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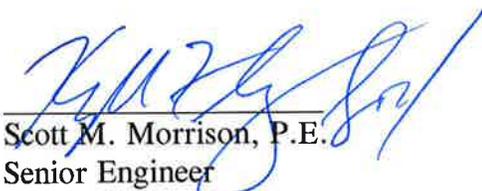
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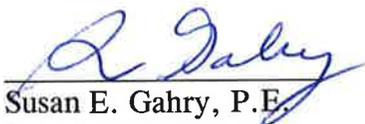
**2010 ANNUAL PROGRESS REPORT
SMI HOLDING LLC
455, 485/487 AND 501/505
EAST MIDDLEFIELD ROAD
MOUNTAIN VIEW, CALIFORNIA**

APRIL 11, 2011

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1.0 INTRODUCTION

On behalf of SMI Holding LLC (SMI), PES Environmental, Inc. has prepared this 2010 annual progress report for 455, 485/487, and 501/505 East Middlefield Road in Mountain View, California. The 2010 annual report covers the period between January 1 and December 31, 2010. As requested by the U.S. Environmental Protection Agency Region IX (EPA) in electronic correspondence dated May 6, 2005, the report has been organized in general accordance with the following outline:

- The remainder of Section 1 provides an introduction to the site, including a summary of the site background, hydrogeology, remedial activities, and a summary of 2010 activities and deliverables;
- Section 2 discusses the groundwater extraction and treatment (GWET) system, including a system description, summary of operation and maintenance (O&M) activities, capture zone analyses, and summary of analytical results;
- Section 3 discusses other site activities, if applicable;
- Section 4 discusses problems encountered during the reporting period;
- Section 5 provides a technical assessment on how the remedy is functioning, capture zones, and concentration trends;
- Section 6 summarizes the conclusions and recommendations provided in this report;
- Section 7 discusses the status of follow-up actions identified in the last EPA Five Year Report; and
- Section 8 discusses work planned for 2011 and future activities.

1.1 Site Description and Background

On November 29, 1990, EPA issued a Section 106 Unilateral Administrative Order (106 Order) for Remedial Design and Remedial Action (RD/RA) to the following Potentially Responsible Parties (PRPs) or 106 Order Companies: Fairchild Semiconductor Corporation, Schlumberger Technology Corporation, National Semiconductor Corporation, NEC Electronics, Inc., Siltec Corporation, Sobrato Development Companies, General Instrument Corporation, Tracor X-Ray, Inc., and Union Carbide Chemicals and Plastic Company Inc. The 106 Order required the 106 Order Companies to develop and implement soil and groundwater source control remedies at their individual facilities and to perform future O&M of the Middlefield-Ellis-Whisman (MEW) Regional Groundwater Remediation Program following its construction by the Consent Decree parties.

On April 10, 1992, EPA entered into a Consent Decree with two PRPs: Raytheon and Intel (Consent Decree companies), that required the Consent Decree companies to design, construct, and operate their individual facility-specific source control soil and groundwater remediation systems and to design and construct the MEW Regional Groundwater Remediation Program.

SMI is implementing the requirements of the 106 Order issued to Sobrato Development Company for 455, 485/487, and 505 East Middlefield Road (the Site). Symantec, Inc. is the current owner of the Site. The Site is located on the upgradient or south side of the MEW area, along the south side of East Middlefield Road (EMR) between Ellis Street and the railroad (Plate 1). Two buildings, 455 EMR and 487 EMR, are located in the vicinity of shallow groundwater that has potentially been impacted with volatile organic compounds (VOCs), which include trichloroethylene (TCE) and cis-1,2-dichloroethylene (cis-1,2-DCE), a degradation product of TCE.

Two potential sources of VOCs were identified on the 455 EMR site¹: (1) the former waste solvent/neutralization tanks formerly located near the southeastern corner of the building, and (2) suspected releases in the vicinity of the southeastern corner of the 455 EMR site. Results of chemical analyses of soil and groundwater samples from the area south of 487 EMR suggested a release of TCE across the southern portion of the 485/487 EMR property; but it is not known whether these sources were due to on-Site activities and/or off-Site activities.² Soil and groundwater impacts in the A-aquifer above the clean-up levels have not been identified at 501/505 EMR.

An upgradient source of TCE concentrations in groundwater is evident based on groundwater quality data for upgradient well R-24A.

1.2 Hydrogeology

In the vicinity of the potential source areas at the 455 EMR site, groundwater impacts above the clean-up goal of 5 micrograms per liter ($\mu\text{g/L}$) for TCE have only been identified in the A-aquifer. A-aquifer materials are generally present from approximately 15 feet below ground surface (bgs) to 30 or 35 feet bgs at the Site. The aquifer materials were likely deposited in alluvial environments.

The majority of the boring logs for the Site indicate the presence of a relatively thick (at least 10 feet) permeable lens or lenses at depths between approximately 15 and 30 feet bgs. The exceptions to this are limited, and include well SO-1 (gravel at 25 to 30 feet bgs) and SO-PZ3 (sand at 21 to 23.5 feet bgs and 25.5 to 32 feet bgs).

¹ PES, 1993. *Source Investigation and Characterization – Addendum 1, Sobrato Property, 455 East Middlefield Road, Mountain View, California*, July 30, 1993.

² PES, 1992. *Source Investigation and Characterization, Sobrato Properties, 485/487 and 501/505 East Middlefield Road, Mountain View, California*, March 30, 1992.

The general groundwater flow direction in the A-aquifer on the Site was to the north towards San Francisco Bay. However, subsequent to the installation of a slurry wall surrounding the downgradient Raytheon site located at 350 Ellis Street, the groundwater flow direction bifurcated to the northeast and northwest on the northern portion of 455 EMR and 485/487 EMR.

In 1993, variable-rate aquifer tests were conducted on A-aquifer wells SO-1 and SO-2 to assess hydraulic properties. The transmissivity and hydraulic conductivity calculated from the tests were 58-66 feet per day (ft/day) and 700-790 square feet per day (ft²/day) for well SO-1, and 157-160 ft/day and 2,300 ft²/day for well SO-2, respectively.¹ These results are consistent with the reported lithology at wells SO-1 and SO-2 (both installed by Dames & Moore in 1989). The lithologic log for well SO-1 indicates only a limited depth interval of permeable material (silty fine to medium gravel at depths of 25 to 30 feet bgs). The log for well SO-2 indicates the presence of more permeable lenses (fine gravel and sandy fine to medium gravel at depths of 16.5 to 27 feet bgs and silty sand at depths of 32.5 to 34.5 feet bgs).

Step-discharge testing was also conducted on wells EW-2 and EW-3 in 2000 by SECOR International, Inc. (SECOR). The results indicated that the maximum sustainable pumping rate at EW-2 and EW-3 was greater than approximately 19 gallons per minute (gpm). The greater sustainable pumping rates at extraction wells EW-2 and EW-3 indicate the presence of relatively high permeable sediments in the vicinity of these wells. To determine the extent of these sediments, SECOR prepared geologic cross-sections (in draft form – not submitted to EPA).³ The cross-sections were drawn for the Site along an east-west alignment, and extended onto the adjoining 365 EMR site to the west. The cross-sections are consistent with the presence of permeable sediments containing sand and gravel extending from the Site to at least the extraction wells on the 365 EMR site.

1.3 Remedial Activities

Each individual MEW company is responsible for investigation, cleanup and source control for soil and groundwater impacts at their individual facility-specific properties. The MEW Regional Program systems south and north of U.S. Highway 101 contain and treat impacted groundwater where a plume has mixed together with other impacted groundwater and the source of impacts has not been identified. Navy and NASA both operate groundwater extraction treatment systems to contain and treat impacted groundwater at their areas of responsibility in addition to the regional system operating North of 101.

Remedial activities were initiated at the Site in 1995. An air sparging/soil vapor extraction (AS/SVE) pilot test was conducted at the Site between October 1995 and March 1996. In 1997, a full-scale AS/SVE system was installed. Four groundwater extraction wells in the A-aquifer were also installed. Extracted groundwater was initially treated by two 300-pound

³ SECOR, 2000. *Transmittal of the Second Quarter 2000 Groundwater Capture Analysis for Siemens-Sobrato Properties at 455, 485/487, and 501/505 East Middlefield Road, Mountain View, California*, July 11, 2000.

granular activated carbon (GAC) vessels in series, but is currently treated through two 1,000-pound GAC vessels in series.

The AS/SVE system operated until rising water levels forced closure of the vertical AS/SVE wells. The SVE system continued to operate with the horizontal well and extracted vapors were treated by GAC. Closure of the SVE system was obtained in 2001 following confirmatory soil sampling to verify that soil clean-up goals were achieved.

A chemical oxidation pilot test using potassium permanganate to reduce groundwater VOC concentrations was conducted at the Site in November and December 2000, with the highest volume of potassium permanganate solution injected near the well with the highest VOC concentrations. Residual effects of this treatment were noted; the TCE concentration in the area treated most extensively (near well SO-PZ2) has been reduced from the pre-injection concentration of 2,900 $\mu\text{g/L}$. Further injection of potassium permanganate solution to further reduce groundwater concentrations in the source area was proposed in September 2002, but the proposed plan never received EPA approval. In January 2004, PES advised EPA that SMI no longer desired EPA's approval for additional source area chemical oxidation.

As a voluntary measure to further assess methods to facilitate Site remediation, SMI conducted an enhanced reduction dechlorination (ERD) laboratory microcosm study between January and April 2003 using a groundwater sample collected from well SO-PZ2 in December 2002. Various electron donors were tested as well as bioaugmentation. This test was discussed with EPA during a meeting on January 26, 2004. A work plan to implement ERD at the Site was submitted on March 2, 2004. Comments from EPA were received on April 8, 2004. The ERD pilot test was not implemented due to concerns of the former property owner. The property was unexpectedly sold in 2010, and SMI has been trying to contact the new property owner, as discussed further in Section 3.

In September 2009, EPA issued their second five-year review for the MEW Site (Five Year Review). The five-year review contained a summary of issues, recommendations, and follow-up actions for groundwater for each facility. The progress towards the completion of the site-specific recommendations contained in EPA's Five Year Review is contained in Appendix A. The completed "2010 Annual Remedy Performance Checklist" is included as Appendix B.

1.4 2010 Activities and Deliverables

Activities and deliverables provided to EPA in 2010 included the following:

- 2009 Annual Progress Report on March 31, 2010;
- An annual and quarterly NPDES report was submitted in January 2010. Quarterly NPDES reports were submitted in April, July, and October 2010. These reports were also submitted to the Regional Water Quality Control Board (RWQCB) and the State of California's Geotracker system;

- Participation in semi-annual water elevation monitoring events for the MEW Site that were conducted in March and November 2010;
- Participation in All-Parties meetings, as scheduled by EPA;
- Submittal of cost information requested by EPA for the focused groundwater feasibility study in December 2010; and
- The annual groundwater sampling event was conducted on December 14, 2010 (results are discussed in Section 2.4).

2.0 GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

The GWET system consists of four extraction wells (EW-1, EW-2, EW-3, and EW-4) that went on-line in June 1997. Well EW-4 was shut-down on May 11, 2007 with EPA's prior approval and a larger pump was subsequently installed in well EW-2. The extraction wells are located in the A-aquifer. The deeper B1-aquifer has not been impacted with TCE at the Site above clean-up levels in the vicinity of the potential source areas at the 455 EMR site. Extracted groundwater was initially treated by two 300-pound GAC vessels in series, but is currently treated through two 1,000-pound GAC vessels in series. The extraction wells pump a total of approximately 20 gpm.

2.1 GWET System Monitoring and Mass Removal

During 2010, the GWET system monitoring was conducted as follows:

- Weekly monitoring of effluent flowrate;
- Monthly effluent sample analyses for VOCs using EPA Method 8260B (low level);
- Monthly influent and mid-point sample analyses for halogenated VOCs (HVOCs) using EPA Method 8260B;
- Monthly standard observations for the groundwater treatment system were recorded;
- Semi-annual influent monitoring for VOCs by EPA Method 8260B;
- Annual influent monitoring for pH; and
- Annual effluent monitoring for pH, turbidity, fish toxicity (bioassay 96-hour percent survival with rainbow trout), electrical conductivity and temperature.

Laboratory analyses were performed by TestAmerica, Inc. (TAL), of San Francisco, a California-certified laboratory. Summaries of the laboratory analytical results for first through fourth quarters of 2010 are presented on Tables 1A through 1D, respectively.

During calendar year 2010, the estimated mass of total VOCs removed was approximately 3.9 pounds. Mass removal data for the GWET system during 2010 is summarized on Table 2. Monthly discharge flow totals and VOC concentrations from GWET system influent samples were used to calculate the mass of VOCs removed.

During 2010, the GWET system removed approximately 8,656,927 gallons of groundwater at an average extraction rate of approximately 17.6 gpm. The average monthly extraction well flow rates are shown on Table 3. The average extraction flow rates for wells EW-1, EW-2, and EW-3 were 0.8, 8.8, and 7.9 gpm, respectively. Extraction well EW-4 was not operated during 2010.

Since start up in June 1997, the GWET system has removed and treated approximately 95,107,530 gallons of groundwater (Plate 2), and removed approximately 60.5 pounds of total VOCs (Table 2 and Plate 3). In general, overall influent VOC concentrations have been decreasing as shown on Plate 4. Influent concentrations temporarily increased following the shut-down of extraction well EW-4 in May 2007 and the subsequent installation of a larger pump in extraction well EW-2. The temporary increase in influent VOC concentrations was likely due to well EW-2 pumping at a higher rate and pulling in more TCE-impacted groundwater than well EW-4 previously did (as groundwater concentrations in the vicinity of well EW-4 are lower than in the vicinity of well EW-2). The intent of shutting down well EW-4 was to optimize, or improve, mass removal.

2.2 System Performance/O&M Activities

The O&M activities that occurred during 2010 included:

- On January 11, 2010, the telephone line for the auto-dialer was repaired by AT&T and the vacuum breaker located downstream of the effluent pump was replaced due to a minor leak. The system operated continuously during the repairs;
- On April 14, 2010, a carbon change-out was completed. The system was shut-down for approximately four hours;
- Between July 19 and August 9, 2010 the GWET system shutdown four times (July 19, July 23, July 26, and August 9) due to a high influent tank level alarm. After each shutdown, the system was restarted the same day or the next day (within 24 hours of each shutdown). After the first two shutdowns, the level control probes were cleaned and the cartridge filters were checked and replaced (albeit they appeared to be clean). The cause of the shutdowns was indeterminate as the problem was intermittent;
- On August 10, 2010, the effluent pump performance was checked by an electrician and compared to its theoretical pump curve; as the performance was lower than expected, a new pump was installed on August 13, 2010. On August 16, 2010, the system shutdown again. On August 17, 2010, the system was restarted but

would not stay operational. A higher than normal flow rate from well EW-1 was identified (with pumping at a high rate for a short period of time); the flow rate for well EW-1 was decreased to an average of approximately 1 gpm, and system operation resumed;

- On August 19, 2010 a carbon change-out was completed, and the vessels were relocated to allow full access to the electrical control panel. The system was shut-down during the change-out for approximately 2.5 hours;
- On September 22, 2010, the system shut-down again due to a high tank level and was restarted the same day, with the flow rate for well EW-2 reduced from 10 gpm to 8 gpm. The flow meter for well EW-2 was initially noted to be inoperable and was replaced on September 24, 2010; and
- On October 12, 2010, the system shut-down due to a high tank level and was restarted later that day. On the first attempt to restart the system, an abnormal clicking sound was heard on the control panel. The system was successfully restarted on the second attempt. On October 13, 2010, an electrician replaced the influent tank level controller module on the control panel, as weak signals from the module were suspected. No further shut-downs occurred during the quarter, and the flow rate for well EW-2 was increased back to 10 gpm on November 13, 2010.

Based on the above information, the GWET system operated for approximately 98% of 2010, with approximately one week of downtime.

2.3 Hydraulic Control and Capture Zone Analysis

This section presents the methods and results of the evaluation of hydraulic control and capture of VOCs identified in the A-aquifer beneath the Site. In accordance with the EPA's electronic correspondence dated May 6, 2005, capture was evaluated using the six-step process recommended by EPA in our December 16, 2004 meeting and the February 3, 2005 EPA Training Course entitled *Capture Zone Analyses for Pump-and-Treat Systems*. PES notes that in January 2008, EPA published a document entitled "*A Systematic Approach for Evaluation of Capture Zones at Pump and Treat Systems (EPA/600/R-098/003)*", which is also based on the six-step process.

2.3.1 Methodology

The groundwater capture zone (shown on Plates 5 and 6) for the remediation system were manually prepared using flownet construction techniques based on potentiometric surface maps prepared from groundwater elevation measurements collected from the Site on March 25 and November 18, 2010. The capture zone maps were developed through a combination of: (1) qualitative analysis of the groundwater elevation contour maps using available Site information (i.e., groundwater elevation/location data, pumping well locations, and Site-specific hydrogeologic data); (2) application of groundwater flow concepts

(i.e., continuity of flow and well hydraulics); and (3) performing flow budget and capture zone width calculations. Capture for the Site was then further evaluated using the six-step process recommended by EPA, as summarized in the following section.

2.3.2 Estimated Capture Zone for 2010

Step 1 – Review Site Data, Site Conceptual Model, and Remedy Goals

Hydrogeologic characterization activities performed at the Site have included: (1) the advancement and lithologic logging of at least 30 boreholes ranging in depth from approximately 20 to 67 feet bgs; (2) the installation of 15 groundwater monitoring wells and 4 groundwater extraction wells; (3) collection and laboratory analysis of at least 120 soil samples; (4) the collection and laboratory analysis of groundwater samples from at least 18 locations; and (5) the performance of variable rate and step discharge testing of 4 groundwater wells located at the Site. These activities exclude regional work (deeper investigations and deeper wells). These activities have adequately characterized the horizontal and vertical extent of VOCs in soil and groundwater at the Site and identified potential on-Site source areas (as described above in Section 1.1). As discussed in Section 1.3, soil remediation was completed in 2001. Groundwater source remediation activities have included operation of an AS/SVE system, a chemical oxidation pilot test, and continued operation of the GWET system. Additionally, these activities have generated a large volume of Site-specific hydrogeologic data to facilitate the evaluation of capture at the Site, including hydraulic conductivity estimates, aquifer thickness data, aquifer geometry information, and horizontal hydraulic gradients (as described in Section 1.2). Further, the hydrogeologic characterization activities have resulted in the development of an extensive network of groundwater monitoring wells that are well distributed across the Site, with which to construct potentiometric surface and capture zone maps.

The 106 Order requires the removal or remediation of sources of chemicals of concern originating from the Site (source control). As discussed in Section 1.1, the sources at the Site consisted of the former waste solvent/neutralization tanks formerly located near the southeastern corner of 455 EMR and suspected surface releases located near the southern portion of the 485/487 EMR property.

Step 2 – Define Site-Specific Target Capture Zones

The EPA-approval final O&M report⁴ for the Site states “Capture zone areas will be compared to the groundwater chemical data to assess whether sufficient groundwater capture is occurring”. Thus, the target capture for the Site is that which results in a reduction in groundwater chemical concentrations on the Site. The on-Site area of A-aquifer groundwater impacts originate from the source area in the vicinity of wells SO-PZ1 (near the southeast corner of the building at 455 EMR) and well SO-PZ2 (near the southwest corner of the

⁴ Secor International Incorporated, 1998. *Final Report, Operation and Maintenance Plan for 455, 485/487, and 501/505 East Middlefield Road, Mountain View, California*. February 20.

building at 485/487 EMR). Since 1995, the highest A-aquifer groundwater concentrations have historically been identified in wells SO-PZ1 and SO-PZ2. However, in recent years, TCE concentrations in these wells have declined, albeit cis-1,2-DCE (a biological breakdown product of TCE) have generally increased. Maintaining hydraulic control of the groundwater originating from this area should result in a reduction in groundwater chemical concentrations at the Site, which has been noted to date. However, continued operation of the extraction system is not expected to greatly reduce on-Site groundwater concentrations and many more years (or decades) of operation is required to meet the clean-up goals. As discussed in a prior document, a slow dissolution process (matrix diffusion), associated with absorbed TCE contained predominantly within the finer-grained materials, may be continually leaching TCE from fine-grained aquifer soils into the surrounding aquifer⁵.

Step 3 – Interpret Water Levels

An accurate interpretation of capture zones relies on an accurate interpretation of the potentiometric surface. The potentiometric surface maps for the March 2010 and November 2010 groundwater monitoring events were contoured manually using data from the 15 groundwater monitoring wells distributed across the Site. Additionally, groundwater level elevations from groundwater extraction wells EW-2 and EW-3 were also considered in preparing the potentiometric surface maps. Based on the results of step-discharge testing, well losses at wells EW-2 and EW-3 were found to be negligible (i.e., less than 0.02 foot for the range of pumping rates associated with these wells)⁶. Because extraction well EW-4 is no longer operating, groundwater levels from well EW-4 were used for preparing the capture zone maps. Groundwater levels measured at well EW-1 were not considered in preparing the potentiometric surface maps, as pronounced drawdown effects in that well are large and well losses appear to be significant.

Table 4 summarizes depth to groundwater and groundwater elevation data at the Site. Plate 7 provides a graphical summary of groundwater elevation data from 1992 through 2010 for wells R-21A, SO-PZ1, SO-1, SO-2, C-3, and R-20A. Between 1992 and 1997, the groundwater elevations rose more than 10 feet. Seasonal variations in groundwater levels at the Site in 2010 do not appear to significantly influence the shape of the potentiometric surface and capture zone maps. The groundwater levels increased by an average of 0.8 feet between November 2009 and March 2010, and decreased by an average of 0.3 feet between March 2010 and November 2010. Overall, the groundwater level increased by an average of 0.5 feet between November 2009 and November 2010. [Note that the operating extraction wells (EW-1, EW-2, and EW-3) and B1-aquifer well SO3-B1 were not used in this analysis].

Plates 5 and 6 present the potentiometric surface maps and capture zone maps of the A-aquifer for the two groundwater monitoring events performed in 2010. Consistent with historical data,

⁵ PES, 2008. *Remedial Optimization Evaluation Report, SMI Holding LLC, 455, 485/487, and 501/505 East Middlefield Road, Mountain View, California.* September 2.

⁶ PES, 2005. *2004 Annual Progress Report, SMI Holding Company, LLC, 455, 485/487, and 501/505 East Middlefield Road, Mountain View, California.* June 8.

the groundwater at the Site is flowing to the northeast. The potentiometric surface maps show groundwater on the western portion of the Site flowing to the north, which is consistent with data from previous monitoring events. The groundwater contour data shows noticeable depressions in the groundwater surface as a result of groundwater extraction and indicate that the estimated capture zone overlaps the target capture zone. The capture zone encompasses the former potential source areas (the targeted area).

Step 4 – Perform Appropriate Calculations

To facilitate the preparation of the capture zone maps, capture zone width and stagnation point calculations were performed to serve as additional lines of evidence for assessing the extent of capture. Results of these calculations contributed to interpreting the extent of capture in areas that could not be precisely defined based on the potentiometric surface map alone. The capture zone width and stagnation point calculations are provided in Table 5, along with a description of the assumptions considered in the calculations.

Flow budget calculations were also performed, which calculate the estimated rate of groundwater extraction required for capture based on groundwater flow through the extent of the plume. These calculations are also provided in Table 5 and indicate that the estimated groundwater extraction rate for capture ranges from approximately 4.4 to 14.3 gpm (based on estimates of transmissivity ranging from 700 to 2,300 ft²/d, as identified in Section 1.2). The cumulative extraction rates for the three extraction wells operating at the Site averaged 17.6 gpm during 2010, which exceeds the high (conservative) end of the range of estimated groundwater extraction rates required for capture.

Step 5 – Evaluate Concentration Trends at Monitoring Wells

Chemical concentration trends observed in monitoring wells at the Site were also evaluated to provide an additional line of evidence for capture. Plate 8 presents graphs showing chemical concentration trends over time for each monitoring well located at the Site, including wells located within the target capture zone and wells located outside and downgradient of the target capture zone. As indicated on Plate 8, concentration trends have shown a significant decline in nearly all of the monitoring wells following start-up of the GWET system in 1997. VOC concentration trends observed at downgradient monitoring wells IM-7A and R-15A exhibited appreciable declining trends between 1992 and 2002. Since 2002, significant concentration changes have not been noted in wells IM-7A and R-15A, with concentrations below 16 µg/L and 100 µg/L, respectively (see Table 7).

Step 6 – Interpret Actual Capture Based on Steps 1 through 5, Compare to Target Capture Zone, and Assess Uncertainties and Data Gaps

Capture at the Site was assessed by evaluating the multiple lines of evidence described in Steps 1 through 5, above. The following lines of evidence indicate that the GWET system is effectively providing hydraulic capture at the Site:

- The Site has been adequately characterized through the extensive sampling and monitoring programs performed at the Site. Sufficient groundwater chemistry data has been collected from the Site to characterize the horizontal and vertical distribution of VOCs in groundwater and a large amount of Site-specific hydrogeologic data has been collected to facilitate assessing capture;
- The target capture for the Site has been identified as that which results in a reduction in groundwater chemical concentrations on the Site. Maintaining hydraulic control of the groundwater originating from the source area in the vicinity of wells SO-PZ1 (near the southeast corner of the building at 455 EMR) and well SO-PZ2 (near the southwest corner of the building at 485/487 EMR) should result in a reduction in groundwater chemical concentrations at the Site, which has been noted to date. However, as discussed in Section 2.4.3, 2010 monitoring results indicate substantial TCE degradation in groundwater samples from wells SO-PZ1 and SO-PZ2, and current TCE concentrations in the former source area(s) are less than 75 $\mu\text{g/L}$. Continued pumping may be detrimental to continued TCE (and daughter product) degradation by pulling in groundwater from the surrounding area with competing electron acceptors (oxygen, nitrate, and sulfate);
- Potentiometric surface and capture zone maps prepared for the Site have been developed based on an extensive network of groundwater monitoring wells and capture zone width calculations. These maps indicate that the estimated capture zone overlaps the target capture zone (i.e., the source area);
- Flow budget calculations performed for the Site indicate that the current GWET system extraction rate of approximately 17.6 gpm is sufficient for providing capture; and
- VOC concentration trends indicate that the GWET system is effectively capturing and reducing VOC concentrations in groundwater, as evidenced by the significant decline in nearly all of the monitoring wells following start-up of the GWET system in 1997 and appreciable declining concentration trends observed at downgradient monitoring wells IM-7A and R-15A between 1992 and 2002. Since 2002, substantial changes in concentration trends in downgradient monitoring wells IM-7A and R-15A have not been observed, which is indicative of the performance limitations of a pump-and-treat system.

Uncertainties and data gaps associated with the above-described evaluation of capture include: (1) the effect of VOCs migrating onto the Site in the A-aquifer from an unknown upgradient source has not been completely characterized; (2) well pairs are not available at the Site to demonstrate that inward hydraulic gradients exist at the downgradient margin of the target capture zone; and (3) reliable groundwater level data in the immediate vicinity of extraction well EW-1 is not available due pronounced drawdown effects (i.e., significant well losses) associated with that well and the lack of an adjacent groundwater piezometer.

Based on the multiple lines of evidence described above, which indicate that the GWET system is providing adequate capture, the first two uncertainties and data gaps are not deemed as critical data requirements for evaluating capture at the Site. Further, with regards to the uncertainty associated with the effect of VOCs migrating onto the Site, the final O&M report for the Site stated that the groundwater extraction wells would be shut down if the downgradient VOC groundwater concentrations are statistically the same as the VOC groundwater concentrations of upgradient sources migrating onto the Site.

With regards to the uncertainty related to reliable groundwater levels in the immediate vicinity of extraction well EW-1, because this well is not critical in controlling the source area (i.e., VOC groundwater concentrations in well EW-1 are relatively low and pumping rates from well EW-1 are relatively low) and all lines of evidence show that adequate capture is being maintained, no action is recommended at this time.

2.3.3 Horizontal and Vertical Gradients

Horizontal hydraulic gradients calculated for the A-aquifer at the Site ranged from 0.001 to 0.005 during 2010, which is consistent with historical data collected from the Site. The vertical hydraulic gradient, which is based on data from a single B-aquifer zone well (SO3-B1) indicates that an upward hydraulic gradient has persisted between the A- and B-aquifer zones throughout 2010.

2.4 Groundwater Monitoring and Analytical Results

2.4.1 Annual Groundwater Monitoring

The Site groundwater quality monitoring schedule was included in the final O&M report and is summarized on Table 6. Wells monitored every year include: on-Site wells C-3, R-21A, SO-4, EW-1, EW-2, EW-3, EW-4, SO-PZ1, and SO-PZ2 and off-Site wells R-15A and IM-7A. Wells monitored every other year include: on-Site wells C-2, R-20A, R-48A, SO-1, SO-2, SO3-B1, and SO-PZ3 and off-Site wells R-51A and ME-1A. However, due to EPA's concern related to the TCE concentrations in well ME-1A, this well has been monitored annually since 2002.

Annual groundwater monitoring for VOCs was conducted on December 14, 2010. Sixteen monitoring wells and four extraction wells were sampled during this event.

To coincide with the monitoring being completed by the Regional Program, the monitoring wells were sampled using low-flow methodology⁷ so that geochemical parameters associated with monitored natural attenuation (MNA) could be monitored with a flow-through cell and field meter [i.e., dissolved oxygen (DO) and oxygen-reduction potential (ORP)]. Historical

⁷ EPA, 1996. Ground Water Issue, *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures*. Office of Solid Waste and Emergency Response. April.

groundwater monitoring has been completed using the three well volume purge methodology (with port samples collected from the extraction wells).

2.4.2 MNA Monitoring

Six wells were also monitored for additional parameters used to evaluate MNA; these wells included two source area wells (SO-PZ1 and SO-PZ2), two wells located near the downgradient property boundary (wells R-20A and C-3), and two wells located further downgradient on the other side of Middlefield Road (wells ME-1A and R-15A). During reductive dechlorination, the VOCs act as electron acceptors. Other electron acceptors compete with VOCs during reductive dechlorination and must first be depleted in order for the VOCs to be utilized (degraded). The most easily depleted electron acceptor is oxygen, followed by nitrate, manganese (IV), iron (III), and then sulfate. When sulfate-reducing conditions are achieved, VOCs are also degraded. Thus, nitrate, dissolved manganese (II), ferric iron (II), and sulfate were monitored. Conditions amenable to reductive dechlorination of VOCs include:

- Low DO (less than 1 mg/L);
- Negative ORP (indicate of reductive conditions);
- Depleted nitrate concentrations;
- Depleted manganese (IV) or presence of dissolved manganese (II);
- Presence of ferrous iron (II), which indicates iron (III) depletion; and
- Reduced sulfate concentrations, relative to background.

During reductive dechlorination, TCE degrades sequentially to cis-1,2-DCE, vinyl chloride, and ethene/ethane gas.

Additionally, carbon specific isotope analysis (CSIA) was completed on samples from the six select wells to evaluate another line of evidence associated with degradation of VOCs (either abiotic or biotic). The CSIA methodology used the ratio of carbon isotopes associated with TCE to evaluate whether degradation has occurred. The heavier carbon isotope (C^{13}) does not degrade as readily as the lighter carbon isotope (C^{12}). If the ratio of C^{13}/C^{12} increases relative to pure substance (commercial grade) TCE, degradation is indicated. The ratio of C^{13}/C^{12} (relative to an international standard) is measured as $\delta^{13}C$. A less negative (or more positive) $\delta^{13}C$ value is indicative of more degradation. For commercial grade (non-degraded) TCE, $\delta^{13}C$ ranges from -27.8 to -33.5.⁸ Thus, a $\delta^{13}C$ value of greater than -27.8 (or less negative) provides definitive evidence of degradation, albeit it is not possible without further information

⁸ Wilson, J.T., 2009. *MNA for Chlorinated Solvents and Fuel Oxygenate Presentation, Advanced Tools for In-Situ Remediation Workshop, Portland, OR.* October 7.

to assess whether the degradation is abiotic or biotic. The CSIA analysis was completed by the University of Toronto.

2.4.3 Groundwater Monitoring Results

2.4.3.1 VOC Groundwater Monitoring Results

Table 7 summarizes the historical monitoring and extraction well groundwater VOC concentrations. Laboratory analytical reports, chain-of-custody documentation, and field data sheets are included as Appendix C.

TCE and its breakdown product cis-1,2-DCE are the chemicals detected at the highest frequency and concentrations beneath the Site. Graphical depictions of the TCE and cis-1,2-DCE (when present) groundwater concentration trends with time (since 1992) are shown on Plate 8.

Plate 9 presents TCE and cis-1,2-DCE groundwater concentrations in December 2010. TCE and cis-1,2-DCE were detected at a maximum concentration of 580 $\mu\text{g/L}$ and 900 $\mu\text{g/L}$ in samples from on-Site wells C-3 and SO-PZ1, respectively. Vinyl chloride was also detected in samples from source area wells SO-PZ1 and SO-PZ2 at concentrations of 24 $\mu\text{g/L}$ and 15 $\mu\text{g/L}$, respectively.

The TCE groundwater concentrations detected in December 2010 for all wells were similar to or lower than previously measured, except for wells C-3 and R-20A (both located near the downgradient property boundary between extraction wells EW-1 and EW-3). The increased TCE concentrations detected in wells C-3 and R-20A may be the result of sampling methodology, as low-flow sampling was completed in 2010; prior well sampling was completed using a three well volume purge. Extraction wells were sampled using sample ports. For well C-3, the TCE concentration of 580 $\mu\text{g/L}$ measured in December 2010 was higher than the 400 $\mu\text{g/L}$ measured in December 2009. Similarly, for well R-20A, the TCE concentration of 480 $\mu\text{g/L}$ measured in December 2010 was higher than the 320 $\mu\text{g/L}$ detected in February 2009. However, TCE concentrations were less than 75 $\mu\text{g/L}$ in all other on-Site and off-Site wells monitored.

Quality assurance/quality control (QA/QC) measures were implemented during the collection and chemical analysis process to ensure that the data collected are representative of actual groundwater quality conditions. The QA/QC procedures included the following: (1) holding time review; (2) method blank analysis; (3) equipment blank analysis (when applicable); (4) trip blank analysis; (5) blank spike, matrix spike, and spike duplicate analysis; (6) surrogate spike analysis; (7) detection limit review; and (8) field duplicate analysis. No QA/QC problems were identified and the data set is considered valid with no qualifiers. A QA/QC report is included as Appendix D.

2.4.3.2 MNA Monitoring Results

Table 8 summarizes the geochemical parameter and CSIA monitoring. Field parameters monitored during low-flow sampling (DO and ORP) are summarized on Table 9. The CSIA laboratory report is included in Appendix C.

Several lines of evidence indicative of conditions favorable to TCE degradation were noted, including:

- Low DO readings (less than 1 mg/L) in several wells (including wells R-20A, ME-1A, C-3, SO-PZ1, SO-PZ2, and SO-PZ3);
- Negative ORP in wells SO-PZ1 and SO-PZ3;
- Presence of daughter products, including cis-1,2-DCE and vinyl chloride, in wells, SO-PZ1, SO-PZ2, and cis-1,2-DCE in wells C-3, ME-1A, R-20A, R-21A, SO-1, SO-2, EW-2, and SO3-B1;
- Depleted or low nitrate concentrations (less than 1 mg/L) in wells SO-PZ1 and SO-PZ2;
- Presence of ferrous iron (II) in wells ME-1A, R-20A, and SO-PZ1;
- Relatively low sulfate concentrations ranging from 84 to 120 mg/L in the six wells monitored; and
- Based on the CSIA results, the presence of degraded TCE (relative to commercial grade TCE), with the most degraded TCE identified in source area well SO-PZ2 and off-Site well ME-1A, with $\delta^{13}\text{C}$ results of -24.8 and -26.8, respectively.

The most definitive evidence associated with TCE degradation was found in source area wells SO-PZ1 and SO-PZ2. Continued pumping of groundwater in this area may be detrimental to TCE degradation by pulling in groundwater with competing electron acceptors (oxygen, nitrate, and sulfate) from the surrounding area. Thus, elimination of pumping may be beneficial and increase the rate of the naturally occurring degradation of TCE.

3.0 OTHER SITE ACTIVITIES

As previously discussed, a Remedial Optimization Evaluation Report was submitted to the EPA on September 2, 2008. This report concluded that ERD or in-situ bioremediation was the preferred alternative technology for use at the Site (rather than pump and treat). Representatives of SMI and PES met with EPA on November 5, 2008 to discuss the report recommendations.

Subsequently, representatives of SMI and PES also met with representatives of the former property owner. The former property owner indicated that they were now willing to allow completion of the proposed work pending agreement on a new Site access/indemnification agreement. However, in July 2010, during the negotiation of a new access/indemnification agreement, the property was unexpectedly sold. SMI has been trying to contact the new owner to re-initiate access discussions.

4.0 PROBLEMS ENCOUNTERED

Other than the intermittent treatment system shutdowns that occurred during 2010 (see Section 2.2), no problems were encountered during calendar year 2010.

5.0 TECHNICAL ASSESSMENT

The remedy is functioning as intended and VOC concentrations in former potential source areas have decreased with time. Based on the additional MNA monitoring completed in 2010, the current VOC reductions that are occurring in the former source areas area likely associated with biological degradation. Continued pumping of groundwater in this area may be detrimental to TCE degradation by pulling in groundwater with competing electron acceptors (oxygen, nitrate, and sulfate) from the surrounding area. Thus, elimination of pumping may be beneficial and increase the rate of the naturally occurring degradation of TCE. To eliminate the need to obtain the property owner's permission for additional work, injection of an electron donor in the City right-of-way (East Middlefield Road) to facilitate additional TCE degradation and ensure plume stability will be proposed for the Site, rather than continued operation of the pump-and-treat system.

Pilot testing of an alternative treatment technology (in-situ bioremediation) has been recommended previously, but an access agreement to allow such was never obtained from the former property owner. SMI has been trying to contact the new property owner to re-initiate access discussions. If SMI can obtain reasonable access to allow work on-Site, injection of an electron donor upgradient of wells C-3 and R-20A would also be completed (due to the anticipated time needed to negotiate an access agreement that is acceptable to both parties, this may occur at a later date than the injections in the City right-of-way,).

As has been discussed in prior annual reports, the TCE concentrations are higher in off-Site, upgradient well R-24A, located approximately 350 feet southeast of the Site, than in on-Site well R-48A.

6.0 CONCLUSIONS AND RECOMMENDATIONS

This report presented information related to the performance of remedial actions at the Site during 2010. The remedy is functioning as intended and on-Site VOC concentrations are slowly decreasing with time. However, many more years (or decades) of operation will likely be required to meet the clean-up goals. Pilot testing of an alternative treatment technology (in-situ bioremediation) has been recommended, but has been hampered by the need to work on private property. A revised plan, which includes the initial work only in the City right-of-way, will be submitted as discussed in Section 7.0.

7.0 FOLLOW-UP ACTIONS

SMI plans to submit a plan to EPA to include discontinuation of pumping, to minimize the potential of pulling in groundwater from the surrounding area with competing electron acceptors (oxygen, nitrate, and sulfate) that are detrimental to the naturally occurring degradation of TCE that is occurring in the former source area. The plan will also include the injection of an electron donor in the City right-of-way (to avoid the need for access to private property) to facilitate additional TCE degradation at the property boundary and ensure plume stability. If reasonable access to the property can be obtained, electron donor would also be injected upgradient of wells C-3 and R-20A, albeit this may occur at a later date due to the time needed to negotiate an access agreement.

8.0 WORK PLANNED FOR THE NEXT REPORTING PERIOD

The work planned for the next reporting period includes the following:

- Submit a plan to EPA that includes discontinuation of pumping, to minimize the potential of pulling in groundwater with competing electron acceptors (oxygen, nitrate, and sulfate), from the surrounding area, that are detrimental to the naturally occurring degradation of TCE that is occurring in the former source area. The plan will also include the injection of an electron donor at the property boundary in the City right-of-way (to avoid the need for access to private property) to facilitate additional TCE degradation and ensure plume stability. If reasonable access on the property can be obtained, subsequent injections would also be completed on the property upgradient of wells C-3 and R-20A;
- Coordinate/participate with other respondents regarding meetings and other regional data collection activities;
- Participate in All-Parties Meetings associated with the focused feasibility study for groundwater, as requested by EPA;

- Continue operation and maintenance of the GWET system in accordance with the O&M Plan, until an alternative technology is implemented at the Site;
- Continue NPDES sampling and reporting of the GWET system at the Site, as necessary; and
- Complete an annual groundwater monitoring event in December 2011.

9.0 REFERENCES

- PES, 1992. *Source Investigation and Characterization, Sobrato Properties, 485/487 and 501/505 East Middlefield Road, Mountain View, California*, March 30, 1992.
- PES, 1993. *Source Investigation and Characterization – Addendum 1, Sobrato Property, 455 East Middlefield Road, Mountain View, California*, July 30, 1993.
- PES, 2003. *September and October 2003 Air Sample Results, SMI Holding LLC, 455 and 487 East Middlefield Road, Mountain View, California*. January 8, 2004.
- PES, 2008. *Remedial Optimization Evaluation Report, SMI Holding LLC, 455, 485/487, and 501/505 East Middlefield Road, Mountain View, California*. September 2, 2008.
- SECOR, 1998. *Final Operation and Maintenance Plan for 455, 485/487, and 501/505 East Middlefield Road, Mountain View, California*. February 20, 1998.
- SECOR, 2000. *Transmittal of the Second Quarter 2000 Groundwater Capture Analysis for Siemens-Sobrato Properties at 455, 485/487, and 501/505 East Middlefield Road, Mountain View, California*, July 11, 2000.
- Wilson, J.T., 2009. *MNA for Chlorinated Solvents and Fuel Oxygenate Presentation, Advanced Tools for In-Situ Remediation Workshop, Portland, OR*. October 7, 2009.

TABLES

Table 1A
Summary of Laboratory Analytical Results - First Quarter 2010
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Sample Identification		Laboratory Reporting Limits and Method Detection Limits		I-1	M-1	E-1	I-1	M-1	E-1	I-1	M-1	E-1	I-1	M-1	E-1	NPDES Discharge Limits					
Sample Location	Analytical Method	Laboratory	Date Sampled	Date Analyzed	System Influent	Between Carbon Vessels	System Effluent	System Influent	Between Carbon Vessels	System Effluent	System Influent	Between Carbon Vessels	System Influent	Between Carbon Vessels	System Effluent	System Influent	Between Carbon Vessels	System Effluent			
					8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B		
					TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF		
					1/25/10	1/25/10	1/25/10	2/18/10	2/18/10	2/18/10	2/18/10	2/18/10	2/18/10	2/18/10	2/18/10	3/19/10	3/19/10	3/19/10	3/19/10		
					2/1/10	2/1/10	2/1/10	2/21/10	2/21/10	2/21/10	2/21/10	2/21/10	2/21/10	2/21/10	2/21/10	3/24/10	3/24/10	3/24/10	3/24/10		
VOCs (µg/L) (4)		RLs	MDLs	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	NPDES Discharge Limits	
1,1,1-Trichloroethane	0.50	0.037	0.38	DNQ B	0.055	DNQ	<MDL		0.28	DNQ	0.11	DNQ B	<MDL		0.33	DNQ	0.24	DNQ	<MDL		5
Tetrachloroethylene	0.50	0.065	0.33	DNQ	<MDL		0.36	DNQ	0.16	DNQ	<MDL		<MDL		0.19	DNQ	<MDL		<MDL		1.6
Trichloroethylene	0.50	0.059	68		<MDL		<MDL		60	B	0.12	DNQ B	<MDL		56		0.070	DNQ	<MDL		5
1,1-Dichloroethylene	0.50	0.054	0.19	DNQ B	<MDL		<MDL		0.15	DNQ	0.072	DNQ	<MDL		0.13	DNQ	0.080	DNQ	<MDL		0.11
1,2-Dichloroethane	0.50	0.077	<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		0.5
Vinyl Chloride	0.50	0.045	<MDL		<MDL		0.065	DNQ	<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		0.5
cis-1,2-Dichloroethylene	0.50	0.057	5.0		0.57		<MDL		4.1		1.8		<MDL		2.8		3.9		<MDL		5
1,1-Dichloroethane	0.50	0.046	0.11	DNQ	0.20	DNQ	<MDL		0.11	DNQ	0.18	DNQ	<MDL		<MDL		<MDL		<MDL		5
1,1,2-Trichloroethane	0.50	0.11	<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		1.2
Methylene Chloride	5.0	0.33	<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		0.43	DNQ	0.51	DNQ	<MDL		5
Chloroform	1.0	0.053	0.46	DNQ	0.68	DNQ	<MDL		0.37	DNQ	0.77	DNQ	<MDL		0.40	DNQ	0.80	DNQ	0.078	DNQ	5
Carbon Tetrachloride	0.50	0.072	<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		0.5
Benzene	0.50	0.050	<MDL		NA		<MDL		NA		NA		<MDL		<MDL		NA		<MDL		1
Toluene	0.50	0.075	<MDL		NA		<MDL		NA		NA		0.27	DNQ	<MDL		NA		<MDL		5
Ethylbenzene	0.50	0.041	<MDL		NA		<MDL		NA		NA		<MDL		<MDL		NA		<MDL		5
Total Xylenes	1.0	0.49	<MDL		NA		<MDL		NA		NA		<MDL		<MDL		NA		<MDL		5
Other Compounds:																					
tert-Butylbenzene	1.0	0.050	<MDL		<MDL		0.050	DNQ	NA		NA		<MDL		NA		NA		<MDL		NS
Dichlorodifluoromethane	0.50	0.037	0.044	DNQ B	<MDL		0.039	DNQ B	<MDL		0.085	DNQ B	0.065	DNQ B	<MDL		<MDL		<MDL		NS

- Notes:**
- 1) RLs = laboratory reporting limits; MDLs = method detection limits; DNQ = detected but not quantified (less than the RL but greater than or equal to the MDL).
 - 2) Results shown with "DNQ" qualifier are estimated concentration (greater than MDL). Results in bold are greater than the RL.
 - 3) NS = not specified.
 - 4) Volatile organic compounds subject to effluent limitations in NPDES Order No. R2-2009-0059, dated August 19, 2009 are listed. No other compounds were detected.
 - 5) NA = not analyzed.
 - 6) "B": compound was found in the blank and sample.
 - 7) TAL SF = TestAmerica Laboratories, Inc. San Francisco (Pleasanton).

Table 1B
Summary of Laboratory Analytical Results - Second Quarter 2010
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Sample Identification	Laboratory Reporting Limits and Method Detection Limits		I-1			M-1			E-1			I-1			M-1			E-1			NPDES Discharge Limits
			System Influent	Between Carbon Vessels	System Effluent	System Influent	Between Carbon Vessels	System Effluent	System Influent	Between Carbon Vessels	System Effluent	System Influent	Between Carbon Vessels	System Effluent	System Influent	Between Carbon Vessels	System Effluent				
Sample Location			8260B	8260B	8260B																
Analytical Method			TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF				
Laboratory			4/28/10	4/28/10	4/28/10	5/20/10	5/20/10	5/20/10	6/15/10	6/15/10	6/15/10	6/15/10	6/15/10	6/15/10	6/15/10	6/15/10	6/15/10				
Date Sampled			5/2/10	5/2/10	5/2/10	5/25/10	5/25/10	5/25/10	6/17/10	6/17/10	6/17/10	6/17/10	6/17/10	6/17/10	6/17/10	6/17/10	6/17/10				
Date Analyzed	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	
VOCs (µg/L) (4)	RLs	MDLs																			
1,1,1-Trichloroethane	0.50	0.037	0.25	DNQ	0.055	DNQ	<MDL		0.28	DNQ	<MDL		<MDL		0.26	DNQ	0.079	DNQ	<MDL		5
Tetrachloroethylene	0.50	0.065	0.13	DNQ	<MDL		<MDL		0.15	DNQ	<MDL		<MDL		0.17	DNQ	<MDL		<MDL		1.6
Trichloroethylene	0.50	0.059	44		<MDL		<MDL		50		<MDL		<MDL		51		<MDL		<MDL		5
1,1-Dichloroethylene	0.50	0.054	0.099	DNQ	<MDL		<MDL		0.14	DNQ	<MDL	DNQ	<MDL		0.15	DNQ	<MDL		<MDL		0.11
1,2-Dichloroethylene	0.50	0.077	<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		0.5
Vinyl Chloride	0.50	0.045	<MDL		<MDL		<MDL		0.057	DNQ	<MDL		<MDL		<MDL		<MDL		<MDL		0.5
cis-1,2-Dichloroethylene	0.50	0.057	2.3		0.13	DNQ	<MDL		3.0		0.58		<MDL		3.2		1.4		<MDL		5
1,1-Dichloroethane	0.50	0.046	<MDL		0.12	DNQ	<MDL		0.079	DNQ	0.16	DNQ	<MDL		0.074	DNQ	0.14	DNQ	<MDL		5
1,1,2-Trichloroethane	0.50	0.11	<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		1.2
Methylene Chloride	5.0	0.33	<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		5
Chloroform	1.0	0.053	0.36	DNQ	0.37	DNQ	<MDL		0.36	DNQ	0.60	DNQ	<MDL		0.36	DNQ	0.69	DNQ	<MDL		5
Carbon Tetrachloride	0.50	0.072	<MDL	DNQ	<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		0.5
Benzene	0.50	0.050	NA		NA		<MDL		NA		NA		<MDL		<MDL		NA		<MDL		1
Toluene	0.50	0.17	NA		NA		<MDL		NA		NA		<MDL		<MDL		NA		<MDL		5
Ethylbenzene	0.50	0.070	NA		NA		<MDL		NA		NA		<MDL		<MDL		NA		<MDL		5
Total Xylenes	1.0	0.49	NA		NA		<MDL		NA		NA		<MDL		<MDL		NA		<MDL		5
Other Compounds:																					
Chloromethane	1.0	0.19	<MDL		0.20	DNQ	<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		NS

Notes:

- 1) RLs = laboratory reporting limits; MDLs = method detection limits; DNQ = detected but not quantified (less than the RL but greater than or equal to the MDL).
- 2) Results shown with "DNQ" qualifier are estimated concentration (greater than MDL). Results in bold are greater than the RL.
- 3) NS = not specified.
- 4) Volatile organic compounds subject to effluent limitations in NPDES Order No. R2-2009-0059, dated August 19, 2009 are listed. Other compounds detected are also shown.
- 5) NA = not analyzed.
- 6) TAL SF = TestAmerica Laboratories, Inc. San Francisco (Pleasanton).

Table 1C
Summary of Laboratory Analytical Results - Third Quarter 2010
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Sample Identification		Laboratory Reporting Limits and Method Detection Limits		I-1		M-1		E-1		I-1		M-1		E-1		I-1		M-1		E-1		NPDES Discharge Limits	
Sample Location	Analytical Method			System Influent	Between Carbon Vessels	System Effluent	System Influent	Between Carbon Vessels	System Effluent	System Influent	Between Carbon Vessels	System Effluent	System Influent	Between Carbon Vessels	System Effluent	System Influent	Between Carbon Vessels	System Effluent	System Influent	Between Carbon Vessels	System Effluent		
				8260B	8260B	8260B		8260B															
				TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF		TAL SF
				7/22/10	7/22/10	7/22/10	9/10/10	9/10/10	9/10/10	9/10/10	9/29/10	9/29/10	9/29/10	9/29/10	9/29/10	9/29/10	9/29/10	9/29/10	9/29/10	9/29/10	9/29/10		9/29/10
				7/23/10	7/23/10	7/23/10	9/11/10	9/11/10	9/14/10	9/30/10	9/30/10	9/30/10	9/30/10	9/30/10	9/30/10	9/30/10	9/30/10	9/30/10	9/30/10	9/30/10	9/30/10		9/30/10
<u>VOCs (µg/L) ⁽⁴⁾</u>		RLs	MDLs	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier		
1,1,1-Trichloroethane		0.50	0.037	0.28	DNQ	0.19	DNQ	<MDL		0.27	DNQ	<MDL		<MDL		0.28	DNQ	<MDL		<MDL		5	
Tetrachloroethylene		0.50	0.065	0.16	DNQ	<MDL		<MDL		0.17	DNQ	<MDL		<MDL		0.17	DNQ	<MDL		<MDL		1.6	
Trichloroethylene		0.50	0.059	48		0.077	DNQ	<MDL		49		<MDL		<MDL		42		<MDL		<MDL		5	
1,1-Dichloroethylene		0.50	0.054	<MDL		<MDL		<MDL		0.17	DNQ B	<MDL		<MDL		0.15	DNQ	<MDL		<MDL		0.11	
1,2-Dichloroethane		0.50	0.077	<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		0.5	
Vinyl Chloride		0.50	0.045	<MDL		<MDL		<MDL		0.082	DNQ B	<MDL		<MDL		<MDL		<MDL		<MDL		0.5	
cis-1,2-Dichloroethylene		0.50	0.057	3.0		2.8		<MDL		3.2		0.15	DNQ	<MDL		2.3		0.42	DNQ	<MDL		5	
1,1-Dichloroethane		0.50	0.067	<MDL		<MDL		<MDL		0.09	DNQ	0.15	DNQ	<MDL		0.087	DNQ	0.14	DNQ	<MDL		5	
1,1,2-Trichloroethane		0.50	0.11	<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		1.2	
Methylene Chloride		5.0	0.33	<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		5	
Chloroform		1.0	0.053	0.36	DNQ	0.69	DNQ	0.095	DNQ	0.39	DNQ	0.52	DNQ	<MDL		0.40	DNQ	0.69	DNQ	<MDL		5	
Carbon Tetrachloride		0.50	0.072	<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		<MDL		0.5	
Benzene		0.50	0.050	<MDL		NA		<MDL		NA		NA		<MDL		<MDL		NA		<MDL		1	
Toluene		0.50	0.17	<MDL		NA		<MDL		NA		NA		0.27	DNQ	<MDL		NA		<MDL		5	
Ethylbenzene		0.50	0.070	<MDL		NA		<MDL		NA		NA		<MDL		<MDL		NA		<MDL		5	
Total Xylenes		1.0	0.49	<MDL		NA		<MDL		NA		NA		<MDL		<MDL		NA		<MDL		5	
<u>Other Compounds:</u>																							
Isopropylbenzene		0.5	0.038	<MDL		<MDL		<MDL		<MDL		<MDL		0.039	DNQ	<MDL		<MDL		<MDL		NS	
N-Propylbenzene		1.0	0.056	<MDL		<MDL		<MDL		<MDL		<MDL		0.084	DNQ	<MDL		<MDL		<MDL		NS	

Notes:

- 1) RLs = laboratory reporting limits; MDLs = method detection limits; DNQ = detected but not quantified (less than the RL but greater than or equal to the MDL).
- 2) Results shown with "DNQ" qualifier are estimated concentration (greater than MDL). Results in bold are greater than the RL.
- 3) NS = not specified.
- 4) Volatile organic compounds subject to effluent limitations in NPDES Order No. R2-2009-0059, dated August 19, 2009 are listed. Other compounds detected are also shown.
- 5) NA = not analyzed.
- 6) TAL SF = TestAmerica Laboratories, Inc. San Francisco.
- 7) "B" indicates compound was found in the blank and sample.

Table 1D
Summary of Laboratory Analytical Results - Fourth Quarter 2010
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Sample Identification	Laboratory Reporting Limits and Method Detection Limits		I-1	M-1	E-1	I-1	M-1	E-1	I-1	M-1	E-1	NPDES Discharge Limits									
			System Influent	Between Carbon Vessels	System Effluent	System Influent	Between Carbon Vessels	System Effluent	System Influent	Between Carbon Vessels	System Effluent										
Sample Location			8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B										
Analytical Method			TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF	TAL SF										
Laboratory			10/21/10	10/21/10	10/21/10	11/18/10	11/18/10	11/18/10	40526	40526	40526										
Date Sampled			10/28/10	10/28/10	10/28/10	11/19/10	11/22/10	11/19/10	12/17/10	12/16/10	12/15/10										
Date Analyzed																					
VOCs (µg/L) (4)	RLs	MDLs	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	Results	Qualifier	NPDES Discharge Limits
1,1,1-Trichloroethane	0.50	0.037	0.25	DNQ	0.059	DNQ	< MDL		0.28	DNQ	0.13	DNQ	< MDL		0.31	DNQ B	0.21	DNQ	< MDL		5
Tetrachloroethylene	0.50	0.065	0.16	DNQ	< MDL		< MDL		0.15	DNQ	< MDL		< MDL		0.18	DNQ	< MDL		< MDL		1.6
Trichloroethylene	0.50	0.059	38		0.075	DNQ	< MDL		49		< MDL		< MDL		54		0.11	DNQ	< MDL		5
1,1-Dichloroethylene	0.50	0.058	0.15	DNQ	< MDL		< MDL		0.13	DNQ	0.066	DNQ	< MDL		0.17	DNQ B	0.16	DNQ	< MDL		0.11
1,2-Dichloroethylene	0.50	0.077	< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		0.5
Vinyl Chloride	0.50	0.045	< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		0.5
cis-1,2-Dichloroethylene	0.50	0.057	1.9		0.95		< MDL		3.8		2.0		< MDL		4.0		3.6		< MDL		5
1,1-Dichloroethane	0.50	0.067	< MDL		0.15	DNQ	< MDL		< MDL		0.13	DNQ	< MDL		< MDL		0.14	DNQ	< MDL		5
1,1,2-Trichloroethane	0.50	0.11	< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		1.2
Methylene Chloride	5.0	0.33	< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		1.0	DNQ B	2.2	DNQ B	5
Chloroform	1.0	0.053	0.38	DNQ	0.67	DNQ	< MDL		0.36	DNQ	0.70	DNQ	< MDL		0.38	DNQ	0.71	DNQ	< MDL		5
Carbon Tetrachloride	0.50	0.072	< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		< MDL		0.5
Benzene	0.50	0.050	< MDL		NA		< MDL		< MDL		NA		< MDL		< MDL		NA		< MDL		1
Toluene	0.50	0.17	< MDL		NA		< MDL		< MDL		NA		< MDL		< MDL		NA		< MDL		5
Ethylbenzene	0.50	0.070	< MDL		NA		< MDL		< MDL		NA		< MDL		< MDL		NA		< MDL		5
Total Xylenes	1.0	0.49	< MDL		NA		< MDL		< MDL		NA		< MDL		< MDL		NA		< MDL		5
pH	0.100	NS	NA		NA		NA		NA		NA		NA		7.68		NA		7.75		6.5<pH<8.5
Temperature, degrees Fahrenheit	NS	NS	NA		NA		NA		NA		NA		NA		NA		NA		63.7		NS
96-hour bioassay survival, %	NS	NS	NA		NA		NA		NA		NA		NA		NA		NA		100		90
Electrical Conductivity, umhos/cm	NS	10	NA		NA		NA		NA		NA		NA		NA		NA		1100		NS
Turbidity, NTUs	NA	0.10	NA		NA		NA		NA		NA		NA		NA		NA		< MDL		NS
Other Compounds:																					
Carbon disulfide	5	0.078	NA		NA		< MDL		NA		NA		< MDL		< MDL		< MDL		0.15	DNQ	NS
Chloromethane	1.0	0.19	<MDL		0.20	DNQ	<MDL		<MDL		<MDL		<MDL		0.40	DNQ	<MDL		<MDL		NS

- Notes:**
- 1) RLs = laboratory reporting limits; MDLs = method detection limits; DNQ = detected but not quantified (less than the RL but greater than or equal to the MDL).
 - 2) Results shown with "DNQ" qualifier are estimated concentration (greater than MDL). Results in bold are greater than the RL.
 - 3) DNQ B indicates compound was found in blank and samples
 - 4) NS = not specified.
 - 5) Volatile organic compounds subject to effluent limitations in NPDES Order No. R2-2009-0059, dated August 19, 2009 are listed. Other compounds detected are also shown.
 - 6) NA = not analyzed.
 - 7) TAL SF = TestAmerica Laboratories, Inc. San Francisco (Pleasanton).
 - 8) umhos/cm = micro reciprocal ohms per centimeter

Table 2
2010 Discharge Flow and Mass Removal
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Month	Treated Discharge to Storm Drain (gallons)	Influent VOCs (µg/L)	Total VOCs Removed (pounds) ¹
JANUARY	696,331	73.0	0.42
FEBRUARY	768,590	64.1	0.41
MARCH	793,252	58.8	0.39
Total Q1 2010	2,258,173	--	1.22
APRIL	778,158	46.3	0.30
MAY	803,245	53.0	0.35
JUNE	745,204	54.2	0.34
Total Q2 2010	2,326,607	--	0.99
JULY	718,012	51.0	0.30
AUGUST	638,097	52.2	0.28
SEPTEMBER	758,594	44.3	0.28
Total Q3 2010	2,114,703	--	0.86
OCTOBER	551,664	39.9	0.18
NOVEMBER	688,664	52.8	0.30
DECEMBER	717,116	58.0	0.35
Total Q4 2010	1,957,444	--	0.83
Cumulative 2010	8,656,927	--	3.9
Q3 1997 - Q4 2009	86,450,603	--	56.6
Cumulative to Date	95,107,530	--	60.5

Notes:

(1) Total VOCs Removed (pounds) = Total Volume Treated (gallons) * Influent concentration of VOCs in GWET system influent (µg/L) * (3.78 liters / gallon) * (gram / 1,000,000 micrograms) * (pound / 454 grams).

Only VOCs detected above method detection limit used in mass removal calculation.

µg/L = micograms per liter.

VOCs = volatile organic compounds.

Table 3
2010 Individual Average Monthly Extraction Well Flowrate
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Month	EW-1 Average Flow (gpm)	EW-2 Average Flow (gpm)	EW-3 Average Flow (gpm)	EW-4 Average Flow (gpm)	Monthly Total (gpm)
Jan-10	0.4	10.0	8.5	Off	18.9
Feb-10	0.5	10.0	8.5	Off	18.9
Mar-10	0.6	9.2	8.0	Off	17.9
Apr-10	1.0	10.2	8.3	Off	19.5
May-10	1.5	8.8	8.3	Off	18.5
Jun-10	1.1	10.0	8.4	Off	19.5
Jul-10	1.0	9.1	7.7	Off	17.8
Aug-10	1.0	8.0	7.0	Off	16.0
Sep-10	0.8	9.2	8.2	Off	18.2
Oct-10	0.6	4.6	8.2	Off	13.5
Nov-10	0.7	7.4	8.2	Off	16.3
Dec-10	0.6	9.1	6.1	Off	15.9
Annual Average	0.8	8.8	7.9	Off	17.6

Notes:

Calculations based on monthly flow meter readings.
gpm = gallons per minute.

Table 4
Groundwater Elevations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
R-15A	6/25/2002	56.88*	10.31	46.57
R-15A	7/26/2002	56.88*	10.41	46.47
R-15A	8/22/2002	56.88*	10.62	46.26
R-15A	9/13/2002	56.88*	10.69	46.19
R-15A	10/29/2002	56.88*	11.01	45.87
R-15A	11/21/2002	56.88*	11.25	45.63
R-15A	12/18/2002	56.88*	10.63	46.25
R-15A	1/16/2003	56.88*	10.51	46.37
R-15A	2/27/2003	56.88*	10.35	46.53
R-15A	3/26/2003	56.88*	10.34	46.54
R-15A	4/28/2003	56.88*	9.90	46.98
R-15A	5/22/2003	56.88*	9.72	47.16
R-15A	6/19/2003	56.88*	10.55	46.33
R-15A	7/24/2003	56.88*	9.55	47.33
R-15A	8/28/2003	56.88*	9.87	47.01
R-15A	9/24/2003	56.88*	10.12	46.76
R-15A	10/28/2003	56.88*	9.91	46.97
R-15A	11/20/2003	56.88*	10.59	46.29
R-15A	12/22/2003	56.88*	10.62	46.26
R-15A	3/25/2004	56.94****	9.91	47.03
R-15A	5/28/2004	56.94****	9.85	47.09
R-15A	8/26/2004	56.94****	10.09	46.85
R-15A	11/18/2004	56.94****	11.13	45.81
R-15A	3/24/2005	56.94****	11.43	45.51
R-15A	11/17/2005	56.94****	10.48	46.46
R-15A	3/23/2006	56.94****	9.52	47.42
R-15A	11/16/2006	56.94****	9.80	47.14
R-15A	3/22/2007	56.94****	9.94	47.00
R-15A	6/29/2007	56.94****	10.25	46.69
R-15A	11/15/2007	56.94****	11.16	45.78
R-15A	3/27/2008	56.94****	10.91	46.03
R-15A	11/20/2008	56.94****	11.63	45.31
R-15A	3/26/2009	56.94****	11.21	45.73
R-15A	11/19/2009	56.94****	11.82	45.12
R-15A	3/25/2010	56.94****	11.11	45.83
R-15A	11/18/2010	56.94****	11.20	45.74

Table 4
Groundwater Elevations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
R-20A	6/25/2002	56.98*	10.27	46.71
R-20A	7/26/2002	56.98*	10.41	46.57
R-20A	8/22/2002	56.98*	10.60	46.38
R-20A	9/13/2002	56.98*	10.71	46.27
R-20A	10/29/2002	56.98*	12.11	44.87
R-20A	11/21/2002	56.98*	12.10	44.88
R-20A	12/18/2002	56.98*	10.65	46.33
R-20A	1/16/2003	56.98*	10.51	46.47
R-20A	2/27/2003	56.98*	10.38	46.60
R-20A	3/26/2003	56.98*	10.29	46.69
R-20A	4/28/2003	56.98*	9.95	47.03
R-20A	5/22/2003	56.98*	9.69	47.29
R-20A	6/19/2003	56.98*	9.47	47.51
R-20A	7/24/2003	56.98*	9.55	47.43
R-20A	8/28/2003	56.98*	9.86	47.12
R-20A	9/24/2003	56.98*	10.12	46.86
R-20A	10/28/2003	56.98*	10.28	46.70
R-20A	11/20/2003	56.98*	10.58	46.40
R-20A	12/22/2003	56.98*	10.62	46.36
R-20A	3/25/2004	57.00****	9.88	47.12
R-20A	5/28/2004	57.00****	9.93	47.07
R-20A	8/26/2004	57.00****	10.51	46.49
R-20A	11/18/2004	57.00****	11.14	45.86
R-20A	3/24/2005	57.00****	11.42	45.58
R-20A	11/17/2005	57.00****	14.47	42.53
R-20A	3/23/2006	57.00****	9.55	47.45
R-20A	11/16/2006	57.00****	9.80	47.20
R-20A	3/22/2007	57.00****	9.94	47.06
R-20A	6/29/2007	57.00****	10.24	46.76
R-20A	11/15/2007	57.00****	11.20	45.80
R-20A	3/27/2008	57.00****	10.95	46.05
R-20A	11/20/2008	57.00****	11.68	45.32
R-20A	3/26/2009	57.00****	11.27	45.73
R-20A	11/19/2009	57.00****	11.90	45.10
R-20A	3/25/2010	57.00****	11.04	45.96
R-20A	11/18/2010	57.00****	11.19	45.81

**Table 4
Groundwater Elevations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California**

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
R-21A	6/25/2002	62.96*	15.44	47.52
R-21A	7/26/2002	62.96*	15.61	47.35
R-21A	8/22/2002	62.96*	15.88	47.08
R-21A	9/13/2002	62.96*	15.95	47.01
R-21A	10/29/2002	62.96*	16.42	46.54
R-21A	11/21/2002	62.96*	16.30	46.66
R-21A	12/18/2002	62.96*	16.11	46.85
R-21A	1/16/2003	62.96*	13.34	49.62
R-21A	2/27/2003	62.96*	15.65	47.31
R-21A	3/26/2003	62.96*	15.31	47.65
R-21A	4/28/2003	62.96*	14.98	47.98
R-21A	5/22/2003	62.96*	14.77	48.19
R-21A	6/19/2003	62.96*	14.62	48.34
R-21A	7/24/2003	62.96*	14.65	48.31
R-21A	8/28/2003	62.96*	15.06	47.90
R-21A	9/24/2003	62.96*	15.32	47.64
R-21A	10/28/2003	62.96*	15.20	47.76
R-21A	11/20/2003	62.96*	15.81	47.15
R-21A	12/22/2003	62.96*	15.97	46.99
R-21A	3/25/2004	64.15****	16.20	47.95
R-21A	5/28/2004	64.15****	16.22	47.93
R-21A	8/26/2004	64.15****	16.87	47.28
R-21A	11/18/2004	64.15****	17.64	46.51
R-21A	3/24/2005	64.15****	17.70	46.45
R-21A	11/17/2005	64.15****	16.85	47.30
R-21A	3/23/2006	64.15****	15.82	48.33
R-21A	11/16/2006	64.15****	16.03	48.12
R-21A	3/22/2007	64.15****	16.23	47.92
R-21A	6/29/2007	64.15****	16.58	47.57
R-21A	11/15/2007	64.15****	17.64	46.51
R-21A	3/27/2008	64.15****	17.37	46.78
R-21A	11/20/2008	64.15****	18.17	45.98
R-21A	3/26/2009	64.15****	17.71	46.44
R-21A	11/19/2009	64.15****	18.39	45.76
R-21A	3/25/2010	64.15****	17.54	46.61
R-21A	11/18/2010	64.15****	17.63	46.52

Table 4
Groundwater Elevations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
R-48A	6/25/2002	66.70***	19.70	47.00
R-48A	7/26/2002	66.70***	19.27	47.43
R-48A	8/22/2002	66.70***	19.49	47.21
R-48A	9/13/2002	66.70***	19.56	47.14
R-48A	10/29/2002	66.70***	19.95	46.75
R-48A	11/21/2002	66.70***	20.11	46.59
R-48A	12/18/2002	66.70***	19.78	46.92
R-48A	1/16/2003	66.70***	19.42	47.28
R-48A	2/27/2003	66.70***	19.47	47.23
R-48A	3/26/2003	66.70***	19.13	47.57
R-48A	4/28/2003	66.70***	18.72	47.98
R-48A	5/22/2003	66.70***	18.48	48.22
R-48A	6/19/2003	66.70***	18.21	48.49
R-48A	7/24/2003	66.70***	18.32	48.38
R-48A	8/28/2003	66.70***	18.67	48.03
R-48A	9/24/2003	66.70***	18.99	47.71
R-48A	10/28/2003	66.70***	19.25	47.45
R-48A	11/20/2003	66.70***	19.43	47.27
R-48A	12/22/2003	66.70***	19.63	47.07
R-48A	3/25/2004	66.86****	18.61	48.25
R-48A	5/28/2004	66.86****	18.92	47.94
R-48A	8/26/2004	66.86****	19.28	47.58
R-48A	11/18/2004	66.86****	20.00	46.86
R-48A	3/24/2005	66.86****	20.16	46.70
R-48A	11/17/2005	66.86****	19.22	47.64
R-48A	3/23/2006	66.86****	18.21	48.65
R-48A	11/16/2006	66.86****	18.37	48.49
R-48A	3/22/2007	66.86****	18.61	48.25
R-48A	6/29/2007	66.86****	18.95	47.91
R-48A	11/15/2007	66.86****	20.04	46.82
R-48A	3/27/2008	66.86****	19.81	47.05
R-48A	11/20/2008	66.86****	20.58	46.28
R-48A	3/26/2009	66.86****	20.14	46.72
R-48A	11/19/2009	66.86****	20.79	46.07
R-48A	3/25/2010	66.86****	19.96	46.90
R-48A	11/18/2010	66.86****	20.03	46.83

Table 4
Groundwater Elevations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
R-51A	6/25/2002	59.82*	13.08	46.74
R-51A	7/26/2002	59.82*	13.22	46.60
R-51A	8/22/2002	59.82*	13.47	46.35
R-51A	9/13/2002	59.82*	13.55	46.27
R-51A	10/29/2002	59.82*	13.95	45.87
R-51A	11/21/2002	59.82*	14.00	45.82
R-51A	12/18/2002	59.82*	13.51	46.31
R-51A	1/16/2003	59.82*	15.77	44.05
R-51A	2/27/2003	59.82*	13.22	46.60
R-51A	3/26/2003	59.82*	13.14	46.68
R-51A	4/28/2003	59.82*	12.72	47.10
R-51A	5/22/2003	59.82*	12.47	47.35
R-51A	6/19/2003	59.82*	12.15	47.67
R-51A	7/24/2003	59.82*	12.37	47.45
R-51A	8/28/2003	59.82*	12.65	47.17
R-51A	9/24/2003	59.82*	12.96	46.86
R-51A	10/28/2003	59.82*	13.12	46.70
R-51A	11/25/2003	59.82*	13.45	46.37
R-51A	12/22/2003	59.82*	13.51	46.31
R-51A	3/25/2004	60.00****	12.71	47.29
R-51A	5/28/2004	60.00****	12.76	47.24
R-51A	8/26/2004	60.00****	13.29	46.71
R-51A	11/18/2004	60.00****	14.01	45.99
R-51A	3/24/2005	60.00****	14.26	45.74
R-51A	11/17/2005	60.00****	13.30	46.70
R-51A	3/23/2006	60.00****	12.33	47.67
R-51A	11/16/2006	60.00****	12.59	47.41
R-51A	3/22/2007	60.00****	12.76	47.24
R-51A	6/29/2007	60.00****	13.01	46.99
R-51A	11/15/2007	60.00****	14.01	45.99
R-51A	3/27/3008	60.00****	13.77	46.23
R-51A	11/20/2008	60.00****	14.52	45.48
R-51A	3/26/2009	60.00****	14.19	45.81
R-51A	11/19/2009	60.00****	14.73	45.27
R-51A	3/25/2010	60.00****	13.56	46.44
R-51A	11/18/2010	60.00****	14.05	45.95

Table 4
Groundwater Elevations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
IM-7A	6/25/2002	58.52*	NM	NM
IM-7A	7/26/2002	58.52*	NM	NM
IM-7A	8/22/2002	58.52*	12.21	46.31
IM-7A	9/13/2002	58.52*	12.29	46.23
IM-7A	10/29/2002	58.52*	12.64	45.88
IM-7A	11/21/2002	58.52*	12.75	45.77
IM-7A	12/18/2002	58.52*	12.19	46.33
IM-7A	1/16/2003	58.52*	12.10	46.42
IM-7A	2/27/2003	58.52*	11.93	46.59
IM-7A	3/26/2003	58.52*	11.82	46.70
IM-7A	4/28/2003	58.52*	11.40	47.12
IM-7A	5/22/2003	58.52*	11.29	47.23
IM-7A	6/19/2003	58.52*	11.00	47.52
IM-7A	7/24/2003	58.52*	11.10	47.42
IM-7A	8/28/2003	58.52*	11.42	47.10
IM-7A	9/24/2003	58.52*	11.71	46.81
IM-7A	10/28/2003	58.52*	11.69	46.83
IM-7A	11/20/2003	58.52*	12.17	46.35
IM-7A	12/22/2003	58.52*	12.21	46.31
IM-7A	3/25/2004	58.52*	12.52	46.00
IM-7A	5/28/2004	58.52*	11.51	47.01
IM-7A	8/26/2004	58.52*	NM	NA
IM-7A	11/18/2004	58.52*	12.75	45.77
IM-7A	3/24/2005	58.52*	15.62	42.90
IM-7A	8/25/2005	58.52*	11.45	47.07
IM-7A	11/17/2005	58.52*	12.01	46.51
IM-7A	3/23/2006	58.52*	11.09	47.43
IM-7A	11/16/2006	58.52*	11.52	47.00
IM-7A	3/22/2007	58.52*	11.52	47.00
IM-7A	6/29/2007	58.52*	11.81	46.71
IM-7A	11/15/2007	58.52*	12.75	45.77
IM-7A	3/27/2008	58.52*	12.62	45.90
IM-7A	11/20/2008	58.52*	13.42	45.10
IM-7A	3/26/2009	58.52*	12.80	45.72
IM-7A	11/19/2009	58.52*	13.46	45.06
IM-7A	3/25/2010	58.52*	12.58	45.94
IM-7A	11/18/2010	58.52*	12.80	45.72

**Table 4
Groundwater Elevations
SMI Holding LLC
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Mountain View, California**

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
ME-1A	6/25/2002	56.98*	11.60	45.38
ME-1A	7/26/2002	56.98*	11.64	45.34
ME-1A	8/22/2002	56.98*	11.82	45.16
ME-1A	9/13/2002	56.98*	11.90	45.08
ME-1A	10/29/2002	56.98*	13.25	43.73
ME-1A	11/21/2002	56.98*	12.42	44.56
ME-1A	12/18/2002	56.98*	11.78	45.20
ME-1A	1/16/2003	56.98*	11.78	45.20
ME-1A	2/27/2003	56.98*	11.66	45.32
ME-1A	3/26/2003	56.98*	11.62	45.36
ME-1A	4/28/2003	56.98*	11.28	45.70
ME-1A	5/22/2003	56.98*	NM (new lock, no key)	NA
ME-1A	6/19/2003	56.98*	NM (new lock, no key)	NA
ME-1A	7/24/2003	56.98*	NM (new lock, no key)	NA
ME-1A	8/28/2003	56.98*	NM (new lock, no key)	NA
ME-1A	9/24/2003	56.98*	NM (new lock, no key)	NA
ME-1A	10/28/2003	56.98*	NM (new lock, no key)	NA
ME-1A	11/20/2003	56.98*	11.79	45.19
ME-1A	12/22/2003	56.98*	11.83	45.15
ME-1A	3/25/2004	58.00****	11.22	46.78
ME-1A	5/28/2004	58.00****	Locked	NA
ME-1A	8/26/2004	58.00****	11.74	46.26
ME-1A	11/18/2004	58.00****	12.40	45.60
ME-1A	3/24/2005	58.00****	12.77	45.23
ME-1A	11/17/2005	58.00****	11.75	46.25
ME-1A	3/23/2006	58.00****	10.78	47.22
ME-1A	11/16/2006	58.00****	11.08	46.92
ME-1A	3/22/2007	58.00****	7.17	50.83
ME-1A	6/29/2007	58.00****	11.48	46.52
ME-1A	11/15/2007	58.00****	12.34	45.66
ME-1A	3/27/2008	58.00****	12.15	45.85
ME-1A	11/20/2008	58.00****	12.96	45.04
ME-1A	3/26/2009	58.00****	12.45	45.55
ME-1A	11/19/2009	58.00****	13.00	45.00
ME-1A	3/25/2010	58.00****	12.32	45.68
ME-1A	11/18/2010	58.00****	12.48	45.52

Table 4
Groundwater Elevations
SMI Holding LLC
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Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
C-2	6/25/2002	63.3*	16.34	46.96
C-2	7/26/2002	63.3*	16.48	46.82
C-2	8/22/2002	63.3*	18.72	44.58
C-2	9/13/2002	63.3*	16.81	46.49
C-2	10/29/2002	63.3*	17.17	46.13
C-2	11/21/2002	63.3*	17.02	46.28
C-2	12/18/2002	63.3*	16.87	46.43
C-2	1/16/2003	63.3*	16.61	46.69
C-2	2/27/2003	63.3*	16.47	46.83
C-2	3/26/2003	63.3*	16.32	46.98
C-2	4/28/2003	63.3*	15.89	47.41
C-2	5/22/2003	63.3*	15.70	47.60
C-2	6/19/2003	63.05**	15.25	47.80
C-2	7/24/2003	63.05**	15.35	47.70
C-2	8/28/2003	63.05**	15.71	47.34
C-2	9/24/2003	63.05**	16.00	47.05
C-2	10/28/2003	63.05**	16.01	47.04
C-2	11/20/2003	63.05**	16.50	46.55
C-2	12/22/2003	63.05**	16.55	46.50
C-2	3/25/2004	63.05**	15.78	47.27
C-2	5/28/2004	63.05**	15.78	47.27
C-2	8/26/2004	63.05**	16.46	46.59
C-2	11/18/2004	63.05**	17.10	45.95
C-2	3/24/2005	63.05**	15.65	47.40
C-2	8/25/2005	63.05**	15.69	47.36
C-2	11/17/2005	63.05**	15.55	47.50
C-2	3/23/2006	63.05**	15.35	47.70
C-2	11/16/2006	63.05**	16.44	46.61
C-2	3/22/2007	63.05**	15.80	47.25
C-2	6/29/2007	63.05**	16.12	46.93
C-2	11/15/2007	63.05**	17.10	45.95
C-2	3/27/2008	63.05**	16.85	46.20
C-2	11/20/2008	63.05**	17.67	45.38
C-2	3/26/2009	63.05**	17.21	45.84
C-2	11/19/2009	63.05**	17.88	45.17
C-2	3/25/2010	63.05**	16.96	46.09
C-2	11/18/2010	63.05**	17.04	46.01

Table 4
Groundwater Elevations
SMI Holding LLC
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Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
C-3	6/25/2002	58.14*	11.40	46.74
C-3	7/26/2002	58.14*	9.33	48.81
C-3	8/22/2002	58.14*	11.79	46.35
C-3	9/13/2002	58.14*	11.85	46.29
C-3	10/29/2002	58.14*	12.20	45.94
C-3	11/21/2002	58.14*	12.31	45.83
C-3	12/18/2002	58.14*	11.75	46.39
C-3	1/16/2003	58.14*	11.65	46.49
C-3	2/27/2003	58.14*	11.49	46.65
C-3	3/26/2003	58.14*	11.38	46.76
C-3	4/28/2003	58.14*	10.95	47.19
C-3	5/22/2003	58.14*	10.85	47.29
C-3	6/19/2003	58.14*	10.59	47.55
C-3	7/24/2003	58.14*	10.70	47.44
C-3	8/28/2003	58.14*	11.00	47.14
C-3	9/24/2003	58.14*	11.26	46.88
C-3	10/28/2003	58.14*	11.47	46.67
C-3	11/20/2003	58.14*	11.71	46.43
C-3	12/22/2003	58.14*	11.78	46.36
C-3	3/25/2004	58.14*	11.04	47.10
C-3	5/28/2004	58.14*	11.07	47.07
C-3	8/26/2004	58.14*	11.71	46.43
C-3	11/18/2004	58.14*	12.35	45.79
C-3	3/24/2005	58.14*	11.01	47.13
C-3	8/25/2005	58.14*	11.00	47.14
C-3	11/17/2005	58.14*	11.62	46.52
C-3	3/23/2006	58.14*	10.64	47.50
C-3	11/16/2006	58.14*	11.76	46.38
C-3	3/22/2007	58.14*	11.10	47.04
C-3	6/29/2007	58.14*	11.38	46.76
C-3	11/15/2007	58.14*	12.31	45.83
C-3	3/27/2008	58.14*	12.07	46.07
C-3	11/20/2008	58.14*	12.83	45.31
C-3	3/26/2009	58.14*	12.31	45.83
C-3	11/19/2009	58.14*	13.06	45.08
C-3	3/25/2010	58.14*	10.36	47.78
C-3	11/18/2010	58.14*	12.34	45.80

Table 4
Groundwater Elevations
SMI Holding LLC
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Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
SO-1	6/25/2002	63.35*	16.28	47.07
SO-1	7/26/2002	63.35*	16.41	46.94
SO-1	8/22/2002	63.35*	16.66	46.69
SO-1	9/13/2002	63.35*	16.72	46.63
SO-1	10/29/2002	63.35*	17.10	46.25
SO-1	11/21/2002	63.35*	17.22	46.13
SO-1	12/18/2002	63.35*	16.85	46.50
SO-1	1/16/2003	63.35*	16.61	46.74
SO-1	2/27/2003	63.35*	16.47	46.88
SO-1	3/26/2003	63.35*	16.30	47.05
SO-1	4/28/2003	63.35*	15.92	47.43
SO-1	5/22/2003	63.35*	15.62	47.73
SO-1	6/19/2003	63.35*	15.40	47.95
SO-1	7/24/2003	63.35*	15.51	47.84
SO-1	8/28/2003	63.35*	15.87	47.48
SO-1	9/24/2003	63.35*	16.17	47.18
SO-1	10/28/2003	63.35*	16.42	46.93
SO-1	11/20/2003	63.35*	16.61	46.74
SO-1	12/22/2003	63.35*	16.77	46.58
SO-1	3/25/2004	63.35*	16.01	47.34
SO-1	5/28/2004	63.35*	16.02	47.33
SO-1	8/26/2004	63.35*	16.65	46.70
SO-1	11/18/2004	63.35*	17.38	45.97
SO-1	3/24/2005	63.35*	16.01	47.34
SO-1	8/25/2005	63.35*	15.94	47.41
SO-1	11/17/2005	63.35*	16.59	46.76
SO-1	3/23/2006	63.35*	15.55	47.80
SO-1	11/16/2006	63.35*	16.64	46.71
SO-1	3/22/2007	63.35*	16.01	47.34
SO-1	6/29/2007	63.35*	16.20	47.15
SO-1	11/15/2007	63.35*	17.31	46.04
SO-1	3/27/2008	63.35*	17.12	46.23
SO-1	11/20/2008	63.35*	17.89	45.46
SO-1	3/26/2009	63.35*	17.40	45.95
SO-1	11/19/2009	63.35*	18.13	45.22
SO-1	3/25/2010	63.35*	17.22	46.13
SO-1	11/18/2010	63.35*	17.25	46.10

Table 4
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SMI Holding LLC
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Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
SO-2	6/25/2002	60.96*	13.99	46.97
SO-2	7/26/2002	60.96*	14.14	46.82
SO-2	8/22/2002	60.96*	14.32	46.64
SO-2	9/13/2002	60.96*	14.62	46.34
SO-2	10/29/2002	60.96*	14.80	46.16
SO-2	11/21/2002	60.96*	15.00	45.96
SO-2	12/18/2002	60.96*	14.52	46.44
SO-2	1/16/2003	60.96*	14.29	46.67
SO-2	2/27/2003	60.96*	14.14	46.82
SO-2	3/26/2003	60.96*	14.00	46.96
SO-2	4/28/2003	60.96*	15.92	45.04
SO-2	5/22/2003	60.96*	15.62	45.34
SO-2	6/19/2003	60.96*	13.12	47.84
SO-2	7/24/2003	60.96*	12.22	48.74
SO-2	8/28/2003	60.96*	13.58	47.38
SO-2	9/24/2003	60.96*	13.86	47.10
SO-2	10/28/2003	60.96*	14.08	46.88
SO-2	11/25/2003	60.96*	14.35	46.61
SO-2	12/22/2003	60.96*	14.38	46.58
SO-2	3/25/2004	60.96*	8.82	52.14
SO-2	5/28/2004	60.96*	13.62	47.34
SO-2	8/26/2004	60.96*	14.35	46.61
SO-2	11/18/2004	60.96*	14.95	46.01
SO-2	3/24/2005	60.96*	13.63	47.33
SO-2	8/25/2005	60.96*	13.59	47.37
SO-2	11/17/2005	60.96*	14.21	46.75
SO-2	3/23/2006	60.96*	13.23	47.73
SO-2	11/16/2006	60.96*	13.71	47.25
SO-2	3/22/2007	60.96*	13.67	47.29
SO-2	6/29/2007	60.96*	13.95	47.01
SO-2	11/15/2007	60.96*	14.93	46.03
SO-2	3/27/2008	60.96*	14.72	46.24
SO-2	11/20/2008	60.96*	15.52	45.44
SO-2	3/26/2009	60.96*	15.05	45.91
SO-2	11/19/2009	60.96*	15.80	45.16
SO-2	3/25/2010	60.96*	14.85	46.11
SO-2	11/18/2010	60.96*	14.90	46.06

Table 4
Groundwater Elevations
SMI Holding LLC
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Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
SO-3B1	6/25/2002	60.87*	9.71	51.16
SO-3B1	7/26/2002	60.87*	9.88	50.99
SO-3B1	8/22/2002	60.87*	10.20	50.67
SO-3B1	9/13/2002	60.87*	10.32	50.55
SO-3B1	10/29/2002	60.87*	10.71	50.16
SO-3B1	11/21/2002	60.87*	12.15	48.72
SO-3B1	12/18/2002	60.87*	10.60	50.27
SO-3B1	1/16/2003	60.87*	9.88	50.99
SO-3B1	2/27/2003	60.87*	9.48	51.39
SO-3B1	3/26/2003	60.87*	9.31	51.56
SO-3B1	4/28/2003	60.87*	8.85	52.02
SO-3B1	5/22/2003	60.87*	8.43	52.44
SO-3B1	6/19/2003	60.87*	8.43	52.44
SO-3B1	7/24/2003	60.87*	8.23	52.64
SO-3B1	8/28/2003	60.87*	8.31	52.56
SO-3B1	9/24/2003	60.87*	9.80	51.07
SO-3B1	10/28/2003	60.87*	9.04	51.83
SO-3B1	11/25/2003	60.87*	9.85	51.02
SO-3B1	12/22/2003	60.87*	9.92	50.95
SO-3B1	3/25/2004	60.87*	9.36	51.51
SO-3B1	5/28/2004	60.87*	9.06	51.81
SO-3B1	8/26/2004	60.87*	9.95	50.92
SO-3B1	11/18/2004	60.87*	10.79	50.08
SO-3B1	3/24/2005	60.87*	9.42	51.45
SO-3B1	8/25/2005	60.87*	9.50	51.37
SO-3B1	11/17/2005	60.87*	9.91	50.96
SO-3B1	3/23/2006	60.87*	8.79	52.08
SO-3B1	11/16/2006	60.87*	9.58	51.29
SO-3B1	3/22/2007	60.87*	9.11	51.76
SO-3B1	6/29/2007	60.87*	9.73	51.14
SO-3B1	11/15/2007	60.87*	11.10	49.77
SO-3B1	3/27/2008	60.87*	10.30	50.57
SO-3B1	11/20/2008	60.87*	10.35	50.52
SO-3B1	3/26/2009	60.87*	10.71	50.16
SO-3B1	11/19/2009	60.87*	12.14	48.73
SO-3B1	3/25/2010	60.87*	10.65	50.22
SO-3B1	11/18/2010	60.87*	10.90	49.97

Table 4
Groundwater Elevations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
SO-4	6/25/2002	58.4*	11.59	46.81
SO-4	7/26/2002	58.4*	11.77	46.63
SO-4	8/22/2002	58.4*	11.97	46.43
SO-4	9/13/2002	58.4*	12.07	46.33
SO-4	10/29/2002	58.4*	12.41	45.99
SO-4	11/21/2002	58.4*	12.53	45.87
SO-4	12/18/2002	58.4*	12.03	46.37
SO-4	1/16/2003	58.4*	11.91	46.49
SO-4	2/27/2003	58.4*	11.71	46.69
SO-4	3/26/2003	58.4*	11.58	46.82
SO-4	4/28/2003	58.4*	11.23	47.17
SO-4	5/22/2003	58.4*	11.02	47.38
SO-4	6/19/2003	58.4*	10.72	47.68
SO-4	7/24/2003	58.4*	10.85	47.55
SO-4	8/28/2003	58.4*	11.20	47.20
SO-4	9/24/2003	58.4*	11.45	46.95
SO-4	10/28/2003	58.4*	11.45	46.95
SO-4	11/20/2003	58.4*	11.95	46.45
SO-4	12/22/2003	58.4*	11.97	46.43
SO-4	3/25/2004	58.4*	11.22	47.18
SO-4	5/28/2004	58.4*	11.27	47.13
SO-4	8/26/2004	58.4*	11.90	46.50
SO-4	11/18/2004	58.4*	12.60	45.80
SO-4	3/24/2005	58.4*	12.38	46.02
SO-4	8/25/2005	58.4*	11.19	47.21
SO-4	11/17/2005	58.4*	11.82	46.58
SO-4	3/23/2006	58.4*	10.83	47.57
SO-4	11/16/2006	58.4*	11.86	46.54
SO-4	3/22/2007	58.4*	11.26	47.14
SO-4	6/29/2007	58.4*	11.60	46.80
SO-4	11/15/2007	58.4*	12.54	45.86
SO-4	3/27/2008	58.4*	12.29	46.11
SO-4	11/20/2008	58.4*	13.08	45.32
SO-4	3/26/2009	58.4*	12.58	45.82
SO-4	11/19/2009	58.4*	13.25	45.15
SO-4	3/25/2010	58.4*	12.35	46.05
SO-4	11/18/2010	58.4*	12.60	45.80

Table 4
Groundwater Elevations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
SO-PZ1	6/25/2002	62.30*	15.18	47.12
SO-PZ1	7/26/2002	62.30*	15.39	46.91
SO-PZ1	8/22/2002	62.30*	15.58	46.72
SO-PZ1	9/13/2002	62.30*	15.67	46.63
SO-PZ1	10/29/2002	62.30*	16.05	46.25
SO-PZ1	11/21/2002	62.30*	16.22	46.08
SO-PZ1	12/18/2002	62.30*	15.88	46.42
SO-PZ1	1/16/2003	62.30*	15.58	46.72
SO-PZ1	2/27/2003	62.30*	15.51	46.79
SO-PZ1	3/26/2003	62.30*	15.50	46.80
SO-PZ1	4/28/2003	62.30*	14.85	47.45
SO-PZ1	5/22/2003	62.30*	14.92	47.38
SO-PZ1	6/19/2003	62.30*	14.75	47.55
SO-PZ1	7/24/2003	62.30*	13.95	48.35
SO-PZ1	8/28/2003	62.30*	13.81	48.49
SO-PZ1	9/24/2003	62.30*	15.62	46.68
SO-PZ1	10/28/2003	62.30*	14.12	48.18
SO-PZ1	11/20/2003	62.30*	15.97	46.33
SO-PZ1	12/22/2003	62.30*	15.95	46.35
SO-PZ1	3/25/2004	62.30*	14.82	47.48
SO-PZ1	5/28/2004	62.30*	14.82	47.48
SO-PZ1	8/26/2004	62.30*	15.56	46.74
SO-PZ1	11/18/2004	62.30*	16.20	46.10
SO-PZ1	3/24/2005	62.30*	15.17	47.13
SO-PZ1	8/25/2005	62.30*	14.77	47.53
SO-PZ1	11/17/2005	62.30*	15.43	46.87
SO-PZ1	3/23/2006	62.30*	14.95	47.35
SO-PZ1	11/16/2006	62.30*	14.45	47.85
SO-PZ1	3/22/2007	62.30*	14.88	47.42
SO-PZ1	6/29/2007	62.30*	15.20	47.10
SO-PZ1	11/15/2007	62.30*	16.19	46.11
SO-PZ1	3/27/2008	62.30*	15.91	46.39
SO-PZ1	11/20/2008	62.30*	16.64	45.66
SO-PZ1	3/26/2009	62.30*	16.28	46.02
SO-PZ1	11/19/2009	62.30*	16.98	45.32
SO-PZ1	3/25/2010	62.30*	16.03	46.27
SO-PZ1	11/18/2010	62.30*	16.18	46.12

Table 4
Groundwater Elevations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
SO-PZ2	6/25/2002	60.66*	14.65	46.01
SO-PZ2	7/26/2002	60.66*	14.40	46.26
SO-PZ2	8/22/2002	60.66*	14.31	46.35
SO-PZ2	9/13/2002	60.66*	14.38	46.28
SO-PZ2	10/29/2002	60.66*	15.41	45.25
SO-PZ2	11/21/2002	60.66*	14.44	46.22
SO-PZ2	12/18/2002	60.66*	15.50	45.16
SO-PZ2	1/16/2003	60.66*	23.91	36.75
SO-PZ2	2/27/2003	60.66*	17.43	43.23
SO-PZ2	3/26/2003	60.66*	15.79	44.87
SO-PZ2	4/28/2003	60.66*	14.98	45.68
SO-PZ2	5/22/2003	60.66*	14.35	46.31
SO-PZ2	6/19/2003	60.66*	13.91	46.75
SO-PZ2	7/24/2003	60.66*	13.68	46.98
SO-PZ2	8/28/2003	60.66*	13.56	47.10
SO-PZ2	9/24/2003	60.66*	13.59	47.07
SO-PZ2	10/28/2003	60.66*	13.62	47.04
SO-PZ2	11/20/2003	60.66*	13.61	47.05
SO-PZ2	12/22/2003	60.66*	13.64	47.02
SO-PZ2	3/25/2004	60.66*	16.55	44.11
SO-PZ2	5/28/2004	60.66*	13.66	47.00
SO-PZ2	8/26/2004	60.66*	14.09	46.57
SO-PZ2	11/18/2004	60.66*	14.30	46.36
SO-PZ2	3/24/2005	60.66*	15.49	45.17
SO-PZ2	8/25/2005	60.66*	16.16	44.50
SO-PZ2	11/17/2005	60.66*	15.01	45.65
SO-PZ2	3/23/2006	60.66*	14.93	45.73
SO-PZ2	11/16/2006	60.66*	13.40	47.26
SO-PZ2	3/22/2007	60.66*	13.71	46.95
SO-PZ2	6/29/2007	60.66*	13.62	47.04
SO-PZ2	11/15/2007	60.66*	14.55	46.11
SO-PZ2	3/27/2008	60.66*	14.35	46.31
SO-PZ2	11/20/2008	60.66*	15.10	45.56
SO-PZ2	3/26/2009	60.66*	14.19	46.47
SO-PZ2	11/19/2009	60.66*	15.28	45.38
SO-PZ2	3/25/2010	60.66*	16.04	44.62
SO-PZ2	11/18/2010	60.66*	16.20	44.46

Table 4
Groundwater Elevations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
SO-PZ3	6/25/2002	61.78*	15.49	46.29
SO-PZ3	7/26/2002	61.78*	15.45	46.33
SO-PZ3	8/22/2002	61.78*	15.54	46.24
SO-PZ3	9/13/2002	61.78*	15.64	46.14
SO-PZ3	10/29/2002	61.78*	15.75	46.03
SO-PZ3	11/21/2002	61.78*	15.95	45.83
SO-PZ3	12/18/2002	61.78*	15.50	46.28
SO-PZ3	1/16/2003	61.78*	15.27	46.51
SO-PZ3	2/27/2003	61.78*	15.11	46.67
SO-PZ3	3/26/2003	61.78*	14.92	46.86
SO-PZ3	4/28/2003	61.78*	14.68	47.10
SO-PZ3	5/22/2003	61.78*	14.42	47.36
SO-PZ3	6/19/2003	61.78*	14.41	47.37
SO-PZ3	7/24/2003	61.78*	14.46	47.32
SO-PZ3	8/28/2003	61.78*	14.66	47.12
SO-PZ3	9/24/2003	61.78*	14.91	46.87
SO-PZ3	10/28/2003	61.78*	15.22	46.56
SO-PZ3	11/20/2003	61.78*	15.21	46.57
SO-PZ3	12/22/2003	61.78*	15.40	46.38
SO-PZ3	3/25/2004	61.78*	14.75	47.03
SO-PZ3	5/28/2004	61.78*	14.58	47.20
SO-PZ3	8/26/2004	61.78*	15.61	46.17
SO-PZ3	11/18/2004	61.78*	15.84	45.94
SO-PZ3	3/24/2005	61.78*	9.42	52.36
SO-PZ3	8/25/2005	61.78*	14.65	47.13
SO-PZ3	11/17/2005	61.78*	15.21	46.57
SO-PZ3	3/23/2006	61.78*	14.21	47.57
SO-PZ3	11/16/2006	61.78*	14.92	46.86
SO-PZ3	3/22/2007	61.78*	14.52	47.26
SO-PZ3	6/29/2007	61.78*	14.85	46.93
SO-PZ3	11/15/2007	61.78*	15.82	45.96
SO-PZ3	3/27/2008	61.78*	15.67	46.11
SO-PZ3	11/20/2008	61.78*	16.41	45.37
SO-PZ3	3/26/2009	61.78*	15.95	45.83
SO-PZ3	11/19/2009	61.78*	16.48	45.30
SO-PZ3	3/25/2010	61.78*	16.54	45.24
SO-PZ3	11/18/2010	61.78*	16.61	45.17

Table 4
Groundwater Elevations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
EW-1	6/25/2002	57.39*	11.29	46.10
EW-1	7/26/2002	57.39*	11.54	45.85
EW-1	8/22/2002	57.39*	12.35	45.04
EW-1	9/13/2002	57.39*	12.65	44.74
EW-1	10/29/2002	57.39*	13.72	43.67
EW-1	11/21/2002	57.39*	15.41	41.98
EW-1	12/18/2002	57.39*	11.70	45.69
EW-1	1/16/2003	57.39*	11.46	45.93
EW-1	2/27/2003	57.39*	11.29	46.10
EW-1	3/26/2003	57.39*	11.02	46.37
EW-1	4/28/2003	57.39*	10.80	46.59
EW-1	5/22/2003	57.39*	10.35	47.04
EW-1	6/19/2003	57.39*	10.05	47.34
EW-1	7/24/2003	57.39*	10.20	47.19
EW-1	8/28/2003	57.39*	10.62	46.77
EW-1	9/24/2003	57.39*	10.81	46.58
EW-1	10/28/2003	57.39*	11.05	46.34
EW-1	11/20/2003	57.39*	11.29	46.10
EW-1	12/22/2003	57.39*	11.29	46.10
EW-1	3/25/2004	57.39*	10.53	46.86
EW-1	5/28/2004	57.39*	10.65	46.74
EW-1	8/26/2004	57.39*	26.30	31.09
EW-1	11/18/2004	57.39*	27.85	29.54
EW-1	3/24/2005	57.39*	14.33	43.06
EW-1	8/25/2005	57.39*	11.43	45.96
EW-1	11/17/2005	57.39*	27.67	29.72
EW-1	3/23/2006	57.39*	25.81	31.58
EW-1	11/16/2006	57.39*	14.98	42.41
EW-1	3/22/2007	57.39*	15.81	41.58
EW-1	6/29/2007	57.39*	27.66	29.73
EW-1	11/15/2007	57.39*	11.54	45.85
EW-1	3/27/2008	57.39*	21.59	35.80
EW-1	11/20/2008	57.39*	20.61	36.78
EW-1	3/26/2009	57.39*	11.96	45.43
EW-1	12/17/2009	57.39*	20.72	36.67
EW-1	3/25/2010	57.39*	16.52	40.87
EW-1	11/18/2010	57.39*	21.70	35.69

Table 4
Groundwater Elevations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
EW-2	6/25/2002	60.04*	13.36	46.68
EW-2	7/26/2002	60.04*	13.60	46.44
EW-2	8/22/2002	60.04*	13.77	46.27
EW-2	9/13/2002	60.04*	13.88	46.16
EW-2	10/29/2002	60.04*	14.25	45.79
EW-2	11/21/2002	60.04*	14.35	45.69
EW-2	12/18/2002	60.04*	13.89	46.15
EW-2	1/16/2003	60.04*	13.65	46.39
EW-2	2/27/2003	60.04*	13.02	47.02
EW-2	3/26/2003	60.04*	13.99	46.05
EW-2	4/28/2003	60.04*	13.13	46.91
EW-2	5/22/2003	60.04*	14.00	46.04
EW-2	6/19/2003	60.04*	12.50	47.54
EW-2	7/24/2003	60.04*	12.61	47.43
EW-2	8/28/2003	60.04*	12.98	47.06
EW-2	9/24/2003	60.04*	13.30	46.74
EW-2	10/28/2003	60.04*	13.05	46.99
EW-2	11/20/2003	60.04*	13.61	46.43
EW-2	12/22/2003	60.04*	13.68	46.36
EW-2	3/25/2004	60.04*	12.99	47.05
EW-2	5/28/2004	60.04*	12.98	47.06
EW-2	8/26/2004	60.04*	13.75	46.29
EW-2	11/18/2004	60.04*	14.34	45.70
EW-2	3/24/2005	60.04*	12.98	47.06
EW-2	8/25/2005	60.04*	12.95	47.09
EW-2	11/17/2005	60.04*	13.64	46.40
EW-2	3/23/2006	60.04*	12.61	47.43
EW-2	11/16/2006	60.04*	14.45	45.59
EW-2	3/22/2007	60.04*	12.62	47.42
EW-2	6/29/2007	60.04*	13.55	46.49
EW-2	11/15/2007	60.04*	14.69	45.35
EW-2	3/27/2008	60.04*	14.47	45.57
EW-2	11/20/2008	60.04*	15.68	44.36
EW-2	3/26/2009	60.04*	15.05	44.99
EW-2	12/17/2009	60.04*	17.37	42.67
EW-2	3/25/2010	60.04*	14.95	45.09
EW-2	11/18/2010	60.04*	15.06	44.98

Table 4
Groundwater Elevations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
EW-3	6/25/2002	59.55*	12.96	46.59
EW-3	7/26/2002	59.55*	13.10	46.45
EW-3	8/22/2002	59.55*	13.31	46.24
EW-3	9/13/2002	59.55*	13.40	46.15
EW-3	10/29/2002	59.55*	14.80	44.75
EW-3	11/21/2002	59.55*	13.82	45.73
EW-3	12/18/2002	59.55*	13.19	46.36
EW-3	1/16/2003	59.55*	13.20	46.35
EW-3	2/27/2003	59.55*	13.52	46.03
EW-3	3/26/2003	59.55*	12.90	46.65
EW-3	4/28/2003	59.55*	12.61	46.94
EW-3	5/22/2003	59.55*	14.05	45.50
EW-3	6/19/2003	59.55*	12.00	47.55
EW-3	7/24/2003	59.55*	12.20	47.35
EW-3	8/28/2003	59.55*	12.50	47.05
EW-3	9/24/2003	59.55*	12.65	46.90
EW-3	10/28/2003	59.55*	12.82	46.73
EW-3	11/20/2003	59.55*	13.19	46.36
EW-3	12/22/2003	59.55*	13.32	46.23
EW-3	3/25/2004	59.55*	12.57	46.98
EW-3	5/28/2004	59.55*	12.59	46.96
EW-3	8/26/2004	59.55*	13.20	46.35
EW-3	11/18/2004	59.55*	13.90	45.65
EW-3	3/24/2005	59.55*	12.58	46.97
EW-3	8/25/2005	59.55*	12.48	47.07
EW-3	11/17/2005	59.55*	13.11	46.44
EW-3	3/23/2006	59.55*	12.15	47.40
EW-3	11/16/2006	59.55*	14.55	45.00
EW-3	3/22/2007	59.55*	13.09	46.46
EW-3	6/29/2007	59.55*	12.94	46.61
EW-3	11/15/2007	59.55*	13.84	45.71
EW-3	3/27/2008	59.55*	13.64	45.91
EW-3	11/20/2008	59.55*	14.35	45.20
EW-3	3/26/2009	59.55*	13.91	45.64
EW-3	12/17/2009	59.55*	14.68	44.87
EW-3	3/25/2010	59.55*	13.75	45.80
EW-3	11/18/2010	59.55*	13.82	45.73

Table 4
Groundwater Elevations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Identification	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
EW-4	6/25/2002	60.83*	13.99	46.84
EW-4	7/26/2002	60.83*	14.14	46.69
EW-4	8/22/2002	60.83*	14.40	46.43
EW-4	9/13/2002	60.83*	14.49	46.34
EW-4	10/29/2002	60.83*	14.91	45.92
EW-4	11/21/2002	60.83*	15.01	45.82
EW-4	12/18/2002	60.83*	14.53	46.30
EW-4	1/16/2003	60.83*	14.30	46.53
EW-4	2/27/2003	60.83*	14.16	46.67
EW-4	3/26/2003	60.83*	13.98	46.85
EW-4	4/28/2003	60.83*	13.69	47.14
EW-4	5/22/2003	60.83*	13.30	47.53
EW-4	6/19/2003	60.83*	13.11	47.72
EW-4	7/24/2003	60.83*	13.20	47.63
EW-4	8/28/2003	60.83*	14.11	46.72
EW-4	9/24/2003	60.83*	14.71	46.12
EW-4	10/28/2003	60.83*	15.00	45.83
EW-4	11/20/2003	60.83*	16.24	44.59
EW-4	12/22/2003	60.83*	15.69	45.14
EW-4	3/25/2004	60.83*	14.31	46.52
EW-4	5/28/2004	60.83*	14.19	46.64
EW-4	8/26/2004	60.83*	14.85	45.98
EW-4	11/18/2004	60.83*	15.90	44.93
EW-4	3/24/2005	60.83*	13.87	46.96
EW-4	8/25/2005	60.83*	13.75	47.08
EW-4	11/17/2005	60.83*	14.45	46.38
EW-4	3/23/2006	60.83*	13.35	47.48
EW-4	11/16/2006	60.83*	15.03	45.80
EW-4	3/22/2007	60.83*	13.71	47.12
EW-4	6/29/2007	60.83*	13.78	47.05
EW-4	11/15/2007	60.83*	14.78	46.05
EW-4	3/27/2008	60.83*	14.55	46.28
EW-4	11/20/2008	60.83*	15.34	45.49
EW-4	3/26/2009	60.83*	14.80	46.03
EW-4	12/17/2009	60.83*	15.62	45.21

Notes:

Only measurements from June 2002 shown; historical data available upon request.

* Well resurveyed on 12/9/99 by Sandis Humber Jones.

** Top of casing cut by 0.25 inches on 5/20/03 to repair well cap & lock.

*** Well resurveyed on 11/11/01 by Sandis Humber Jones.

**** Well resurveyed by Raytheon in 2004

NM = not measured.

NA = not applicable.

MSL = mean sea level.

**Table 5
Stagnation Point, Capture Zone Width and Flow Budget Calculations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California**

Stagnation Point (feet) = $Q / (2 * 3.14 * T * i)$						
		Mar-10		Nov-10		
	Q	SP	Q	SP		
EW-1	0.6	12	0.7	14		
EW-2	9.2	179	7.4	144		
EW-3	8.0	155	8.2	159		
EW-4	0.0	0	0.0	0		

Width at Extraction Well (feet) = $Q / (4 * T * i)$			
		Mar-10	Nov-10
EW-1		20	21
EW-2		282	225
EW-3		243	250
EW-4		0	0

Maximum Width (feet) = $Q / (2 * T * i)$			
		Mar-10	Nov-10
EW-1		39	43
EW-2		563	451
EW-3		487	500
EW-4		0	0

Estimated Transmissivity (ft²/day)	Estimated Extraction Rate (gpm)
700	4.4
2,300	14.3

Notes:

Assumes (1) the aquifer is homogenous, isotropic, of infinite aerial extent, and uniform thickness;
 (2) extraction wells fully penetrate the aquifer; (3) groundwater flow is at steady-state;
 (4) vertical gradients are negligible; and (5) net recharge is accounted for by the regional hydraulic gradient.

Q = average extraction well flowrate (from Table 3).

T = transmissivity.

T = 790 ft²/day for EW-1 and EW-4 (based on aquifer test performed at SO-1).

T = 2,300 ft²/day for EW-2 and EW-3 (based on aquifer test performed at SO-2).

i = average horizontal hydraulic gradient for non-pumping conditions.

i = 0.002 based on historical data.

SP = stagnation point.

ft² = square feet.

gpm = gallons per minute.

Table 6
Groundwater Quality Sampling Schedule
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Identification	Annual Monitoring	Biennial Monitoring
On-Site Wells		
C-2		x
C-3	x	
R-20A		x
R-21A	x	
R-48A		x
SO-1		x
SO-2		x
SO3-B1		x
SO-4	x	
EW-1	x	
EW-2	x	
EW-3	x	
EW-4	x	
SO-PZ1	x	
SO-PZ2	x	
SO-PZ3		x
Off-Site Wells		
R-15A	x	
R-51A		x
IM-7A	x	
ME-1A		x

Notes:

From SECOR International Inc., February 20, 1998 report entitled "Final Report Operation and Maintenance Plan for 455, 485/487, and 501/505 East Middlefield Road".

Table 7
Groundwater Concentrations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Number	Aquifer	Sample Date	TCE (µg/L)	cis-1,2-DCE (µg/L)	Notes
C-2	A	31-Aug-1989	48	NT	
C-2	A	27-Feb-1992	21	34	
C-2	A	25-Sep-1992	< 1	< 1	
C-2	A	26-Jun-1995	61	< 1	
C-2	A	13-Mar-1996	25	< 1	
C-2	A	13-Mar-1996	25	< 0.5	
C-2	A	16-Dec-1997	15	< 0.5	
C-2	A	18-Dec-1998	7.3	< 0.5	
C-2	A	7-Dec-1999	7.1	1.4	
C-2	A	19-Dec-2000	3.5	< 0.5	
C-2	A	18-Dec-2002	4.1	< 0.5	
C-2	A	21-Dec-2004	5.4	< 0.5	
C-2	A	20-Dec-2006	1.8	< 0.5	
C-2	A	17-Dec-2008	4.0	< 0.5	
C-2	A	14-Dec-2010	3.3	< 0.5	
C-3	A	5-Sep-1989	52	NT	
C-3	A	27-Feb-1992	37	< 1	
C-3	A	28-Jun-1995	740	< 1	
C-3	A	17-Jan-1996	480	< 10	
C-3	A	13-Mar-1996	480	< 10	
C-3	A	13-Mar-1996	400	< 10	
C-3	A	25-Jun-1997	380	< 5	
C-3	A	24-Sep-1997	400	< 5	
C-3	A	16-Dec-1997	290	< 5	
C-3	A	16-Mar-1998	270	< 5	
C-3	A	4-Jan-1999	230	< 5	
C-3	A	17-Jun-1999	310	< 5	
C-3	A	7-Dec-1999	260	6.1	
C-3	A	19-Dec-2000	110	< 2.5	
C-3	A	12-Dec-2001	320	< 5	
C-3	A	18-Dec-2002	310	< 5	
C-3	A	22-Dec-2003	360	4.7	
C-3	A	22-Dec-2004	240	< 2.5	
C-3	A	14-Dec-2005	420	5.0	
C-3	A	21-Dec-2006	140	1.9	
C-3	A	19-Dec-2007	240	2.7	
C-3	A	17-Dec-2008	240	<2.5	
C-3	A	17-Dec-2009	400	5.9	DUP: TCE = 420; cis-1,2-DCE = 6.1.
C-3	A	14-Dec-2010	580	8.4	
IM-7A	A	12-Feb-1986	17	NT	
IM-7A	A	25-Mar-1986	480	NT	
IM-7A	A	26-Mar-1986	400	NT	
IM-7A	A	1-Apr-1986	420	NT	
IM-7A	A	17-Oct-1986	430	NT	
IM-7A	A	19-Nov-1992	180	< 50	
IM-7A	A	28-Jun-1995	200	< 4	
IM-7A	A	17-Jan-1996	140	< 2.5	
IM-7A	A	13-Mar-1996	120	< 2.5	
IM-7A	A	25-Jun-1997	67	< 1	
IM-7A	A	24-Sep-1997	73	< 2.5	
IM-7A	A	15-Dec-1997	56	< 2.5	

Table 7
Groundwater Concentrations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Number	Aquifer	Sample Date	TCE (µg/L)	cis-1,2-DCE (µg/L)	Notes
IM-7A	A	17-Mar-1998	54	< 2.5	
IM-7A	A	16-Jun-1999	36	< 0.5	
IM-7A	A	7-Dec-1999	6.8	< 0.5	
IM-7A	A	19-Dec-2000	36	< 0.5	
IM-7A	A	12-Dec-2001	31	< 0.5	
IM-7A	A	18-Dec-2002	13	< 0.5	
IM-7A	A	22-Dec-2003	8.9	< 0.5	
IM-7A	A	22-Dec-2004	15	< 0.5	
IM-7A	A	14-Dec-2005	16	< 0.5	
IM-7A	A	20-Dec-2006	7.5	< 0.5	
IM-7A	A	19-Dec-2007	11	< 0.5	
IM-7A	A	17-Dec-2008	11	< 0.5	
IM-7A	A	17-Dec-2009	12	< 0.5	
IM-7A	A	14-Dec-2010	12	< 0.5	
ME-1A	A	29-May-1985	80	3.0	
ME-1A	A	19-Jun-1985	45	NT	
ME-1A	A	12-Jul-1985	49	NT	
ME-1A	A	12-Jul-1985	81	NT	
ME-1A	A	19-Sep-1985	14	NT	
ME-1A	A	26-Nov-1985	62	NT	
ME-1A	A	26-Nov-1985	47	NT	
ME-1A	A	14-Oct-1986	41	NT	
ME-1A	A	25-Sep-1992	36	9.1	
ME-1A	A	28-Jun-1995	31	10	
ME-1A	A	17-Nov-1995	29	8.8	
ME-1A	A	20-Dec-1995	22	8.0	
ME-1A	A	17-Jan-1996	3.6	2.2	
ME-1A	A	13-Mar-1996	19	6.3	
ME-1A	A	25-Jun-1997	39	7.7	
ME-1A	A	24-Sep-1997	51	9.2	
ME-1A	A	15-Dec-1997	85	15	
ME-1A	A	18-Dec-1998	75	6.0	
ME-1A	A	7-Dec-1999	150	14	
ME-1A	A	19-Dec-2000	200	13	
ME-1A	A	18-Dec-2002	170	15	
ME-1A	A	22-Dec-2003	140	14	DUP: TCE = 160; cis-1,2-DCE = 15.
ME-1A	A	22-Dec-2004	120	13	
ME-1A	A	14-Dec-2005	66	6.8	
ME-1A	A	21-Dec-2006	57	8.2	
ME-1A	A	19-Dec-2007	98	8.2	
ME-1A	A	17-Dec-2008	90	11	PCE = 0.54; 1,1-DCA = 0.53. DUP: TCE = 89; cis-1,2-DCE = 12.
ME-1A	A	17-Dec-2009	78	9.9	
ME-1A	A	14-Dec-2010	67	9.0	DUP: TCE = 67; cis-1,2-DCE = 8.8.
R-15A	A	2-Mar-1985	3100	NT	
R-15A	A	15-Mar-1985	3700	NT	
R-15A	A	22-Apr-1985	2700	NT	
R-15A	A	7-Jun-1985	2900	NT	
R-15A	A	12-Sep-1985	2200	NT	
R-15A	A	27-Jan-1985	2900	NT	
R-15A	A	6-Mar-1986	2900	NT	
R-15A	A	22-Oct-1986	1800	NT	

Table 7
Groundwater Concentrations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Number	Aquifer	Sample Date	TCE (µg/L)	cis-1,2-DCE (µg/L)	Notes
R-15A	A	16-Oct-1992	410	< 10	
R-15A	A	26-Jun-1995	370	< 1	
R-15A	A	17-Nov-1995	400	< 6	
R-15A	A	20-Dec-1995	470	< 1	
R-15A	A	17-Jan-1996	400	< 5	
R-15A	A	11-Mar-1996	540	< 10	
R-15A	A	15-Dec-1997	220	< 25	
R-15A	A	16-Mar-1998	270	< 5	
R-15A	A	4-Jan-1999	190	< 2.5	
R-15A	A	16-Jun-1999	240	< 0.5	
R-15A	A	8-Dec-1999	140	< 0.5	
R-15A	A	19-Dec-2000	17	< 0.5	
R-15A	A	12-Dec-2001	110	< 2.5	
R-15A	A	18-Dec-2002	39	< 0.5	
R-15A	A	22-Dec-2003	70	< 0.5	
R-15A	A	21-Dec-2004	100	< 1	
R-15A	A	14-Dec-2005	67	< 0.5	
R-15A	A	21-Dec-2006	44	< 0.5	
R-15A	A	19-Dec-2007	67	0.5	
R-15A	A	17-Dec-2008	65	0.8	
R-15A	A	17-Dec-2009	56	0.6	
R-15A	A	14-Dec-2010	44	< 0.5	
R-20A	A	5-May-1985	68	NT	
R-20A	A	30-May-1985	30	NT	
R-20A	A	12-Sep-1985	90	NT	
R-20A	A	19-Sep-1985	44	NT	
R-20A	A	23-Dec-1985	38	NT	
R-20A	A	4-Mar-1986	120	NT	
R-20A	A	9-Oct-1986	49	NT	
R-20A	A	25-Sep-1989	143	NT	
R-20A	A	26-Jun-1995	89	4.4	
R-20A	A	17-Jan-1996	280	NT	
R-20A	A	13-Mar-1996	350	9.4	
R-20A	A	16-Dec-1997	290	NT	
R-20A	A	18-Dec-1998	220	16	
R-20A	A	8-Dec-1999	180	30	
R-20A	A	19-Dec-2000	180	25	
R-20A	A	18-Dec-2002	190	8.5	
R-20A	A	22-Dec-2003	340	15	
R-20A	A	22-Dec-2004	360	15	
R-20A	A	21-Dec-2006	360	11	
R-20A	A	2-Feb-2009	320	8.1	Well resampled on Feb. 2, 2009.
R-20A	A	14-Dec-2010	480	14	
R-21A	A	15-Aug-1985	540	NT	
R-21A	A	13-Sep-1985	350	NT	
R-21A	A	2-Dec-1985	380	NT	
R-21A	A	22-Oct-1986	380	NT	
R-21A	A	27-Jun-1989	500	< 5	
R-21A	A	31-Aug-1989	68	NT	
R-21A	A	25-Sep-1989	397	NT	
R-21A	A	9-Mar-1992	1400	< 25	

Table 7
Groundwater Concentrations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Number	Aquifer	Sample Date	TCE (µg/L)	cis-1,2-DCE (µg/L)	Notes
R-21A	A	1-Dec-1992	190	< 10	
R-21A	A	28-Jun-1995	110	< 2	
R-21A	A	11-Mar-1996	90	2	
R-21A	A	25-Jun-1997	60	< 10	
R-21A	A	24-Sep-1997	64	< 2.5	
R-21A	A	16-Dec-1997	45	< 1.3	
R-21A	A	16-Mar-1998	67	< 0.5	
R-21A	A	16-Jun-1999	63	< 0.5	
R-21A	A	7-Dec-1999	43	1.4	
R-21A	A	19-Dec-2000	43	1.3	
R-21A	A	12-Dec-2001	43	1.6	
R-21A	A	18-Dec-2002	37	1.4	
R-21A	A	22-Dec-2003	42	2.3	
R-21A	A	21-Dec-2004	39	2.3	
R-21A	A	14-Dec-2005	39	1.9	
R-21A	A	20-Dec-2006	40	2.4	
R-21A	A	19-Dec-2007	39	2.8	
R-21A	A	17-Dec-2008	47	4.8	PCE = 0.59.
R-21A	A	17-Dec-2009	44	4.6	
R-21A	A	14-Dec-2010	39	6.4	
R-48A	A	15-Dec-1986	< 1	NT	
R-48A	A	27-Jan-1987	79	NT	
R-48A	A	3-Feb-1987	34	NT	
R-48A	A	9-Mar-1992	54	< 1	
R-48A	A	13-Oct-1992	6.8	< 1	
R-48A	A	28-Jun-1995	30	< 1	
R-48A	A	11-Mar-1996	17	< 0.5	
R-48A	A	16-Dec-1997	13	< 0.5	
R-48A	A	19-Dec-2000	10	< 0.5	
R-48A	A	18-Dec-2002	10	< 0.5	
R-48A	A	21-Dec-2004	7.0	< 0.5	
R-48A	A	20-Dec-2006	5.4	< 0.5	
R-48A	A	17-Dec-2008	8.5	< 0.5	
R-48A	A	14-Dec-2010	6.0	< 0.5	
R-51A	A	29-Apr-1987	54	NT	
R-51A	A	7-May-1987	56	NT	
R-51A	A	14-May-1987	120	NT	
R-51A	A	26-Jun-1995	140	< 1	
R-51A	A	17-Nov-1995	130	< 1	
R-51A	A	20-Dec-1995	130	< 1	
R-51A	A	17-Jan-1996	120	< 2.5	
R-51A	A	11-Mar-1996	110	< 2.5	
R-51A	A	16-Dec-1997	65	< 2.5	
R-51A	A	17-Dec-1998	42	< 0.5	
R-51A	A	7-Dec-1999	40	< 0.5	
R-51A	A	19-Dec-2000	29	< 0.5	
R-51A	A	18-Dec-2002	27	< 0.5	
R-51A	A	21-Dec-2004	20	< 0.5	
R-51A	A	20-Dec-2006	15	< 0.5	
R-51A	A	17-Dec-2008	17	< 0.5	
R-51A	A	14-Dec-2010	14	< 0.5	

Table 7
Groundwater Concentrations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Number	Aquifer	Sample Date	TCE (µg/L)	cis-1,2-DCE (µg/L)	Notes
SO-1	A	5-Sep-1989	132	NT	
SO-1	A	27-Feb-1992	390	< 1	
SO-1	A	25-Sep-1992	260	< 1	
SO-1	A	28-Jun-1995	83	< 1	
SO-1	A	17-Nov-1995	57	< 1	
SO-1	A	20-Dec-1995	54	< 1	
SO-1	A	18-Jan-1996	53	< 1	
SO-1	A	11-Mar-1996	57	< 1	
SO-1	A	16-Dec-1997	33	< 3.3	
SO-1	A	16-Dec-1998	33	< 0.5	
SO-1	A	7-Dec-1999	36	< 0.5	
SO-1	A	19-Dec-2000	28	< 0.5	
SO-1	A	18-Dec-2002	30	0.56	
SO-1	A	21-Dec-2004	22	0.67	
SO-1	A	20-Dec-2006	19	0.89	
SO-1	A	17-Dec-2008	22	1.1	
SO-1	A	14-Dec-2010	15	0.71	
SO-2	A	31-Aug-1989	67	NT	
SO-2	A	25-Sep-1989	41,000	NT	
SO-2	A	25-Sep-1989	36,600	NT	
SO-2	A	12-Oct-1989	35,000	NT	
SO-2	A	27-Feb-1992	60,000	< 1	
SO-2	A	25-Sep-1992	49,000	< 1	
SO-2	A	28-Jun-1995	230	< 4	
SO-2	A	11-Oct-1995	270	3.1	
SO-2	A	17-Nov-1995	280	< 4	
SO-2	A	20-Dec-1995	250	3.3	
SO-2	A	18-Jan-1996	170	4.7	
SO-2	A	11-Mar-1996	240	6.1	
SO-2	A	15-Dec-1997	93	3.2	
SO-2	A	17-Dec-1998	110	1.6	
SO-2	A	7-Dec-1999	95	< 0.5	
SO-2	A	19-Dec-2000	100	3.9	
SO-2	A	18-Dec-2002	45	1.7	
SO-2	A	22-Dec-2003	60	3.1	
SO-2	A	21-Dec-2004	66	3.4	
SO-2	A	21-Dec-2006	51	5.3	1,1-DCA = 0.51.
SO-2	A	17-Dec-2008	54	2.2	1,1-DCA = 0.52.
SO-2	A	14-Dec-2010	46	2.5	1,1-DCA = 0.72.
SO-PZ1	A	27-Apr-1993	1,200	< 25	
SO-PZ1	A	27-Apr-1993	1,100	< 25	
SO-PZ1	A	28-Jun-1995	1,100	< 15	
SO-PZ1	A	17-Nov-1995	560	< 13	
SO-PZ1	A	20-Dec-1995	450	< 5	
SO-PZ1	A	17-Jan-1996	520	< 10	
SO-PZ1	A	13-Mar-1996	560	< 10	
SO-PZ1	A	25-Jun-1997	450	< 10	
SO-PZ1	A	25-Jun-1997	470	< 10	
SO-PZ1	A	24-Sep-1997	920	< 13	
SO-PZ1	A	15-Dec-1997	350	< 13	

Table 7
Groundwater Concentrations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Number	Aquifer	Sample Date	TCE (µg/L)	cis-1,2-DCE (µg/L)	Notes
SO-PZ1	A	15-Dec-1997	340	< 25	
SO-PZ1	A	16-Mar-1998	570	< 10	
SO-PZ1	A	4-Jan-1999	340	< 10	
SO-PZ1	A	16-Jun-1999	360	63	
SO-PZ1	A	7-Dec-1999	400	830	
SO-PZ1	A	19-Dec-2000	10	310	
SO-PZ1	A	12-Dec-2001	130	690	
SO-PZ1	A	18-Dec-2002	84	610	
SO-PZ1	A	22-Dec-2003	110	570	
SO-PZ1	A	22-Dec-2004	160	620	
SO-PZ1	A	14-Dec-2005	66	380	
SO-PZ1	A	21-Dec-2006	13	78	
SO-PZ1	A	19-Dec-2007	12	370	
SO-PZ1	A	17-Dec-2008	100	200	VC = 2.6.
SO-PZ1	A	17-Dec-2009	14	210	
SO-PZ1	A	14-Dec-2010	46	900	VC = 24; trans-1,2-DCE = 3.9.
SO-PZ2	A	27-Apr-1993	3,900	< 100	
SO-PZ2	A	28-Jun-1995	5,000	< 75	
SO-PZ2	A	17-Nov-1995	7,400	85	
SO-PZ2	A	17-Nov-1995	5,900	< 75	
SO-PZ2	A	20-Dec-1995	1,900	120	
SO-PZ2	A	20-Dec-1995	1,800	120	
SO-PZ2	A	17-Jan-1996	4,200	280	
SO-PZ2	A	17-Jan-1996	4,000	240	
SO-PZ2	A	12-Mar-1996	1,200	< 25	
SO-PZ2	A	12-Mar-1996	1,400	< 25	
SO-PZ2	A	25-Jun-1997	3,500	< 100	
SO-PZ2	A	24-Sep-1997	6,300	110	
SO-PZ2	A	24-Sep-1997	7,000	110	
SO-PZ2	A	15-Dec-1997	8,000	< 100	
SO-PZ2	A	16-Mar-1998	700	150	
SO-PZ2	A	16-Mar-1998	2,900	< 50	
SO-PZ2	A	4-Jan-1999	2,400	< 50	
SO-PZ2	A	16-Jun-1999	2,900	730	
SO-PZ2	A	8-Dec-1999	800	2500	
SO-PZ2	A	19-Dec-2000	190	270	
SO-PZ2	A	12-Dec-2001	610	3600	
SO-PZ2	A	18-Dec-2002	120	1900	
SO-PZ2	A	22-Dec-2003	35	370	
SO-PZ2	A	22-Dec-2004	230	960	DUP: TCE = 160; cis-1,2-DCE = 290.
SO-PZ2	A	14-Dec-2005	510	2200	VC = 40. DUP: TCE = 43; cis-1,2-DCE = 2,300; VC = 43; trans-1,2-DCE = 23.
SO-PZ2	A	21-Dec-2006	420	1500	VC = 32. DUP: TCE = 410; cis-1,2-DCE = 1,600; VC = 30; trans-1,2-DCE = 20.
SO-PZ2	A	19-Dec-2007	38	840	DUP: DCE = 160.
SO-PZ2	A	17-Dec-2008	420	1500	VC = 36; trans-1,2-DCE = 16.
SO-PZ2	A	17-Dec-2009	300	1700	VC = 46; trans-1,2-DCE = 19.
SO-PZ2	A	14-Dec-2010	21	430	VC = 15. DUP: TCE = 18; cis-1,2-DCE = 370; VC = 19.
SO-PZ3	A	27-Apr-1993	< 0.5	< 0.5	
SO-PZ3	A	16-Dec-1997	< 0.5	< 0.5	
SO-PZ3	A	17-Dec-1998	< 0.5	< 0.5	
SO-PZ3	A	8-Dec-1999	< 0.5	< 0.5	
SO-PZ3	A	19-Dec-2000	< 0.5	< 0.5	

Table 7
Groundwater Concentrations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Number	Aquifer	Sample Date	TCE (µg/L)	cis-1,2-DCE (µg/L)	Notes
SO-PZ3	A	18-Dec-2002	< 0.5	< 0.5	
SO-PZ3	A	21-Dec-2004	< 0.5	< 0.5	
SO-PZ3	A	20-Dec-2006	< 0.5	< 0.5	
SO-PZ3	A	17-Dec-2008	< 0.5	< 0.5	
SO-PZ3	A	14-Dec-2010	< 0.5	< 0.5	
SO-4	A	28-Jun-1995	220	< 4	
SO-4	A	28-Jun-1995	210	< 5	
SO-4	A	17-Jan-1996	140	< 2.5	
SO-4	A	13-Mar-1996	140	< 2.5	
SO-4	A	25-Jun-1997	80	< 1.2	
SO-4	A	24-Sep-1997	81	< 2.5	
SO-4	A	16-Dec-1997	52	< 2.5	
SO-4	A	16-Mar-1998	51	< 0.5	
SO-4	A	4-Jan-1999	53	< 1	
SO-4	A	16-Jun-1999	58	< 0.5	
SO-4	A	7-Dec-1999	37	< 0.5	
SO-4	A	19-Dec-2000	< 0.5	< 0.5	
SO-4	A	12-Dec-2001	34	< 0.5	
SO-4	A	18-Dec-2002	28	< 0.5	
SO-4	A	22-Dec-2003	25	< 0.5	
SO-4	A	21-Dec-2004	19	< 0.5	
SO-4	A	14-Dec-2005	12	< 0.5	
SO-4	A	20-Dec-2006	6.1	< 0.5	
SO-4	A	19-Dec-2007	10	< 0.5	
SO-4	A	17-Dec-2008	18	< 0.5	
SO-4	A	17-Dec-2009	16	< 0.5	
SO-4	A	14-Dec-2010	14	< 0.5	
EW-1	A	26-Jun-1995	150	< 2	
EW-1	A	17-Nov-1995	76	< 1	
EW-1	A	20-Dec-1995	60	< 1	
EW-1	A	17-Jan-1996	51	< 1	
EW-1	A	13-Mar-1996	190	< 2.5	
EW-1	A	25-Jun-1997	180	< 2.5	
EW-1	A	24-Sep-1997	170	< 5	
EW-1	A	17-Dec-1997	170	< 5	
EW-1	A	16-Mar-1998	260	< 2.5	
EW-1	A	4-Jan-1999	200	< 5	
EW-1	A	17-Jun-1999	220	< 0.5	
EW-1	A	8-Dec-1999	140	< 0.5	
EW-1	A	19-Dec-2000	95	< 2.5	
EW-1	A	12-Dec-2001	77	< 2.5	
EW-1	A	18-Dec-2002	70	< 2.5	
EW-1	A	22-Dec-2003	78	< 2.5	Chloroform = 0.58.
EW-1	A	22-Dec-2004	46	1.1	Chloroform = 0.61.
EW-1	A	14-Dec-2005	75	1.2	
EW-1	A	21-Dec-2006	53	1.2	
EW-1	A	19-Dec-2007	53	1.6	
EW-1	A	17-Dec-2008	43	< 0.5	
EW-1	A	17-Dec-2009	56	1.6	
EW-1	A	14-Dec-2010	40	< 0.5	

Table 7
Groundwater Concentrations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Number	Aquifer	Sample Date	TCE (µg/L)	cis-1,2-DCE (µg/L)	Notes
EW-2	A	25-Jun-1997	270	< 5	
EW-2	A	24-Sep-1997	220	< 5	
EW-2	A	17-Dec-1997	290	< 5	
EW-2	A	16-Mar-1998	290	< 2.5	
EW-2	A	4-Jan-1999	150	< 5	
EW-2	A	15-Jun-1999	190	< 0.5	
EW-2	A	7-Dec-1999	180	< 0.5	
EW-2	A	19-Dec-2000	140	3.2	
EW-2	A	12-Dec-2001	140	3.5	
EW-2	A	18-Dec-2002	88	< 2.5	
EW-2	A	22-Dec-2003	84	1.9	Chloroform = 0.56.
EW-2	A	22-Dec-2004	79	3.2	Chloroform = 0.74.
EW-2	A	14-Dec-2005	66	2.2	
EW-2	A	21-Dec-2006	59	3.3	
EW-2	A	19-Dec-2007	47	2.2	
EW-2	A	17-Dec-2008	92	5.6	1,1,1-TCA = 0.51.
EW-2	A	6-Jan-2010	81	6.7	
EW-2	A	14-Dec-2010	73	8.5	
EW-3	A	25-Jun-1997	220	< 5	
EW-3	A	24-Sep-1997	210	< 5	
EW-3	A	17-Dec-1997	170	< 5	
EW-3	A	16-Mar-1998	140	< 2.5	
EW-3	A	4-Jan-1999	130	< 1	
EW-3	A	17-Jun-1999	140	< 0.5	
EW-3	A	7-Dec-1999	92	< 0.5	
EW-3	A	19-Dec-2000	96	< 2.5	
EW-3	A	12-Dec-2001	86	< 2.5	
EW-3	A	18-Dec-2002	51	< 0.5	
EW-3	A	22-Dec-2003	47	< 0.5	
EW-3	A	22-Dec-2004	46	< 0.5	Chloroform = 0.66.
EW-3	A	14-Dec-2005	41	< 0.5	
EW-3	A	21-Dec-2006	32	< 0.5	
EW-3	A	19-Dec-2007	35	< 0.5	
EW-3	A	17-Dec-2008	43	< 0.5	
EW-3	A	17-Dec-2009	40	< 0.5	
EW-3	A	14-Dec-2010	41	< 0.5	
EW-4	A	25-Jun-1997	130	< 2.5	
EW-4	A	24-Sep-1997	110	< 2.5	
EW-4	A	17-Dec-1997	69	< 2.5	
EW-4	A	16-Mar-1998	89	< 0.5	
EW-4	A	4-Jan-1999	69	< 1	
EW-4	A	15-Jun-1999	56	< 0.5	
EW-4	A	7-Dec-1999	60	< 0.5	
EW-4	A	19-Dec-2000	45	< 1	
EW-4	A	12-Dec-2001	49	< 1	
EW-4	A	18-Dec-2002	37	< 1	
EW-4	A	22-Dec-2003	34	< 0.5	Chloroform = 0.51.
EW-4	A	22-Dec-2004	32	< 0.5	Chloroform = 0.64.
EW-4	A	14-Dec-2005	31	< 0.5	
EW-4	A	21-Dec-2006	23	< 0.5	
EW-4	A	19-Dec-2007	28	< 0.5	Sampled from port with pump off. Resampled March 18, 2008.

Table 7
Groundwater Concentrations
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Number	Aquifer	Sample Date	TCE (µg/L)	cis-1,2-DCE (µg/L)	Notes
EW-4	A	17-Dec-2008	34	< 0.5	1,1,1-TCA = 0.53.
EW-4	A	17-Dec-2009	28	< 0.5	
EW-4	A	14-Dec-2010	27	< 0.5	1,1,1-TCA = 0.51.
SO3-B1	B1	27-Feb-1992	18	10	
SO3-B1	B1	26-Jun-1995	11	6.6	
SO3-B1	B1	11-Mar-1996	10	6.4	
SO3-B1	B1	11-Mar-1996	12	7.0	
SO3-B1	B1	15-Dec-1997	3.4	2.1	
SO3-B1	B1	17-Dec-1998	1.1	< 0.5	
SO3-B1	B1	7-Dec-1999	3.6	< 0.5	
SO3-B1	B1	19-Dec-2000	2.5	< 0.5	
SO3-B1	B1	18-Dec-2002	1.3	< 0.5	
SO3-B1	B1	21-Dec-2004	2.0	0.69	
SO3-B1	B1	20-Dec-2006	< 0.5	< 0.5	
SO3-B1	B1	17-Dec-2008	< 0.5	< 0.5	
SO3-B1	B1	14-Dec-2010	3.3	1.5	

Notes:

µg/L = micrograms per liter; NT = not tested.

TCE = trichloroethylene; cis-1,2-DCE = cis-1,2-dichloroethylene; trans-1,2-DCE = trans-1,2-dichloroethylene;

1,1-DCA = 1,1-Dichloroethane; VC = vinyl chloride.

1,1,1-TCA = 1,1,1-Trichloroethane.

< 5 = Not detected above specified detection limit.

Table 8
Summary of Geochemical Parameters and Carbon Specific Isotope Analyses for Select Wells
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well Identification	Sample Date	TCE (µg/L)	cis-1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	Dissolved Oxygen (mg/L)	ORP (mV)	Ferrous Iron (mg/L)	Manganese (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	CSIA $\delta^{13}\text{C}$
Furthest downgradient off-Site wells											
ME-1A	12/14/2010	67 / 67	9.0 / 8.8	<0.50 / <0.50	0.78	82	0.12	4.6	7.0	88	-26.8
R-15A	12/14/2010	44	< 0.50	<0.50	3.6	100	< 0.10	0.076	31	84	-28.3
Downgradient Site boundary wells											
R-20A	12/14/2010	480	14	<2.5	0.76	90	0.13	1.8	6.7	95	-27.9
C-3	12/14/2010	580	8	<2.5	0.95	50	< 0.10	0.44	21	94	-27.3
Site source area wells											
SO-PZ1	12/14/2010	46	900	24	0.08	-142	2.7	0.32	1.0	120	-27.3
SO-PZ2	12/14/2010	21	430	15 / 19	0.93	103	< 0.10	4.3	< 1.0	120	-24.8

Notes:

µg/L = micrograms per liter.

mg/L = milligrams per liter.

mv = millivolts.

Dissolved oxygen (DO) and oxidation-reduction potential (ORP) measured in field with flow-through cell during low flow sampling.

TCE = trichloroethylene; cis-1,2-DCE = cis-1,2-dichloroethylene.

CSIA = carbon specific isotope analysis.

All analytes except CSIA by TestAmerica Laboratories, Inc., San Francisco (Pleasanton).

CSIA analysis by University of Toronto.

CSIA results reported as $\delta^{13}\text{C}$ (negative value indicates that sample is depleted in its ^{13}C -content relative to the $^{13}\text{C}/^{12}\text{C}$ content of the standard).

Less negative CSIA results reported as $\delta^{13}\text{C}$ is more degraded.

Starting conditions for $\delta^{13}\text{C}$ for TCE in commerce range from -27.8 to -33.5 (Wilson - MNA for Fuel Oxygenates and Chlorinated Solvents).

Trans-1,2-dichloroethylene also detected in well SO-PZ1 at concentration of 3.9 µg/L.

Manganese was inadvertently measured as total rather than dissolved.

Table 9
Summary of DO and ORP Field Readings
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

Well ID	Date	DO (mg/L)	ORP (mV)
C-2	12/14/2010	1.4	21
C-3	12/14/2010	0.95	50
EW-1	12/14/2010	3.2	89
EW-2	12/14/2010	3.6	90
EW-3	12/14/2010	3.4	166
EW-4	12/14/2010	3.8	72
IM-7A	12/14/2010	2.6	70
ME-1A	12/14/2010	0.78	82
R-15A	12/14/2010	3.6	100
R-20A	12/14/2010	0.76	90
R-21A	12/14/2010	1.6	83
R-48A	12/14/2010	3.0	108
R-51A	12/14/2010	2.6	83
SO-1	12/14/2010	4.3	114
SO-2	12/14/2010	2.2	101
SO-3B1	12/14/2010	3.0	96
SO-4	12/14/2010	2.7	106
SO-PZ1	12/14/2010	0.08	-142
SO-PZ2	12/14/2010	0.93	103
SO-PZ3	12/14/2010	0.15	-78

Notes:

mg/L = milligrams per liter.

mV = millivolts.

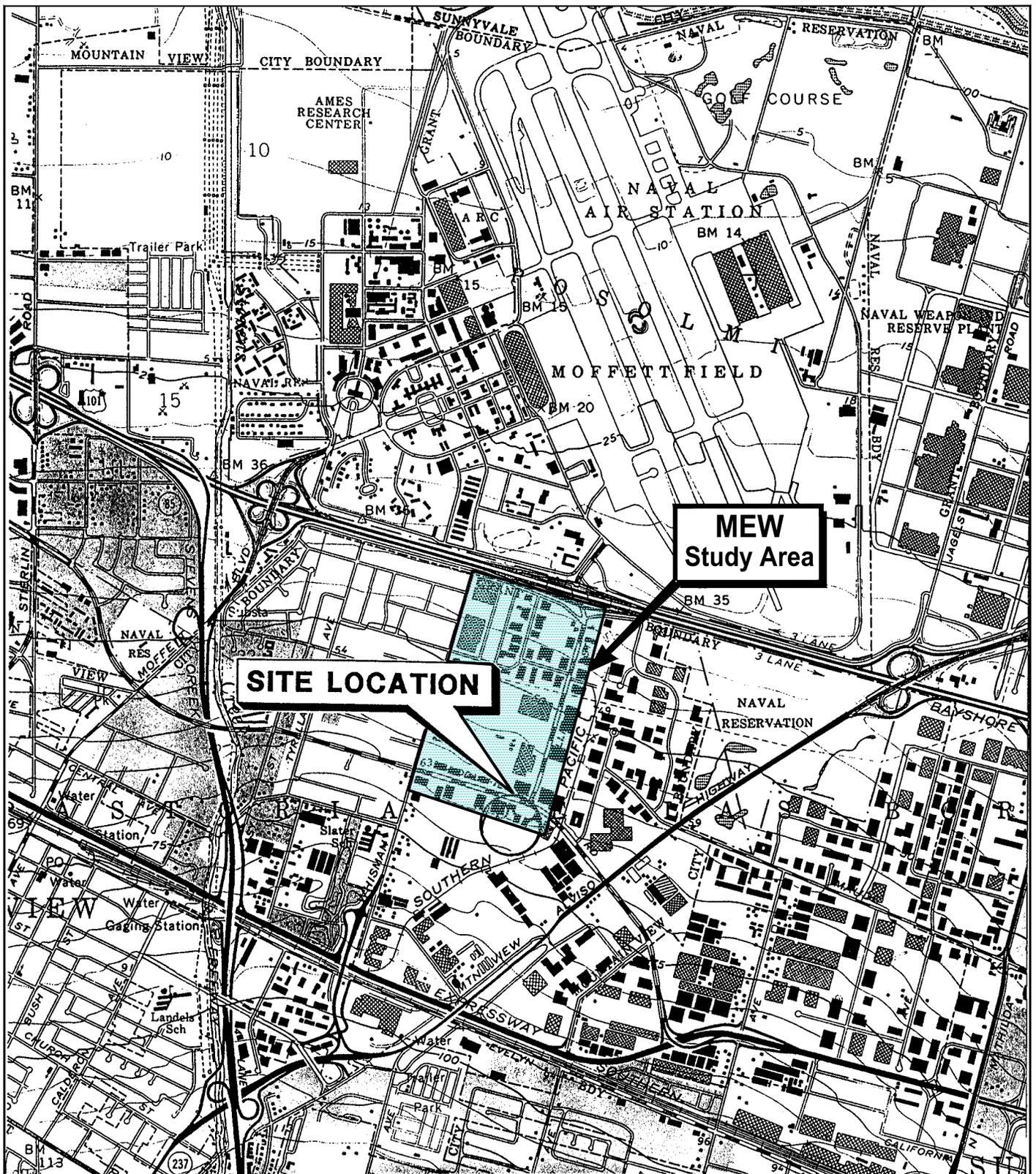
DO = dissolved oxygen.

ORP = oxidation-reduction potential.

DO values less than 1 mg/L shown in red.

Negative ORP values shown in red.

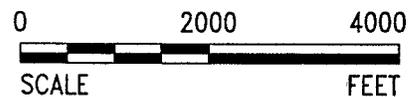
PLATES



SOURCE: BASE MAP FROM U.S.G.S. MOUNTAIN VIEW, CA QUADRANGLE. 7.5 MINUTE SERIES TOPOGRAPHIC MAP, PHOTOREVISED 1981.



NORTH



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Site Location Map
SMI Holding LLC
455, 485/487, 501/505 East Middlefield Road
Mountain View, California

PLATE

1

Plate 2
Cumulative Groundwater Discharge Volume
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

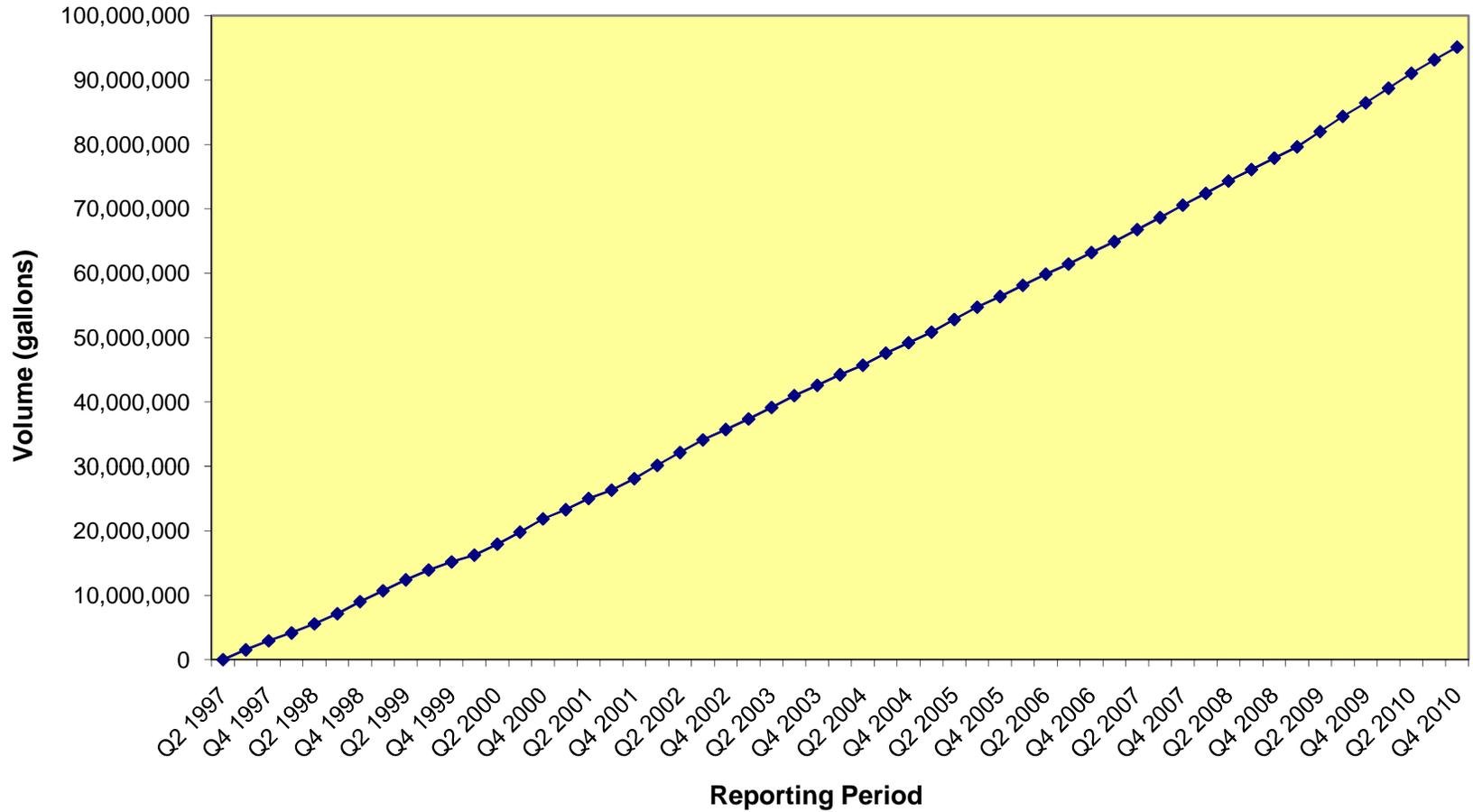


Plate 3
Cumulative Mass Removal
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

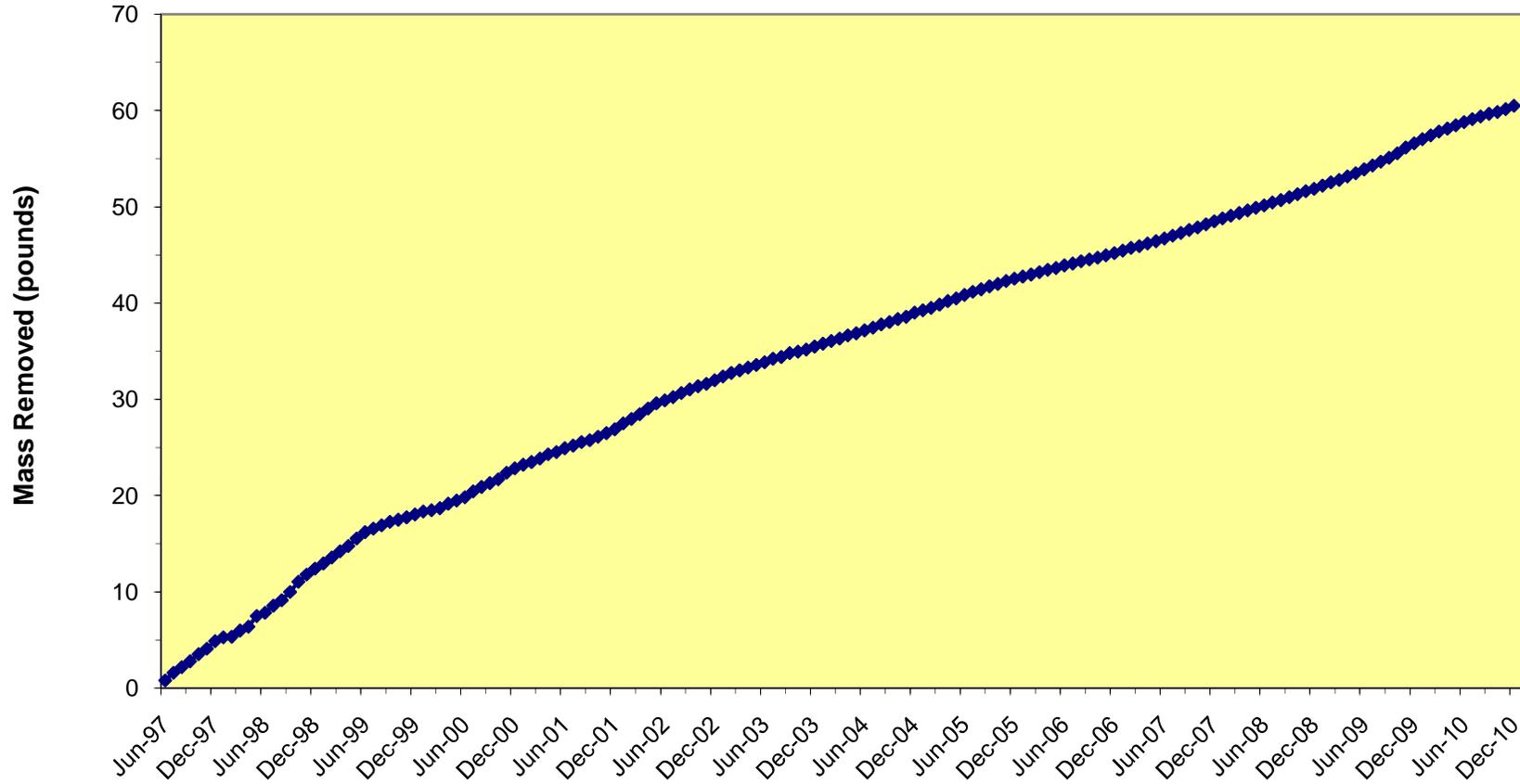


Plate 3
Cumulative Mass Removal
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California

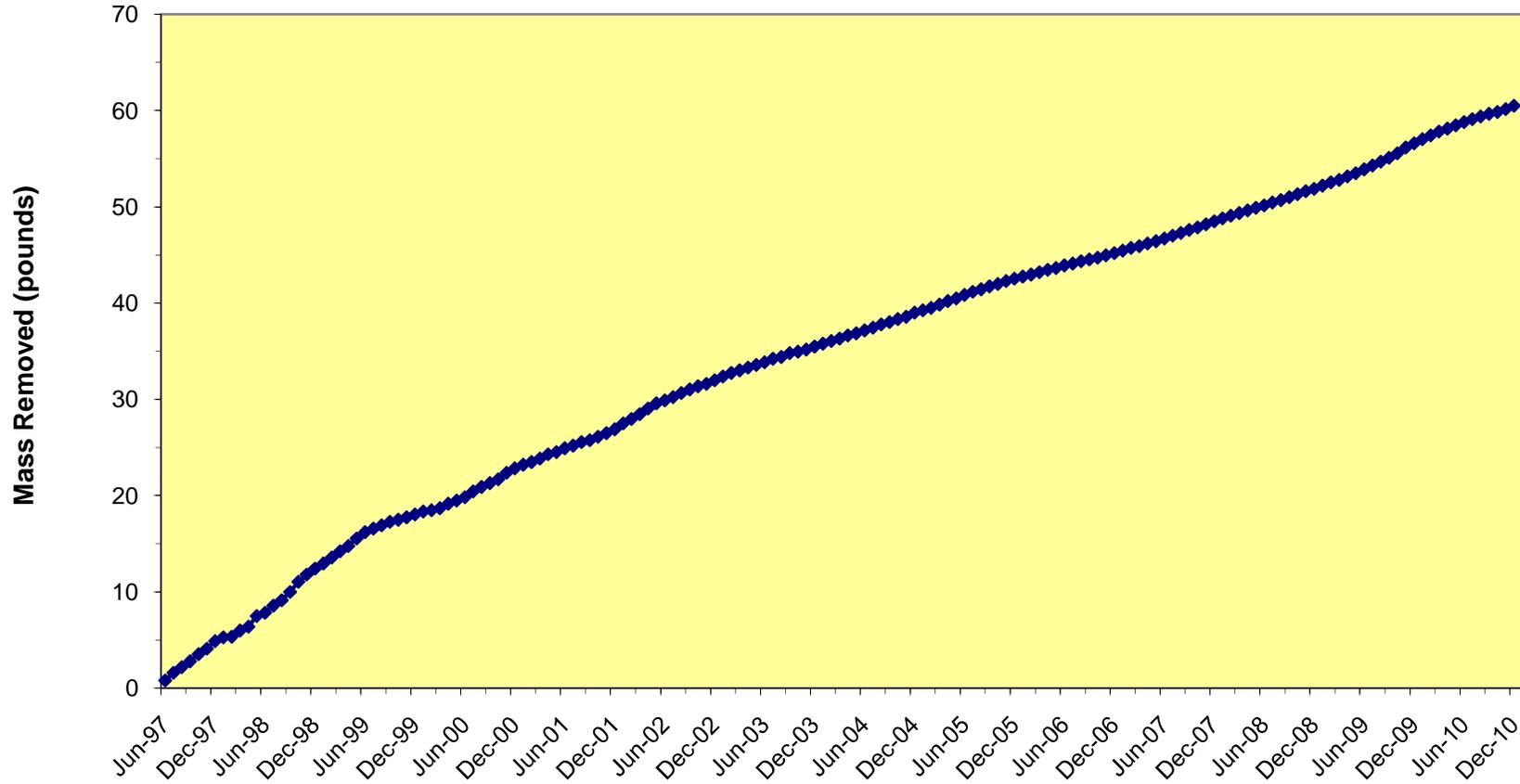
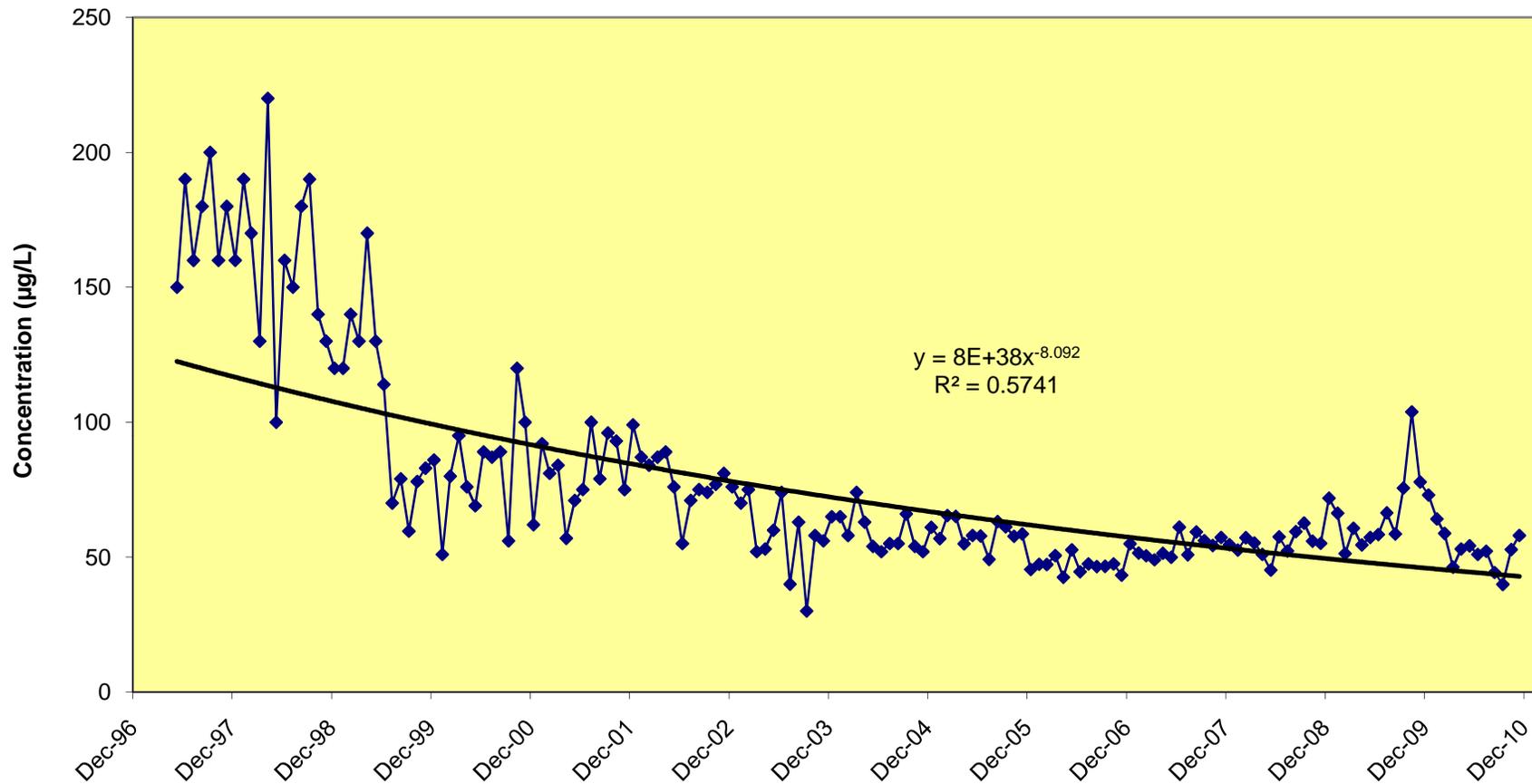
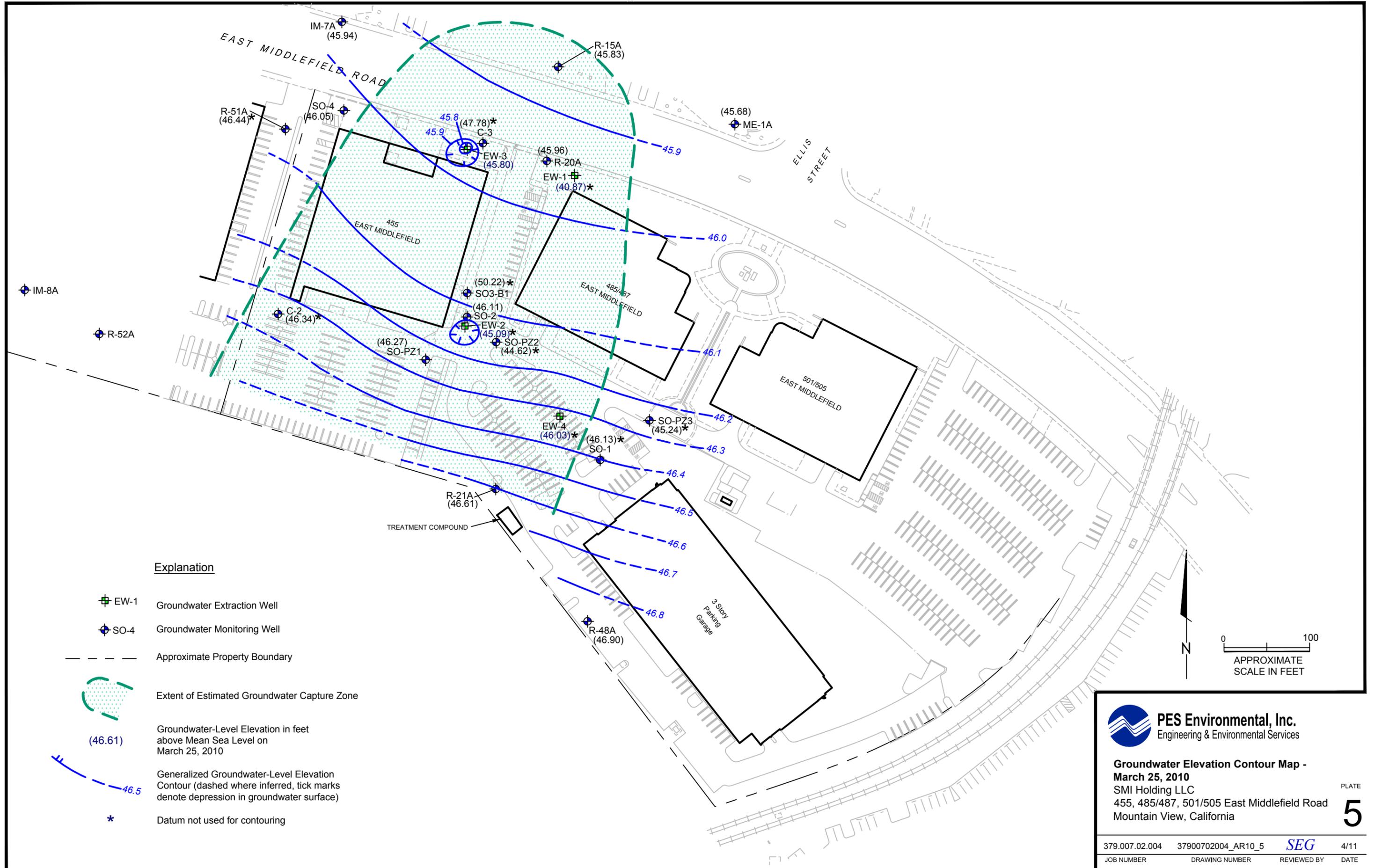


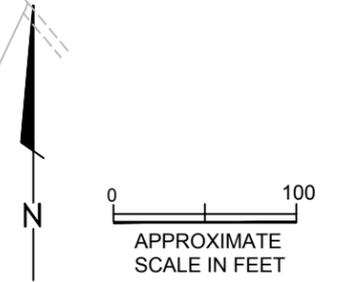
Plate 4
GWET System Influent Total VOCs Concentration
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California





Explanation

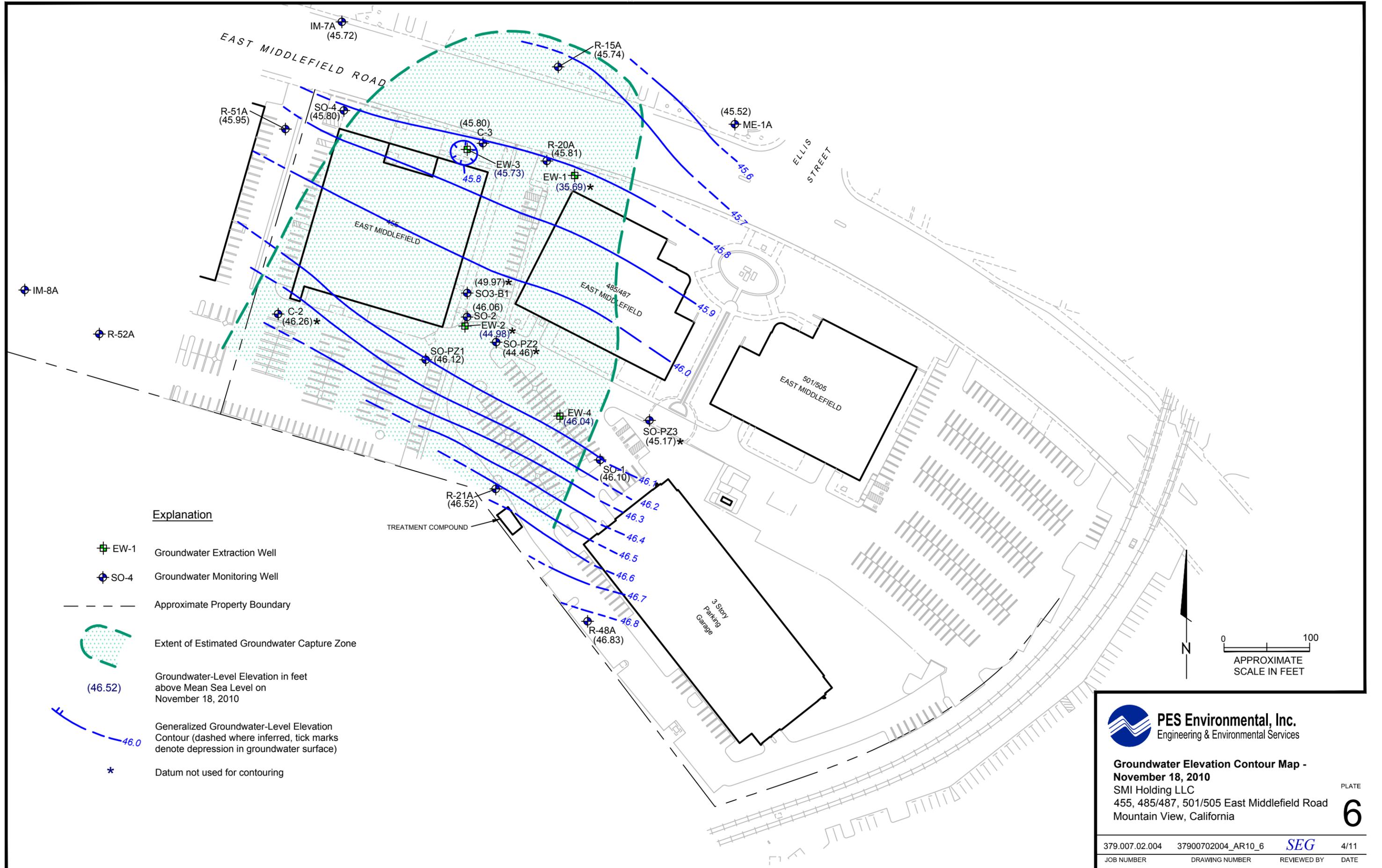
- EW-1 Groundwater Extraction Well
- SO-4 Groundwater Monitoring Well
- Approximate Property Boundary
- Extent of Estimated Groundwater Capture Zone
- Groundwater-Level Elevation in feet above Mean Sea Level on March 25, 2010
- Generalized Groundwater-Level Elevation Contour (dashed where inferred, tick marks denote depression in groundwater surface)
- Datum not used for contouring



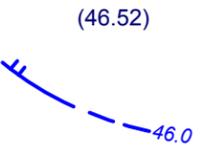
PES Environmental, Inc.
Engineering & Environmental Services

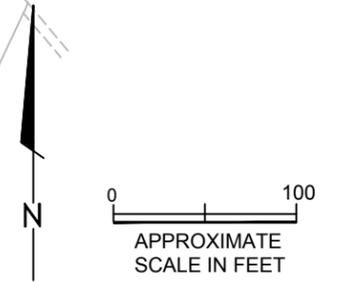
Groundwater Elevation Contour Map -
March 25, 2010
SMI Holding LLC
455, 485/487, 501/505 East Middlefield Road
Mountain View, California

PLATE
5



Explanation

-  EW-1 Groundwater Extraction Well
-  SO-4 Groundwater Monitoring Well
-  Approximate Property Boundary
-  Extent of Estimated Groundwater Capture Zone
-  Groundwater-Level Elevation in feet above Mean Sea Level on November 18, 2010
-  Generalized Groundwater-Level Elevation Contour (dashed where inferred, tick marks denote depression in groundwater surface)
-  * Datum not used for contouring



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Groundwater Elevation Contour Map - November 18, 2010
SMI Holding LLC
455, 485/487, 501/505 East Middlefield Road
Mountain View, California

PLATE
6

Plate 7
A-Aquifer Monitoring Well Groundwater Elevations (1992-2010)
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Montain View, California

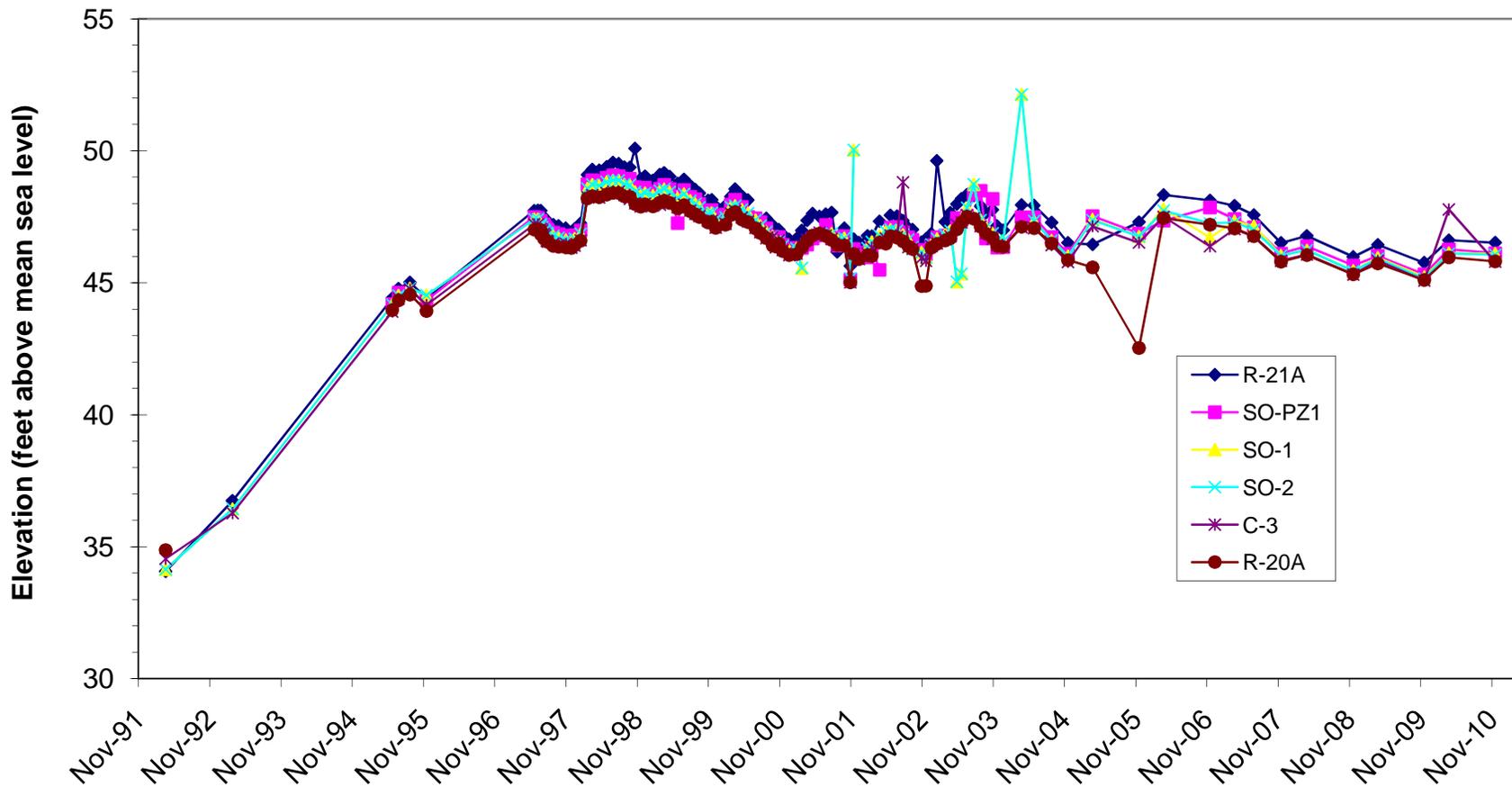
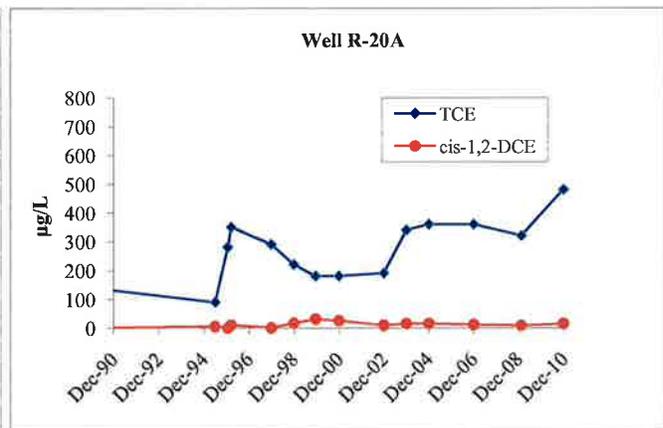
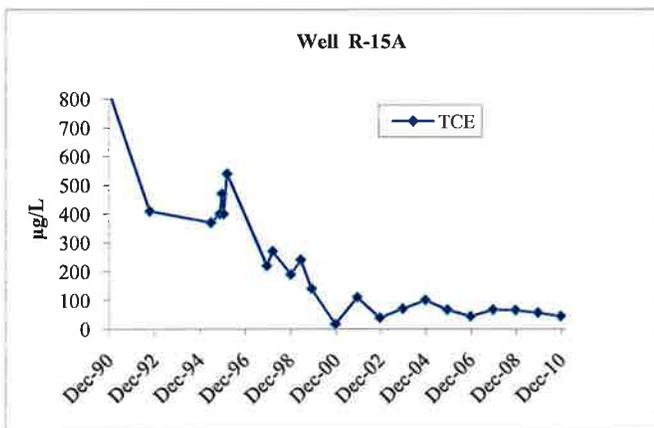
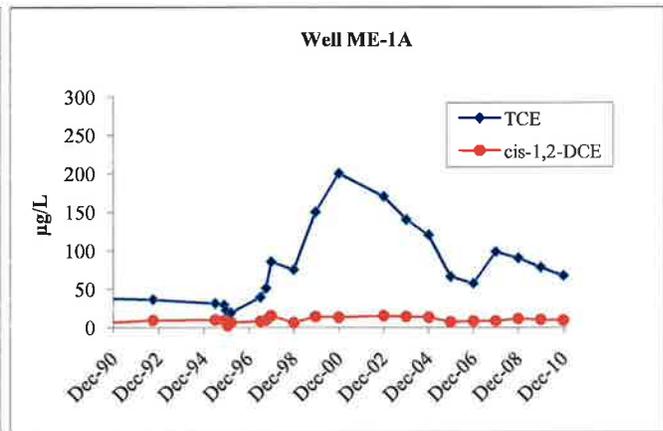
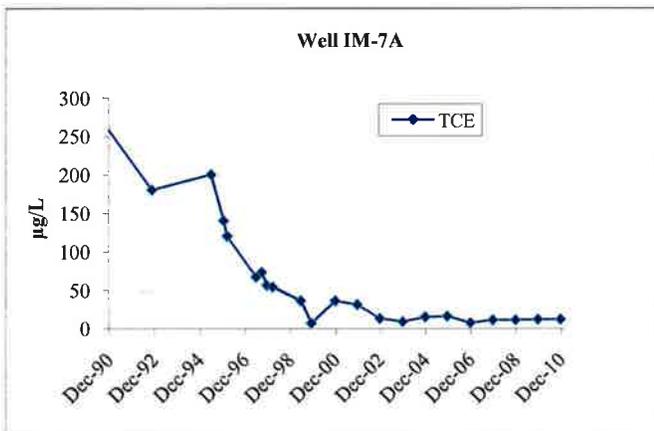
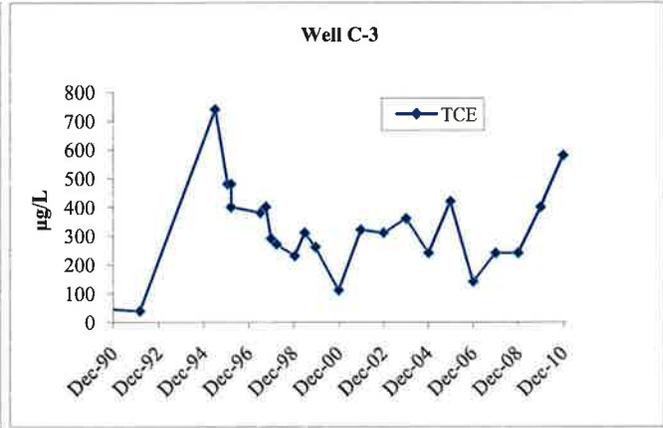
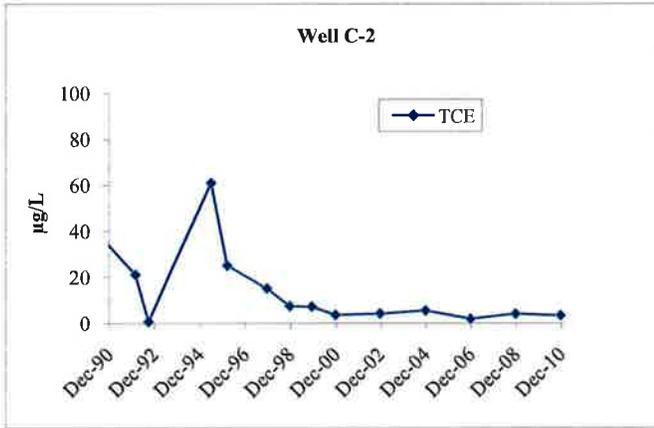
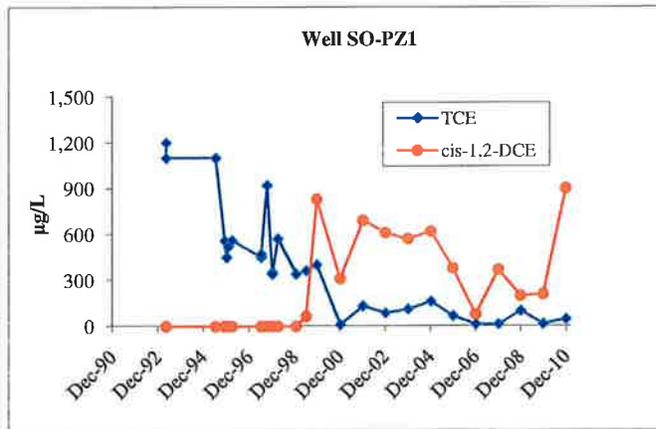
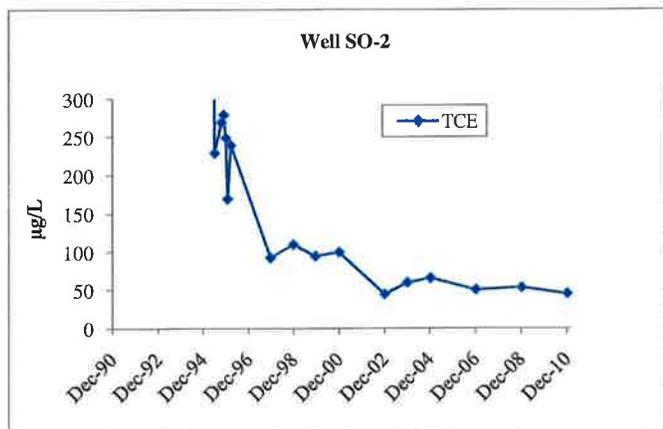
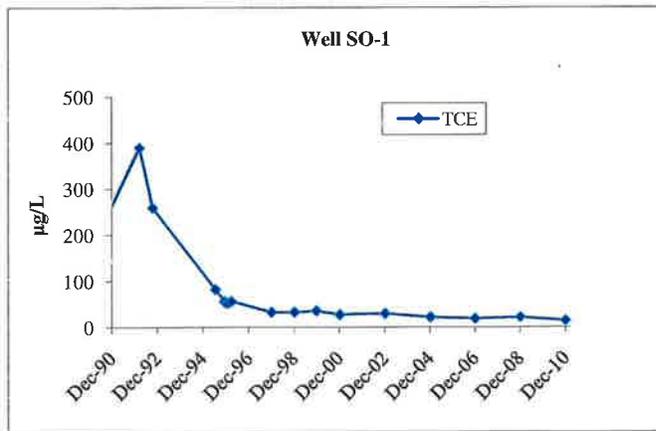
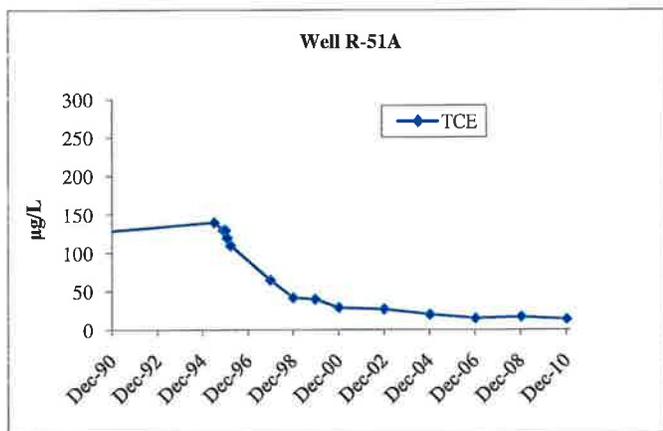
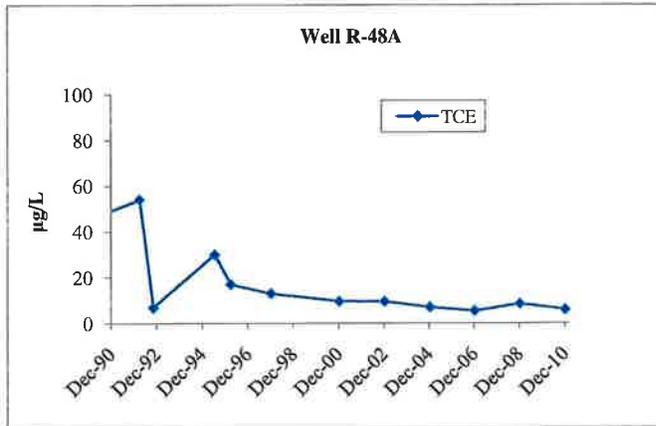
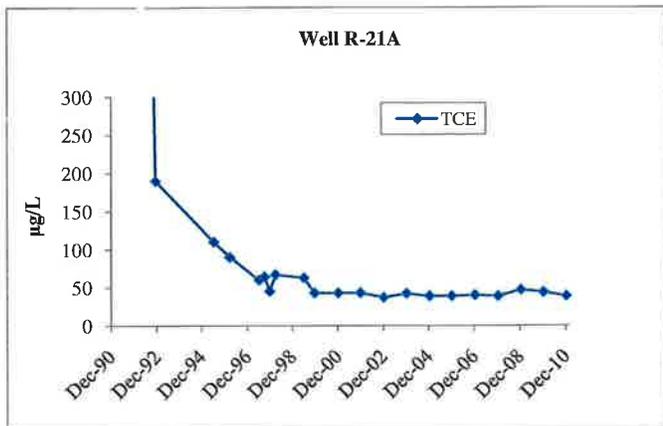


Plate 8
Monitoring and Extraction Well Concentration Trends
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California



Notes:
 µg/L = micrograms per liter.
 TCE = trichloroethylene; cis-1,2-DCE = cis-1,2-dichloroethylene.

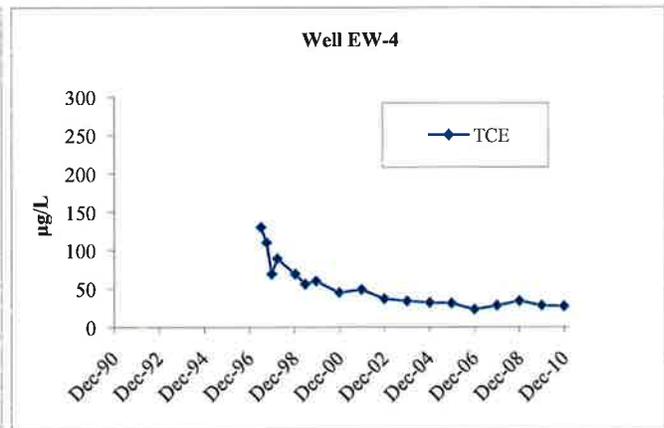
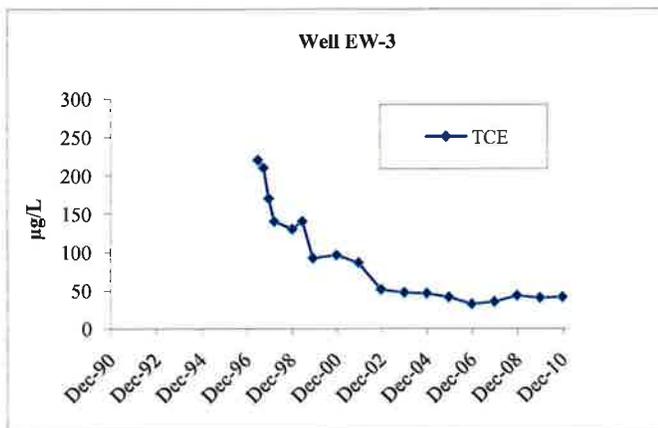
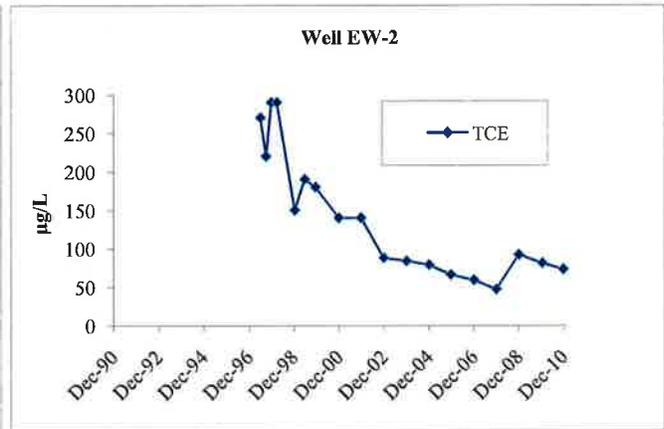
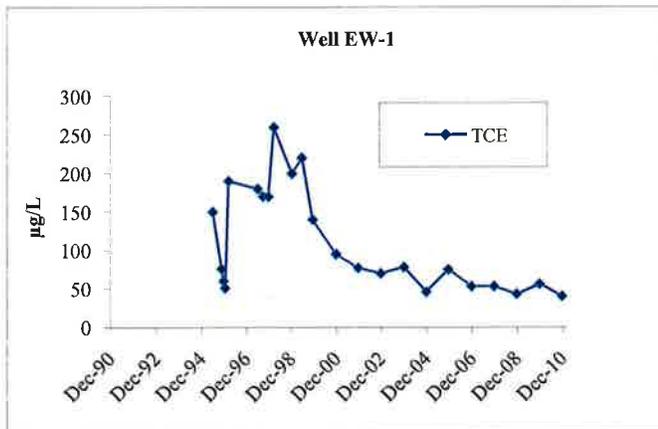
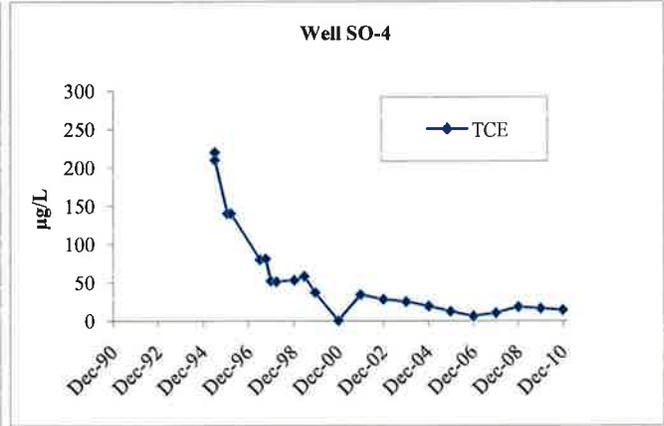
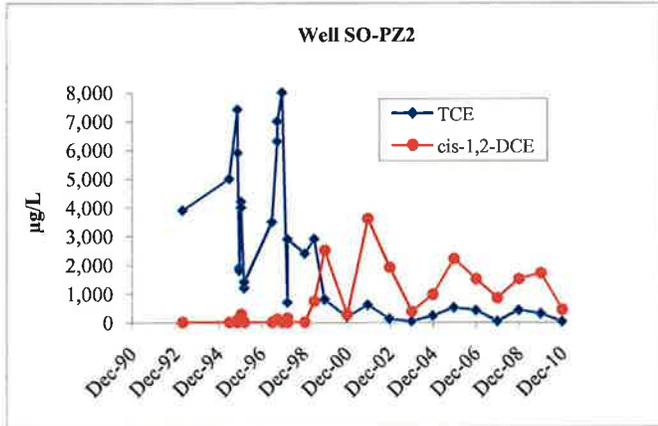
Plate 8
Monitoring and Extraction Well Concentration Trends
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California



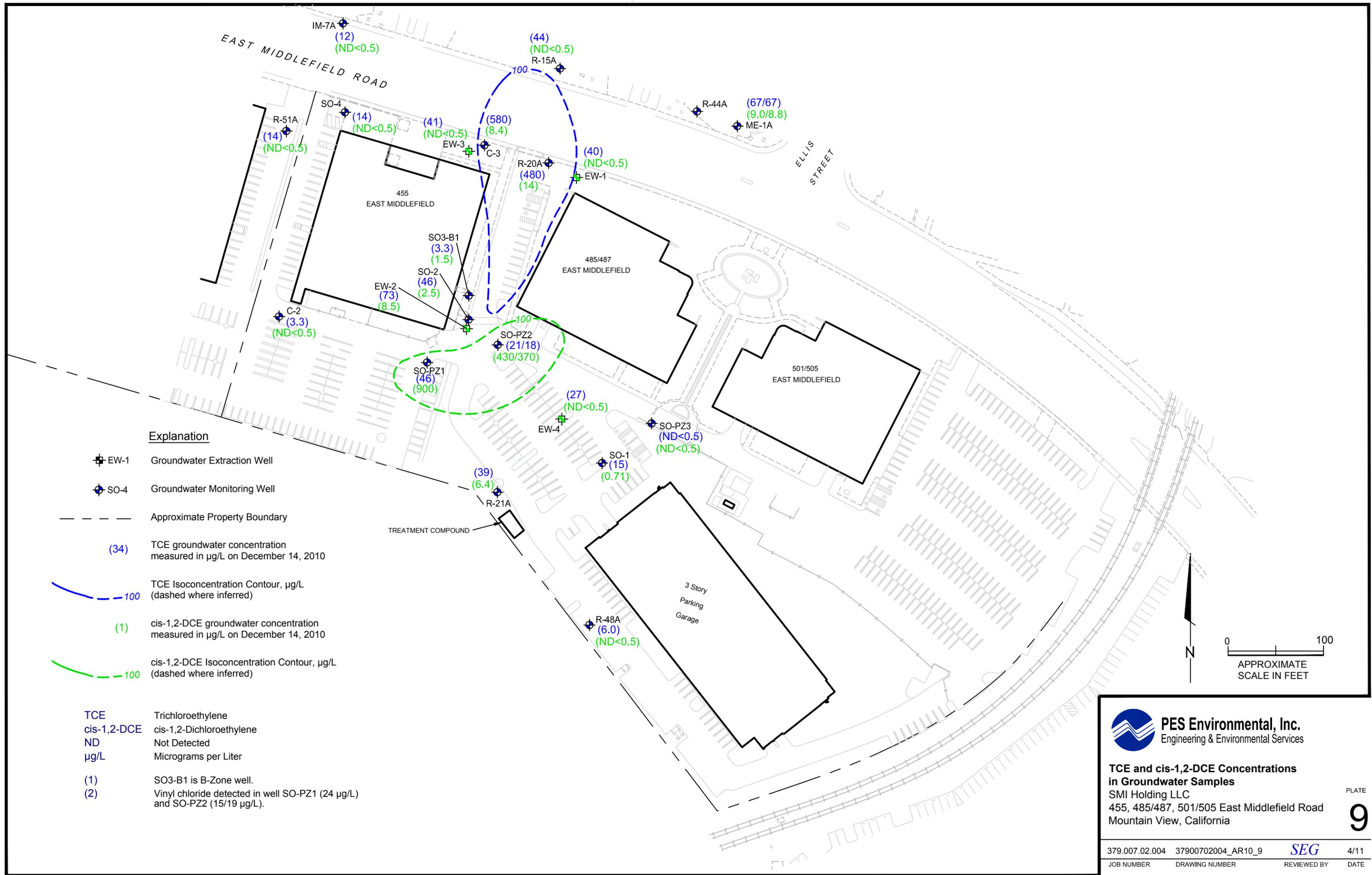
Notes:

µg/L = micrograms per liter.
 TCE = trichloroethylene; cis-1,2-DCE = cis-1,2-dichloroethylene.

Plate 8
Monitoring and Extraction Well Concentration Trends
SMI Holding LLC
455, 485/487, and 501/505 East Middlefield Road
Mountain View, California



Notes:
 µg/L = micrograms per liter.
 TCE = trichloroethylene; cis-1,2-DCE = cis-1,2-dichloroethylene.



TCE and cis-1,2-DCE Concentrations in Groundwater Samples
 SMI Holding LLC
 455, 485/487, 501/505 East Middlefield Road
 Mountain View, California

PLATE
9

APPENDIX A

**PROGRESS TOWARDS COMPLETING EPA FIVE-YEAR REVIEW
RECOMMENDATIONS**

APPENDIX A

PROGRESS TOWARDS COMPLETING EPA FIVE-YEAR REVIEW RECOMMENDATIONS

In section 6, US EPA's five year review stated the following:

“The groundwater system treats approximately 20 gpm, which is near the limits of the design parameters. Beneath the suspected source areas and throughout most of the plume extent, VOC levels are declining, and the plume extent is decreasing.

The extent of capture of groundwater contamination northeast of EW-1 and EW-2 and the increasing levels of TCE and cis-1,2-DCE in monitoring well ME-1A should be monitored closely over the next several monitoring cycles to determine if any modifications to the well network area are needed.

Optimization opportunities to enhance contaminant mass removal and expedite cleanup are currently proposed utilizing enhanced reductive dechlorination”.

In Section 7, an issue for the Site was stated to be *“The capture zone north/northeast of SP-PZ2 and EW-2 may not always be maintained”*. The recommendation or follow-up action was *“evaluate optimizing extraction rates to enhanced plume capture.”*

Beginning in 2002, well ME-1A has been sampled annually rather than biennially. TCE was detected in samples from well ME-1A at concentrations of 120 µg/L to 200 µg/L of TCE between 2000 and 2004, 66 µg/L of TCE in 2005, 57 µg/L of TCE in 2006, 98 µg/L of TCE in 2007, 90 µg/L of TCE in 2008, 78 µg/L of TCE in 2009, and 67 µg/L of TCE in 2010. Well ME-1A is located on the north side of EMR, near the corner of Ellis Road.

With regards to optimizing extraction rates to enhance plume capture, in the 2006 Annual Progress Report, it was recommended that well EW-4 be turned off and to increase the extraction rate from well EW-2. Well EW-2 is located an area of higher TCE groundwater concentrations and is expected to be able to capture the high-concentration groundwater (i.e., well SO-PZ2) without pulling it into an area of lower TCE groundwater concentrations. Well EW-4 was shut off in May 2007 and the extraction rate for well EW-2 was increased. As expected, the TCE concentration in extraction well EW-2 increased from 47 µg/L of TCE in 2007 to 92 µg/L of TCE in 2008.

Based on the MNA monitoring presented in this report, and the low TCE concentrations in most on-site and off-site wells, SMI plans to submit a plan to EPA to include discontinuation of pumping, to minimize the potential of pulling in groundwater from the surrounding area with competing electron acceptors (oxygen, nitrate, and sulfate) that are detrimental to the naturally occurring degradation of TCE that is occurring in the former source area. The plan will also

include the injection of an electron donor in the City right-of-way (to avoid the need for access to private property) to facilitate additional TCE degradation at the property boundary and ensure plume stability. If reasonable access to the property can be obtained, electron donor would also be injected upgradient of wells C-3 and R-20A, albeit this may occur at a later date to the time needed to negotiate an access agreement.

APPENDIX B

2010 ANNUAL REMEDY PERFORMANCE CHECKLIST

APPENDIX B

2010 ANNUAL REPORT REMEDY PERFORMANCE CHECKLIST

I. GENERAL SITE INFORMATION			
Facility Name: SMI Holding LLC			
Facility Address, City, State: 455, 485/487, and 501/505 East Middlefield Road, Mountain View, California.			
Checklist completion date: April 2009		EPA Site ID: CAD980638084	
Site Lead: <input type="checkbox"/> Fund <input type="checkbox"/> PRP <input type="checkbox"/> State <input type="checkbox"/> State Enforcement <input type="checkbox"/> Federal Facility <input checked="" type="checkbox"/> Other, specify: US EPA Region IX			
Site Remedy Components (Include Other Reference Documents for More Information, as appropriate): Four A-zone groundwater extraction wells (three currently operate, EW-1, EW-2, and EW-3). Extracted water is treated by two 1,000-pound granular activated carbon vessels connected in series.			
II. CONTACTS			
List important personnel associated with the Site: Name, title, phone number, e-mail address:			
	Name/Title	Phone	E-mail
PRP Contact	Mr. Gary Jones 47 Hollow Road, Skillman, NJ 08558	(732) 841-9923	Gary.a.jones@me.com
Alternate PRP Contact	Mr. Chuck Hunnewell, Principal Consultant Siemens Financial Services Risk Management Services 170 Wood Avenue South, 7th Floor Iselin, NJ 08830	(732) 476-3449	Chuck.Hunnewell@siemens.com
PRP Contractor/ O&M Contractor	Ms. Susan Gahry, P.E. Principal Engineer PES Environmental, Inc. 1682 Novato Blvd., Suite 100 Novato, CA 94947-7021	(415) 899-1600	sgahry@pesenv.com
Other			

III. O&M COSTS (OPTIONAL)

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

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

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

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

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

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

Some copies of documents are kept at the Site; all are available at PES's office.

V. INSTITUTIONAL CONTROLS (as applicable)

List institutional controls called for (and from what enforcement document): **NONE**

Status of their implementation:

Where are the ICs documented and/or reported?

ICs are being properly implemented and enforced? Yes No, elaborate below

ICs are adequate for site protection? Yes No, elaborate below

Additional remarks regarding ICs:

<p>VI. SIGNIFICANT SITE EVENTS Check all Significant Site events Since the Last Checklist that Affects or May Affect Remedy Performance</p>	
<p><input type="checkbox"/> Community Issues <input type="checkbox"/> Vandalism <input type="checkbox"/> Maintenance Issues <input type="checkbox"/> Other:</p>	
<p><u>Please elaborate on Significant Site Events:</u></p>	
<p>VII. REDEVELOPMENT</p>	
<p>Is redevelopment on property planned? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, what is planned? Please describe below. Is redevelopment plan complete <input type="checkbox"/> Yes, date: _____; <input type="checkbox"/> No ? <input type="checkbox"/> Not Applicable Redevelopment proposal in progress? <input type="checkbox"/> Yes, elaborate below <input type="checkbox"/> No; If no, is a proposal anticipated? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	
<p><input type="checkbox"/> Is the redevelopment proposal compatible with remedy performance? <input type="checkbox"/> Yes <input type="checkbox"/> No Elaborate on redevelopment proposal and how it affects remedy performance</p>	
<p>VIII. GROUNDWATER REMEDY (reference isoconcentration, capture zone maps, trend analysis, and other documentation to support analysis)</p>	
<p><u>Groundwater Quality Data</u> List the types of data that are available: _____ What is the source report? <u>Historical tabulation; isoconcentrations maps; 2010 Annual Progress Report</u> <u>capture zone maps; and</u> <u>trend plots for individual wells</u></p>	
<p><input checked="" type="checkbox"/> Contaminant trend(s) tracked during O&M (i.e., temporal analysis of groundwater contaminant trends). <input type="checkbox"/> Groundwater data tracked with software for temporal analyses. <input type="checkbox"/> Reviewed MNA parameters to ensure health of substrate (e.g., DO, pH, temperature), if appropriate?</p>	
<p><u>Groundwater Pump & Treat Extraction Well and Treatment System Data</u> List the types of data that are available: _____ What is the source report? <u>Total volume extracted; influent, mid-point, and effluent concentrations; 2010 Annual Progress Report</u> <u>extraction rates; and mass removal.</u></p>	
<p><input checked="" type="checkbox"/> The system is functioning adequately. <input type="checkbox"/> The system has been shut down for significant periods of time in the past year. Please elaborate below.</p>	

<p><u>Discharge Data</u></p> <p>List the types of data that are available:</p> <p><u>Monthly influent, mid-point, and effluent concentrations.</u></p> <hr/> <hr/> <p>■ The system is in compliance with discharge permits.</p>		<p>What is the source report?</p> <p><u>Quarterly NPDES discharge reports.</u> <u>(posted on GeoTracker)</u></p> <hr/> <hr/>
<p><u>Slurry Wall Data</u></p> <p>List the types of data that are available:</p> <p>Is slurry wall operating as designed? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If not, what is being done to correct the situation?</p>		<p>What is the source report?</p>
<p><u>Elaborate on technical data and/or other comments</u></p>		

<p>IX. AIR MONITORING/VAPOR INTRUSION PATHWAY EVALUATION (Include in Annual Progress Report and reference document)</p>	
<p>Walk-throughs/Surveys: Completed in Fall 2003 with EPA in attendance.</p> <p>Air testing/monitoring conducted: May and October 2003. One location was resampled in January 2004. At this location, the October 2003 result appeared to be anomalous.</p>	
<p>Summary of Results: All results were within EPA's allowable risk range. Excluding the anomalous sample result noted above, TCE was detected at a maximum concentration of 0.22 micrograms per cubic meter in indoor air. TCE was also detected in pathway samples from non-occupied electrical rooms at concentrations of up to 1.2 micrograms per cubic meter.</p> <p>Problems Encountered: Anomalous result (not consistent with three other locations in building or prior sampling event) was identified at one location and area was retested.</p> <p>Recommendations/Next Steps: Complete indoor air sampling without HVAC operation to allow Tier IV designation as specified in EPA's ROD amendment for vapor intrusion.</p>	
<p>Schedule: Pending completion of new access agreement or as allowed by property owner.</p>	

X. REMEDY PERFORMANCE ASSESSMENT
A. Groundwater Remedies
<p>What are the remedial goals for groundwater? <input type="checkbox"/> Plume containment (prevent plume migration); <input checked="" type="checkbox"/> Plume restoration (attain ROD-specific cleanup levels in aquifer); <input checked="" type="checkbox"/> Other goals, please explain: Source control (not plume that existed off-Site prior to implementation of remedial actions or that which may be reach Site from off-Site upgradient location).</p>
<p>Have you done a trend analysis? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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 See 2010 Annual Progress Report, groundwater concentrations are decreasing.</p>
<p>If plume containment is a remedial goal, check all that apply: <input checked="" type="checkbox"/> Plume migration is under control (explain basis below) <input type="checkbox"/> Plume migration is not under control (explain basis below) <input type="checkbox"/> 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)</p>
<p>Elaborate on basis for determining that plume containment goal is being met or not being met: Capture zone maps were provided in the 2010 Annual Progress Report and Site groundwater concentrations are trending down.</p>
<p>If plume restoration is a cleanup objective, check all that apply: <input checked="" type="checkbox"/> Progress is being made toward reaching cleanup levels (explain basis below) <input type="checkbox"/> Progress is not being made toward reaching cleanup levels (explain basis below) <input type="checkbox"/> Insufficient data to determine progress toward restoration goal (explain below)</p>
<p>Elaborate on basis for determining progress or lack of progress toward restoration goal: Groundwater concentrations are decreasing and with the exception of two wells located near the property boundary are now less than 75 micrograms per liter of TCE. .</p>
B. Vertical Migration
<p>Have you done an assessment of vertical gradients? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No; If Yes, what does it show? (Is it inconclusive due to inadequate data? Gradient from deeper B1 aquifer to A aquifer is upward. The deeper aquifer (B1 zone) is not impacted above clean-up goals at this Site near the former potential source areas.</p> <p>Are the concentrations increasing or decreasing? Explain and provide source document reference Not applicable.</p>

C. Source Control Remedies

What are the remedial goals for source control? [The 106 Order requires the removal or remediation of chemicals of concern originating from the site \(soil source remediation is complete\).](#)

Elaborate on basis for determining progress or lack of progress toward these goals: [Reviewed groundwater concentrations in source area wells and downgradient wells. For the majority of these wells, the groundwater concentrations are decreasing \(see Plate 8 in 2010 Annual Progress Report\). Groundwater concentrations in A zone down-gradient wells \(on north side of East Middlefield Road\) remain below 100 milligrams per liter for the sixth consecutive year.](#)

XI. PROJECTIONS

Administrative Issues

Dates of next monitoring and sampling events for next annual reporting period: [December 2011](#)

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

Remedy Projections for the upcoming year (2008)

- No significant changes projected.
- Groundwater remedy will be converted to monitored natural attenuation. Target date:
- Groundwater Pump & Treat will be shut down. Target date: [third or fourth quarter 2011 to implement in-situ bioremediation pilot test on City property.](#)
- Groundwater cleanup standards to be modified. Target date:
- PRP will request remedy modification. Target date of request:
- Change in the number of monitoring wells. Increasing or decreasing? Target date:
- Change in the number and/or types of analytes being analyzed. Increasing or decreasing?
Target date:
-
- Change in groundwater extraction system. Expansion or minimization (i.e., number of extraction wells and/or pumping rate)? . Target date: Modification on groundwater treatment? Elaborate below. Target date:
 - Change in discharge location. Target date:
 - Other modification(s) anticipated: _____ 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: [2015](#)
- Groundwater Pump & Treat will be shut down. Target date:
- Groundwater cleanup standards to be modified. Target date:
- PRP will request remedy modification. Target date of request:
- Change in the number of monitoring wells. Increasing or decreasing? Target date:
- Change in the number and/or types of analytes being analyzed. Increasing or decreasing?
Target date:
- Change in groundwater extraction system. Expansion or minimization (i.e., number of extraction wells and/or pumping rate)? Target date:
- Modification on groundwater treatment? Elaborate below. Target date:
- Change in discharge location. Target date:
- Other modification(s) anticipated: _____ Elaborate below. Target date:

Elaborate on Remedy Projections: As continued operation of the pump and treat system may result in only asymptotic concentrations, and in-situ bioremediation is not expected to reach the clean-up goal of 5 micrograms per liter of TCE, monitored natural attenuation is a logical next step. EPA is pursuing a focused feasibility study to allow for ROD amendment that allows for alternative groundwater remedy.

B. Projections – Slurry Walls (Check all that apply) NOT APPLICABLE

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.

Submitted plan for ERD pilot test in March 2004. Work was put on hold due to concerns of the former property owner. In 2008, discussions with regards to implementing the ERD pilot test were re-initiated with the property owner and when negotiations were nearly completed, they subsequently sold the property (in 2010). SMI is trying to contact the new owner to re-initiate discussions. SMI plans to submit a plan to EPA to include discontinuation of pumping, to minimize the potential of pulling in groundwater from the surrounding area with competing electron acceptors (oxygen, nitrate, and sulfate) that are detrimental to the naturally occurring degradation of TCE that is occurring in the former source area. The plan will also include the injection of an electron donor in the City right-of-way (to avoid the need for access to private property) to facilitate additional TCE degradation at the property boundary and ensure plume stability. If reasonable access to the property can be obtained, electron donor would also be injected upgradient of wells C-3 and R-20A, albeit this may occur at a later date due to the time needed to negotiate an access agreement.

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](#)

XII. RECOMMENDATIONS

With respect to the ROD amendment which is anticipated to allow use of in-situ technologies for groundwater treatment (rather than just pump-and-treat), recognition that subsurface heterogeneities and associated preferential pathways via the coarser-grained materials, will also inhibit the distribution of amendments associated with in-situ technologies is recommended. Additionally, existing site features will limit injection locations, which will further hinder distribution of in-situ amendments. The decision on when to transition to MNA should be based on groundwater concentration trends or economics (i.e., approaching asymptotic or stable levels or excessive cost per pound of VOC removed) rather than an arbitrary pre-determined concentration of TCE in groundwater (such as 100 µg/L).

APPENDIX C

**LABORATORY ANALYTICAL RESULTS, COC DOCUMENTATION, AND FIELD
DATA SHEETS FOR GROUNDWATER MONITORING**

APPENDIX D

QUALITY ASSURANCE / QUALITY CONTROL REPORT

APPENDIX D

QUALITY ASSURANCE / QUALITY CONTROL REPORT

INTRODUCTION

This Quality Assurance/Quality Control (QA/QC) Report has been prepared by PES Environmental, Inc. on behalf of SMI Holding LLC for 455, 485/487, and 501/505 East Middlefield Road, Mountain View, California (Site). This QA/QC Report summarizes the QA/QC procedures used to collect and analyze data for the Site's annual monitoring event, and is submitted as part of the annual report for 2010.

This QA/QC Report demonstrates that the work performed at the Site complied with the standards specified in the Unified Quality Assurance Project Plan (UQAPP).

Sixteen monitoring and four extraction wells (three of which are routinely operated) were sampled during the annual sampling event and analyzed using EPA Method 8260B for halogenated volatile organic compounds (HVOCs), including Freon 113. Additionally, thirty-six groundwater samples were collected from the influent, mid-point (between carbon vessels), and the effluent of the groundwater extraction and treatment system. The effluent samples were analyzed for the full EPA Method 8260B list for volatile organic compounds (VOCs) and the influent and mid-point samples were analyzed for HVOCs using EPA Method 8260B.

EXTERNAL QUALITY CONTROL SAMPLES

The laboratory analytical data and accompanying QA/QC data are reviewed for each data set by the laboratory and by PES upon receipt of laboratory analytical results. The QA/QC laboratory data includes: method blank report, lab control spike/lab control spike duplicate (LS/LSD) recovery report, and matrix spike/matrix spike duplicate (MS/MSD) recovery report. The method blank reports are reviewed to ensure no compounds are detected in the method blank, and that the surrogate recoveries are within acceptable ranges.

In accordance with the UQAPP, one MS/MSD sample was obtained for a minimum of every 20 samples collected and analyzed under the protocols of EPA's Test Methods for Evaluating Solid and Water Wastes (EPA SW-846). The MS/MSD percent recovery goal specified in the UQAPP was 40 to 150 percent recovery, and the MS/MSD results provided by the laboratory were within this range, as well as the laboratory designated range of 70 to 130 percent recovery.

Percent recovery goals for BS/BSD results are not specified in the UQAPP: thus, the laboratory QC limits were reviewed and were within laboratory limits. Copies of the quality

control reports, which are provided with each laboratory data set, are available in the files at PES.

EQUIPMENT BLANK

During this reporting period, two equipment blanks were collected during the annual sampling event. The sample was analyzed using EPA Method 8260B by Severn Trent Laboratories Inc., San Francisco (STL). The results indicated low detections of chloroform (1.7/1.6 $\mu\text{g/L}$), which is commonly found in chlorinated drinking water. Distilled water was used as an equipment rinsate, and it appears that this water may have been chlorinated; chloroform was not detected in any of the wells sampled.

TRIP BLANK

One trip blank sample was included in the shipping container used to transport samples from the annual groundwater monitoring event. The sample was analyzed for HVOCs using EPA Method 8260B by STL. The results indicated non-detectable concentrations for the compounds analyzed.

DUPLICATE SAMPLES

During the annual sampling event, duplicate samples (DUP) were collected from well ME-1A and SO-PZ2. For well ME-1A, the relative percentage difference (RPD¹) between the results was zero for TCE (identical results of 67 $\mu\text{g/L}$) and minus 2.3 percent for cis-1,2-DCE (results of 5.9 $\mu\text{g/L}$ and 6.1 $\mu\text{g/L}$). For well SO-PZ2, the RPD between the results was minus 15% for TCE (results of 18 $\mu\text{g/L}$ and 21 $\mu\text{g/L}$), minus 15% for cis-1,2-DCE (results of 370 $\mu\text{g/L}$ and 430 $\mu\text{g/L}$), and 24% for vinyl chloride (results of 19 $\mu\text{g/L}$ and 15 $\mu\text{g/L}$).

¹ RPD = relative percent difference = (Result 1 - Result 2)/(average of two results).

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