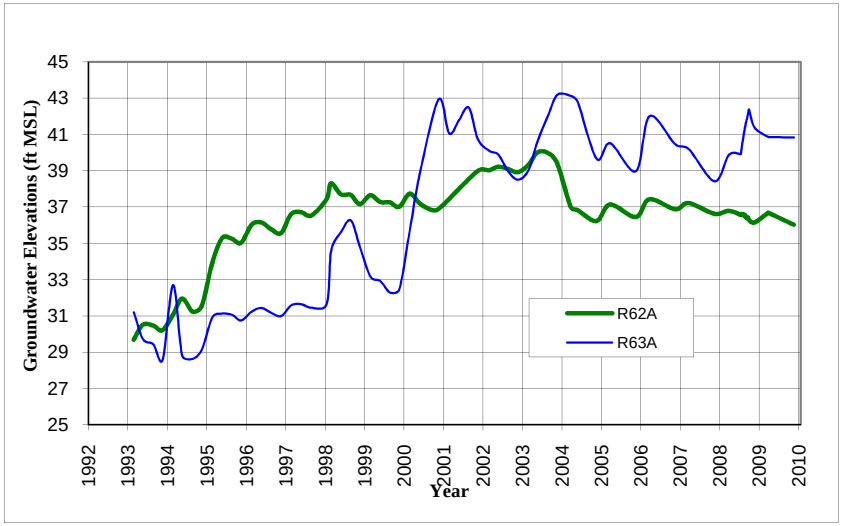

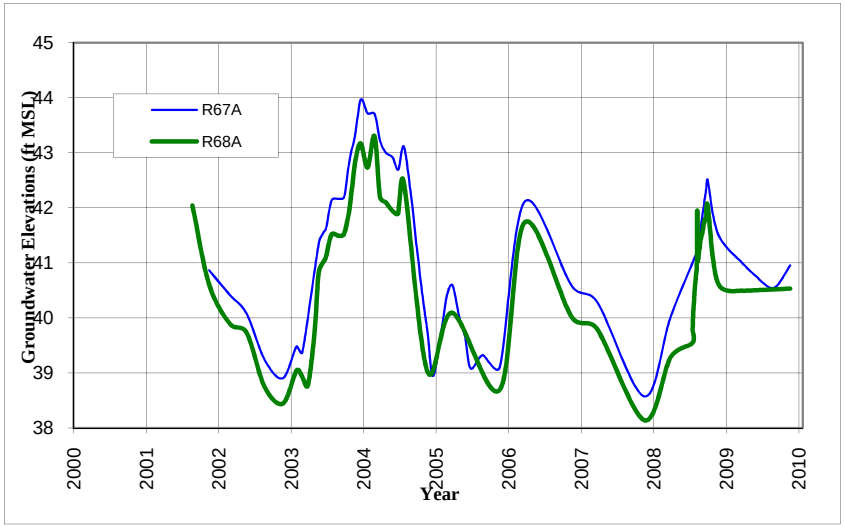

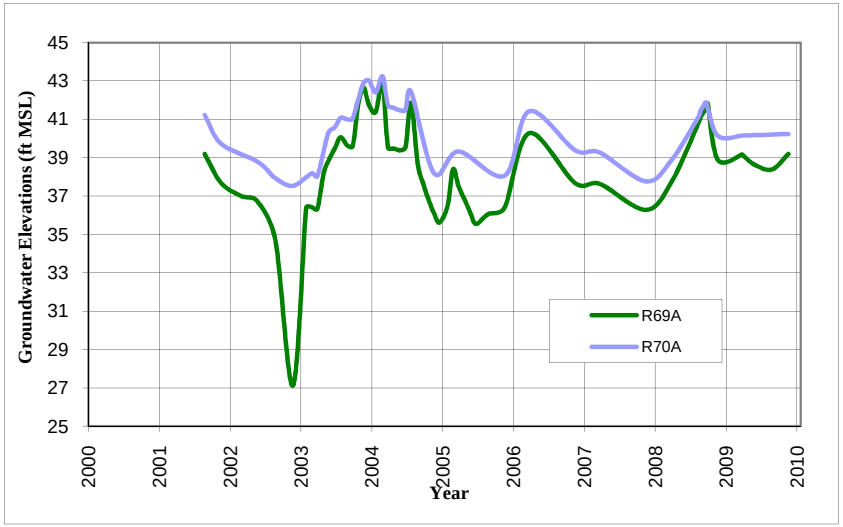

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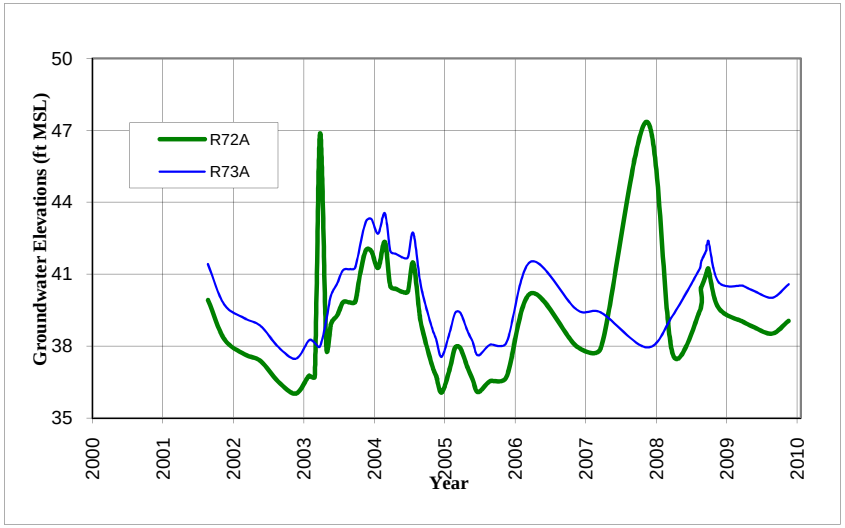

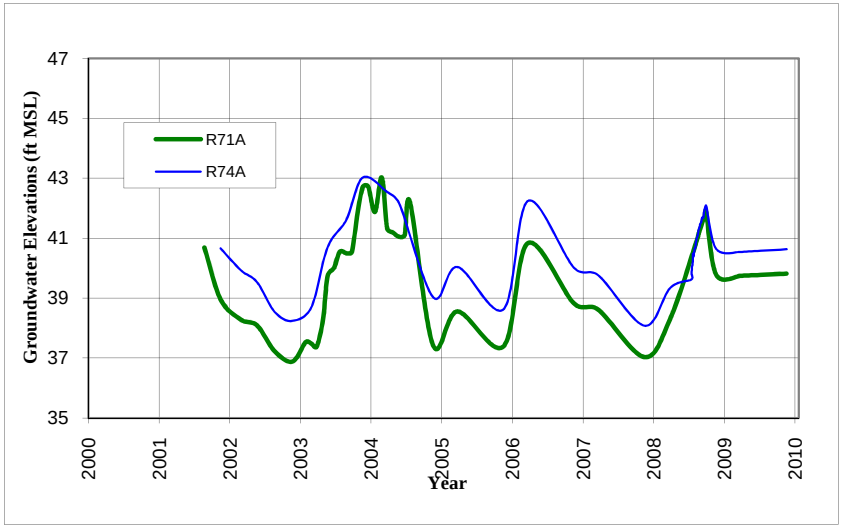

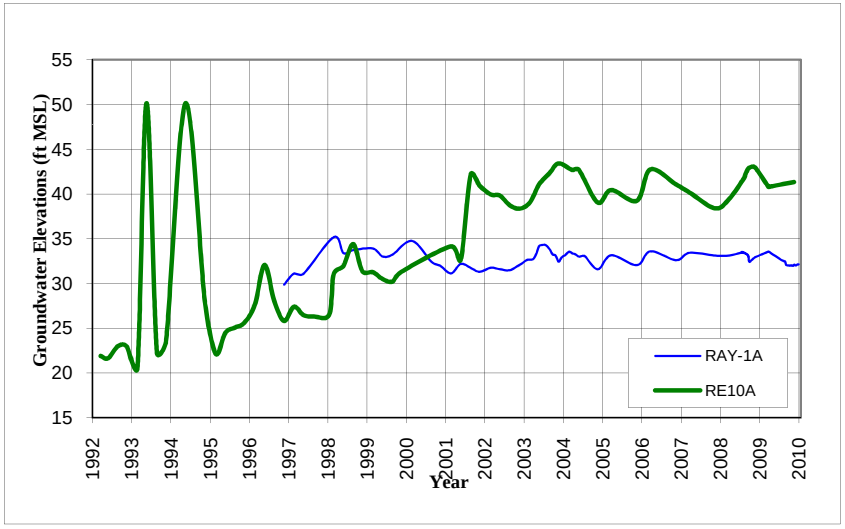

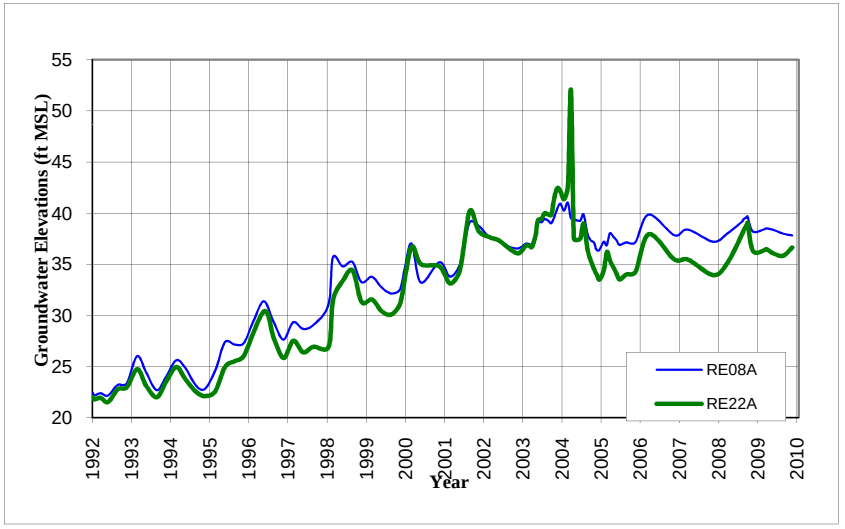

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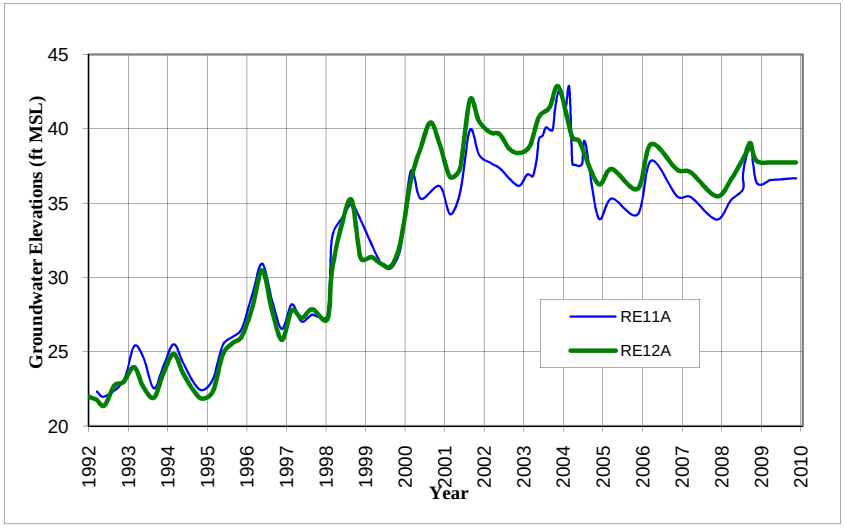

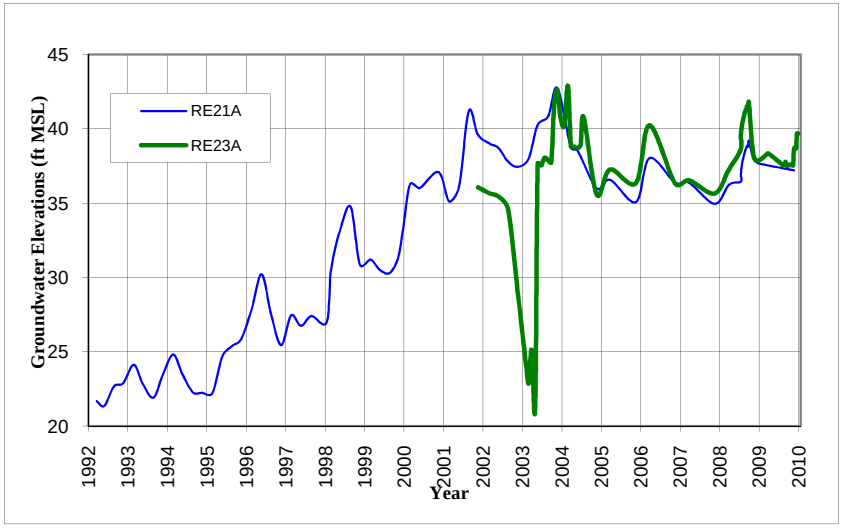

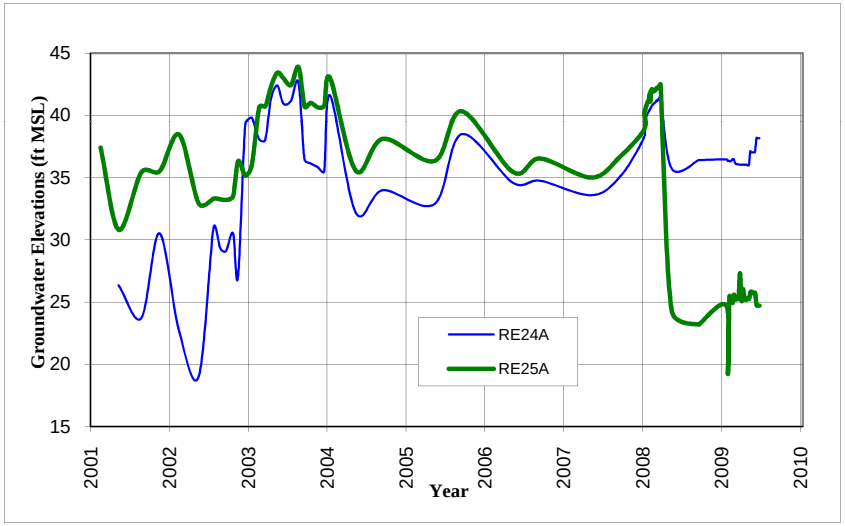

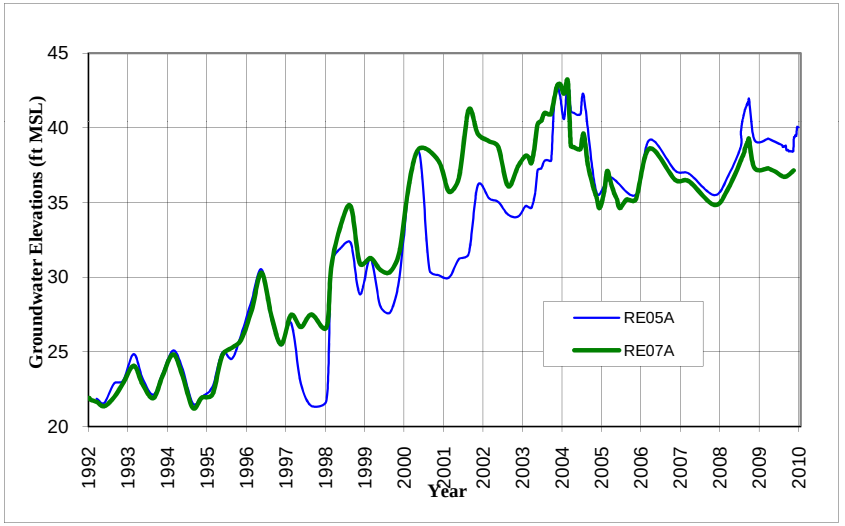

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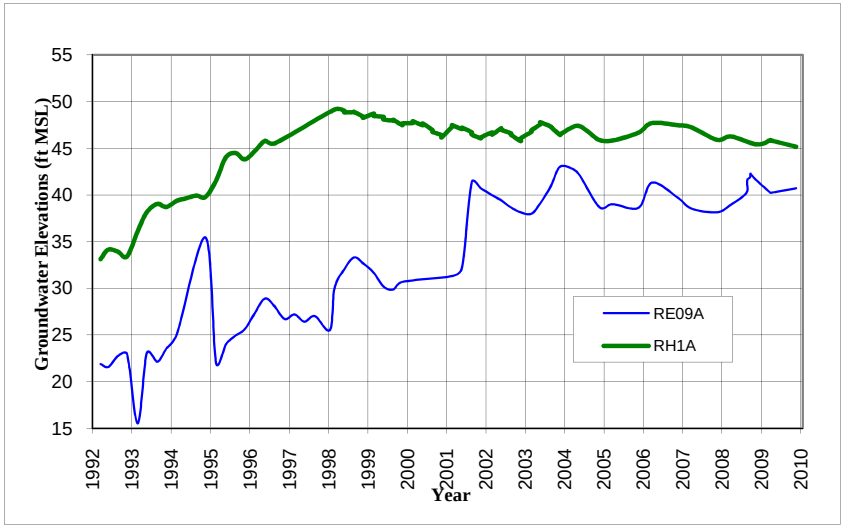
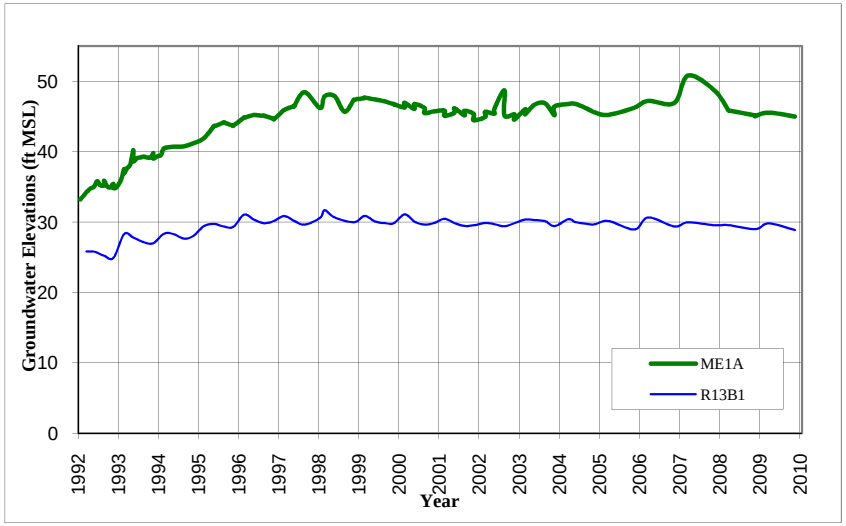
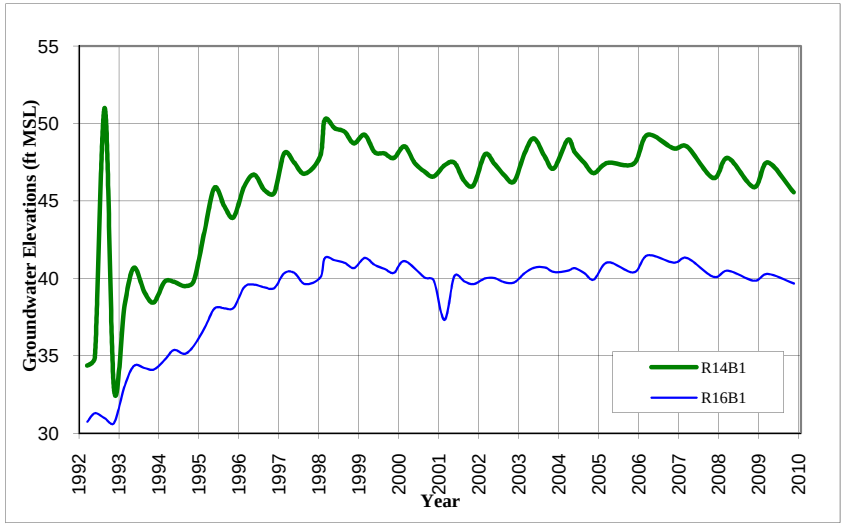
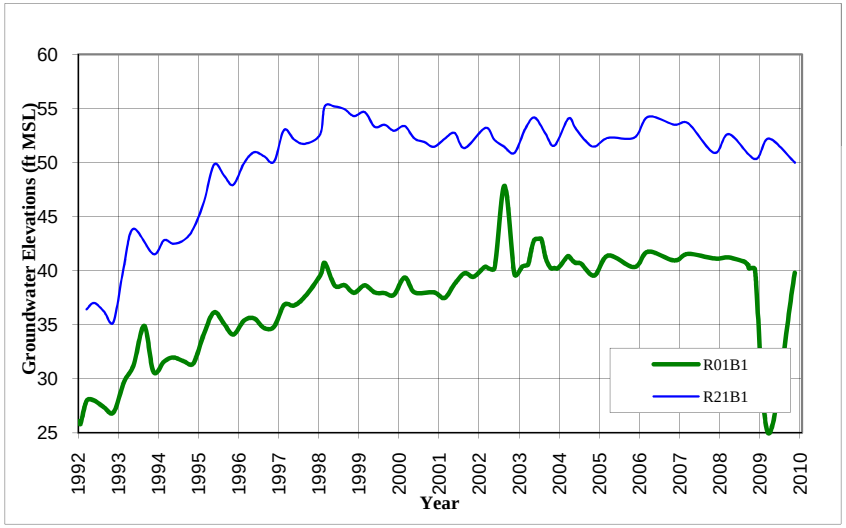
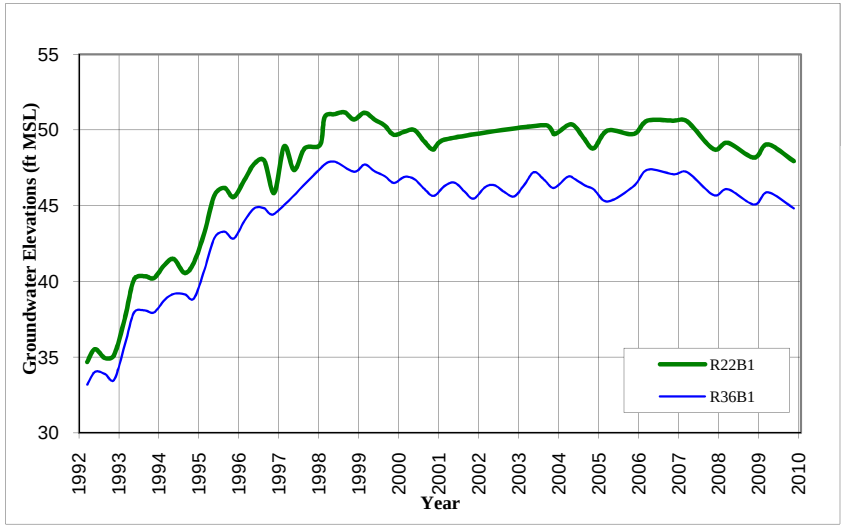


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN "B1" AQUIFER WELLS

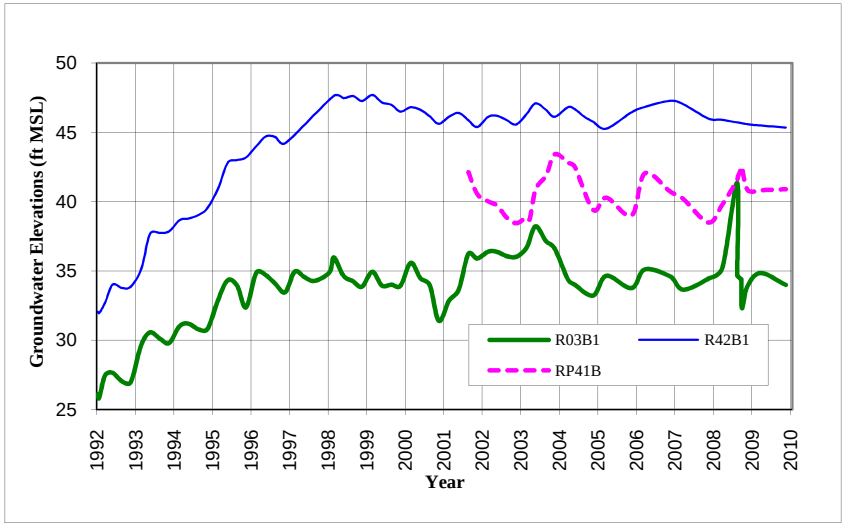


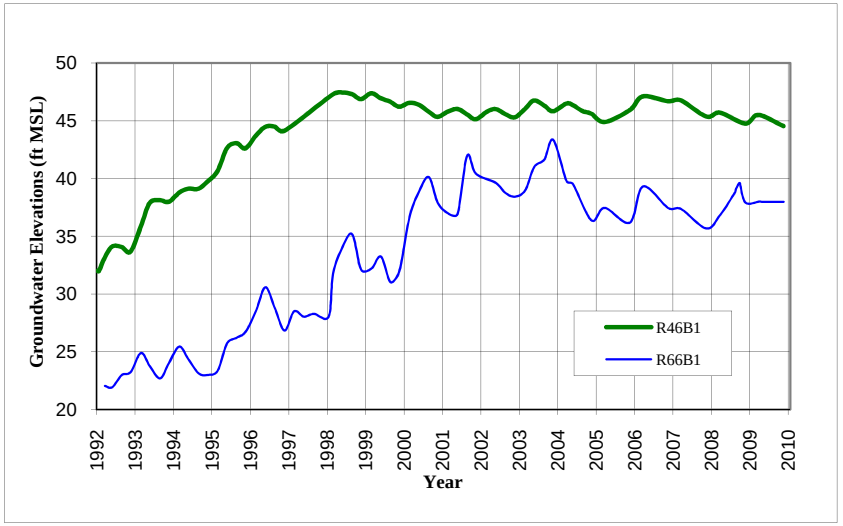


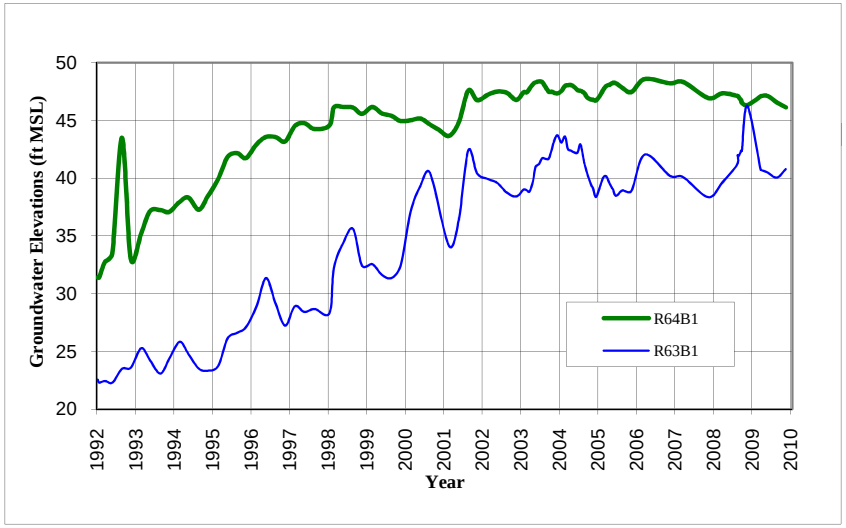


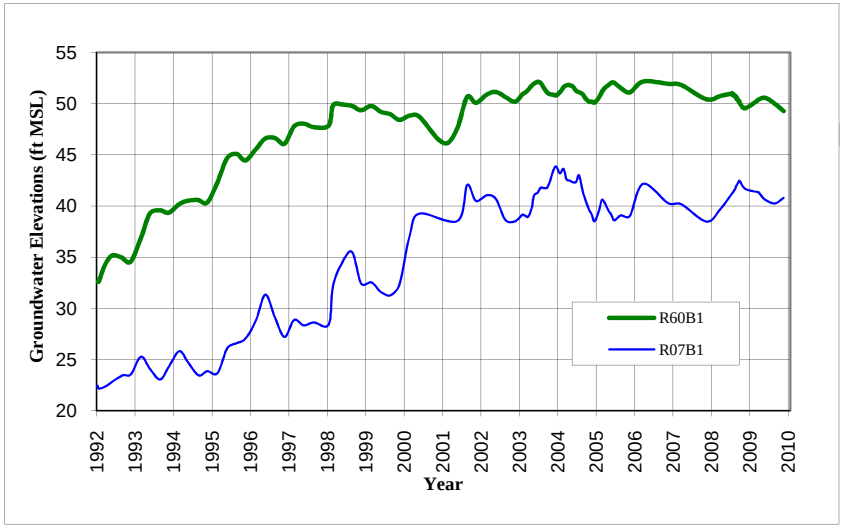


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN "B1" AQUIFER WELLS









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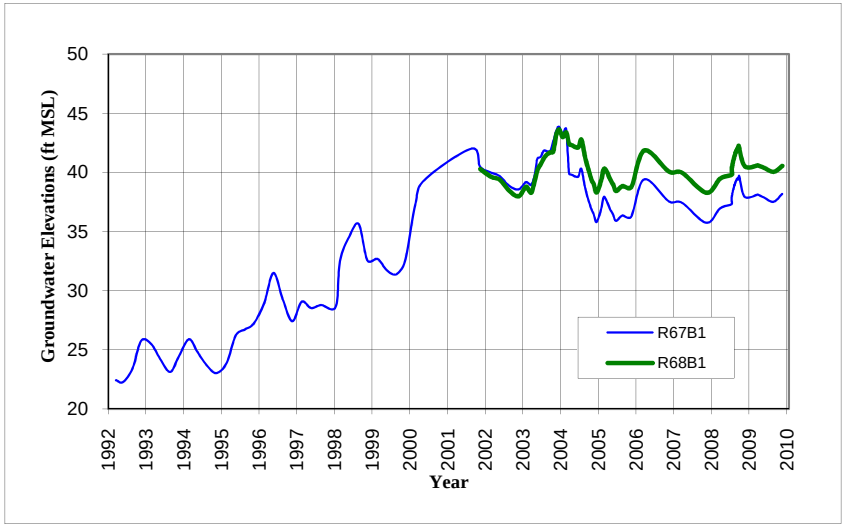
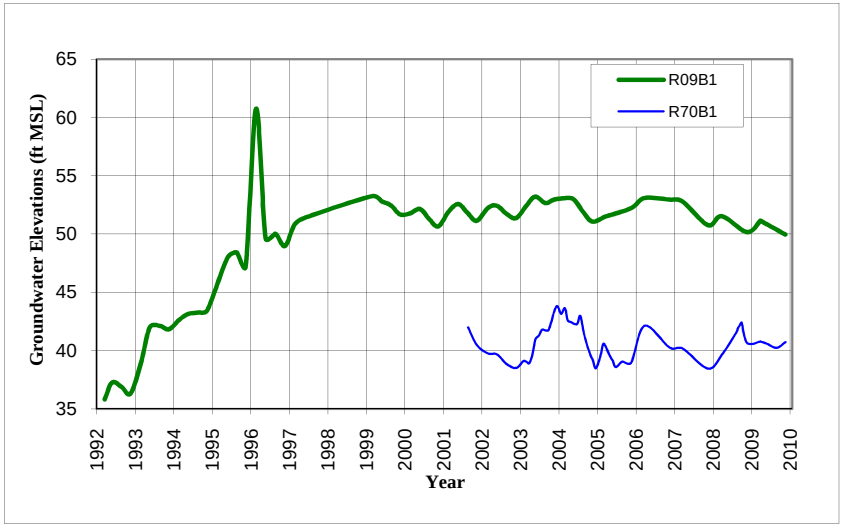
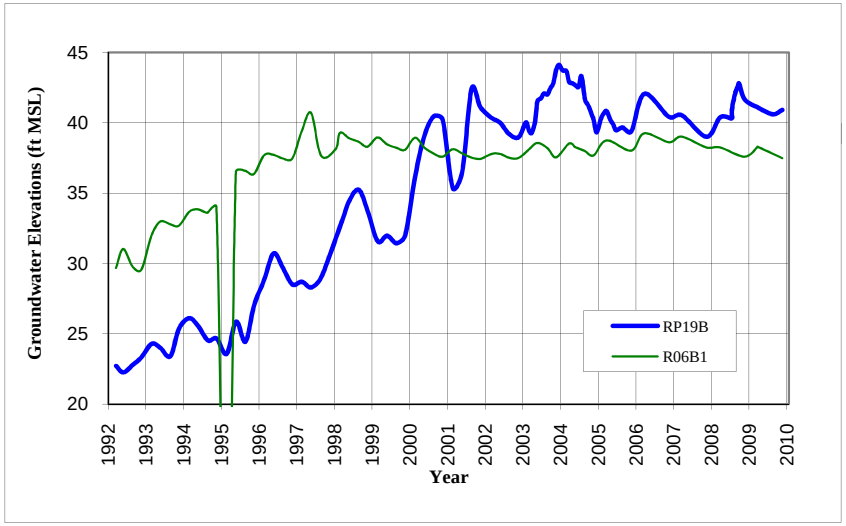
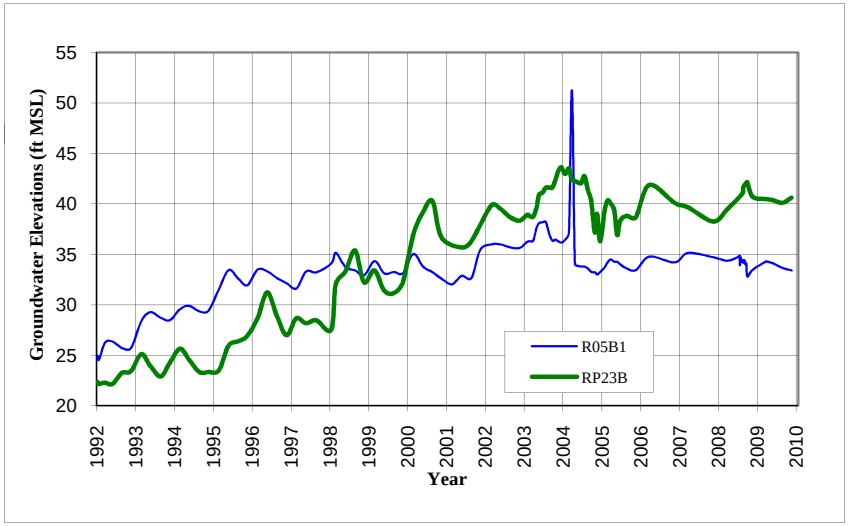
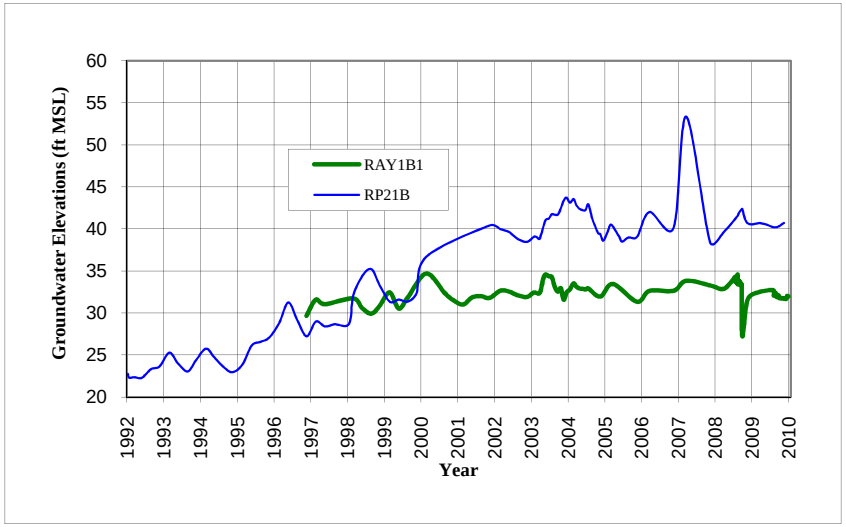


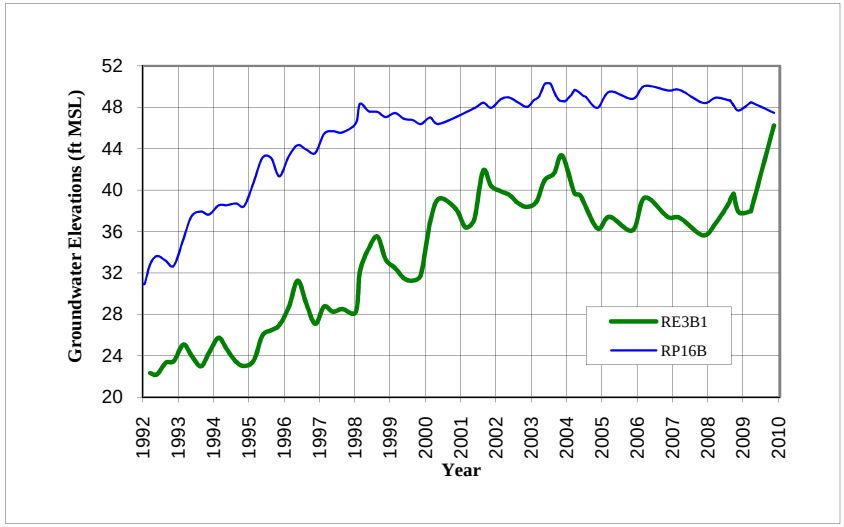


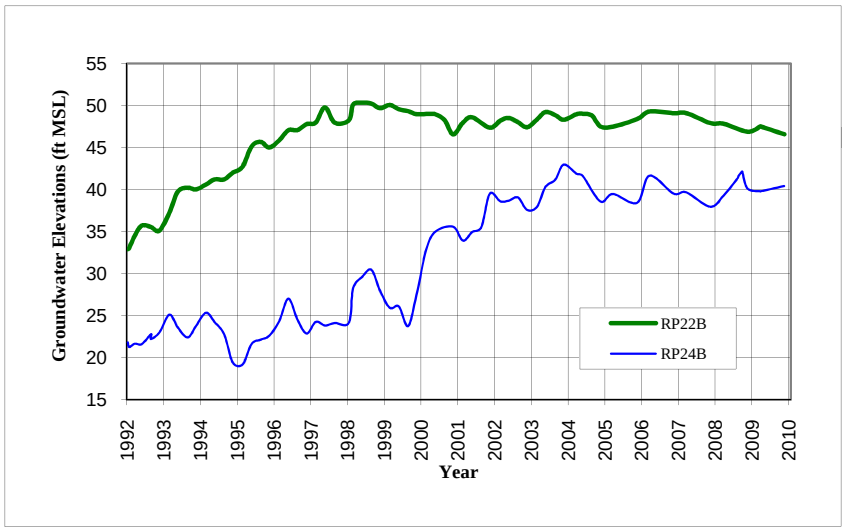


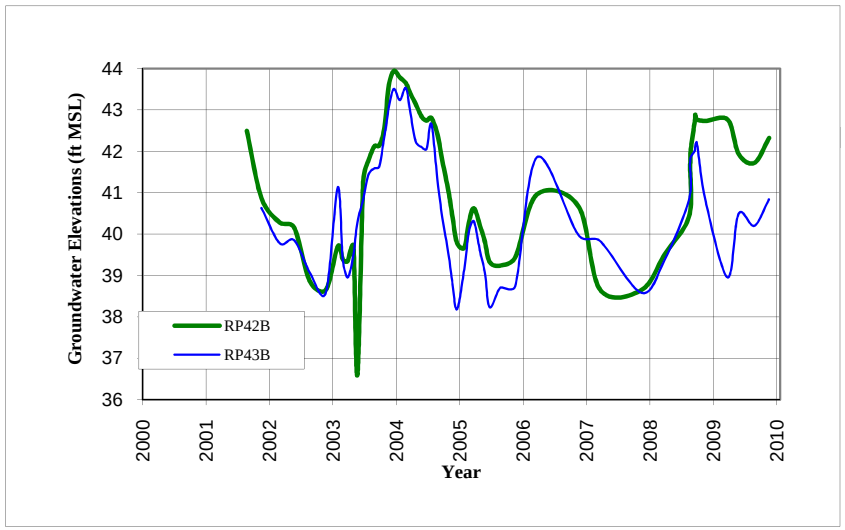


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN "B1" AQUIFER WELLS

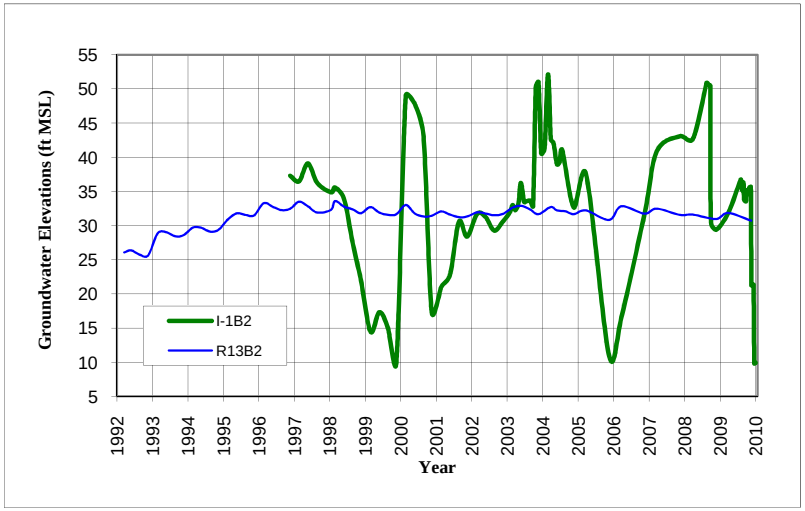


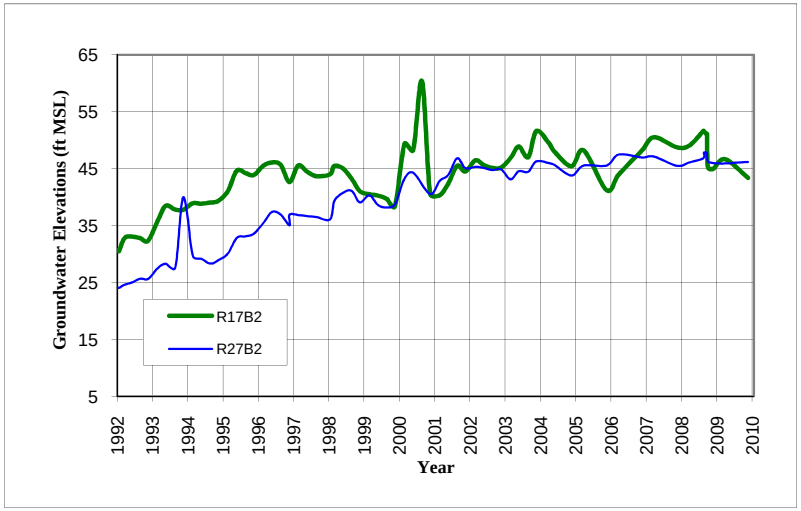


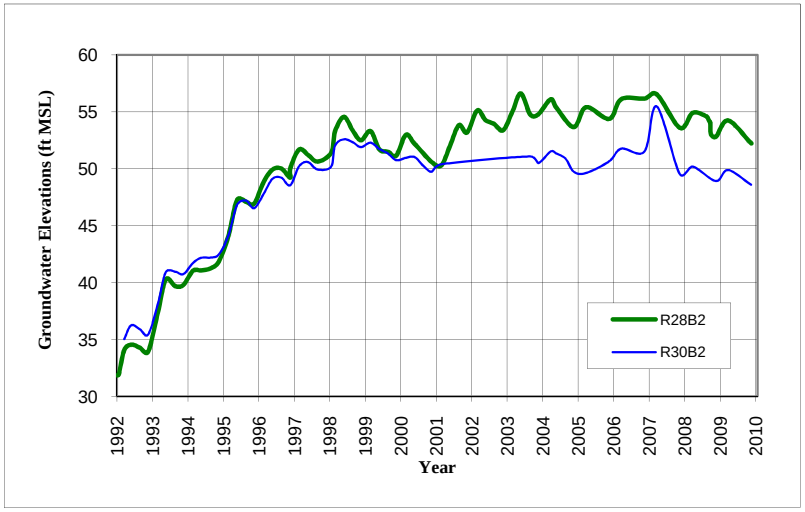


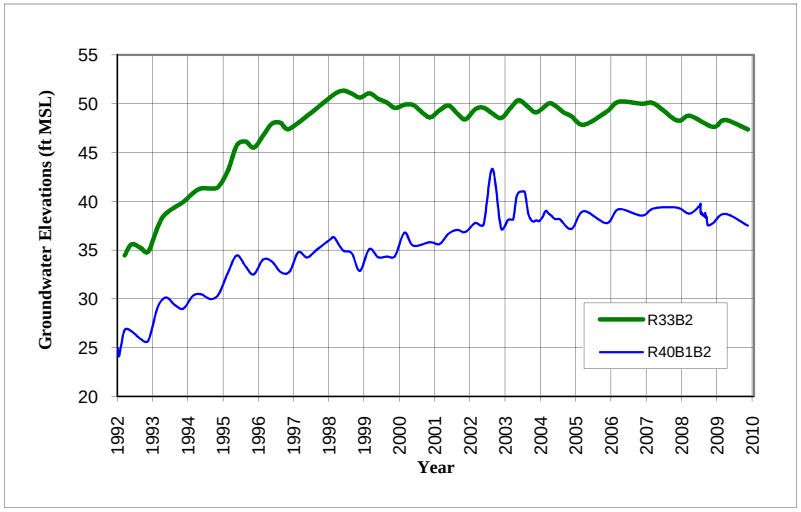


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN "B2" AQUIFER WELLS

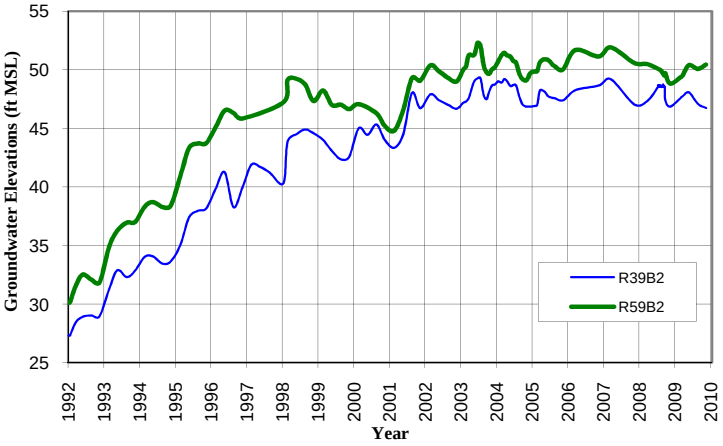


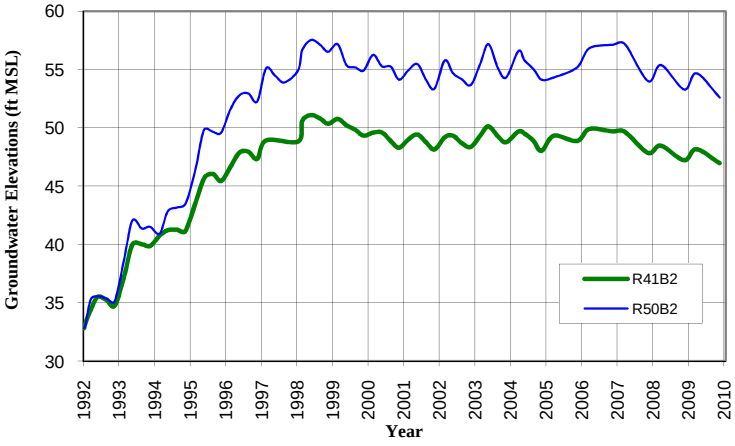


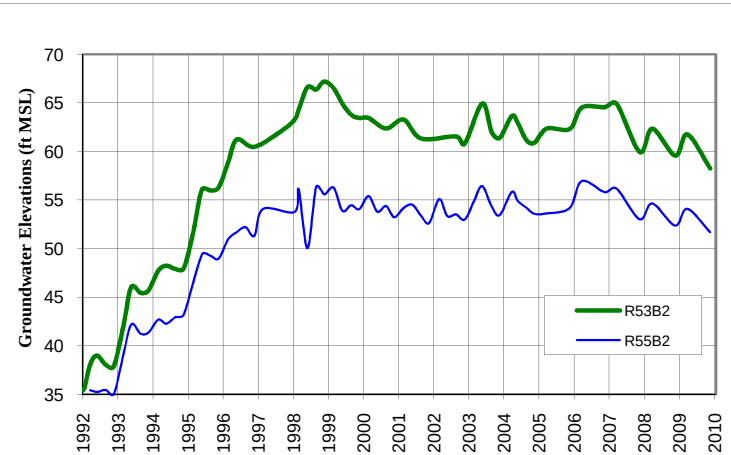


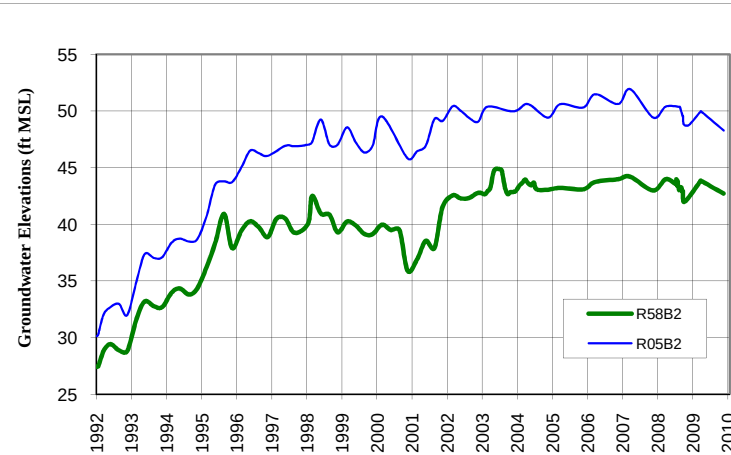


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN "B2" AQUIFER WELLS

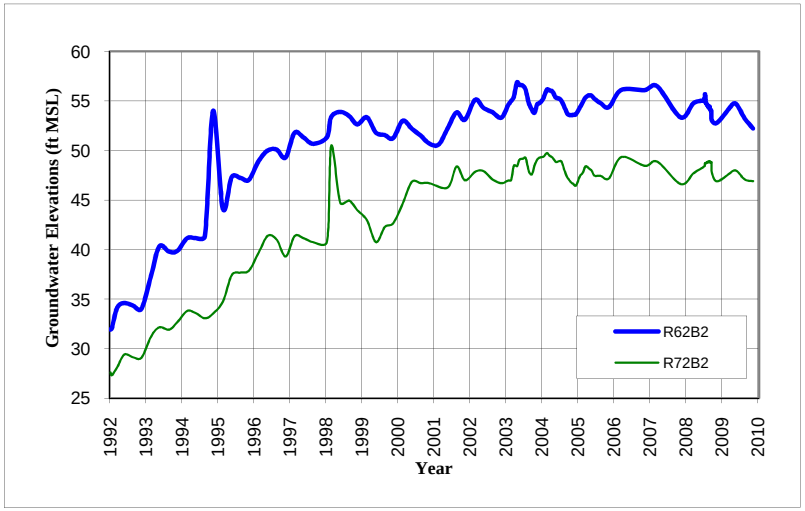


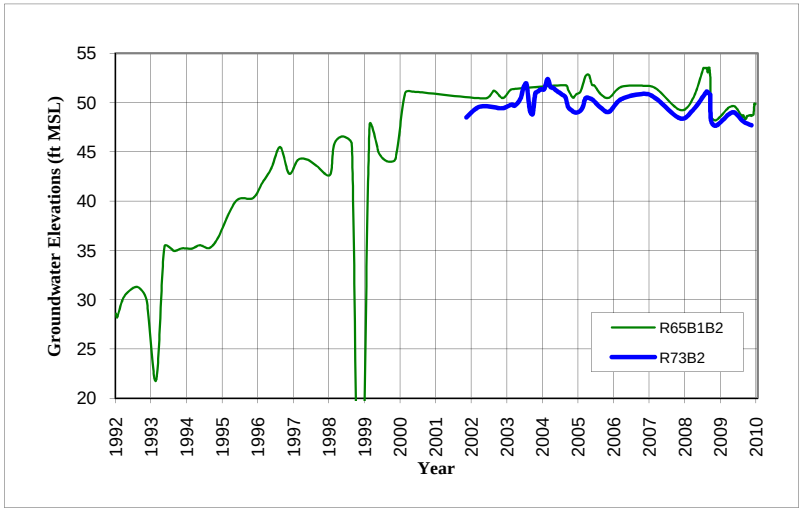


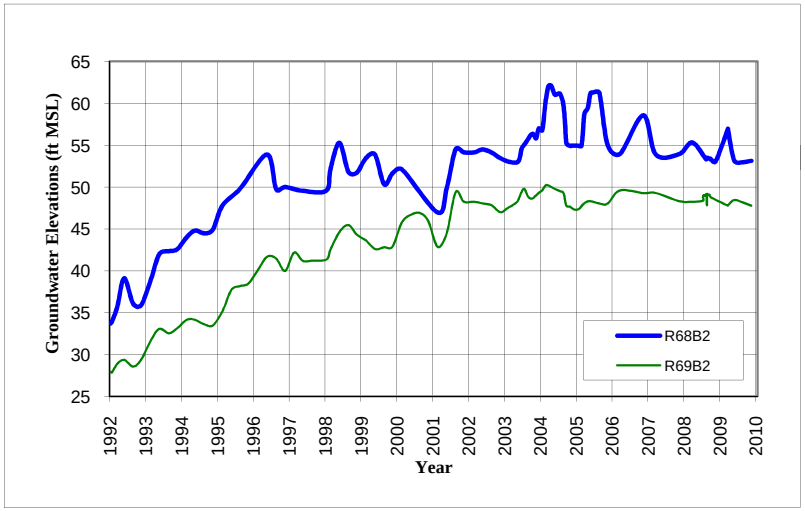


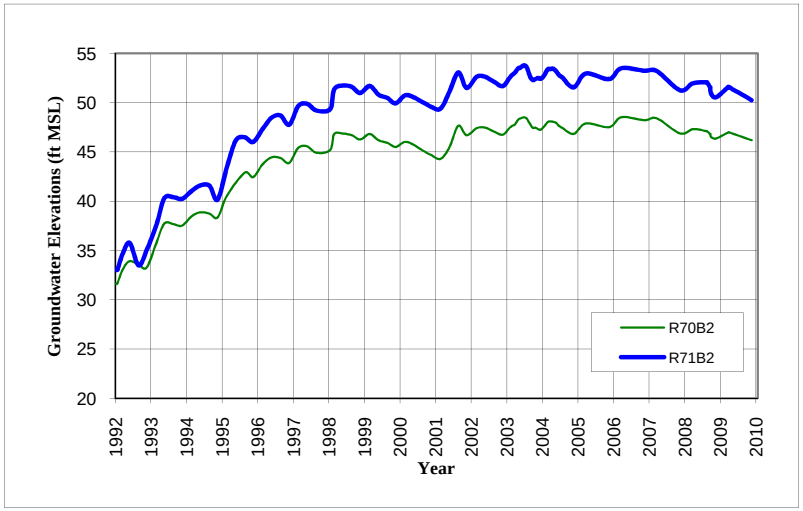


APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN "B2" AQUIFER WELLS

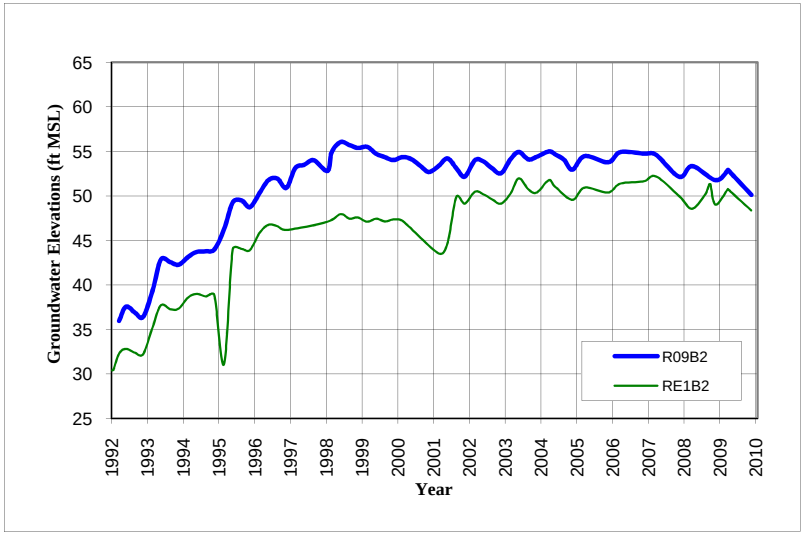








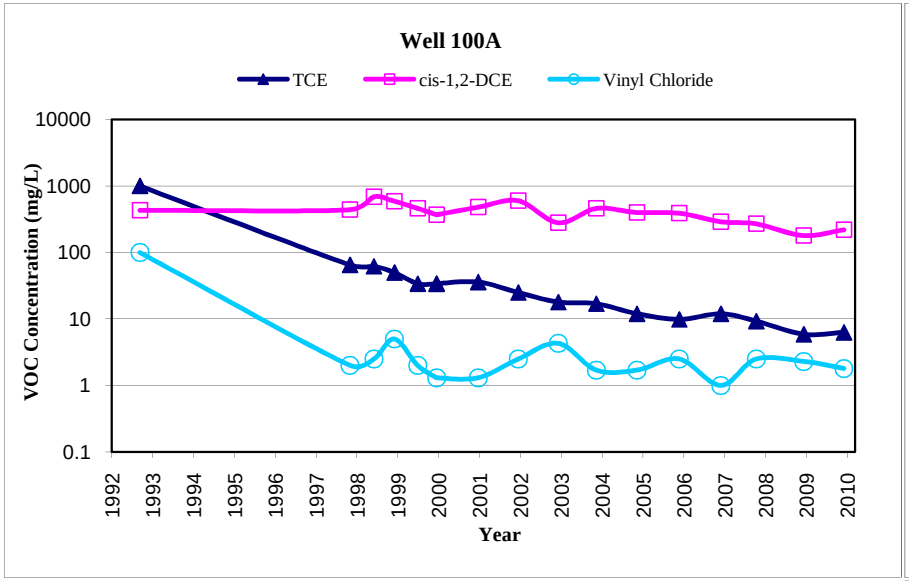
APPENDIX C
HISTORICAL GROUNDWATER ELEVATIONS IN "B2" AQUIFER WELLS

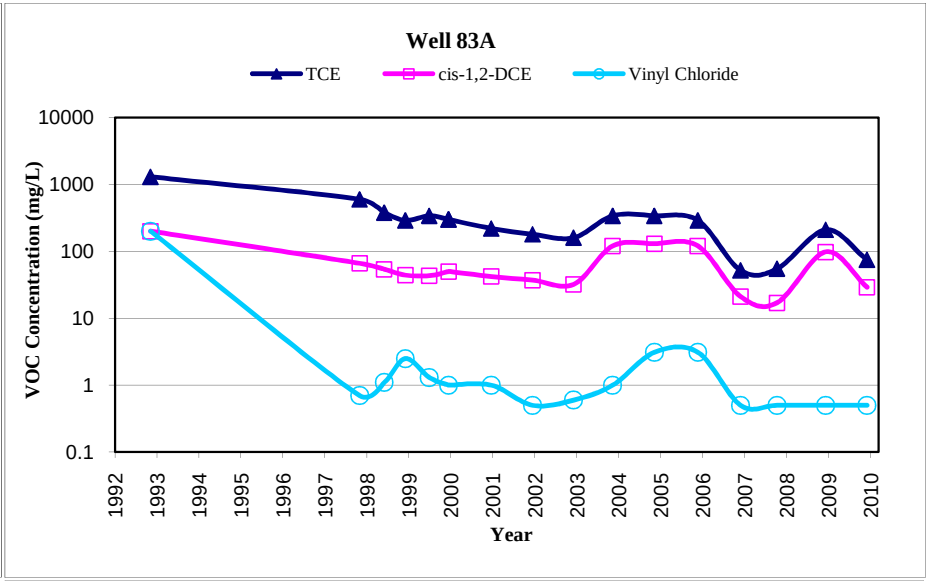


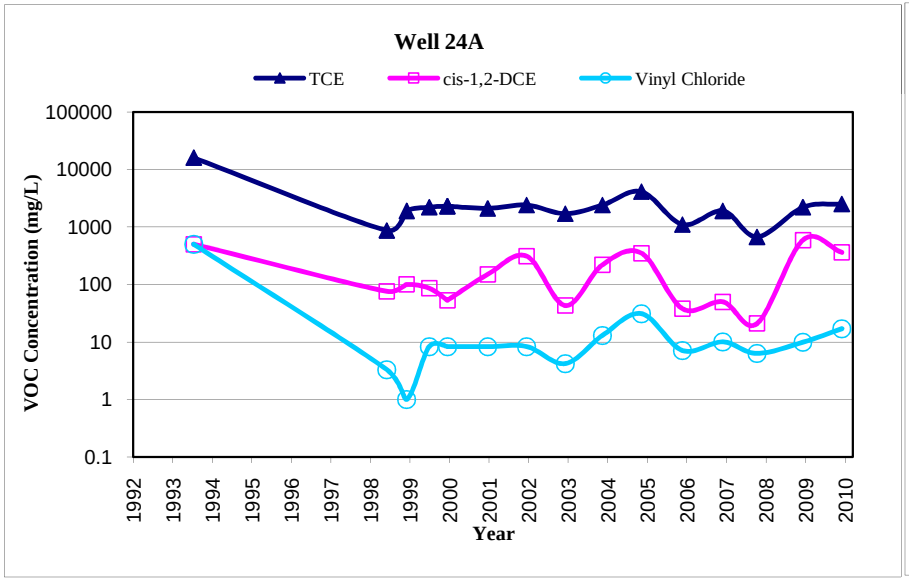
APPENDIX D

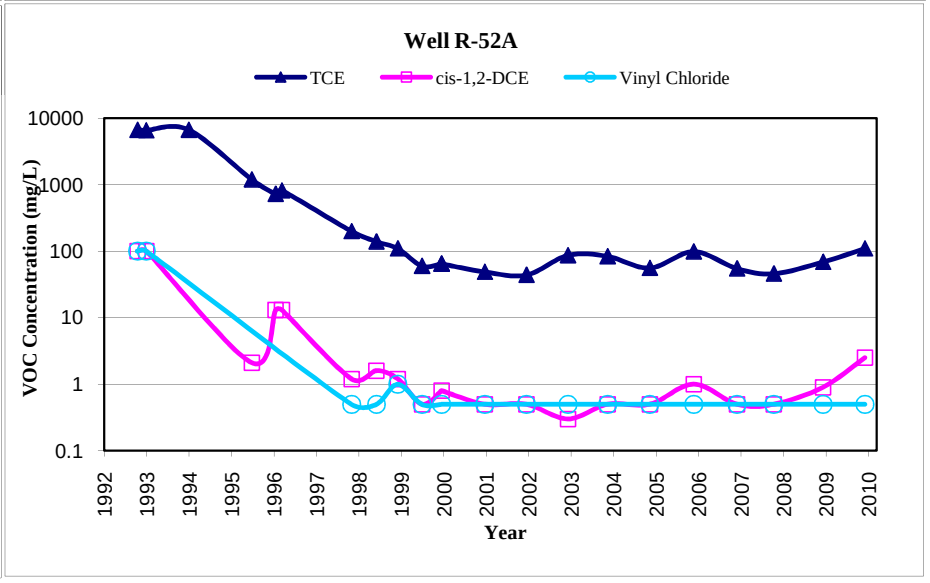
HISTORICAL GROUNDWATER QUALITY DATA AND PLOTS

APPENDIX D
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "A" AQUIFER WELLS

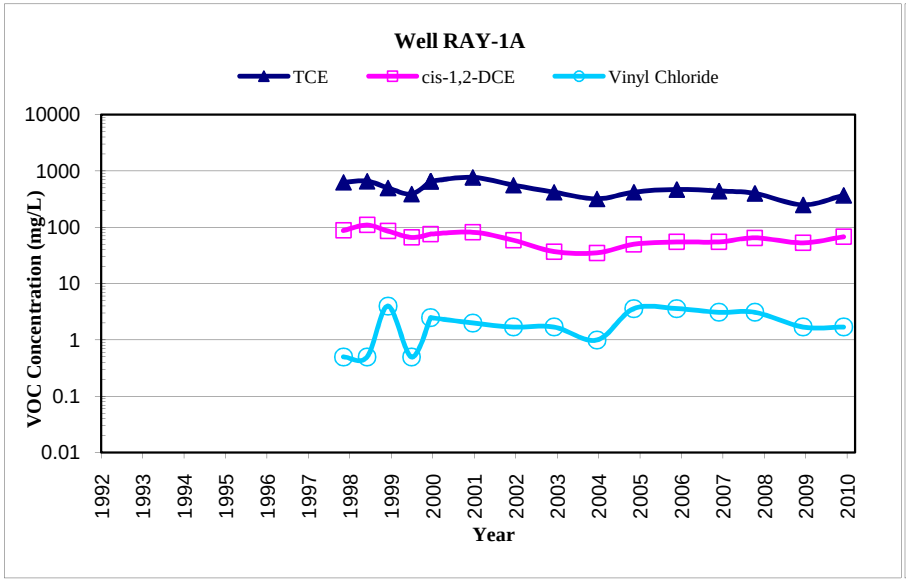


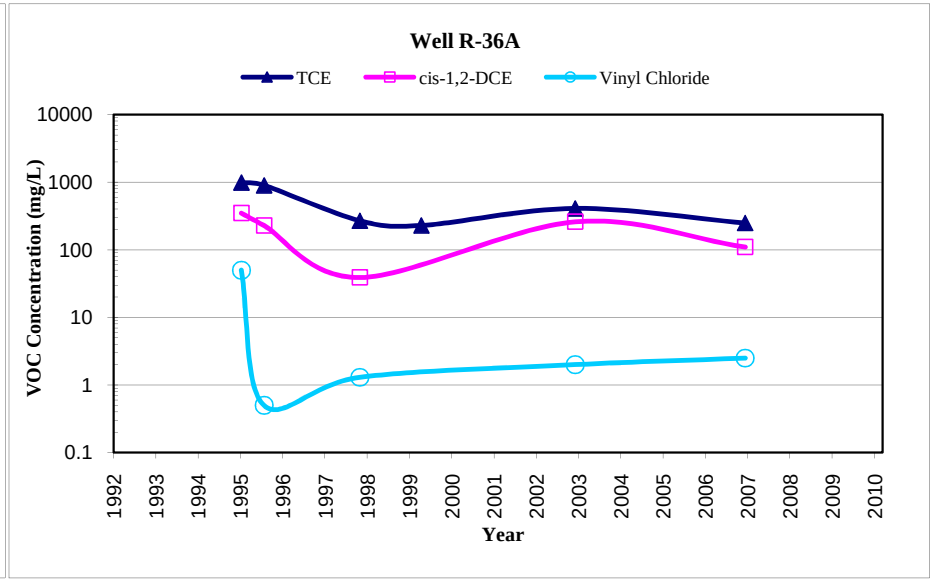


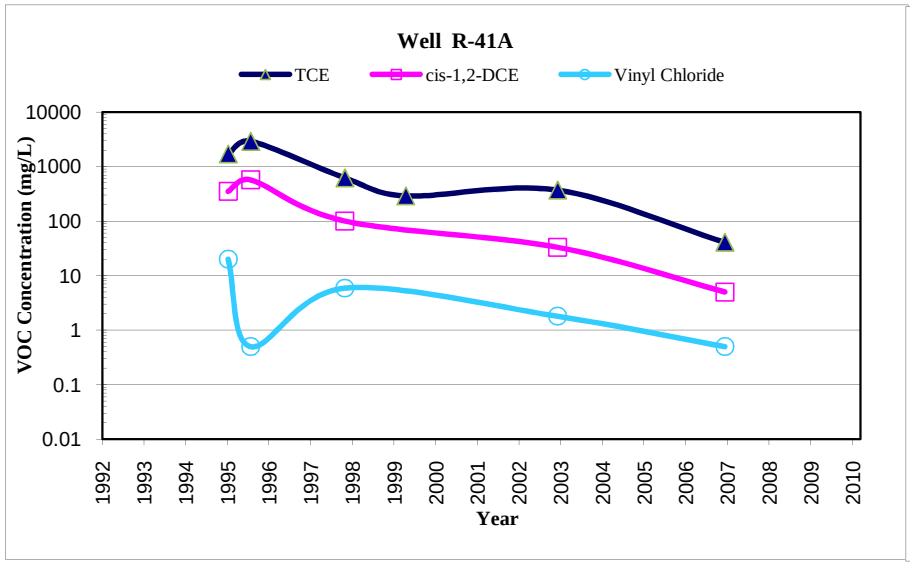


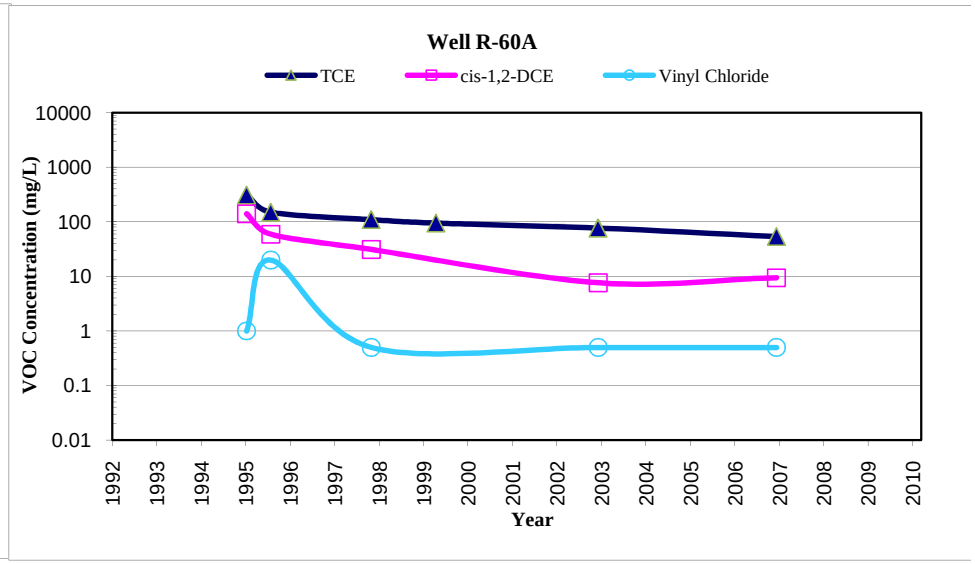


APPENDIX D
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "A" AQUIFER WELLS

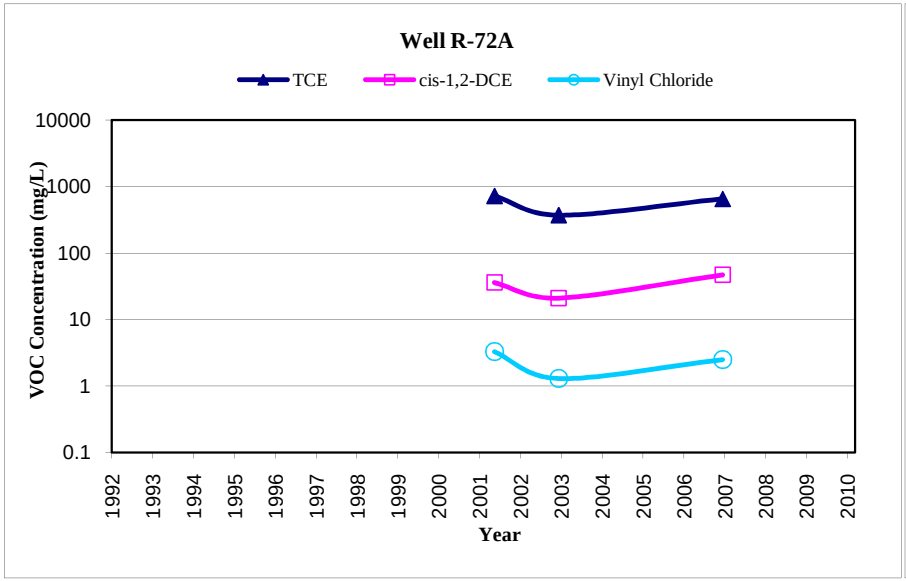


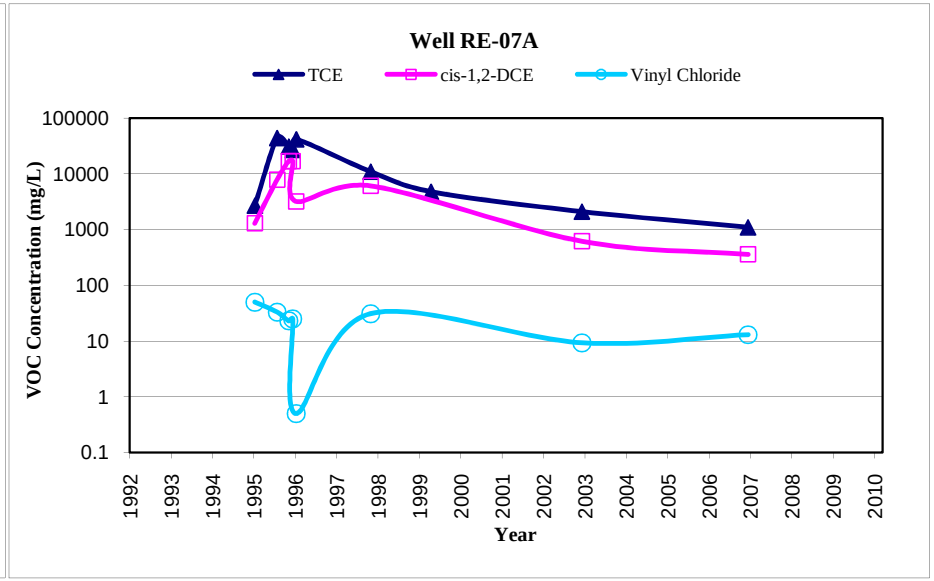


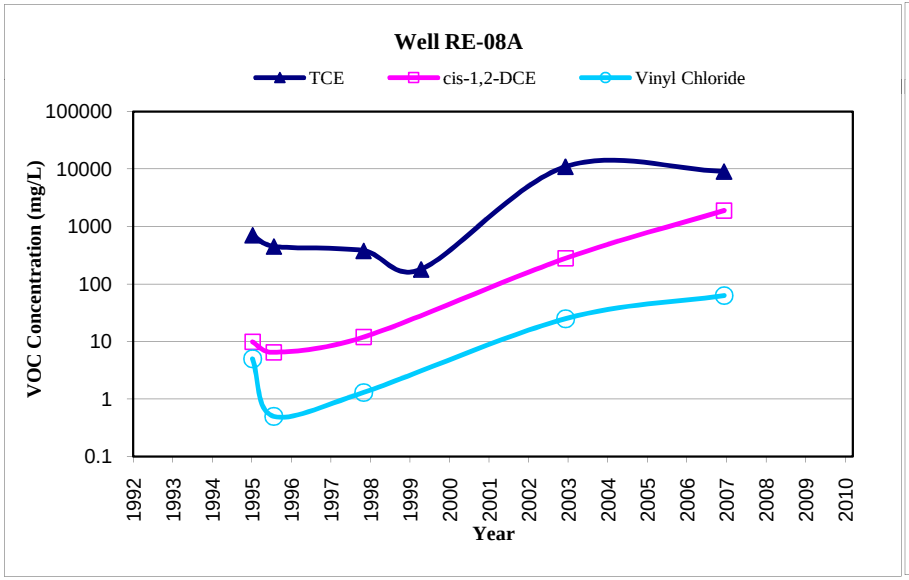


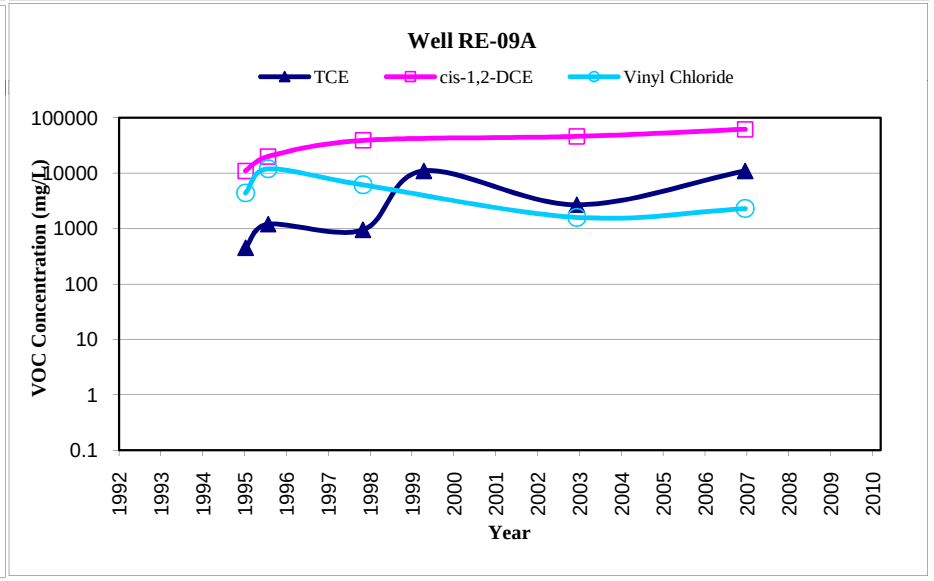


APPENDIX D
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "A" AQUIFER WELLS

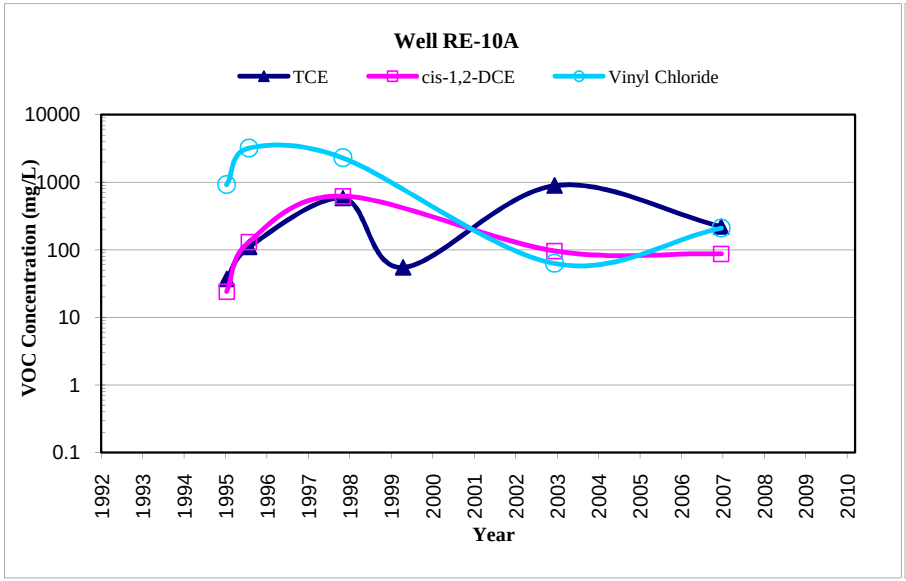


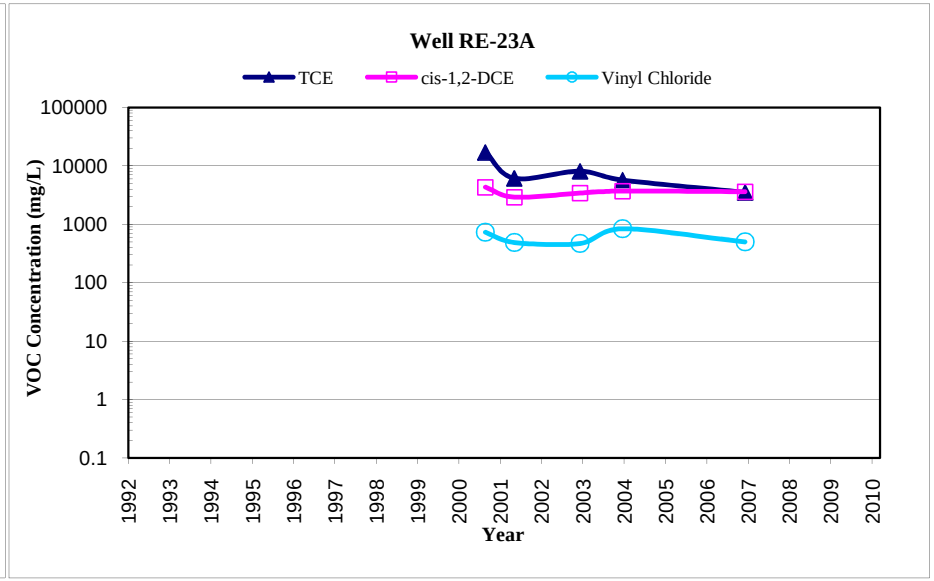


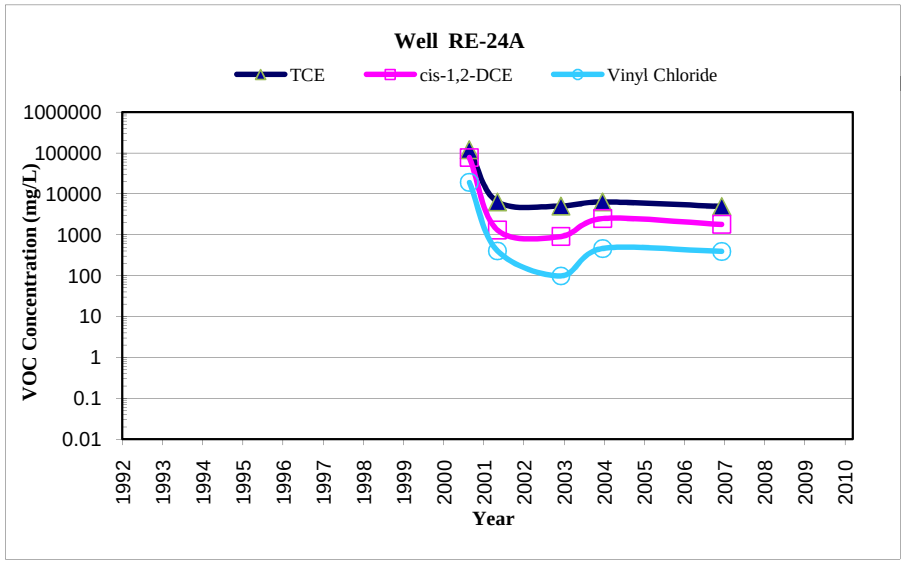


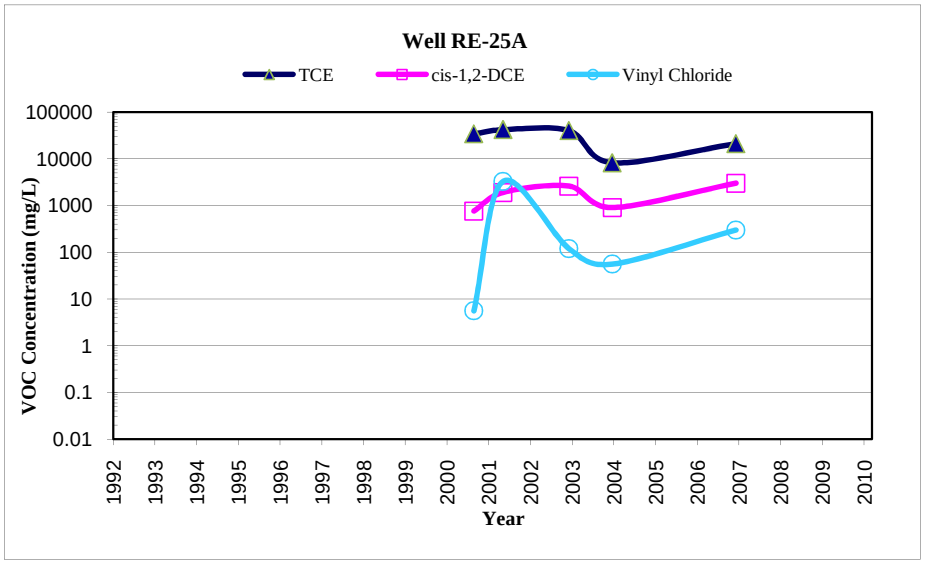


APPENDIX D
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "A" AQUIFER WELLS

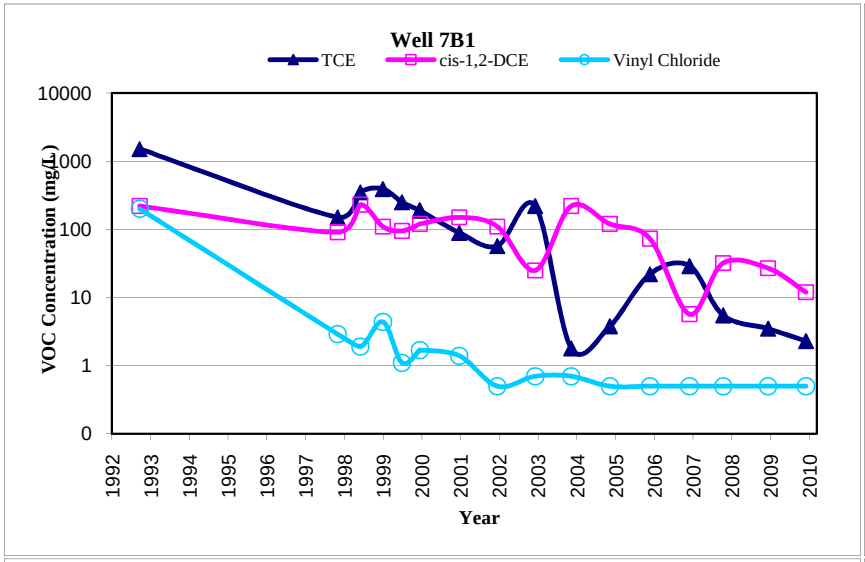


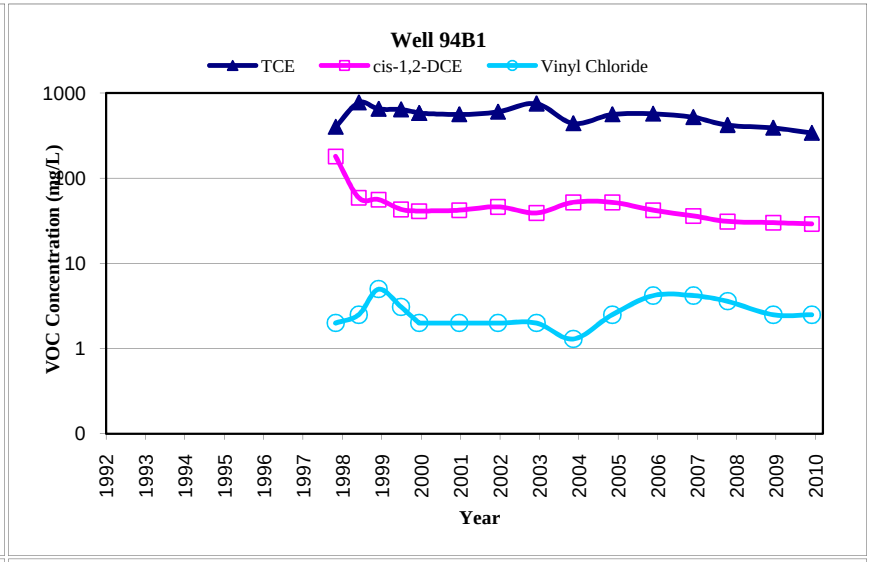


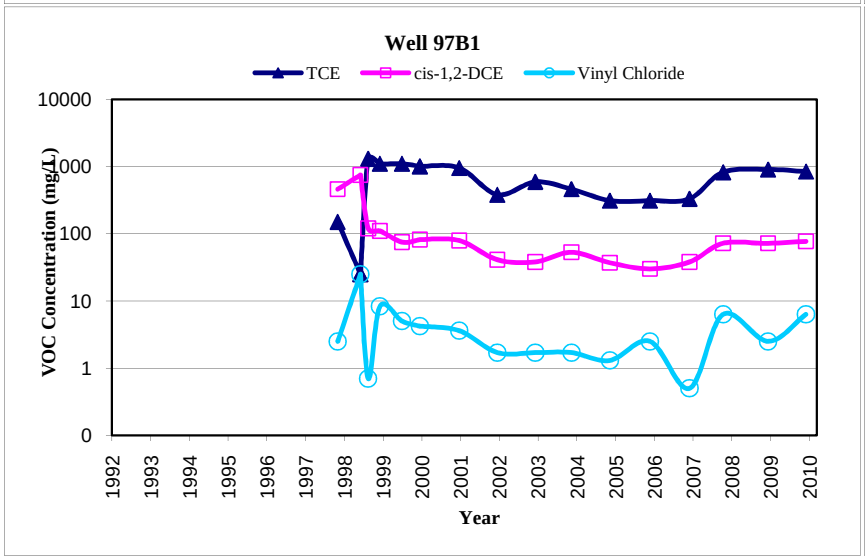


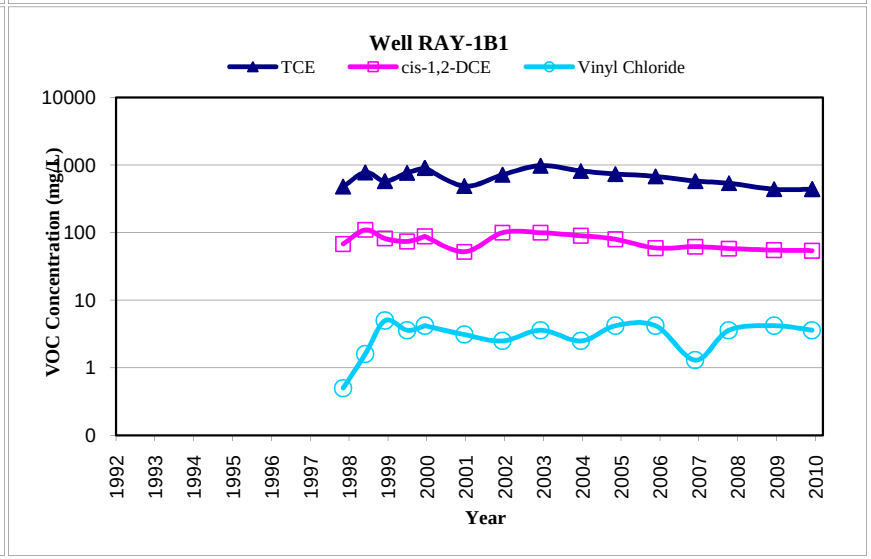


APPENDIX D
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "B1" AQUIFER WELLS

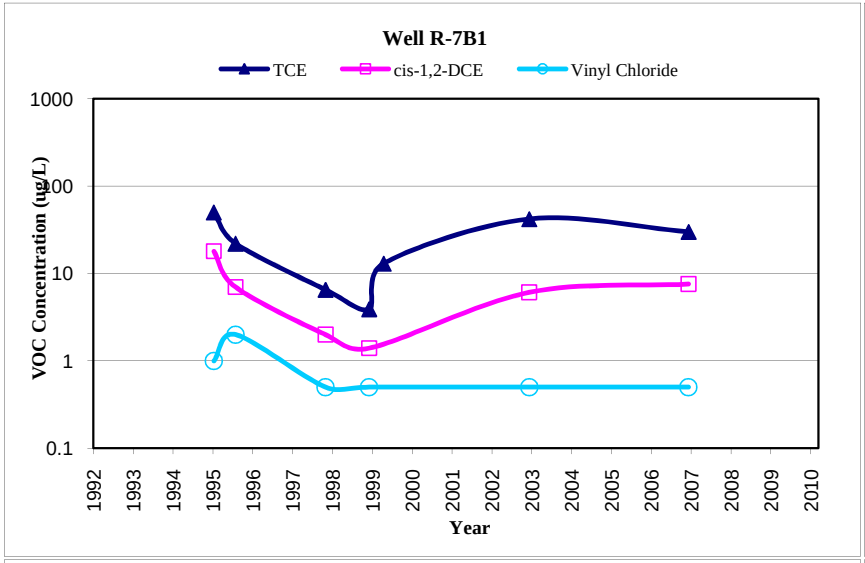


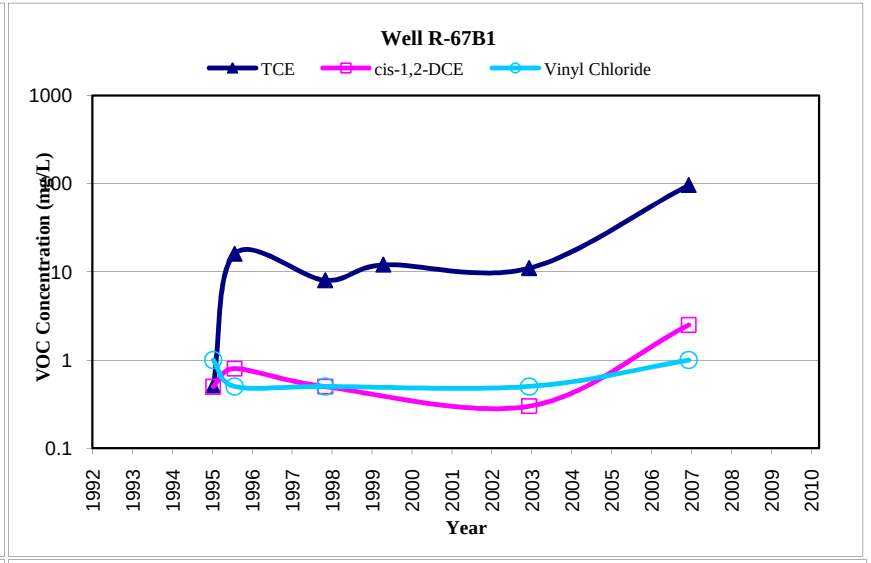


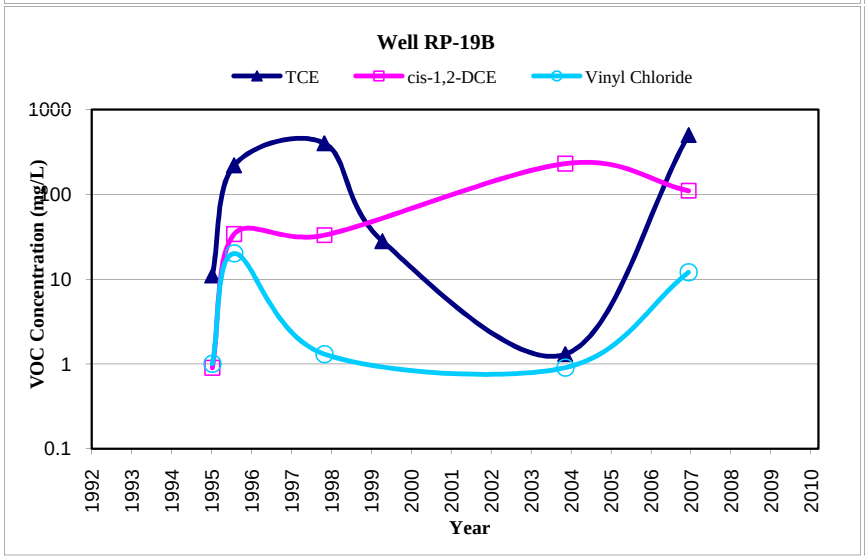


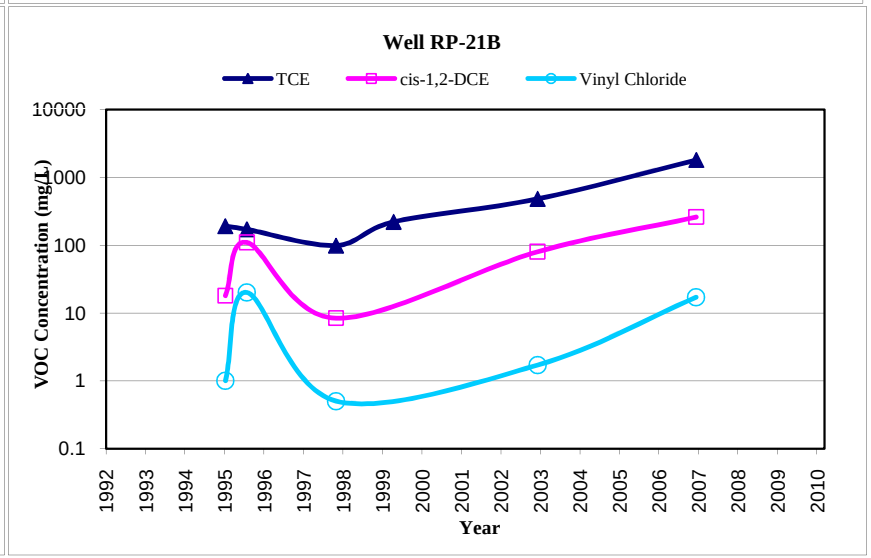


APPENDIX D
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "B1" AQUIFER WELLS

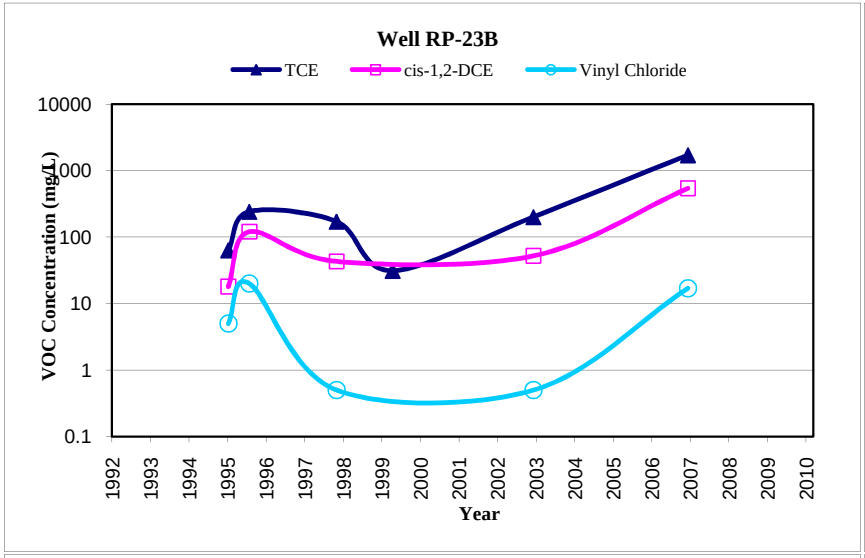


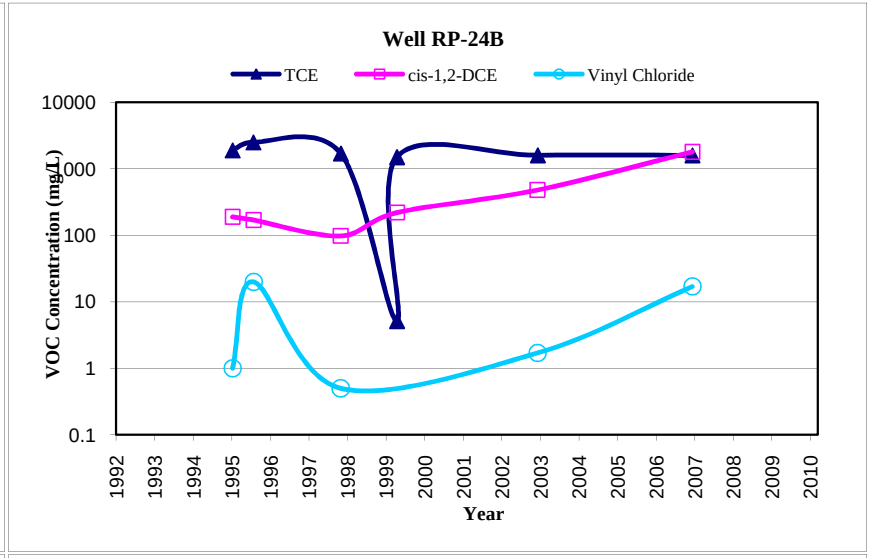


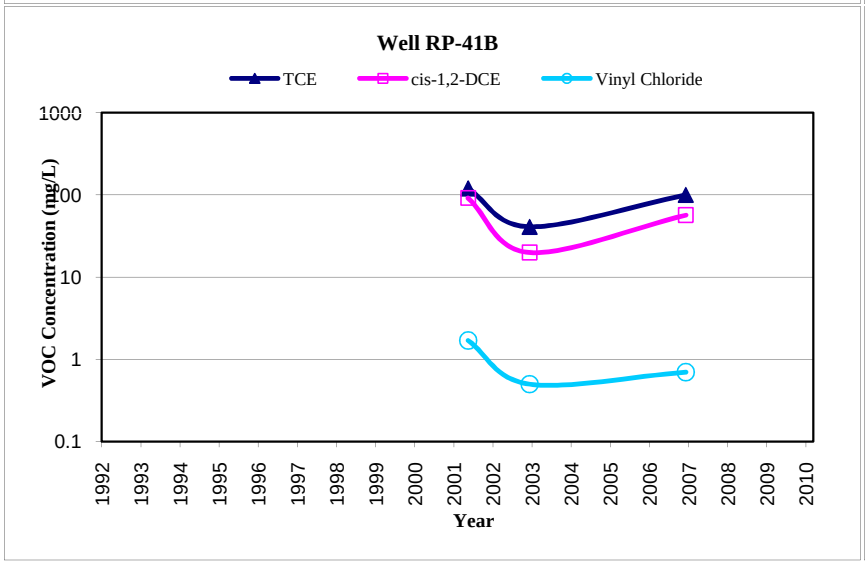


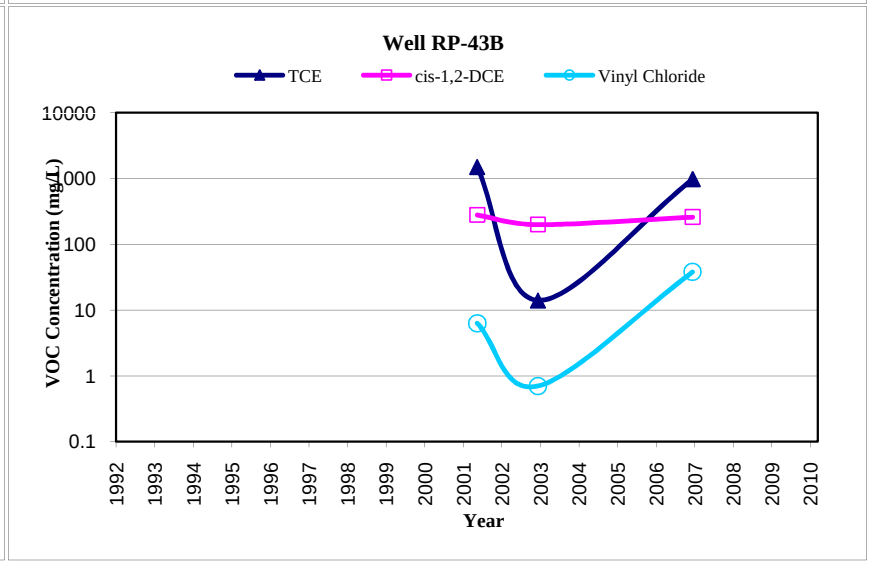


APPENDIX D
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "B1" AQUIFER WELLS









APPENDIX D
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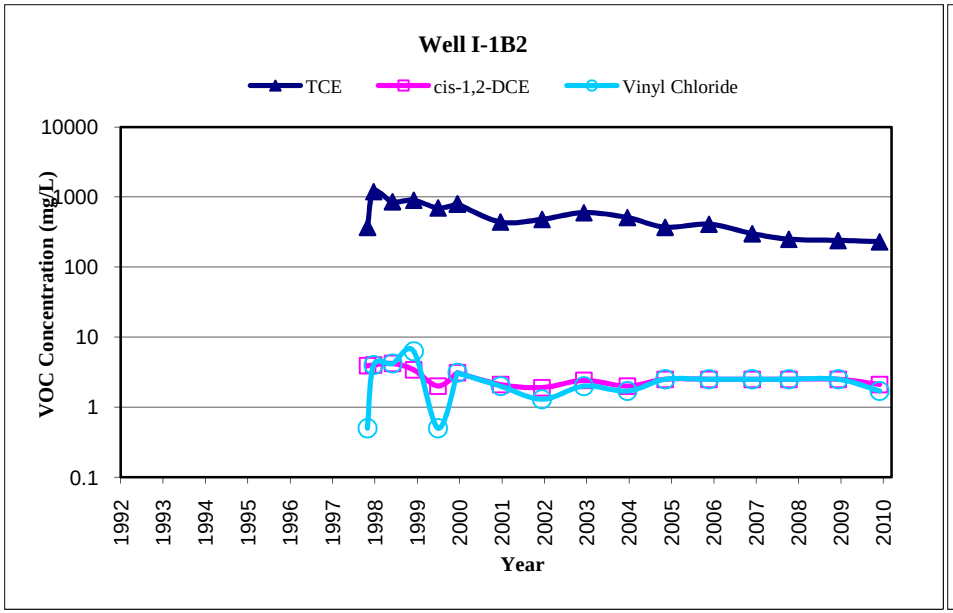
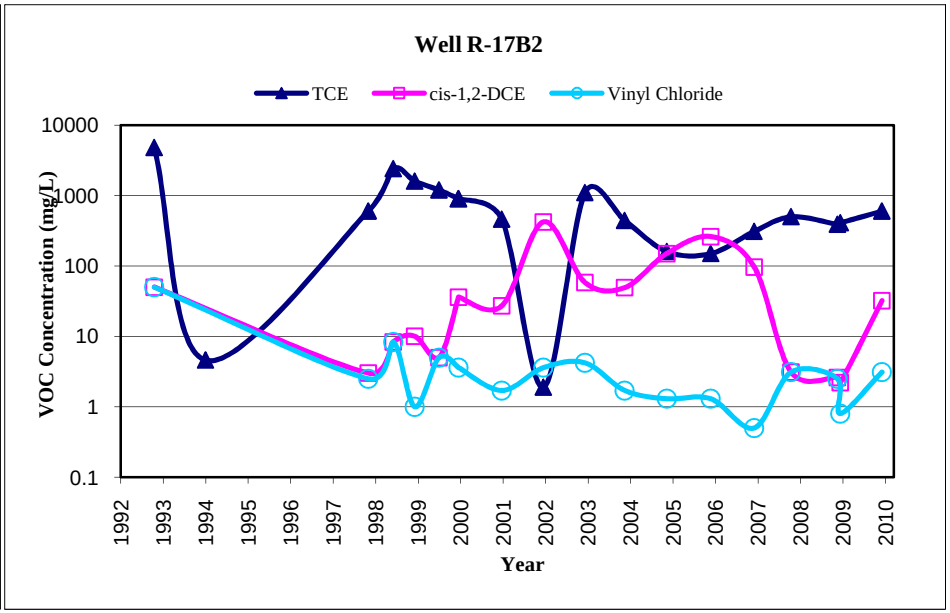
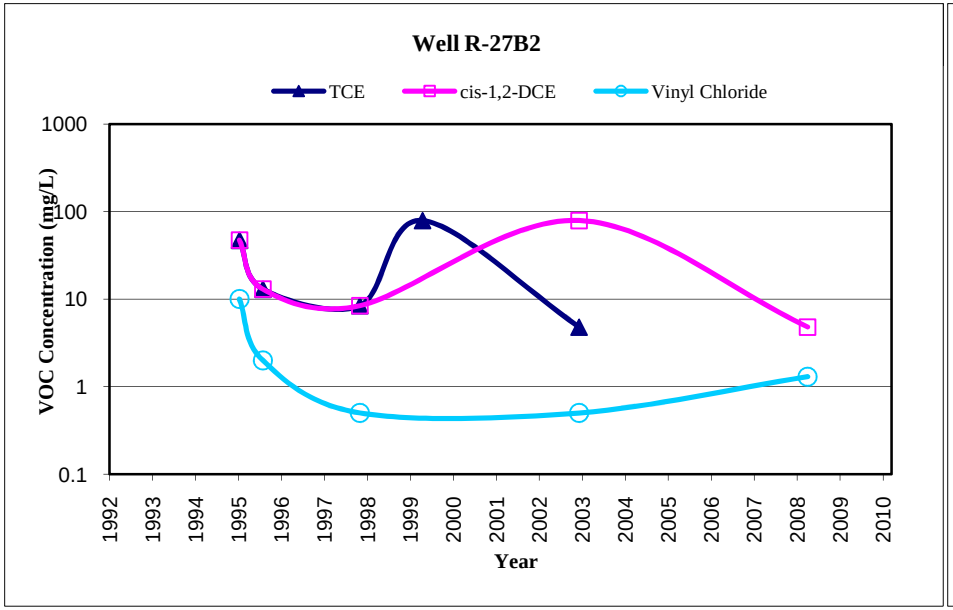
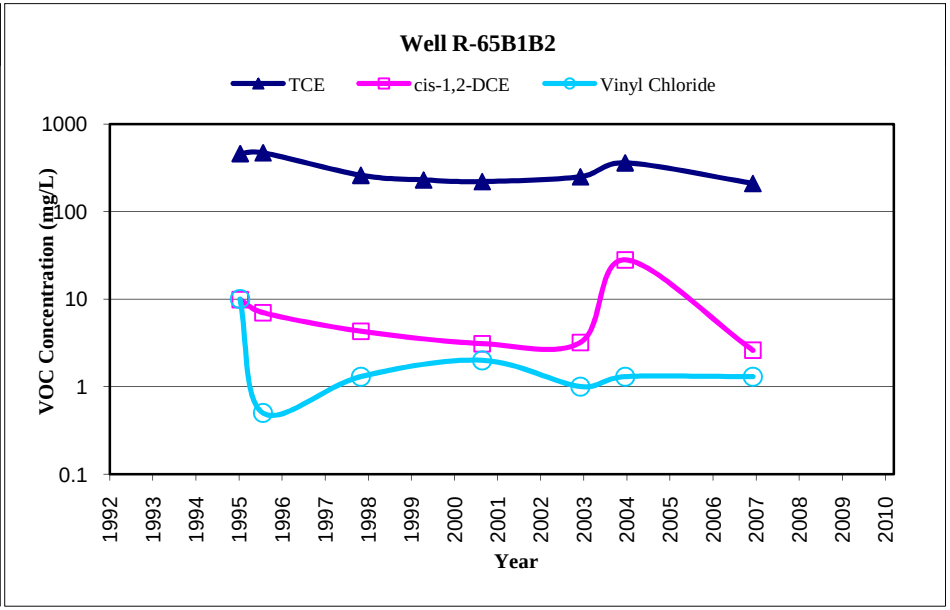
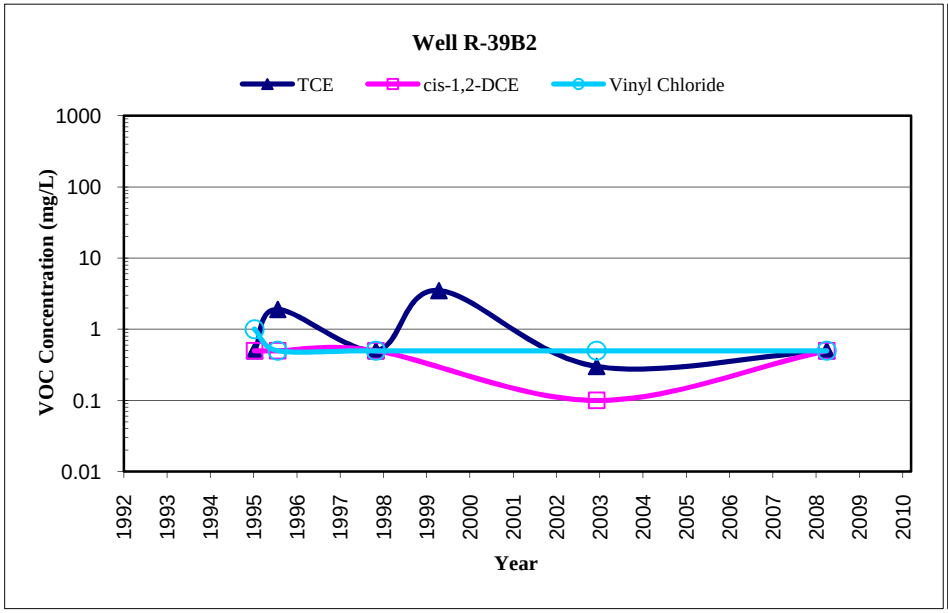


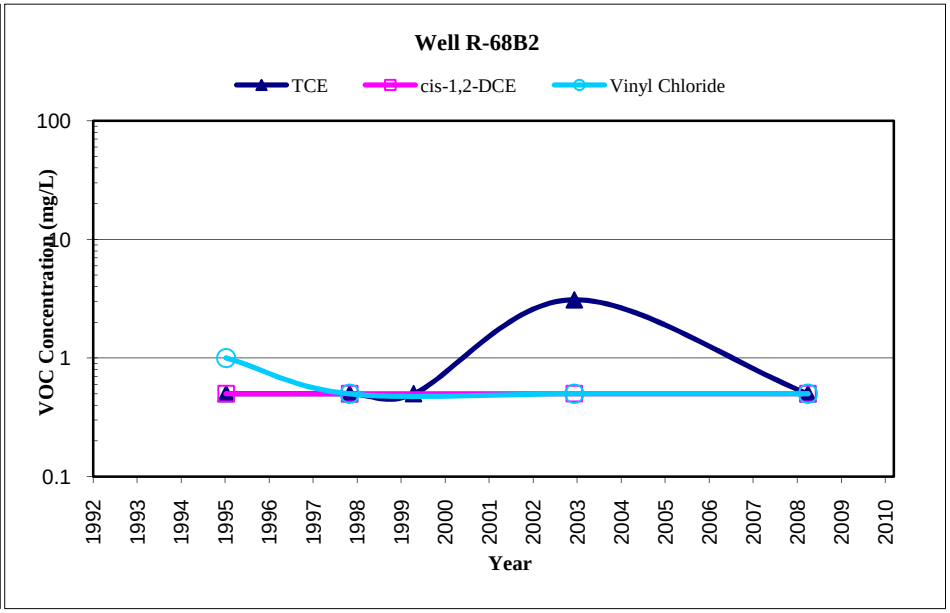


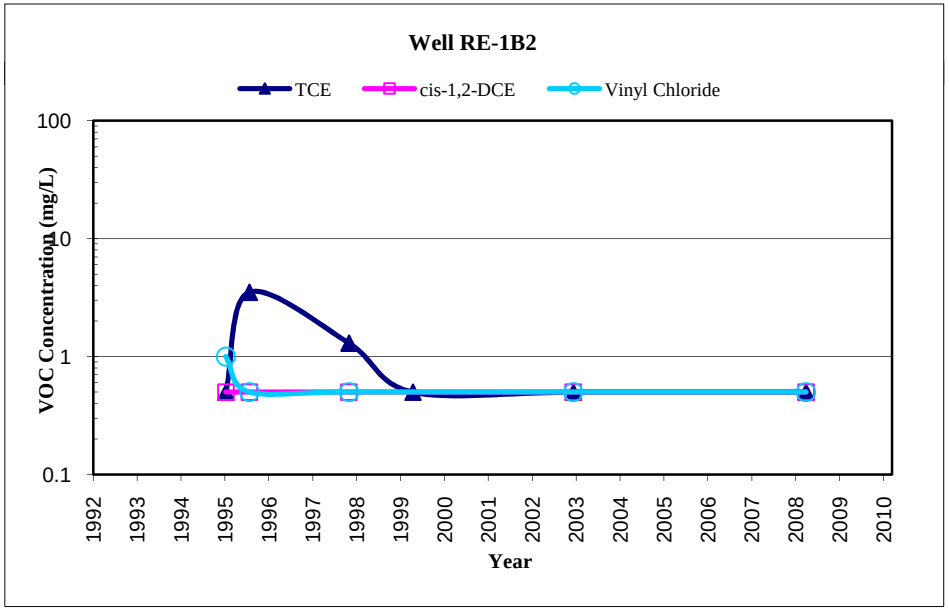




APPENDIX D
AVERAGE ANNUAL VOC CONCENTRATIONS IN SITE SPECIFIC "B2" AQUIFER WELLS







APPENDIX E

QUALITY ASSURANCE/ QUALITY CONTROL REPORT

Appendix E
Quality Assurance/Quality Control Report

Raytheon Company - Former Facilities
350 Ellis Street Site
Mountain View, California

This Quality Assurance/Quality Control Report has been prepared by Locus Technologies (Locus) on behalf of Raytheon Company for the groundwater treatment system samples collected during this reporting period at the Raytheon's former facility located at 350 Ellis Street in Mountain View, California. This QA/QC report demonstrates that the work performed at this site complied with the standards and protocols in accordance with the 1991 Unified Quality Assurance Project Plan for the Middlefield-Ellis-Whisman site in Mountain View, California (UQAPP).

In accordance with the UQAPP, one matrix spike/matrix spike duplicate (MS/MSD) and one method blank sample are to be analyzed for every 20 samples analyzed by the laboratory. In addition, one field duplicate is to be collected for every 20 samples collected and a laboratory prepared travel blank sample accompanies every shipment of samples.

Matrix Spike/Matrix Spike Duplicate and Blank Spike/Blank Spike Duplicate (BS/BSD) Samples

The MS/MSD and BS/BSD samples are used to assess accuracy and precision of the data. MS/MSD and/or BS/BSD samples were run for each of the analyses conducted. A precision goal of 35 percent relative percent difference (RPD) was used for VOC/SVOC analyses. The RPD values ranged from 0 to 13 and 1 to 9 percent for BSD and MSD samples, respectively (Table E-1), and are within the precision goals.

A percent recovery goals of 40 – 150, 75 – 130, and 80 - 120 percent for the volatile analysis were used for the MS/MSD samples. Laboratory QC limits were used for the analyses for which the UQAPP does not specify a percent recovery goal. The surrogate recoveries for the MS/MSD samples ranged from 78 – 118 percent; the quality assurance goal for MS/MSD samples is 80 to 120. For surrogate recoveries for the MS/MSD samples, two were observed beyond the quality assurance goal. In terms of accuracy and precision for MS/MSD samples, the completeness is 95 percent (Table E-2).

The laboratory BS/BSD samples were analyzed using EPA Method 8260. Percent recovery goals for BS/BSD samples are not specified in the UQAPP; as such, the laboratory QC limits were used as the quality assurance goals. All BS/BSD sample percent recoveries were within the quality assurance goals, and are included in Table E-2. In terms of accuracy and precision, the completeness for both BS/BSD analyte recovery and surrogate recovery is 92 percent.

Travel Blank Samples

A total of 13 travel blank samples were analyzed for this annual reporting period. The travel blank surrogate recoveries ranged from 83 to 129 percent, and are within the quality assurance goal of 80 – 120 percent (Table E-3). The completeness of the travel blank data is 100 percent and the data are valid.

Field Blank Samples

Three field blank samples were analyzed during this reporting period. The percent recoveries of the field blank surrogates ranged from 93 to 107 percent, and are within the quality assurance goal of 80 – 120 percent (Table E-3). The completeness of the field blank data is 100 percent; the data are valid.

Method Blank Samples

The laboratory analyzed 20 method blank samples in this reporting period. The percent recoveries ranged from 81 to 126 percent for surrogates associated with EPA Method 8260, and are within the quality assurance goals of 80 – 120 percent (Table E-3). The method blank data have a completeness of 100 percent; the data are valid.

Field Samples

The laboratory analyzed a total of 41 field samples during this reporting period. The percent recoveries ranged from 80 to 129 percent for EPA Methods 8260. The field sample data have a completeness of 100 percent and are valid.

Field Duplicate Samples

Three field duplicate samples were collected and analyzed in 2009. The percent recoveries ranged from 101 to 124 percent for the EPA Method 8260 analysis, which are within the quality assurance goals (Table E-3). The duplicate sample data have a completeness of 100 percent, and are valid.

TABLE E-1
2009 ANNUAL PROGRESS REPORT
QUALITY ASSURANCE REPORT
SUMMARY OF LABORATORY PRECISION DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Sample Type	Constituent	Precision		Completeness	
		Relative Percent Difference (%)	Quality Assurance Goal (%)[2]	Percent (%)	Quality Assurance Goal (%)
Blank Spike Duplicate	1,1-Dichloroethene	0 - 13	35	100	90
	Trichloroethene	0 - 11			
	Chlorobenzene	0 - 6			
	Toluene	2 - 7			
	Benzene	0 - 7			
Matrix Spike Duplicate	1,1-Dichloroethene	1 - 7	35	100	90
	Trichloroethene	2 - 9			
	Chlorobenzene	1 - 5			
	Toluene	1			
	Benzene	4			

Notes:

1. If QA Goal is not specified in UQAPP for specified compound, or its associated analysis, the laboratory QC limit is used.

TABLE E-2
2009 ANNUAL PROGRESS REPORT
QUALITY ASSURANCE REPORT
SUMMARY OF LABORATORY ACCURACY DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Sample Type		Constituent	Accuracy		Completeness	
			Percent Recovery (%)	Quality Assurance Goal (%)	Percent (%)	Quality Assurance Goal (%)
Matrix Spike and Matrix Spike Duplicate [1]	Analyte	1,1-Dichloroethene	97 - 130	40-150	95 *	90-100
		Trichloroethene *	28 - 120			
		Chlorobenzene	89 - 113			
		Benzene	105 - 110	75 - 130		
		Toluene	94 - 104	80 - 120		
	Surrogate	1,2-Dichloroethane-d4	78 - 118	80-120		
		Toluene-d8	94 - 104			
		p-BROMOFLUOROBENZENE	84 - 101			
Blank Spike and Blank Spike Duplicate[2]	Analyte	1,1-Dichloroethene	84 - 127	80 - 120	92 **	90-100
		Benzene	101 - 110			
		Trichloroethene	92 - 111			
		Toluene	94 - 108			
		Chlorobenzene	85 - 114			
	Surrogate	Dibromofluoromethane	95 - 101	80-120		
		1,2-Dichloroethane-d4	81 - 122			
		Toluene-d8	94 - 107			
		Bromofluorobenzene	92 - 110			
		p-Bromofluorobenzene	83 - 107			

Notes:

1 The percentages shown for the quality assurance goals are actually laboratory QC limits; when the UQAPP was written, these analyses were not required for treatment system samples, as such a QA goal was not established.

2 Quality assurance goals were not specified for BS/BSD samples in the UQAPP, as such the laboratory QC limits were used.

* Response exceeded instruments linear range. No analytical problems were encountered. Therefore the completeness for MS/MSD sample is (32/34)*100 =94.4 percent

** High surrogate recoveries were observed for 1,2-dichloroethane-d4 in only one of blank spike. The 122 percent recovery is only slightly beyond the 120 limit and is not expected to significantly effect the sample results associated with the batch. Hence, the completenesss for BS/BSD sample is (11/12)*100= 92 percent

TABLE E-3
2009 ANNUAL PROGRESS REPORT
QUALITY ASSURANCE REPORT
SUMMARY OF ACCURACY AND PRECISION DATA
RAYTHEON COMPANY - FORMER FACILITIES
350 ELLIS STREET, MOUNTAIN VIEW, CALIFORNIA

Sample Type		Constituent	Accuracy		Precision		Completeness	
			Percent Recovery (%)	Quality Assurance Goal (%)[a]	Relative Percent Difference (%)	Quality Assurance Goal (%)	Percent (%)	Quality Assurance Goal (%)
Travel Blanks	Surrogate	Dibromofluoromethane	94	81 - 124	not applicable		100	90-100
		1,2-Dichloroethane-d4	83 - 129	73 - 140				
		Toluene-d8	94 - 105	80 - 120				
		p-Bromofluorobenzene	86 - 118					
Field Blanks	Surrogate	1,2-Dichloroethane-d4	93 - 119	80-120	not applicable		100	90-100
		Toluene-d8	100 - 101					
		p-Bromofluorobenzene	98 - 107					
Rinse Blanks	Surrogate	1,2-Dichloroethane-d4	118	80 - 120	not applicable		100	90-100
		Toluene-d8	102	88 - 113				
		p-Bromofluorobenzene	109	80 - 127				
Method Blanks	Surrogate	Dibromofluoromethane	98 - 105	81 - 124	not applicable		100	90-100
		1,2-Dichloroethane-d4	81 - 126	73 - 140				
		Toluene-d8	93 - 109	80 - 120				
		p-Bromofluorobenzene	85 - 114	80 - 127				
Field Samples	Surrogate	Dibromofluoromethane	97 - 103	80 -120	not applicable		100	90-100
		1,2-Dichloroethane-d4	80 - 129	73 - 140				
		Toluene-d8	93 - 105	80 - 120				
		p-Bromofluorobenzene	83 - 115					
Field Duplicates	Surrogate	1,2-Dichloroethane-d4	101 - 124	73 - 140	not applicable		100	90-100
		Toluene-d8	102 - 106	80 - 120				
		p-Bromofluorobenzene	102 - 110					

Notes:

a. Quality assurance goals were only specified for MS/MSD laboratory samples in the UQAPP, as such laboratory QC limits are used.
b. The quality assurance goals stated are the actual laboratory QC limits; the methods were not required on treatment system samples at the time the UQAPP was written.