Environmental Site Investigation Work Plan

425 National Avenue
Mountain View, California

Prepared for:

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ENVIRONMENTAL SITE INVESTIGATION WORK PLAN
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1.0 INTRODUCTION

This environmental site investigation work plan (work plan) is submitted by AMEC Environment & Infrastructure, Inc. (AMEC) on behalf of Vishay GSI Inc. (Vishay) and SUMCO Phoenix Corporation (SUMCO). The work plan describes facility-specific work activities for the former 405 National Avenue property in Mountain View, California (Site; Figures 1 and 5). Previous investigations performed at the Site indicate that groundwater beneath the Site is impacted by chlorinated volatile organic compounds (CVOCs), primarily trichloroethene (TCE), which was designated as the indicator chemical for the Site in the Record of Decision (EPA, 1989). In response, Vishay and SUMCO have been performing remedial activities at the Site since 1996. Although soil cleanup activities concluded in 1999, operation of the groundwater remedy is ongoing. Groundwater beneath the Site is impacted by CVOCs in concentrations greater than cleanup goals. The existing groundwater remedy consists of a groundwater extraction and treatment system that includes five on- and three off-site extraction wells.

1.1 PURPOSE AND OBJECTIVES

The primary objectives of the scope of work presented in this work plan are to:

- Further delineate areas of the Site where high concentrations of CVOCs are present in groundwater.
- Obtain additional subsurface lithologic data.

The information obtained from this investigation will be used to evaluate remedial options that will target and remove a significant mass of CVOCs at the Site.

1.2 DOCUMENT ORGANIZATION

This work plan presents Site background information, the proposed scope of work for real-time field screening, soil logging, soil and groundwater sampling, the proposed reporting of the investigation results, and a schedule for completion of the work.

2.0 BACKGROUND

This section describes the Site setting and its geographic location, the regional and Site geology and hydrogeology, and the historical investigation and remedial activities conducted at the Site to date.

2.1 SITE SETTING AND USE

The Site is located within the Middlefield-Ellis-Whisman (MEW) Study Area in Mountain View, California (Figures 1 and 2). The Site is located approximately 1,200 feet (ft) south of U.S. Highway 101, approximately midway between Ellis Street and Whisman Road. The Site measures approximately 290 ft by 170 ft and is bounded to the north by National Avenue, to the east by the adjacent portion of 425 National Avenue, to the west by 401 National Avenue, and to the south by the Hetch-Hetchy Aqueduct Easement. In addition, there is a 10-foot-wide public utility easement along the southern property boundary.

Until the Site was redeveloped in 2001, a one-story industrial building occupied the Site, measuring approximately 200 ft by 100 ft and oriented approximately north-south, with the west side of the building coincident with the western property boundary. The building was constructed in the mid-1960s and was first occupied by Elmat Corporation from 1967 to 1969. Semimetals, a subsidiary of General Instrument Corporation (a predecessor to Vishay) occupied the building between 1969 and 1978. Siltec Corporation (a predecessor to SUMCO Phoenix Corporation) then purchased the property and occupied the building from 1978 to 1987. The property was sold to UniSil Corporation (UniSil) in 1989, and UniSil occupied the building until the spring of 1999, when UniSil ceased operations at 405 National Avenue.

In 2001, the 405 and 423 National Avenue properties were redeveloped. The redevelopment activities included demolition of existing buildings and construction of a new two-story commercial building, along with associated parking, drainage, and utility facilities. As part of that redevelopment, the 405 and 423 National Avenue properties were combined and are now collectively referred to as 425 National Avenue. The building and parking lot footprints of the redeveloped structure are shown in relation to the old footprints of 405 and 423 National Avenue properties on Figure 2. The current owner purchased the 425 National Avenue property in August 2006 and completed interior renovation of the building in April 2008.

2.2 GEOLOGY AND HYDROGEOLOGY

The Site is located on Pleistocene and Upper Quaternary alluvial deposits of the San Jose Plain in the north Santa Clara Valley. The Santa Clara Valley is a large depression in the central coast range that is filled with alluvial deposits derived from the Santa Cruz Mountains on the west and the Diablo Mountains on the east. The alluvial deposits slope to the valley interior where they merge into shallow marine deposits fringing the southern San Francisco Bay margin (Canonie Environmental, 1983). The alluvial deposits are estimated to be 1,500 feet thick in the valley floor.

The alluvial deposits are unconsolidated sediments consisting of sand and gravel deposits interlayered with silt and clay aquitards. These alluvial deposits are coarser and more permeable closer to the Santa Cruz Mountains and become progressively finer grained and less permeable nearer the San Francisco Bay. The fine grain sediments are a result of the

deposits from streams and the incursion of marine clays and silts from the San Francisco Bay. Prior investigations at the Site encountered subsurface materials that include clays, silts, sands, clayey sands, silty sands, and sandy clays, with small amounts of fine gravel.

Groundwater aquifers within the MEW Study Area consist of shallow and deep aquifer systems, which are separated by a laterally extensive aquitard approximately 40 ft thick. The shallow aquifer system is generally less than 160 ft deep south of U.S. Highway 101 and generally less than 100 ft deep north of U.S. Highway 101. Subdivisions within the shallow aquifer have been designated the “A” and “B” aquifers. The aquitard between the shallow and deep aquifers is designated the “B/C” aquitard. The zones below the “B/C” aquitard are termed the “C” aquifer and the deep aquifers (Locus, 2000).

Groundwater flow in the shallow aquifer zone is generally towards San Francisco Bay to the north. The shallow and deep aquifer systems in the MEW Study Area are not used for drinking water. Schematic geologic cross sections of the MEW aquifer zones are shown in Appendix A (Locus, 2000).

2.3 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Numerous investigations have been performed at the Site to characterize the nature and extent of chemicals present in soil and groundwater. Wahler Associates performed five investigations of soil and groundwater from 1982 to 1988 (Wahler Associates, 1982; 1985; 1986a; 1986b; and 1988a) and issued a summary report of their findings (Wahler Associates, 1988b). R.L. Stollar & Associates (1990) conducted an investigation in 1989. In 1992, Watkins-Johnson Environmental, Inc. (WJE, formerly R.L. Stollar & Associates) performed an additional investigation (WJE, 1992) to characterize the extent and concentration of the chemicals of concern specified in the 106 Order, primarily trichloroethene (TCE). In 1995, Geomatrix Consultants, Inc. (Geomatrix) performed studies to further estimate chemical concentrations in the groundwater at the Site (Geomatrix, 1996).

2.4 DESCRIPTION OF FINAL REMEDY

Pursuant to the Consent Decree and 106 Order, Vishay and SUMCO, as successors to General Instrument Corporation and Siltec Corporation, respectively, were required to implement source control measures at the 405 National Avenue property. The source control remedial design for the Site included both soil vapor and groundwater extraction and treatment systems described in six documents: (1) Revised Combined Intermediate and Final Source Control Remedial Design (Revised FSCRD) dated, April 27, 1995; (2) Addendum and Response to the U.S. Environmental Protection Agency’s (U.S. EPA’s) Comments on Revised FSCRD dated June 30, 1995; (3) letter to U.S. EPA dated July 13, 1995; (4) Revised Construction Operation and Maintenance Plan (COMP) dated January 1996; (5) Addendum to the Revised FSCRD dated, April 1996; and (6) Revised Operation and Maintenance Plan dated August 1997.

The soil vapor extraction system (VES) included five vapor extraction wells, one vertical vapor extraction well on the south side of the former 405 National Avenue building, and four inclined dual-purpose vapor and groundwater extraction wells on the property boundary between the 401 and former 405 National Avenue properties. Vapor extracted from these wells was piped to a vapor treatment system on 401 National Avenue and treated using granular activated carbon (GAC) beds prior to discharge to the atmosphere under a Bay Area Air Quality Management District (BAAQMD) permit. Confirmation soil sampling was conducted at the Site in January 1999. Analytical results of the soil sampling indicated that volatile organic compound (VOC) concentrations in the samples were below the cleanup objectives specified in the Record of Decision (ROD) for soils outside slurry walls. Following approval by the U.S. EPA (U.S. EPA, 1999b) of the confirmation soil sampling report (Geomatrix, 1999), the VES was permanently shut down on March 22, 1999 and later decommissioned.

The groundwater extraction and treatment system (GETS) includes eight wells (Figure 3) in the A, B1 and B2 aquifers, five of which extract groundwater from underneath the Site and three of which extract groundwater from an area north of the Site. Groundwater is extracted from one vertical well on the south side of the Site (SIL15A) and four inclined groundwater extraction wells (EX-1, EX-2, EX-3, and EX-4) which have wellheads located on the 401 National property and extend under the 405 National property. These five wells are source recovery wells for 405 National Avenue. The four inclined wells used for the GETS are the same four inclined wells that were formerly used for the VES. Three groundwater extraction wells (GSF-1A, GSF-1B1, and GSF-1B2) are located about 200 ft north of the Site and are jointly operated by Vishay/SUMCO and Schlumberger as part of the source control measures for both the 401 and 405 National Avenue sites (Figure 3). Recovered groundwater from all eight extraction wells is piped to a groundwater treatment system at 401 National Avenue.

The groundwater treatment system consists of pretreatment by an ultraviolet light-hydrogen peroxide (UV-H_2O_2) oxidation unit followed by final treatment through a shallow tray air stripper (Figure 4). Until December 2004, treated groundwater was discharged to the sanitary sewer under a discharge permit from the City of Mountain View. As of December 31, 2004, the GETS discharges to the storm drain under a National Pollutant Discharge Elimination System (NPDES) permit (the Permit) for sites with groundwater impacted by VOCs (see Section 3.3 of the 2004 Annual Progress Report for further details). Operation of the groundwater extraction and treatment system is ongoing.

2.5 CVOCs IN GROUNDWATER

Figures 5 through 8 provide TCE, PCE, cis-1,2-DCE and vinyl chloride isoconcentration maps for the A-aquifer based on data from the most recent Annual Report (AMEC, 2013). The highest concentrations of all three chemicals have been detected in the west and southwest of the target capture zone, in wells SIL1A, SIL14A and EX-1.

3.0 PROPOSED FIELD INVESTIGATION ACTIVITIES

This section presents a discussion of proposed field investigation activities to assess the presence of CVOCs in groundwater and obtain subsurface lithologic data. Implementation of the site investigation program will include the interpretation of real-time site data to determine the need for potential changes to the scope of work, as set forth in Section 3.2.2, below. The investigative approach for field activities has been developed to meet the objectives presented in Section 1.1.

3.1 PRE-FIELD ACTIVITIES

Pre-field activities will include development of a health and safety plan, procurement of permits, coordination of property access, and underground utility clearance.

3.1.1 Health and Safety Plan

All work will be performed in accordance with a site-specific health and safety plan (HASP) to protect the public and site personnel during the fieldwork. The HASP will include health and safety precautions for known and potential physical and chemical hazards anticipated for the field effort. A map of the route to the nearest hospital and material safety data sheets (MSDS), or equivalent chemical data information, for chemicals of concern will also be included in the HASP.

3.1.2 Permitting and Access

Prior to initiating field activities, AMEC will procure all necessary boring permits from the Santa Clara Valley Water District (SCVWD). Per SCVWD policy, no permit is required for borings under 45 feet deep (the target depth of this investigation); however, AMEC will apply for a permit in order to retain the option of deeper borings. As part of the pre-field activities, AMEC will coordinate work with the affected property owners and occupants. It is also anticipated that access arrangements will have to be coordinated to minimize disruption to existing tenant operations.

3.1.3 Utility Location and Borehole Clearance

Prior to conducting field activities, AMEC will mark the proposed drilling locations and notify Underground Service Alert (USA) of planned subsurface work. In addition, AMEC will retain a private subsurface utility location contractor to screen each proposed drilling location and the surrounding area for subsurface utilities. Prior to drilling, all boring locations will be advanced using a hand auger to a depth of 5 feet below ground surface (bgs) to clear for utilities. If subsurface utilities are present at a proposed sampling location, then the sample point will be re-established as close as possible to the initial location.

3.2 REAL-TIME FIELD SCREENING

Real-time high-resolution data collection tools will be used for the collection of relative CVOC concentrations and soil properties. For this investigation, a membrane interface probe (MIP)

with an electrical conductivity probe (ECP) will be used for the collection of soil lithology information and relative CVOC concentrations in groundwater in the A-aquifer zone.

3.2.1 Membrane Interface Probe with Electrical Conductivity Probe

The MIP is a tool equipped with a heated, semi-permeable membrane that volatilizes CVOCs in the subsurface as it is advanced using a direct-push drilling rig. For this investigation, CVOCs that diffuse through the membrane will be carried to the ground surface via an inert purge gas for analysis using a flame ionizing detector (FID), a photoionization detector (PID), an electron capture detector (ECD) and a halogen specific detector (XSD). The ECD and XSD detectors are best suited for screening of chlorinated or halogenated compounds (i.e., TCE or PCE) and their degradation products (i.e., cis-1,2-DCE and vinyl chloride).

The ECP is an electrical sensor that provides information on soil lithology, and other subsurface characteristics such as water-bearing zones and aquitards (clay layers). The ECP tool continuously measures electrical conductivity, which is a physical property of the soil matrix and is primarily controlled by the clay mineral content. Soils with relatively high clay mineral content are generally more electrically conductive than soils with low clay mineral content. The ECP is typically paired with the MIP and both types of data are collected concurrently during the same push.

The MIP/ECP system will provide a nearly continuous, real-time, depth-discrete response profile with semi-quantitative/qualitative information on soil lithology and total CVOC readings. Based on previous experience, MIP has a total VOC sensitivity limit down to approximately 300 to 500 micrograms per kilogram (µg/kg) in soil and approximately 300 to 500 micrograms per liter (µg/L) in groundwater. These screening limits meet one of the primary objectives of this work plan, which is to collect sufficient data to assess elevated concentrations of CVOCs.

3.2.2 MIP/ECP Sampling Locations and Procedures

The initial investigation plan includes nine proposed sample locations as shown on Figure 9. Following the initial MIP/ECP screening, up to three additional MIP/ECP borings may be advanced to refine the understanding of the distribution of CVOCs in the A-Zone aquifer. The number and location of additional MIP/ECP borings, which will not exceed three, will be determined in the field with direction from an AMEC Professional Geologist or Engineer based on the results of the initial MIP/ECP borings. In total, MIP/ECP borings will number between nine and twelve.

A global positioning system (GPS) unit will be used to record the location of sample points. The GPS unit has an accuracy of approximately +/– one foot in the horizontal plane, and approximately +/– one foot in elevation.

The MIP/ECP system will be advanced using a truck-mounted direct push (DP) drilling rig. Potential site constraints (i.e., tenant disruption, rig size, noise levels), will determine whether

a hydraulic ram system (CPT rig) or a percussive hammer system will be used. The maximum anticipated depth of the MIP/ECP investigation will be approximately 45 feet bgs, the anticipated depth to the bottom of the A-aquifer.

All of the subsurface characterization methods described in this work plan will be conducted under the direct supervision of a California-licensed Professional Geologist or Engineer. A California-licensed drilling contractor will perform all drilling activities. Non-dedicated downhole sampling equipment will be decontaminated between each boring location and prior to reuse.

3.3 DIRECT PUSH SOIL SAMPLING AND LOGGING

Following completion of the MIP/ECP investigation, confirmation soil and groundwater samples will be collected. Soil cores will be analyzed for metals, and to confirm lithology; and groundwater samples will be analyzed to quantify the distribution of CVOCs in the A-zone aquifer. The number, location and depth of the confirmation borings will be determined in the field with direction from an AMEC Professional Geologist or Engineer based on the results of the MIP/ECP investigation. AMEC anticipates collecting confirmation soil and groundwater samples at between two and five locations to be collocated with completed MIP/ECP borings and no additional borings will be made.

3.3.1 Soil Logging

Confirmation borings will be advanced using dual-tube direct-push technology. A continuous core of soil will be collected at each direct push boring location for lithologic logging.
A lithologic log will be prepared by an AMEC field geologist under the supervision of a California Professional Geologist using visual-manual procedures of the American Society of Testing and Materials (ASTM) Standard D2488-09a for guidance, which is based on the Unified Soil Classification System (USCS).

3.3.2 Soil Sampling

Depth-discrete soil samples will be collected from each confirmation boring based on the results of the MIP/ECP investigation. Soil will be removed from each soil core and placed into 8 oz glass jars with PTFE-lined caps. Sample containers will be labeled, sealed in plastic bags, placed in an ice-chilled cooler, and transported to a California-certified analytical laboratory under AMEC chain-of-custody procedures.

3.3.3 Soil Laboratory Analyses

Soil samples will be analyzed for Title 22 metals using EPA Method 6010B/7471A.

Additional soil samples will be collected and analyzed for soil physical parameters, which will assist in the preparation of a fate and transport evaluation of remedial options. Soil physical testing will include grain size distribution by ASTM D422, hydraulic conductivity by ASTM D-5084, total organic carbon (TOC) by Walkley-Black method, effective porosity by ASTM D-425,

moisture content by ASTM D2216, and bulk density total porosity, and air permeability by American Petroleum Institute (API) Method RP 40.

3.4 GROUNDWATER SAMPLING

As discussed in Section 3.3, grab groundwater samples will be collected from each confirmation boring. Additionally, depth-discrete groundwater samples will be collected from three existing on-site monitoring wells. Results obtained from the MIP/ECP investigation will be compared to the analytical results from the grab groundwater samples and depth-discrete monitoring well samples.

3.4.1 Grab Groundwater Sampling

Once each confirmation boring has been advanced to total depth, temporary polyvinyl chloride (PVC) casing with 5 feet of 0.01-inch slotted screen will be installed in the boring within the outer drill casing, and the outer drill casing then will be retracted no more than 5 feet to expose the PVC screen to the water-bearing unit.

Prior to collection of all grab groundwater samples, the casing will be purged using a peristaltic pump, or a new, disposable, polyethylene bailer to allow for collection of more representative samples. In accordance with Low Flow Sampling Procedures (Puls & Barcelona, 1996), the casing will be purged until field parameters equilibrate. Groundwater parameters to be monitored include pH, electrical conductivity (eC), dissolved oxygen (DO), oxidation reduction potential (ORP), and temperature. These measurements will be recorded in a field sampling log and will be included in the report documenting the investigation. Following purging, a grab groundwater sample will be collected from each boring using a peristaltic pump or a new, disposable, polyethylene bailer.

3.4.2 Groundwater Monitoring Wells

Depth-discrete groundwater samples will be collected from on-site monitoring wells SIL13A, SIL14A, and SIL17A (Figure 9) using passive diffusion bags (PDBs). The number of PDB samples collected from each well will be based on well construction information and associated soil lithology. At a minimum, it is anticipated that at least three zones within each well will be targeted for sampling using PDBs. The PDB sampling will be performed using an apparatus consisting of multiple bag samplers separated into discrete zones by low pressure packers. While the PDB apparatus is deployed in the well, packer pressure will be sufficiently maintained to limit vertical water movement within the well column.

Samples will be collected by retrieving each PDB, opening the PDB using a decontaminated cutting device and decanting the sampled groundwater into appropriate laboratory supplied sampling containers. Each sample will be labeled, sealed in plastic bags, placed in an ice-cooled cooler, and transported to a California-certified analytical laboratory under AMEC chain-of-custody procedures.

3.4.3 Groundwater Laboratory Analyses

Groundwater samples will be analyzed for CVOCs by EPA Method 8260B for comparison to results from the MIP/ECP investigation. Additional organic and inorganic groundwater laboratory analyses will be conducted to provide data for evaluation of remedial options. These analyses will include Title 22 metals using EPA Method 6010B/7471A, TOC by EPA Method SM5310C, iron by EPA Method 200.7, sulfate, sulfide, and nitrate by EPA Method 300.0 and ethane, ethane, and methane by EPA Method RSK 175.

3.5 ABANDONMENT OF SOIL BORINGS

Upon completion of drilling and sample collection, all borings will be destroyed in accordance with State and SCVWD standards. The boreholes will be filled with a cement-bentonite grout mixture using a tremie pipe to within approximately six inches of the surface. The top six inches will be restored using concrete colored to match the existing surface. AMEC will attempt to match the existing grade as closely as is reasonably possible.

3.6 QUALITY ASSURANCE SAMPLING

AMEC will follow established QA/QC procedures for this investigation, which generally follow the QA/QC goals and analytical laboratory quality assurance manual included in the Unified Quality Assurance Project Plan (UQAPP), as approved by the U.S. Environmental Protection Agency (EPA) for the MEW Site on February 3, 1993.

Method blanks, field blanks, and trip blanks will be used to monitor for potential false positive results introduced at the laboratory, during sampling and/or transport, respectively. Method blanks will be tested for all analytes, and trip blanks and field blank samples will only be tested for VOCs by EPA Method 8260B.

Data accuracy will be assessed by the analysis of laboratory control samples/laboratory control sample duplicates (LCS/LCSD), blank spike/blank spike duplicate (BS/BSD), and matrix spike/matrix spike duplicate (MS/MSD) samples, and evaluation of the recovery of spiked compounds. These will be expressed as a percentage of the true or known concentrations. Surrogate recoveries and blank results will also be used to assess accuracy.

Data precision will be evaluated by comparing duplicate sample analytical results. The duplicate data evaluation will be based on calculating the relative percent difference (RPD) between duplicates.

3.7 INVESTIGATION-DERIVED WASTE

Investigation-derived waste (IDW), including drill cuttings, purge water, and equipment wash water, will be stored in Department of Transportation (DOT) approved 55-gallon drums pending profiling, transportation and off-site disposal or recycling at an appropriately licensed facility. All waste containers will be clearly labeled with generator contact and phone number, drilling location(s), and date of generation.

4.0 REPORTING

Following completion of the investigation and receipt of analytical data, AMEC will summarize the investigation activities and results. At a minimum, the report will include:

- A written description of field activities.
- Data tables summarizing the soil, and groundwater data obtained during this investigation.
- A scaled site map and set of figures depicting sampling locations, monitoring and extraction wells, buildings, landscaping, subsurface utilities, streets and other relevant site features.
- Lithologic logs for each boring presented graphically.
- MIP/ECP system field test results.
- Copies of field forms, analytical laboratory reports, a data validation summary, and chain-of-custody forms.
- A discussion of findings and recommendations for further work.

5.0 SCHEDULE

AMEC will initiate the scope of work summarized above once EPA approves this work plan and access arrangements are finalized with the owner of the Site. After coordination with the owner, field work will be scheduled to minimize disruption to its tenants. The investigation report will be submitted eight weeks after the fieldwork is complete.

6.0 REFERENCES

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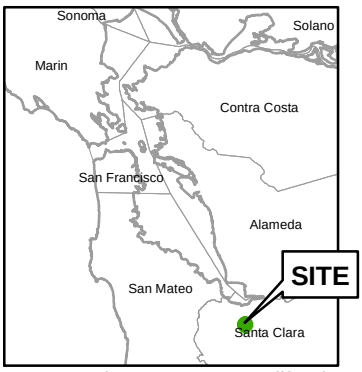
FIGURES

Street map from ESRI, 2007. Aerial image from NAIP, 2009.



San Francisco Bay Area, California

N

0 2,000 Feet

SITE LOCATION MAP
405 National Avenue and Vicinity
Mountain View, California

By: HCR	Date: 02/17/2014	Project No. 0014860013
amec		Figure 1

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126A
RW-21A
35A
AE/RW-9-1
36A
69B1
123A
122A
37A
RW-10A
RW-20A
AE/RW-9-2
41A
69A
42A
137A
39A
31A
138A
40A
43A
44A
25B1
SIL1A
EX1
EX2
EX3
EX4
SIL14A
SIL9A
SIL17A
SIL13A
83A
SIL16A
SIL15A
SIL12A
SIL2A
42B2
SIL3A
SIL4A
SIL6A
SIL10A
28A
SIL7A
SIL5A
SIL8A
SIL11A
45A
REG-MW2B1
REG-MW1B2
REG-MW1B1
REG-MW1A
116A
107B2
109B1
GSF1B2
GSF1B1
GSF1A
108B2
104B1
108A
109A
110A
50A
105B1
56A
151A
RW-25A
152A
77B1
80A
REG-12A
REG-1B2
58A
REG-1B1
147A
143B1

EXPLANATION

- Groundwater extraction well
- Groundwater monitoring well
- Groundwater monitoring well destroyed November 16, 2000
- 405 National Avenue property boundary
- 405 National Avenue building demolished November 2000
- 423 National Avenue building demolished November 2000
- Target capture zone

Well pairs include:
116A & 109B1, 109B1 & 107B2 and
108A & 104B1, 104B1 & 108B2

N

0 80

APPROXIMATE SCALE IN FEET

SITE VICINITY MAP
405 National Avenue and Vicinity
MountainView, California

By: GFS	Date: 02/17/2014	Project No. 0014860013
amec		Figure 2

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LEGEND

- GROUNDWATER MONITORING WELL
- GROUNDWATER EXTRACTION WELL
- GROUNDWATER MONITORING WELL DESTOYED
- SOIL VAPOR MONITORING WELL DESTROYED
- SOIL VAPOR EXTRACTION WELL DESTROYED
- TRENCHES
- CONCRETE ACCESS VAULT
- ELECTRICAL PULL BOX

401 National Avenue

616-620 National Avenue

626-630 National Avenue

425 National Avenue

VAPOR TREATMENT SYSTEM PIPING CAPPED IN PLACE SEPTEMBER 1999

GROUNDWATER TREATMENT SYSTEM

PUMPS POWER & SIGNAL AND PULL BOX

MAIN ELECTRICAL PULL BOX

TELEPHONE PULL BOX

TREATED GROUNDWATER DISCHARGE PIPING

FLOWMETER REMOTE READOUT CURBED FEBRUARY 2005

PG&E UTILITY POLE

PG&E PULL BOX

EXISTING 1¼" GAS LINE

ALL UNDERGROUND UTILITIY LINES ON 401 NATIONAL AVENUE LOCATED BY PAINT MARKS ON PAVEMENT MADE BY CRUZ BROTHERS ACCURACY NOT VERIFIED

10' P.U.E.

5' W.C.E.

PG&E METER PANEL

BOLLARDS

TRANSFORMER PAD

2" PVC TELEPHONE CONDUIT

TELEPHONE PULL BOX

PUMPS POWER & SIGNAL PULL BOX

MAIN ELECTRICAL PULL BOX

EX-1

EX-2

EX-3

EX-4

#1

#2

#3

VAPOR TREATMENT SYSTEM PIPING REMOVED IN MAY 2001

405 NATIONAL AVENUE BUILDING DEMOLISHED NOVEMBER 2000

425 NATIONAL AVENUE PARKING/LANDSCAPING COMPLETED IN 2001

425 NATIONAL AVENUE BUILDING COMPLETED IN 2001

EXISTING GAS LINE

NATIONAL AVENUE

341' 8" VCP

308' 15" RCP

Hetch Hetchy Aqueduct

A.C. PAVING

CONC. SLAB WITH WATER VALVES & BACK FLOW PREVENTER

3"IRON PIPE THRU CURB FL 41.42

0 40

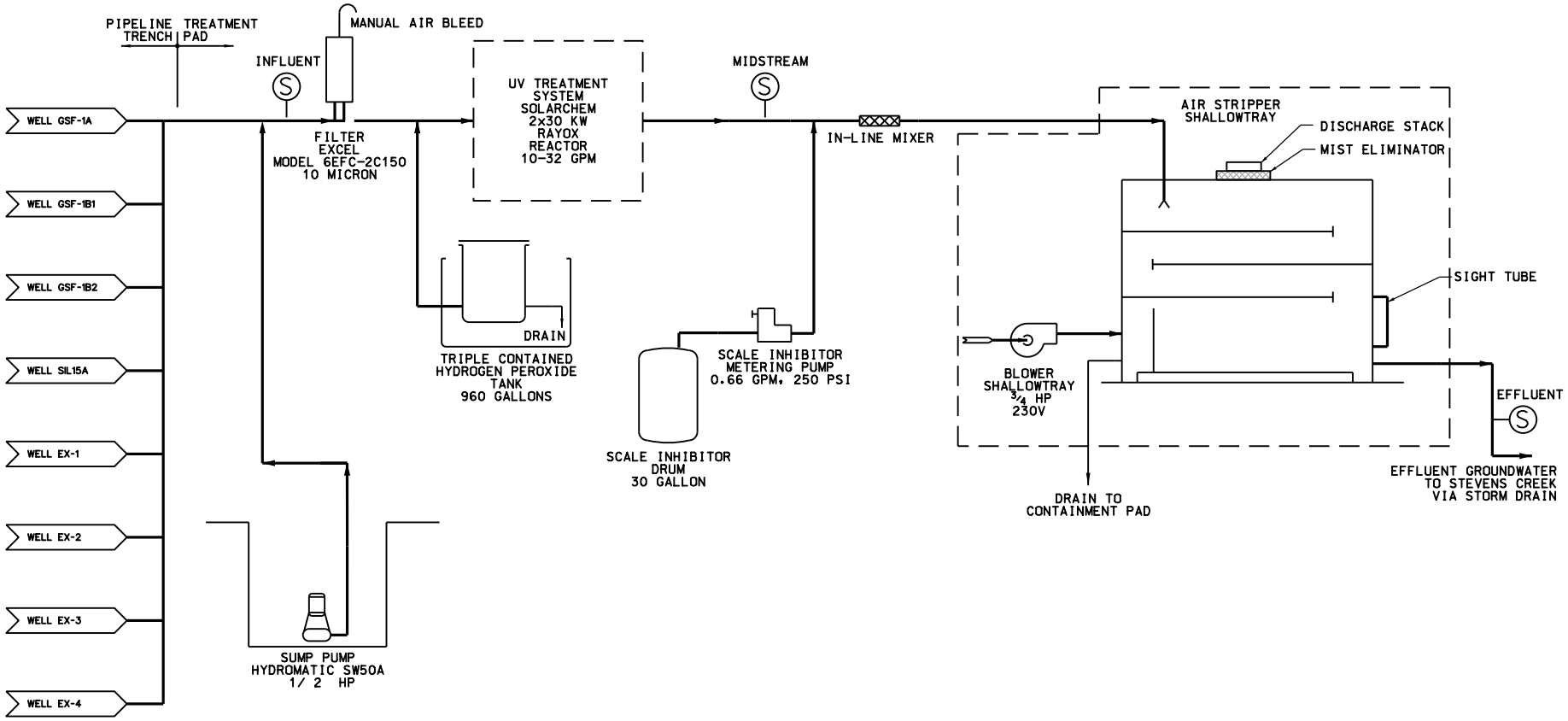
Scale in Feet

GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
405 National Avenue and Vicinity
Mountain View, California

By: RFC	Date: 2/17/2014	Project No. 0014860013
amec		Figure 3

kristin.uber
Q:\iplot\ctb\amec.ctb
R:\1000-1900s\1486\1486.013\Phase_02\task_JJ\14_0123_reiwp_fig_03.dgn

kristin.uber Q:\iplot\ctb\amec.ctb
R:\1000-1900s\1486\1486.013\Phase_02\task_JJ\14_0123_reiwp_fig_04.dgn

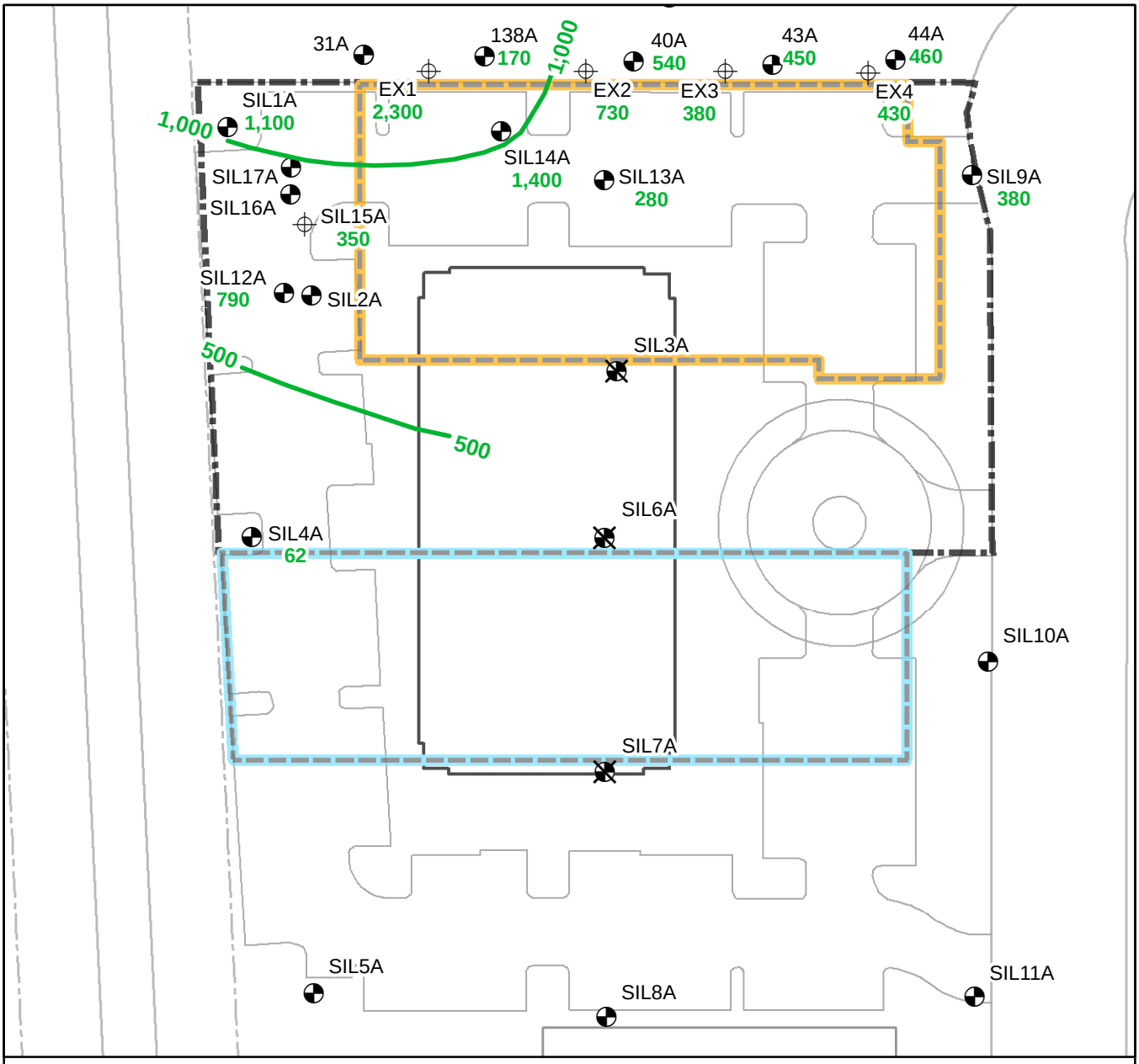


LEGEND

- BLOWER
- METERING PUMP
- SUBMERSIBLE PUMP
- SAMPLE PORT

PROCESS FLOW SCHEMATIC
405 National Avenue and Vicinity
Mountain View, California

By: RFC	Date: 2/17/2014	Project No. 0014860013
amec		Figure 4



EXPLANATION

1,400 TCE concentration in groundwate samples collected from A-zone monitoring wells in µg/L

1,000 A-zone TCE iso-concentration line in µg/L

Groundwater extraction well

Groundwater monitoring well

Groundwater monitoring well destroyed November 16, 2000

405 National Avenue property boundary

405 National Avenue building demolished November 2000

423 National Avenue building demolished November 2000

N

0 60

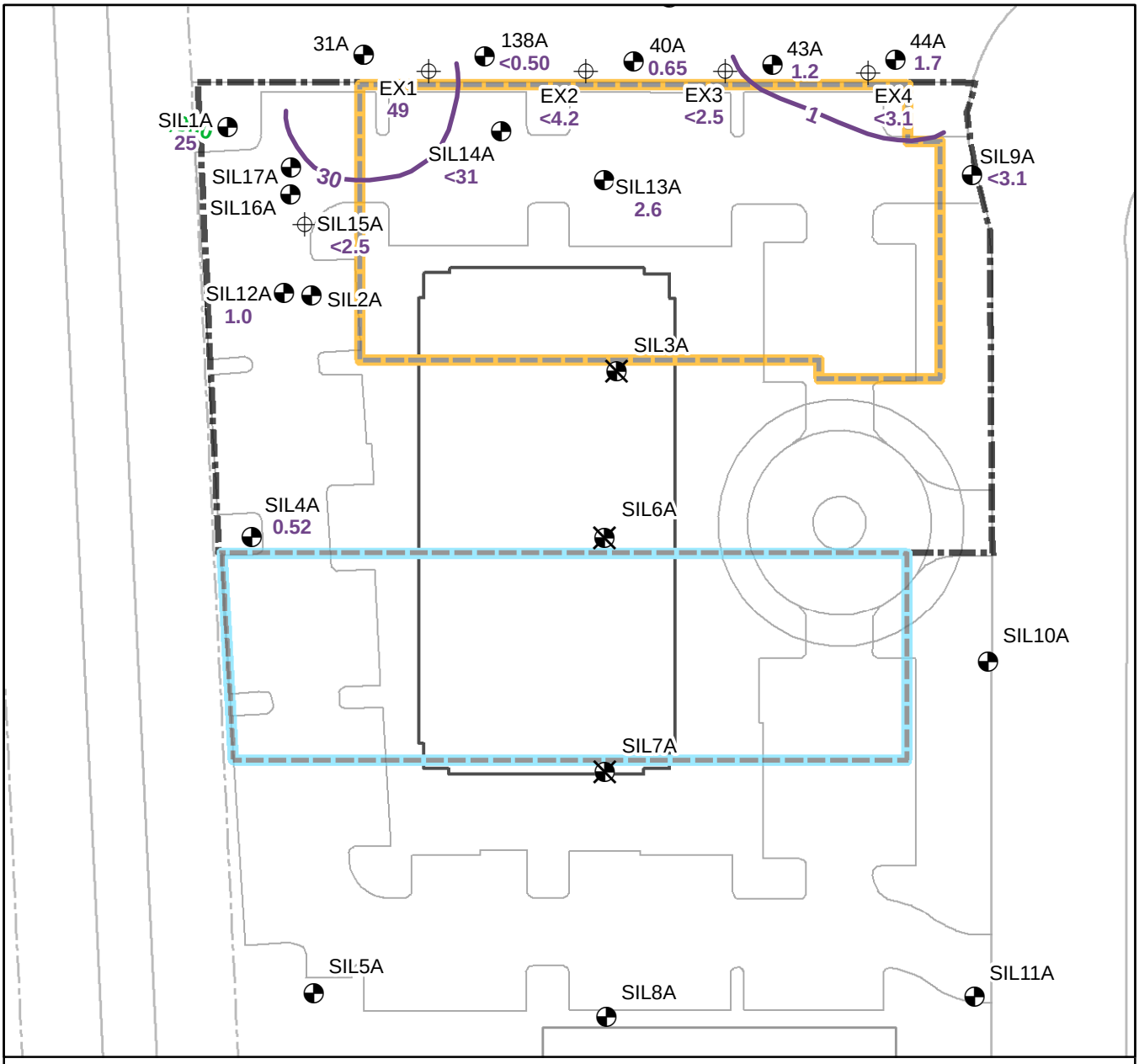
APPROXIMATE SCALE IN FEET

Notes:
1. Contours based on interpolation of data collected from the September, October, 2012 groundwater sampling event.
2. Groundwater concentration data in microgarms per liter (µg/L).

2012 TCE CONCENTRATION MAP FOR A-AQUIFER
405 National Avenue and Vicinity
MountainView, California

By: HCR	Date: 05/28/2014	Project No. 0014860013
amec		Figure 5

R:\1000-1900s\1486\1486.013\Phase_02\task_JJ\14_0123_reiwp_fig_05.mxd



EXPLANATION

49 PCE concentration in groundwater samples collected from A-zone monitoring wells in µg/L

30 A-zone PCE iso-concentration line in µg/L

Groundwater extraction well

Groundwater monitoring well

Groundwater monitoring well destroyed November 16, 2000

405 National Avenue property boundary

405 National Avenue building demolished November 2000

423 National Avenue building demolished November 2000

0 60

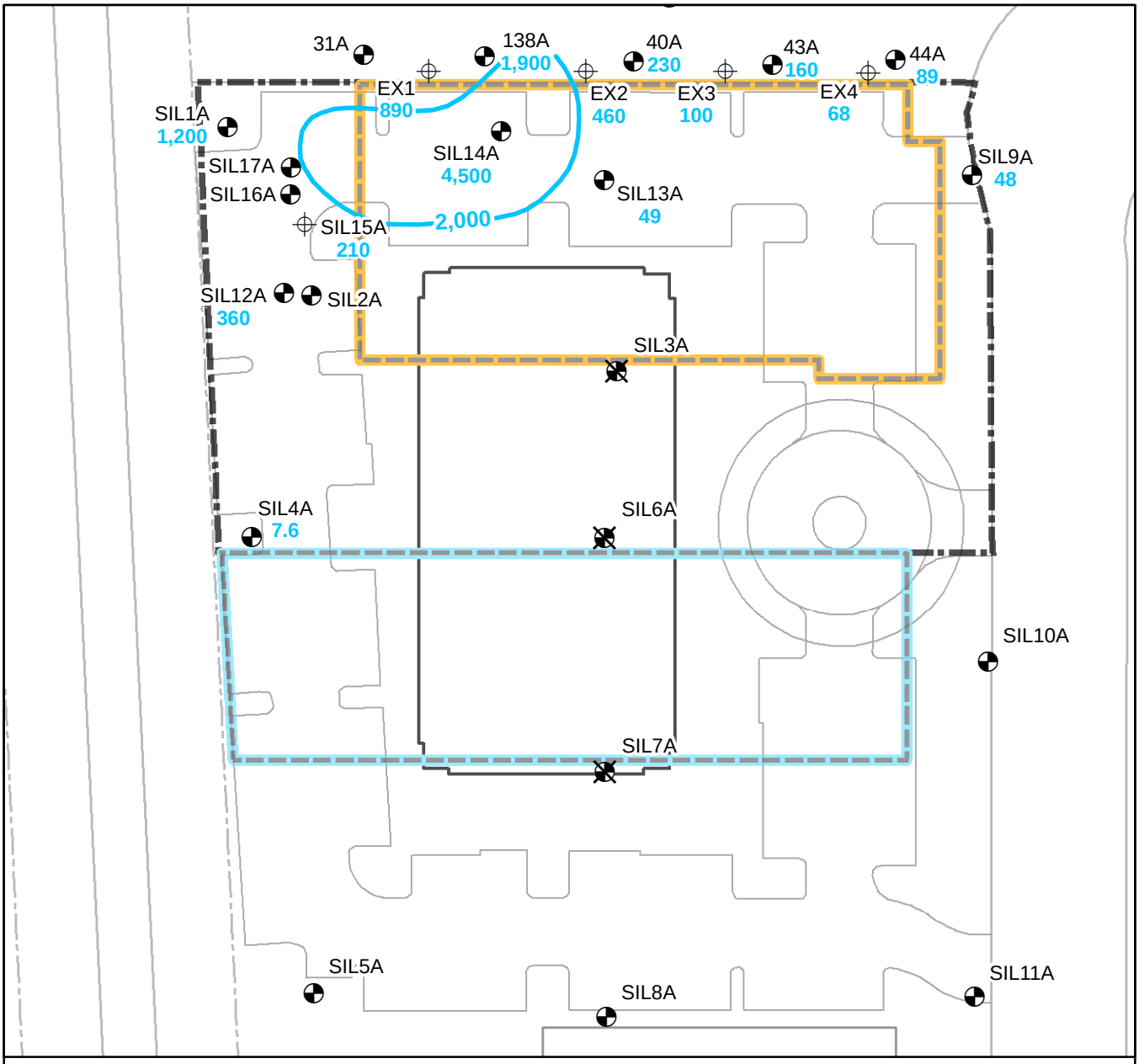
APPROXIMATE SCALE IN FEET

Notes:
1. Contours based on interpolation of data collected from the September, October, 2012 groundwater sampling event.
2. Groundwater concentration data in micrograms per liter (µg/L).

2012 PCE CONCENTRATION MAP FOR A-AQUIFER
405 National Avenue and Vicinity
MountainView, California

By: HCR	Date: 05/28/2014	Project No. 0014860013
amec		Figure 6

R:\1000-1900s\1486\1486.013\Phase_02\task_JJ\14_0123_reiwp_fig_06.mxd



EXPLANATION

4,500 CIS-1,2-DCE concentration in groundwater samples collected from A-zone monitoring wells in µg/L

2,000 A-zone CIS-1,2-DCE iso-concentration line in µg/L

Groundwater extraction well

Groundwater monitoring well

Groundwater monitoring well destroyed November 16, 2000

405 National Avenue property boundary

405 National Avenue building demolished November 2000

423 National Avenue building demolished November 2000

N

0 60

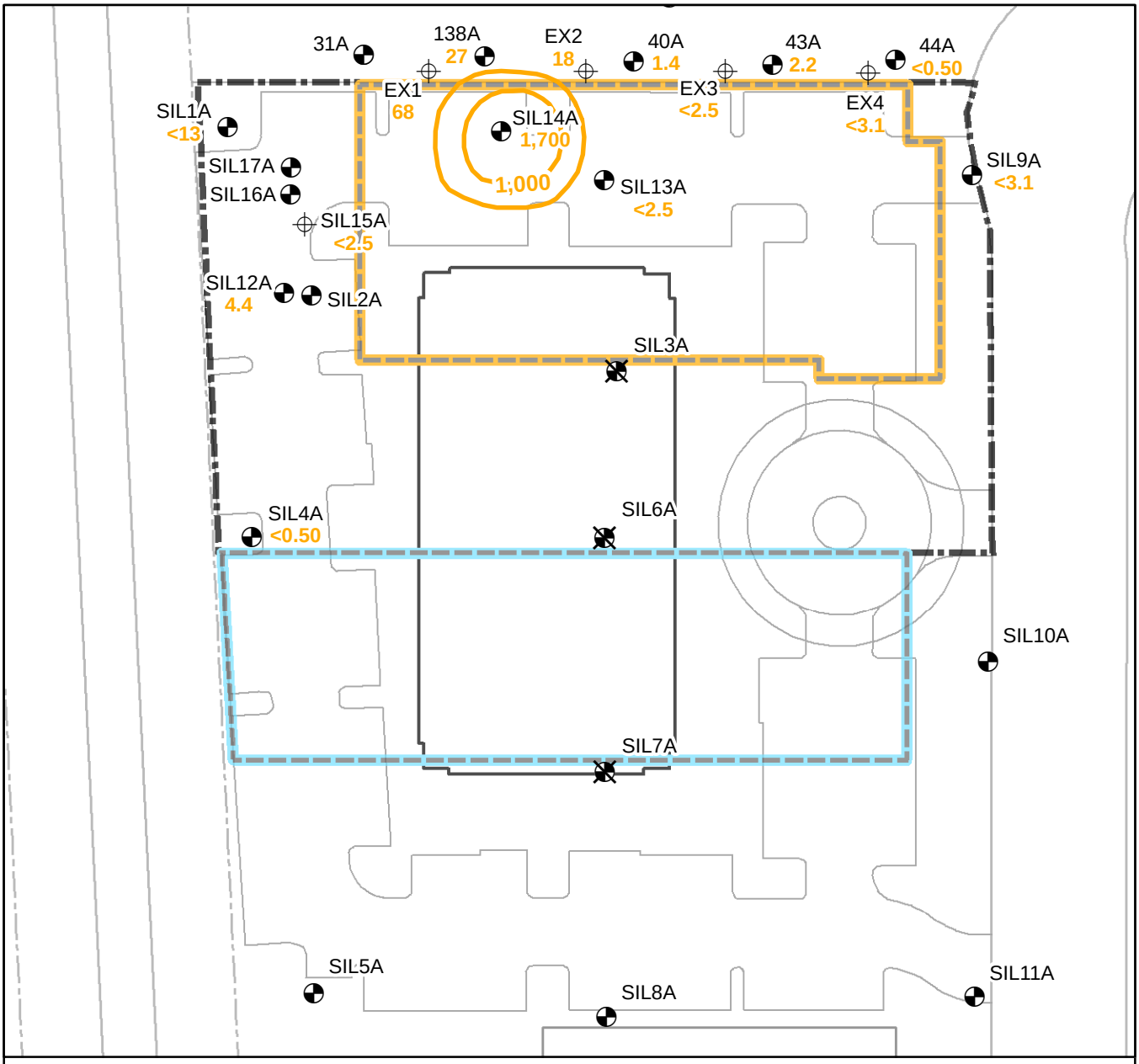
APPROXIMATE SCALE IN FEET

Notes:
1. Contours based on interpolation of data collected from the September, October, 2012 groundwater sampling event.
2. Groundwater concentration data in micrograms per liter (µg/L).

2012 CIS-1,2-DCE CONCENTRATION MAP FOR A-AQUIFER
405 National Avenue and Vicinity
MountainView, California

By: HCR	Date: 05/28/2014	Project No. 0014860013
amec		Figure 7

R:\1000-1900s\1486\1486.013\Phase_02\task_JJ\14_0123_reiwp_fig_07.mxd



EXPLANATION

1.700 Vinyl Chloride concentration in groundwater samples collected from A-zone monitoring wells in µg/L

1,000 A-zone Vinyl Chloride iso-concentration line in µg/L

Groundwater extraction well

Groundwater monitoring well

Groundwater monitoring well destroyed November 16, 2000

405 National Avenue property boundary

405 National Avenue building demolished November 2000

423 National Avenue building demolished November 2000

N

0 60

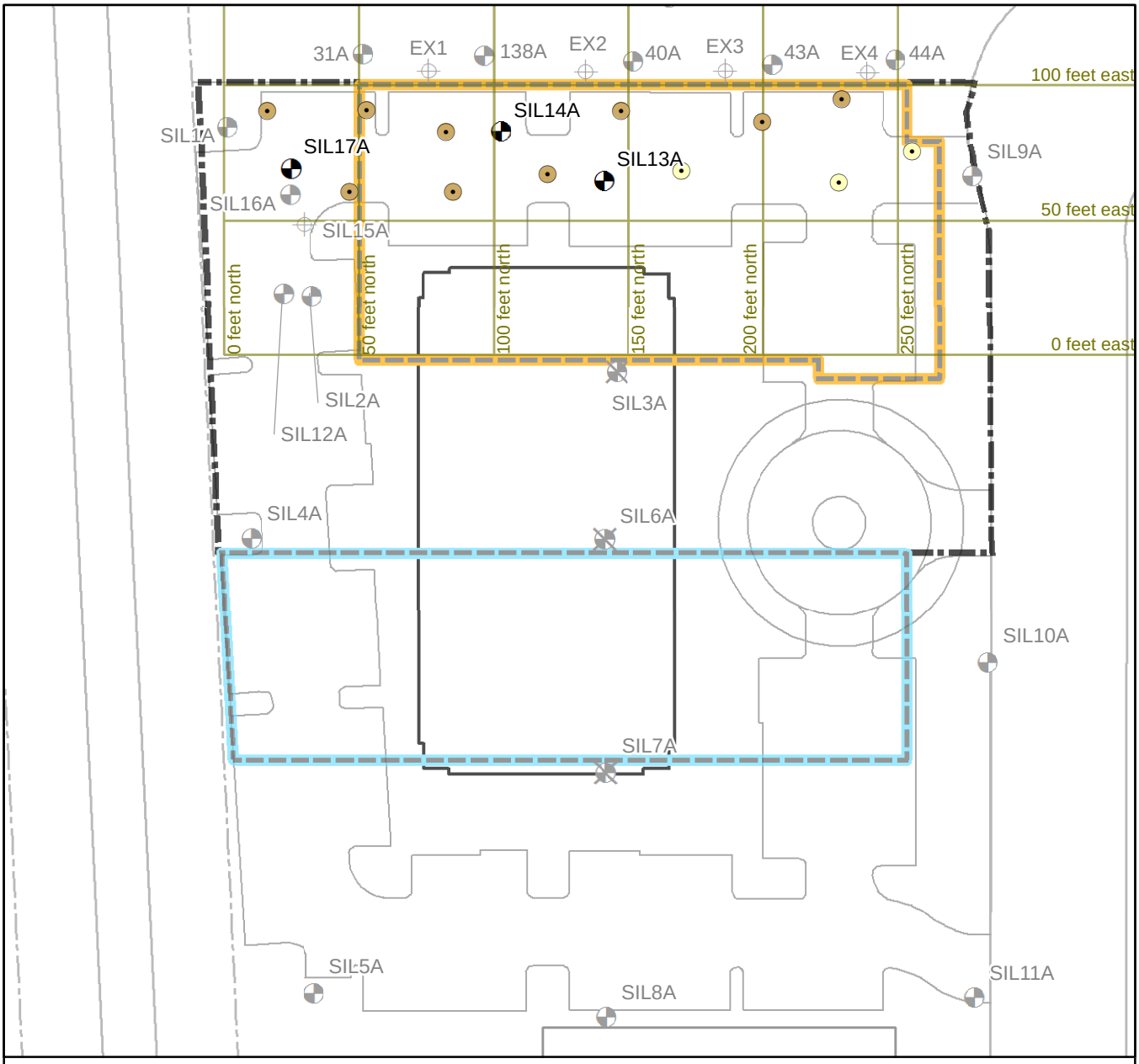
APPROXIMATE SCALE IN FEET

Notes:
1. Contours based on interpolation of data collected from the September, October, 2012 groundwater sampling event.
2. Groundwater concentration data in micrograms per liter (µg/L).

2012 VINYL CHLORIDE CONCENTRATION MAP FOR A-AQUIFER
405 National Avenue and Vicinity
MountainView, California

By: HCR	Date: 05/28/2014	Project No. 0014860013
amec		Figure 8

R:\1000-1900s\1486\1486.013\Phase_02\task_JJ\14_0123_reiwp_fig_08.mxd



EXPLANATION

- Proposed sampling locations
- Optional proposed sampling locations
- Investigation grid
- Groundwater monitoring well
- Groundwater extraction well
- Groundwater monitoring well destroyed November 16, 2000
- 405 National Avenue property boundary
- 405 National Avenue building demolished November 2000
- 423 National Avenue building demolished November 2000

0 60

APPROXIMATE SCALE IN FEET

PROPOSED SAMPLING LOCATIONS
405 National Avenue and Vicinity
MountainView, California

By: GFS	Date: 05/28/2014	Project No. 0014860013
amec		Figure 9

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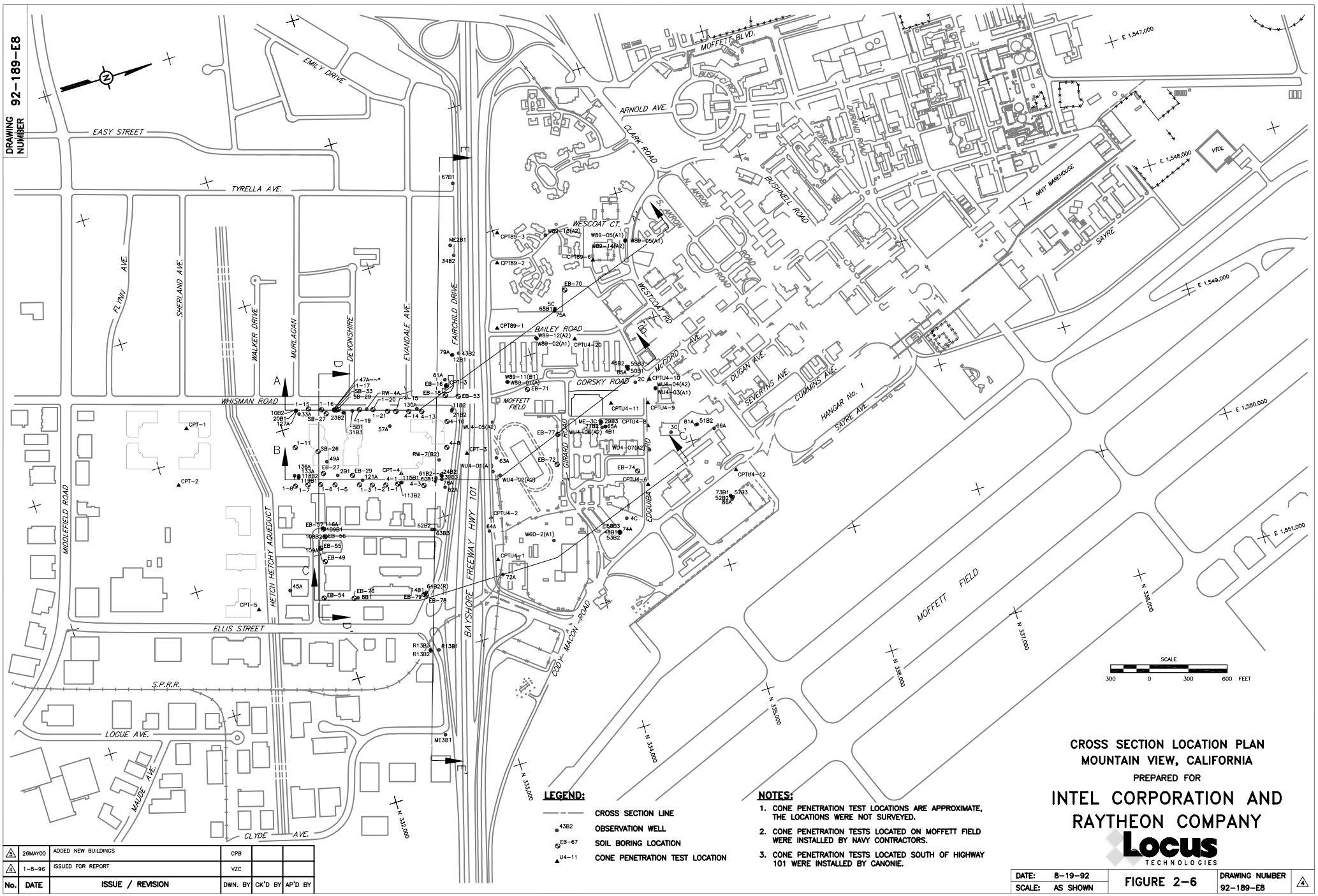
APPENDIX A

Geologic Cross Sections

DRAWING NUMBER 92-189-E8



LEGEND:

- CROSS SECTION LINE
- 43B2 OBSERVATION WELL
- EB-67 SOIL BORING LOCATION
- U4-11 CONE PENETRATION TEST LOCATION

NOTES:

1. CONE PENETRATION TEST LOCATIONS ARE APPROXIMATE, THE LOCATIONS WERE NOT SURVEYED.
2. CONE PENETRATION TESTS LOCATED ON MOFFETT FIELD WERE INSTALLED BY NAVY CONTRACTORS.
3. CONE PENETRATION TESTS LOCATED SOUTH OF HIGHWAY 101 WERE INSTALLED BY CANONIE.

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
3	26MAY00	ADDED NEW BUILDINGS	CPB		
2	1-8-96	ISSUED FOR REPORT	VZC		

CROSS SECTION LOCATION PLAN
MOUNTAIN VIEW, CALIFORNIA

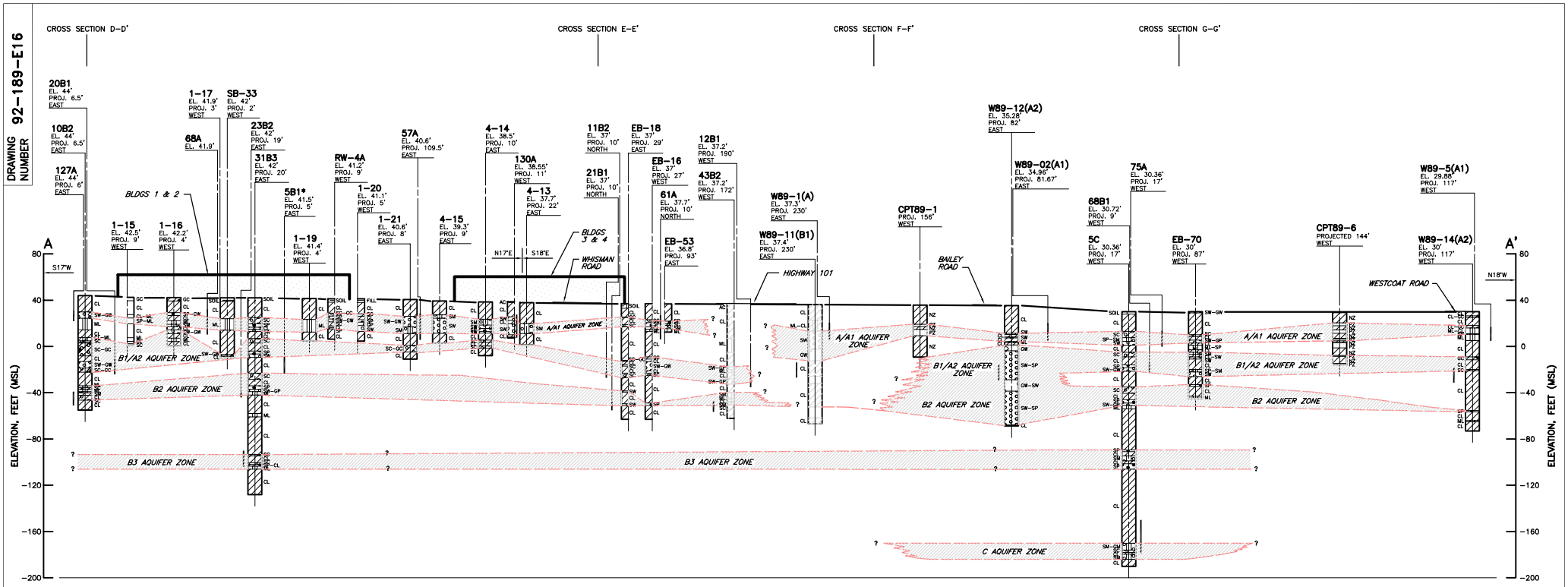
PREPARED FOR

INTEL CORPORATION AND RAYTHEON COMPANY

Locus TECHNOLOGIES

DATE:	8-19-92	FIGURE 2-6	DRAWING NUMBER 92-189-E8 (4)
SCALE:	AS SHOWN		

DRAWING NUMBER 92-189-E16



CROSS SECTION A-A'

NOTES:

1. CONE PENETRATION TESTS ON MOFFET FIELD WERE PERFORMED BY NAVY CONTRACTORS.
2. CONE PENETRATION TEST LOGS WERE INTERPRETED BY CANONIE AS PERMEABLE OR NONPERMEABLE MATERIALS.
3. CROSS SECTION LOCATION SHOWN ON DRAWING NO. 92-189-E8.
4. NO LITHOLOGIC LOG RECORDED FROM 62-68 AND 88-99 FEET IN W89-11(B1).
5. AQUIFER ZONES DESIGNATED BASED ON LITHOLOGIC DATA.
6. AN (*) INDICATES THE WELL WAS SEALED.
7. THE GRAVEL PACK INTERVALS SHOWN ARE GENERALLY PROJECTED TO THE CROSS SECTIONS. THE GRAVEL PACK INTERVALS DO NOT NECESSARILY CORRESPOND TO THE SOIL BORING SHOWN.
8. THESE CROSS SECTIONS REPRESENT ONE INTERPRETATION OF THE LIMITED GEOLOGIC DATA AVAILABLE. OTHER INTERPRETATIONS OF THE DATA ARE POSSIBLE. AS MORE DATA ARE GATHERED AND STUDIED, THE INTERPRETATION MAY CHANGE.

LEGEND:

- CL – CLAY
- MH – FINE SANDY OR SILTY SOILS
- ML – CLAYEY SILT OR SILTY OR CLAYEY SANDS
- GC – CLAYEY GRAVEL
- GM – SILTY GRAVEL
- GP – POORLY GRADED GRAVEL
- GW – WELL-GRADED GRAVEL
- SC – CLAYEY SAND
- SM – SILTY SAND
- SP – POORLY GRADED SAND
- SW – WELL-GRADED SAND
- PZ – PERMEABLE ZONE
- NZ – NONPERMEABLE ZONE
- LITHOLOGIC LOG
- WELL GRAVEL PACK INTERVAL

VERTICAL SCALE
40 0 40 80 FEET

HORIZONTAL SCALE
100 0 100 200 FEET

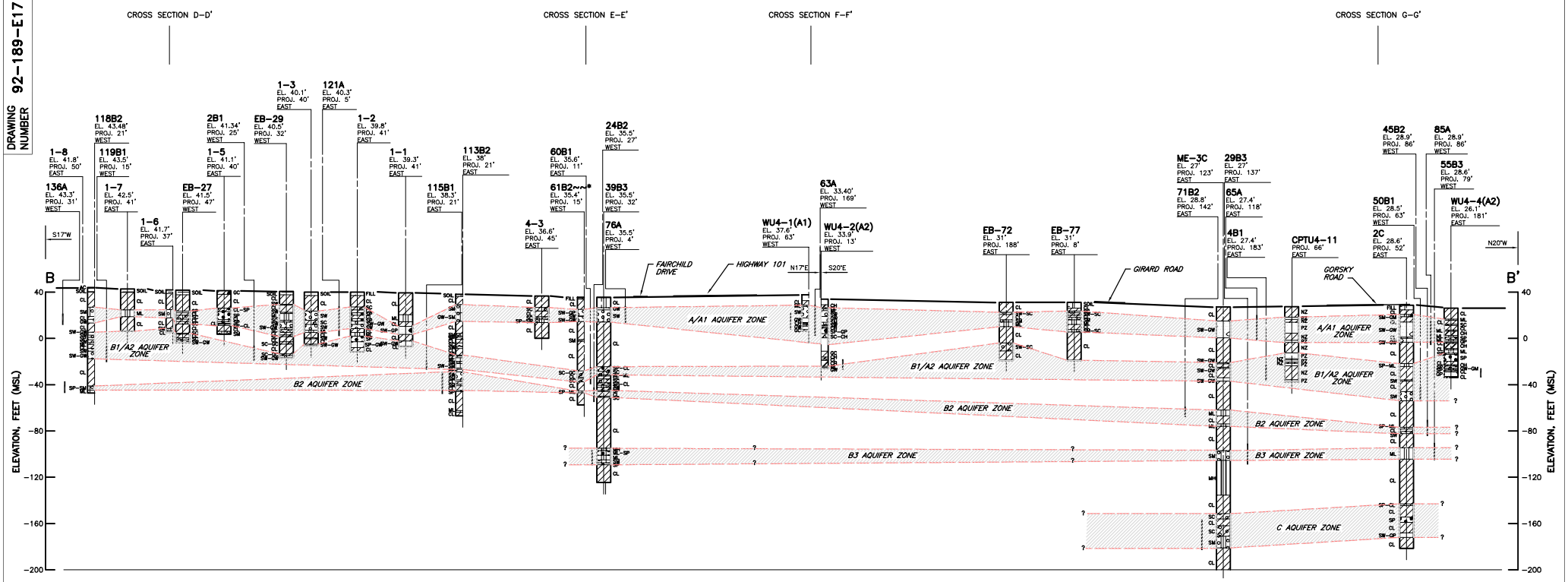
CROSS SECTION A-A'
MOUNTAIN VIEW, CALIFORNIA
PREPARED FOR
INTEL CORPORATION AND RAYTHEON COMPANY

Locus TECHNOLOGIES

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
5	1-8-95	ISSUED FOR REPORT	VZC		

DATE:	11-19-92	FIGURE 2-7	DRAWING NUMBER 92-189-E16 5
SCALE:	AS SHOWN		

DRAWING NUMBER 92-189-E17



CROSS SECTION B-B'

NOTES:

1. CONE PENETRATION TESTS ON MOFFET FIELD WERE PERFORMED BY NAVY CONTRACTORS.
2. CONE PENETRATION TEST LOGS WERE INTERPRETED BY CANONIE AS PERMEABLE OR NONPERMEABLE MATERIALS.
3. CROSS SECTION LOCATION SHOWN ON DRAWING NO. 92-189-E8.
4. WELLS WITH (*) ON NAME WERE SEALED.
5. LITHOLOGIC LOG NOT RECORDED ON WELL WU4-2(A2) BORING LOG FROM 33 TO 50 FEET.
6. THE GRAVEL PACK INTERVALS SHOWN ARE GENERALLY PROJECTED TO THE CROSS SECTIONS. THE GRAVEL PACK INTERVALS DO NOT NECESSARILY CORRESPOND TO THE SOIL BORING SHOWN.
7. THESE CROSS SECTIONS REPRESENT ONE INTERPRETATION OF THE LIMITED GEOLOGIC DATA AVAILABLE. OTHER INTERPRETATIONS OF THE DATA ARE POSSIBLE. AS MORE DATA ARE GATHERED AND STUDIED, THE INTERPRETATION MAY CHANGE.

LEGEND:

- CH – CLAY
- CL – CLAY
- MH – FINE SANDY OR SILTY SOILS
- ML – CLAYEY SILT OR SILTY OR CLAYEY SANDS
- GC – CLAYEY GRAVEL
- GM – SILTY GRAVEL
- GP – POORLY GRADED GRAVEL
- GW – WELL-GRADED GRAVEL
- SC – CLAYEY SAND
- SM – SILTY SAND
- SP – POORLY GRADED SAND
- SW – WELL-GRADED SAND
- NZ – NONPERMEABLE ZONE
- OL – ORGANIC SILTS AND ORGANIC SILTY CLAYS
- PZ – PERMEABLE ZONE
- LITHOLOGIC LOG
- WELL GRAVEL PACK INTERVAL

VERTICAL SCALE
40 0 40 80 FEET

HORIZONTAL SCALE
100 0 100 200 FEET

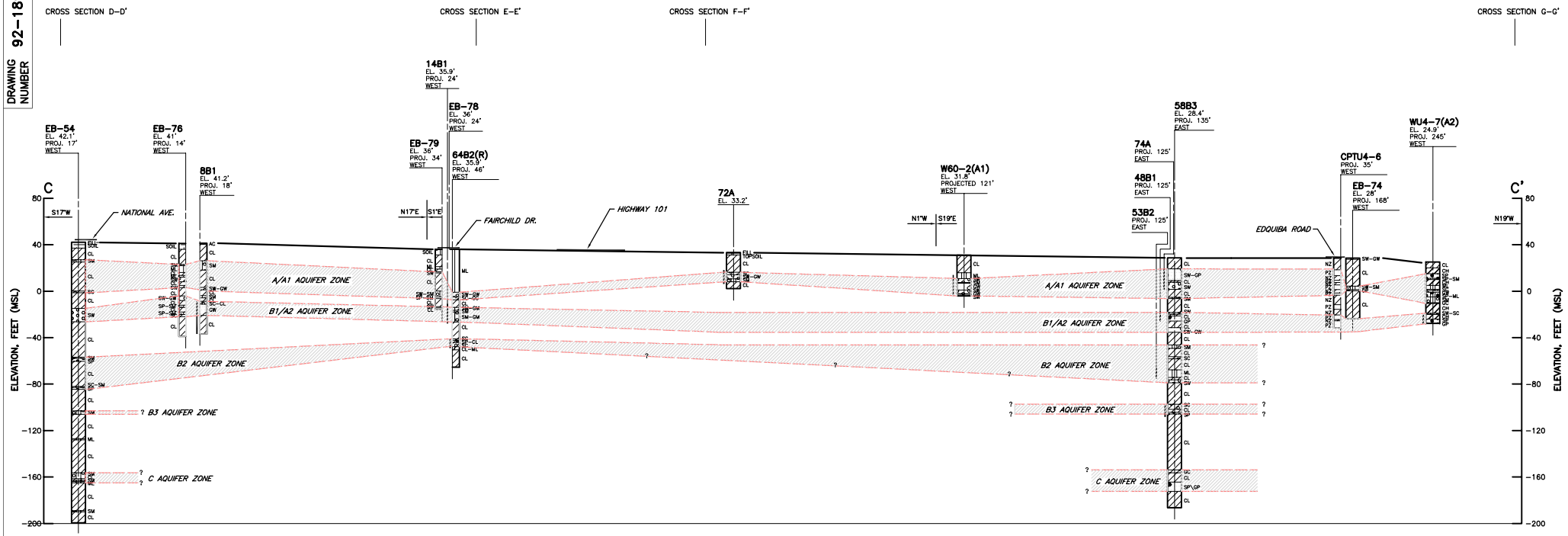
CROSS SECTION B-B'
MOUNTAIN VIEW, CALIFORNIA
PREPARED FOR
INTEL CORPORATION AND RAYTHEON COMPANY

Locus TECHNOLOGIES

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
5	1-8-96	ISSUED FOR REPORT	VZC		

DATE:	11-20-92	FIGURE 2-8	DRAWING NUMBER 92-189-E17
SCALE:	AS SHOWN		5

DRAWING NUMBER 92-189-E18



CROSS SECTION C-C'

NOTES:

1. CONE PENETRATION TEST ON MOFFET FIELD WERE PERFORMED BY NAVY CONTRACTORS.
2. CONE PENETRATION TEST LOGS WERE INTERPRETED BY CANONIE AS PERMEABLE OR NONPERMEABLE MATERIALS.
3. CROSS SECTION LOCATION SHOWN ON DRAWING NO. 92-189-E8.
4. AQUIFER ZONES DESIGNATED BASED ON LITHOLOGIC DATA.
5. THE GRAVEL PACK INTERVALS SHOWN ARE GENERALLY PROJECTED TO THE CROSS SECTIONS. THE GRAVEL PACK INTERVALS DO NOT NECESSARILY CORRESPOND TO THE SOIL BORING SHOWN.
5. THESE CROSS SECTIONS REPRESENT ONE INTERPRETATION OF THE LIMITED GEOLOGIC DATA AVAILABLE. OTHER INTERPRETATIONS OF THE DATA ARE POSSIBLE. AS MORE DATA ARE GATHERED AND STUDIED, THE INTERPRETATION MAY CHANGE.

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- ML – CLAYEY SILT OR SILTY OR CLAYEY SANDS
- GC – CLAYEY GRAVEL
- GM – SILTY GRAVEL
- GP – POORLY GRADED GRAVEL
- GW – WELL-GRADED GRAVEL
- SC – CLAYEY SAND
- SM – SILTY SAND
- SP – POORLY GRADED SAND
- SW – WELL-GRADED SAND
- NZ – NONPERMEABLE ZONE
- PZ – PERMEABLE ZONE
- LITHOLOGIC LOG
- WELL GRAVEL PACK INTERVAL

VERTICAL SCALE
40 0 40 80 FEET

HORIZONTAL SCALE
100 0 100 200 FEET

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
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CROSS SECTION C-C'
MOUNTAIN VIEW, CALIFORNIA
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RAYTHEON COMPANY

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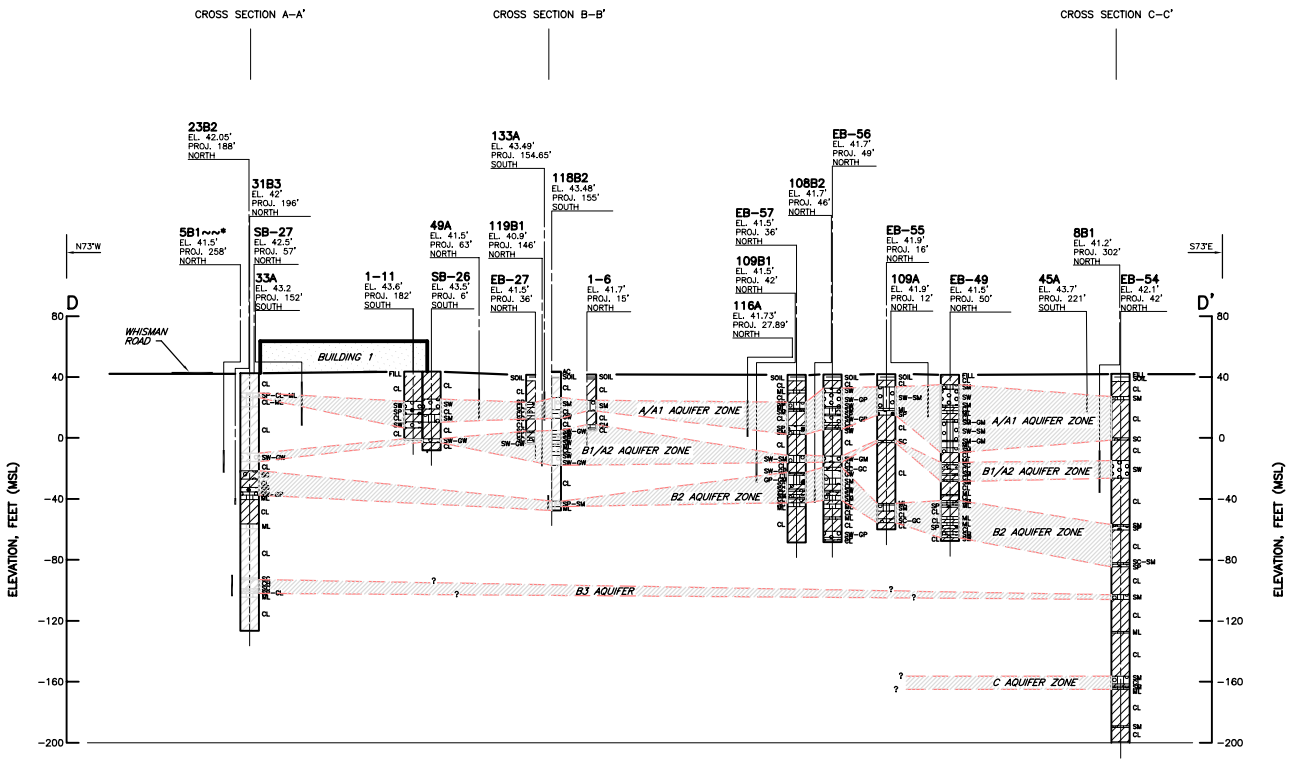
DATE:	11-20-92	FIGURE 2-9	DRAWING NUMBER 92-189-E18
SCALE:	AS SHOWN		5

DRAWING NUMBER 92-189-E19



CROSS SECTION D-D'

NOTES:

1. CROSS SECTION LOCATION SHOWN ON DRAWING No. 92-189-E8.
2. WELLS WITH (*) ON NAME WERE SEALED.
3. AQUIFER ZONES DESIGNATED BASED ON LITHOLOGIC DATA.
4. THE GRAVEL PACK INTERVALS SHOWN ARE GENERALLY PROJECTED TO THE CROSS SECTIONS. THE GRAVEL PACK INTERVALS DO NOT NECESSARILY CORRESPOND TO THE SOIL BORING SHOWN.
5. THESE CROSS SECTIONS REPRESENT ONE INTERPRETATION OF THE LIMITED GEOLOGIC DATA AVAILABLE. OTHER INTERPRETATIONS OF THE DATA ARE POSSIBLE. AS MORE DATA ARE GATHERED AND STUDIED, THE INTERPRETATION MAY CHANGE.

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- GC – CLAYEY GRAVEL
- GM – SILTY GRAVEL
- GP – POORLY GRADED GRAVEL
- GW – WELL-GRADED GRAVEL
- SC – CLAYEY SAND
- SM – SILTY SAND
- SP – POORLY GRADED SAND
- SW – WELL-GRADED SAND
- NZ – NONPERMEABLE ZONE
- PZ – PERMEABLE ZONE
- LITHOLOGIC LOG
- WELL GRAVEL PACK INTERVAL

VERTICAL SCALE
40 0 40 80 FEET

HORIZONTAL SCALE
100 0 100 200 FEET

CROSS SECTION D-D'
MOUNTAIN VIEW, CALIFORNIA
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No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
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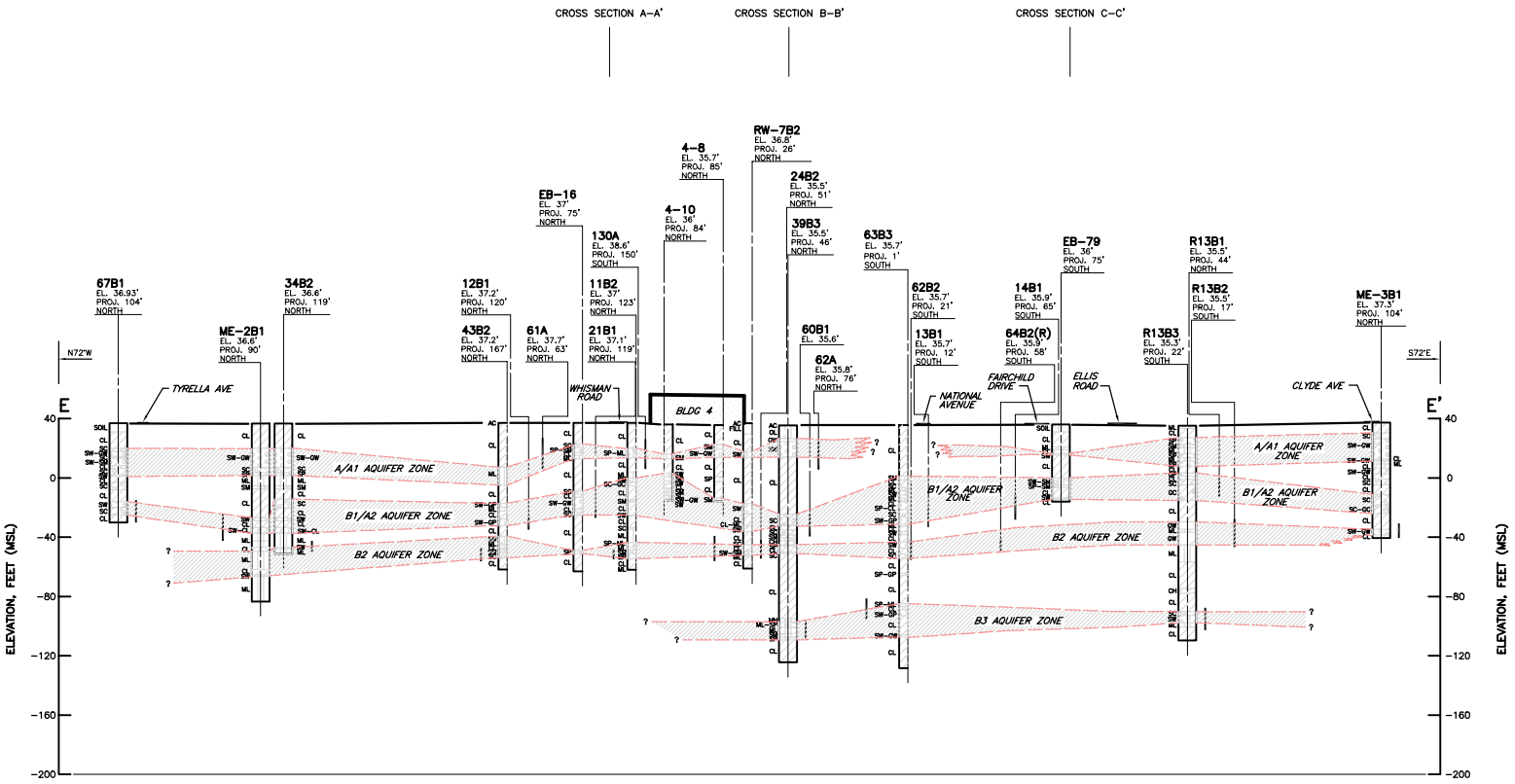
DATE:	11-21-92	FIGURE 2-10	DRAWING NUMBER 92-189-E19 5
SCALE:	AS SHOWN		

DRAWING NUMBER 92-189-E9



CROSS SECTION E–E'

NOTES:

1. CROSS SECTION LOCATION SHOWN ON DRAWING No. 92–189–E8.
2. AQUIFER ZONES DESIGNATED BASED ON LITHOLOGIC DATA.
3. THE GRAVEL PACK INTERVALS SHOWN ARE GENERALLY PROJECTED TO THE CROSS SECTIONS. THE GRAVEL PACK INTERVALS DO NOT NECESSARILY CORRESPOND TO THE SOIL BORING SHOWN.
4. THESE CROSS SECTIONS REPRESENT ONE INTERPRETATION OF THE LIMITED GEOLOGIC DATA AVAILABLE. OTHER INTERPRETATIONS OF THE DATA ARE POSSIBLE. AS MORE DATA ARE GATHERED AND STUDIED, THE INTERPRETATION MAY CHANGE.

LEGEND:

- CL – CLAY
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- ML – CLAYEY SILT OR SILTY OR CLAYEY SANDS
- GC – CLAYEY GRAVEL
- GM – SILTY GRAVEL
- GP – POORLY GRADED GRAVEL
- GW – WELL–GRADED GRAVEL
- SC – CLAYEY SAND
- SM – SILTY SAND
- SP – POORLY GRADED SAND
- SW – WELL–GRADED SAND
- NZ – NONPERMEABLE ZONE
- PZ – PERMEABLE ZONE
- LITHOLOGIC LOG
- WELL GRAVEL PACK INTERVAL

VERTICAL SCALE
40 0 40 80 FEET

HORIZONTAL SCALE
200 0 200 400 FEET

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
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CROSS SECTION E–E'
MOUNTAIN VIEW, CALIFORNIA
PREPARED FOR
INTEL CORPORATION AND RAYTHEON COMPANY

Locus TECHNOLOGIES

DATE:	8–25–92	FIGURE 2–11	DRAWING NUMBER 92–189–E9 2
SCALE:	AS SHOWN		