ENVIRO SOIL TECH CONSULTANTS

Environmental & Geotechnical Consultants

131 TULLY ROAD, SAN JOSE, CALIFORNIA 95111

Tel: (408) 297-1500 Fax: (408) 292-2116

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File No. 12-99-702-SI

Mr. Steven Plunkett
Alameda County EHS
1131 Harbor Bay Parkway
Alameda, California 94502

SUBJECT: CAL GAS LOCATED AT 15595 WASHINGTON AVENUE, SAN LORENZO, CALIFORNIA

Dear Mr. Plunkett:

Enviro Soil Tech Consultants has reviewed your letter dated February 8, 2009 regarding your review of the Site Conceptual Model and Corrective Action Plan submitted by ESTC on August 21, 2007. The letter discusses the decline in MTBE concentrations in on-site monitor wells and the possibility that MTBE has migrated beneath residences located west of the site. ACEHS asserts that the current monitor well network is not adequate to evaluate this possibility and requests a work plan to expand the well network to address that possibility. The letter also discusses the proposed corrective action and concludes that the proposed action does not meet ACESH requirements and should be revised. The letter goes on to discuss the data and conclusions presented in the conceptual model section of the report, disputes several of the conclusions reached by ESTC, and on page 4 states: "Therefore, we require that you prepare a revised SCM that includes a detailed discussion of the multiple releases that have occurred at this site…" In our more than thirty-five years of professional experience, there have been numerous occasions where a client, regulatory agency, or other licensed professional had an interpretation that differed from ours, but this is the first time that we have been directed to change our interpretation and we are rather astounded by this directive. Rather than revise the SCM, we have prepared this letter to respond to the ACEHS letter and address the comments therein.

1. Dissolved MTBE Plume Characterization and Monitoring

In this comment, ACEHS stated: "Historically, significantly elevated levels of Methyl Tertiary Butyl Ether (MTBE) have been detected in onsite monitoring wells at concentrations of up to 340,000 µg/L (MW-1), 210,000 µg/L (MW-2), and 99,000 µg/L (MW-3), respectively". The value given for MW-3 is incorrect; the MTBE concentration has exceeded 99,000 µg/L five times and reached a peak of 200,000 µg/L in May 2000.

Trends in hydrocarbon concentrations for specific on-site monitor wells have been reviewed in previous work plans and quarterly monitoring reports, as well as in the SCM. These reviews have demonstrated that aqueous concentrations began to decline in 1999 and have fallen by several orders of magnitude since then. ACEHS accepts this observation and uses it to suggest that the hydrocarbons, MTBE in particular, have migrated off site beneath the adjacent apartment buildings. ACEHS asserts that this possibility cannot be evaluated because "the well network in its current configuration is not adequate to evaluate the dissolved phase MTBE plume down-gradient of wells MW-2 and MW-3."

We realize that you are new to this site and that you were not involved in reviewing or approving previous investigation work plans, but it is difficult to accept this criticism in view of the fact that the work plans prepared by ESTC have been rejected by ACEHS on a number of occasions and the scope and/or sampling locations have been modified to comply with ACEHS directives. These directives were issued because ACEHS felt that the ACEHS revisions would provide better data on the magnitude and extent of contamination than would the plans as prepared by ESTC. ESTC has submitted five work plans and addendums since assuming the responsibility for investigating this site in 2000: February 2000, September 2004, June 2005, June 2006, and February 2007. Each plan proposed multiple drilling locations, and in each case some of those locations were not approved by ACEHS and were subsequently changed at the agency's request. Two examples are discussed below.

Our first work plan (February 2000) proposed to drill 16 off-site borings west and south of the site to delineate the extent of contamination in the inferred downgradient direction. A boring spacing of 20 feet was proposed, based on previous discussion with Mr. Scott Seery, the first ACEHS regulator charged with oversight for this project. However, in a letter in March 2000 in which Mr. Seery responded to the work plan, he wrote: "Increase to 40' the distance between each boring along each alignment. This will reduce the resultant number of borings along Via Enrico but provide similar coverage overall. In addition, increase the number of borings planned along Lorenzo, from the 3 proposed, to 5. This modification will allow for 160' coverage along Lorenzo Avenue, and better reflects the reported historical groundwater flow characteristics calculated from well data derived from the subject site." By reducing the number of borings from 16 to 12, ACEHS diminished the density of data points west of the site, where you are now requesting additional coverage.

Our second work plan (September 2004) proposed eight off-site monitor wells in accessible locations between apartment buildings to the west and north (Figure 1, attached). In reviewing that plan in a letter dated March 2005, the second ACEHS regulator, Mr. Barney Chan, did not comment on the proposed locations, but in a subsequent meeting with ESTC personnel and the RP in October 2005, ACEHS indicated that the proposed locations were unacceptable. ACEHS issued a letter in November 2005 and made this comment concerning the meeting: "…we discussed the randomness of the proposed borings and wells. We believe a better approach would be the drilling of borings along transects aligned perpendicular to groundwater flow direction." Unable to convince ACEHS that this approach was somewhat impractical because of the existence of the apartment buildings west of the site, we subsequently submitted a revised map in which the borings were arranged in three transects (Figure 2, attached).

Subsequent to that submittal, ESTC met with Mr. Chan and Ms. Cherie McCaulou of the Regional Water Board at the site (June 6, 2006) and the proposed drilling locations were reviewed. After seeing the obstructions presented by the apartment buildings to the west and houses to the north, Mr. Chan and Ms. McCaulou agreed that linear transects were impractical and instructed ESTC to move two of the borings off site and reduce the number of monitor wells from eight to three. ESTC complied with this request in an addendum prepared on June 8, 2006, and those revisions were accepted by ACEHS in a letter dated July 14, 2006. Figure 3 shows the locations as proposed in the June addendum.

The borings (but not the wells) were drilled in October and early November 2006 and ESTC submitted the resulting report in January 2007. In February 2007, ACEHS reviewed our report ("*ADDITIONAL OFF-SITE SOIL AND GROUNDWATER INVESTIGATION AND FOURTH QUARTER OF 2006 GROUNDWATER MONITORING & SAMPLING")* and commented that "It appears that the extent of the plume may be delineated, although not enough off-site borings were advanced to be sure. Permanent off-site monitoring wells are needed to be sure….We request that you use the new data and information to revise the location, construction, and number of wells and submit a revised monitoring well work plan as requested below." ESTC then submitted yet a third addendum to the September 2004 work plan and proposed revised locations for three off-site wells and one on-site well. The on-site location, south of the pre-1986 UST's, was near boring GP-4, where the highest gasoline and MTBE concentrations in soil and groundwater samples were detected in the November 2006 borings (soil concentrations: 1,100 mg/Kg and >0.180 mg/Kg; water concentrations: 9,100 µg/L and 4,200 µg/L). ACEHS approved the off-site wells and added two additional wells along Lorenzo Avenue, but did not approve the on-site well. Apparently, this is because ACEHS staff was absolutely certain that the 1990 UST's are the source of the MTBE and did not accept the ESTC interpretation that the pre-1986 UST's were the more likely source. Hence, ACEHS was therefore not interested in further investigation of the contamination detected between 15 and 24 feet in GP-4 (the existing on-site wells are either 15 or 20 feet in depth).

When the wells were finally drilled in April 2007, five new off-site wells were installed. Two were located as close to the western property boundary as possible, and three were located in Lorenzo Street (Figure 4). Since ACEHS selected the locations for these wells, it is not clear why the agency now considers them "not adequate to evaluate the dissolved phase MTBE plume down-gradient of wells MW-2 and MW-3."

The new wells have been monitored five times, most recently in March 2009, and have shown that groundwater west of the site is moderately impacted, with TPH concentrations up to 760 µg/L and MTBE concentrations up to 3,800 µg/L. That TPHg concentration is roughly half that of the most impacted on-site well, the MTBE concentration is nearly three orders of magnitude less than what was detected in the on-site wells prior to 1999, and both numbers are less than what was detected in on-site boring GP-4 in 2006 where we had proposed a monitor well. In addition, the concentrations in the new wells have steadily declined since they were installed in 2007. You noted in your February 2009 comment letter that "MTBE is highly soluble, very mobile, and not readily biodegradable in groundwater." Hence, one should expect high concentrations in the off-site wells if the ACEHS hypothesis is correct that the orders-of-magnitude decrease in MTBE concentration in the on-site wells is due to off-site migration. Since no such corresponding increase in concentrations is evident in wells west of the site, the monitoring data do not support the ACEHS explanation for the on-site declines.

2. Contaminant Plume Monitoring

In this second comment, ACEHS stated: "We request that you prepare a scope of work to evaluate the dissolved phase plume down-gradient of MW-3 including installation of groundwater monitoring wells near 823 and 845 Via Enrico Avenue" As noted in our response to comment 1 above, Mr. Barney Chan and Ms. Cheri McCaulou visited the site with ESTC in June 2006 and agreed with ESTC that it is physically impossible to install monitoring wells between or behind the apartment buildings at these locations. Furthermore, borings that were proposed on 20-foot centers in front (west) of these buildings in 2000 were spread to 40 foot spacings by Mr. Seery, and the laboratory results, which were all below detection limits, were rejected by ACEHS because of laboratory certification issues.

3. Site Conceptual Model (SCM)

ACEHS states that "two discrete releases from two source areas have been identified." This statement is incorrect; it should have been worded "ACEHS has concluded that this site has experienced two discrete releases from two source areas." In contrast, the Site Conceptual Model developed by ESTC shows that the present distribution of hydrocarbons in the subsurface can be explained by a single release from the pre-1986 UST's. ACEHS states that "ESTC states that a stronger hydrocarbon odor was noted in MW-3 (1^{st} generation UST's) and the elevated concentrations detected in MW-3 indicate that the source was in the vicinity of MW-3. ACEH does not concur with this hypothesis."

This is an incomplete and inaccurate restatement of ESTC's interpretation in the SCM. ESTC's exact words were: "What is clear, however, is that concentrations in MW-1 have declined since the end of 2001, while concentrations in MW-3 remained high until at least the middle of 2004. This, along with the fact that in 1986, stronger hydrocarbon odors were noted in soil samples from MW-3 than from MW-1 (see Appendix "A"), *favors* (emphasis added) the interpretation that the hydrocarbon source was located closer to MW-3 than to MW-1. This interpretation is bolstered by the 2006 discovery in GP-4 of TPHg concentrations of 200 and 1,100 milligrams per kilogram (mg/Kg) in soil samples collected in the depth range of 19-24 feet. None of the other 20 borings that have been drilled on the site have detected soil concentrations approaching such high values, and few, if any, soil samples were collected below 15 feet in any of those earlier borings." Hence, ESTC's statement was not a hypothesis at all: it is a documented fact that when MW-1, MW-2, and MW-3 were drilled in 1986, the strongest odors were detected in MW-3. It is also a documented fact that the TPHg concentration in MW-3 peaked in November 2000 at a concentration of 69,000 µg/L, nearly a full year before TPHg peaked at the lower concentration of 48,000 µg/L in MW-1 in August 2001. Furthermore, concentrations in all three of those wells were in decline by December 2001. If the 1990 UST's were the primary source (especially of MTBE) and MW-1 has been consistently upgradient of MW-3, as maintained by ACEHS, then the post-2001 decline in MW-1 should have resulted in an increase in MW-3 and probably also in MW-2. This is developed further in section 3.a.iv below.

3.a Contaminant Source

3.a.i In this comment, ACEHS cited the fact that a light petroleum sheen (described by ACEHS as "separate phase hydrocarbon") was observed in MW-1 in November 2000 and March 2002 as evidence that MW-1 is closer to the source than is MW-3. However, ACEHS neglected to mention that the TPHg concentration in the November sample from MW-3 was 69,000 µg/L, whereas the concentration in MW-1 was only 24,000 µg/L or the fact that the MTBE concentration in MW-3 in March 2002 was 62,000 µg/L, whereas the concentration in MW-1 was only 20,000 µg/L. These quantitative numbers outweigh any anecdotal observations of rainbow sheen in purge water and show that such observations can lead to false conclusions regarding the magnitude of contamination.

3.a.ii In this comment, ACEHS states that well MW-5 is cross gradient from the pre-1986 USTs and downgradient from the post-1990 USTs and uses that as evidence that hydrocarbons in MW-5 were derived from the post-1990 UST's. This statement is based on the ACEHS view that we are dealing with a water-table aquifer and that groundwater flow at the site is uniformly to the west.

Groundwater elevation (piezometric surface) maps constructed prior to 2007 were based on only five monitoring points, and piezometric surface maps were generalized. In most cases, the piezometric surface could be contoured as a planar surface with relatively straight contour lines trending roughly north south. Examination of more recent maps that are based on ten data points reveals much more complexity. Maps for December 2006, June 2007, September 2007, March 2008, September 2008, and March 2009 reveal an undulating piezometric surface and contour lines that trend in north, northeast, south, southwest, west, and perhaps northwest directions in various portions of the site area. These maps imply that flow is neither uniform nor constant, and if one assumes that groundwater flow is perpendicular to the trend of contour lines, a wide variation in flow directions is indicated. Moreover, in March 2008 and 2009, MW-5 was slightly upgradient of the post-1990 USTs and in September 2007 and 2008 it was basically cross-gradient, rather than down-gradient as stated by ACEHS.

However, there is evidence that groundwater is at least partially confined at this site, and thus the static water elevations measured in wells may not provide a true picture of actual flow directions. In several borings, the water level rose more than a few feet after the boring reached a saturated sand bed below 15 feet, whereas the overlying silty clay sediment was only damp or dry. As discussed below, there is evidence that the actual natural flow direction may be to the northwest, parallel to the trend of the permeable confined aquifer.

In addition, detailed cross sections that utilize CPT and core logs and were included in the Site Conceptual Model report show that bedding in the southern part of the site dips to the north or northwest, but flattens in the central part of the site. This would tend to cause northward flow in the vicinity of the pre-1986 UST's and more variable flow farther north.

3.a.iii In this comment, ACEHS noted that MTBE was not in widespread use when the pre-1986 USTs were in use and that borings SB-D and SB-E (nearer to the post-1990 UST's than to the pre-1986 UST's) had detectable MTBE concentrations when they were sampled in 1998. This statement is an example of selectively discussing and interpreting only evidence that fits one's preferred interpretation. ACEHS neglected to mention the following data that make other interpretations viable:

1) Both SB-D and SB-E were located near the dispenser islands and could have been contaminated by a leak originating there rather than from either set of UST's. In the case of SB-E, MTBE was detected not only at 10 feet but also in the soil sample at 5 feet BSG, which is above the depth of the UST's and closer to the depth of the dispenser product lines.

2) MTBE was also detected in boring SB-C (25 feet northwest of the pre-1986 UST's and 70 feet west of the post-1990 UST's), GP-1 (20 feet west of the pre-1986 UST's and 70 feet west of the post-1990 UST's), GP-2 (40 feet north of the pre-1986 UST's and 70 feet west of the post-1990 UST's), GP-4 (20 feet east of the pre-1986 UST's and 50 feet south of the post-1990 UST's), GP-7 (55 feet north of the pre-1986 UST's , 35 feet west of the post-1990 UST's, and 25 feet west of the dispenser islands), GP-8 (nearly 100 feet northwest of the pre-1986 UST's and even farther from the post-1990 UST's), and SB-B (15 feet east of the post-1990 UST's and 70 feet northeast of the pre-1986 UST's),. As in the case of SB-E, MTBE was reported at 5 feet BSG in SB-B. In the Geoprobe borings, however, MTBE was detected primarily in the depth range 10-25 feet, except in GP-4, where it was present at 7 and 8 feet.

3) Because MTBE was reported in soil and groundwater from boring SB-B in 1998, boring GP-6 was drilled nearby in 2007 to verify those results. GP-6 was continuously cored and logged, and no hydrocarbons were detected in either the soil or groundwater.

4) Groundwater in SB-D had a reported MTBE concentration in 1998 of 140,000 µg/L, whereas the sample from SB-E had a concentration of only 15,000 µg/L. Boring SB-E is only 6 feet west of the post-1990 UST's and 6 feet south of the pump islands, whereas SB-D is approximately 50 feet west of the UST's and 35 feet west of the pump islands. If the UST's were the gasoline source, concentrations should have been much higher in SB-E than in SB-D. This is especially true if one accepts the ACEHS view that groundwater flow has been consistently to the west, because this places SB-E directly downgradient of the post-1990 UST's and SB-D obliquely cross gradient of those UST's..

5) The laboratory data reported by the previous consultant for groundwater samples in 1998 are internally inconsistent, which makes their validity questionable. For example, an MTBE concentration of 340,000 µg/L was reported for MW-1, but the TPHg concentration was reported as ND > 500 µg/L. In contrast, MTBE was reported as ND > 250 µg/L in MW-5, yet the TPHg concentration was reported as 6,600 µg/L. One wonders how the TPHg concentration in MW-5 could be more than 10 times greater than that in MW-1, yet the MTBE concentration was less than 0.1% of that in MW-1.

6) Groundwater in well MW-1 and boring SB-1, which are adjacent to and north of the post-1990 UST's, was already impacted in 1986, four years before those tanks were installed. Those samples contained low concentrations of volatile aromatic hydrocarbons (BTX), but were not analyzed for MTBE or other oxygenates. Because those borings were located far from the pre-1986 UST's, the low groundwater concentrations in those samples could be interpreted as a minor leak from the dispenser island. Alternatively, they could be interpreted as the distal fringe of a contaminant plume originating at the pre-1986 UST's, which would imply groundwater flow to the north, even though groundwater elevation contours in the wells trend north-south. In any case, they could not be attributed to the post-1990 UST's.

3.a.iv In this comment, ACEHS states that MW-1 is located upgradient of MW-3, had higher MTBE concentrations than MW-3, and has shown a decline in MTBE concentrations while MW-3 and MW-5 continued to have high MTBE concentrations. On this basis, ACEHS concludes that MW-1 is closer to the gasoline source and that the decline in MW-1 is proof of migration toward MW-3.

It is true that the static water level in MW-1 has usually been higher than the level in MW-3, but not always. In December 2006 the static level was at 14.87 feet above msl in MW-1 and 14.86 feet in MW-3. Moreover, this is a spurious argument, because if one claims that if there are two impacted wells and the one that is farther upgradient is closer to the source, then the source must have been near MW-2, which has been either upgradient or cross gradient of MW-1 since monitoring began at this site. There is no known potential source near MW-2 and to our knowledge no one has suggested that MW-2 is near the source of the contamination. Further, if groundwater is confined in a linear aquifer, static water levels may not yield accurate interpretations of the groundwater flow direction.

Regarding concentration trends, ESTC and ACEHS agree that MW-1, MW-2, and MW-3 have all seen dramatic declines in MTBE concentrations since they were first monitored for MTBE in 1998. In MW-1, decline began immediately and continued until the third quarter of 2000, after which the concentration increased for three quarters before resuming its decline. In MW-2, the concentration began to decline in early 1999 and did not reverse course. In MW-3, the concentration climbed for two or three quarters, peaking in May 2000, and then began a consistent decline, just as MW-1 was beginning to increase. If MW-1 were closer to the source than either MW-2 or MW-3 and MTBE was migrating to the west, as maintained by ACEHS, then the decline that began in MW-1 in the middle of 2001 should have resulted in and been followed by an increase in MW-2 and MW-3. This did not occur. Instead, the decline that began in MW-2 in 1998 and in MW-3 in the middle of 2000 was followed by an increase in MW-1 in early 2001 that lasted for three quarters. Further, although the concentration in MW-1 declined from 1998 to late 2000, the concentration in MW-5 did not begin to rise until the middle or latter part of 2000, just when the concentration began falling in MW-3 and rising in MW-1.

TPHg concentration trends also favor the pre-1986 UST's as the principal source. The highest TPHg concentration registered in MW-1 was 46,000 μg/L in August 2001, about the time that MTBE was reaching its second peak in that well. In MW-3, the TPHg concentration reached or exceeded that value three times before the peak was reached in MW-1. The peak at 69,000 μg/L in November 2000 came a full nine months before TPHg reached its peak in MW-1 and was relatively coincident with the second rise in MTBE concentrations in that well.

The most logical interpretation of these trends is that groundwater was impacted by gasoline and MTBE from the pre-1986 UST's sometime prior to the drilling of MW-1, MW-2, and MW-3 in 1986. Between then and 1998, the gasoline-impacted groundwater diffused outward and upward. As evidenced in the monitoring data for the site and explained in the SCM, a low-permeability clay bed extends to a depth of as much as 15 feet, which confined groundwater below it in a silt-sand sequence when the wells were drilled in 1986. Between then and 1998, the piezometric surface rose but groundwater was still confined below the clay bed except where this bed was punctured by wells. When MW-4 and MW-5 and several other borings were drilled, and MW-1, MW-2, and MW-3 were also sampled, the static water level in the wells was at about 11 or 12 feet. The impacted groundwater, which was previously below the bottom of the three original wells, rose to the screened interval in those wells, they became impacted, and the plume expanded. By the middle of 2000, the plume had begun to drift to the north, causing the concentrations to decline in MW-2 and MW-3 and increase in MW-1 through the middle of 2001 and in MW-5 through the middle of 2005.

3.b Data Inconsistencies

3.b.i through 3.b.iv In these four comments, ACEHS pointed out incorrect concentrations referred to in the text of the Site Conceptual Model report. ACEHS is correct and the cited concentrations are an order of magnitude too high. The concentrations are correct as shown in the data table, and have been corrected in the text.

3.b.v and vi The dates shown in Table 1 are incorrect; instead of 8/8/06 it should be 8/8/86. This is a typographical error.

3.b.vii ACEHS is correct in pointing out that the well screens have not been submerged since May 2000.

3.b.viii In this comment, ACEHS expresses some confusion as to the meaning of Figure 5 in the SCM. This exhibit is a site map that shows all borings that have been drilled during this investigation (except those drilled in our 2000 field work phase), and next to each boring is a simplified boring log. The colors in each log denote the general lithology seen in the boring and provide a quick summary of the generalized vertical sequence. The purpose of the figure is to show all the logs in a single exhibit so that the reader can quickly grasp the variations in site stratigraphy and develop an appreciation for the continuity (or lack of it) of bedding in the shallow subsurface. We have used similar exhibits effectively in past SCM's for other regulatory agencies, and apologize for not describing the diagram in sufficient detail to make it meaningful to ACEHS.

3.c Contaminated Groundwater

3.c.i In this comment, ACEHS states: "Based on local and regional hydraulic gradient data it is unlikely MTBE concentrations in upgradient well MW-1 would increase."

We request that you review our responses in item 3.a. above, which demonstrate that:

1) Concentrations in MW-1 did in fact increase, from November 2000 to at least May 2001.

2) Regional hydraulic gradient data are too "smoothed" and generalized to provide site-specific data, which is why monitor wells are drilled at each site. Further, as is very commonly the case, gradient information at this site improved with the addition of more wells and it is now proven that the piezometric surface does not slope uniformly to the west. There is a wide range of flow directions, depending on the location chosen and perhaps also on the time of year.

3.c.ii In this comment, ACEHS notes that MW-2 is upgradient of MW-3 and it is therefore unlikely that MW-2 has been impacted by a release from the pre-1986 UST's. As we noted in item 3.1.iv above, MW-2 is also upgradient of MW-1 and the post-1990 UST's and is (or was) almost as highly impacted as MW-3. Therefore this argument is moot.

3.c.iii In this comment, ACEHS states: "Grab groundwater samples from borings SB-C, SB-D, and SB-E, down-gradient of the 2nd generation USTs, detected MTBE at concentrations of 13,000 µg/L, 140,000 µg/L, and 15,000 µg/L, respectively, indicate that a release occurred from the 2nd generation UST system."

The presence of MTBE in these and other borings does indeed indicate that MTBE has been released, but it is a great leap of faith to conclude that this "indicates that a release occurred from the 2nd generation UST system." That is merely one interpretation, and unless one can demonstrate that gasoline in the 1st generation UST's never contained MTBE or can fingerprint the MTBE in those borings as being unique to the 2nd generation UST's, we assert that the ACEHS interpretation is merely conjecture and does not refute the evidence given above and in the SCM that the 1st generation UST's were just as likely to have been the sole source of the release.

3.d Hydrogeologic Units

In this section, ACEHS disputes the ESTC interpretation that "sand bed A" is a preferred pathway for migration of the gasoline away from the pre-1986 UST's. It is not clear whether ACEHS favors a different migration path or believes that there is no preferred path. However, there is no doubt that ACEHS requested that an attempt be made to identify potential preferred migration pathways.

On page 2 of a comment letter dated August 2004, Ms. Donna Drogos of ACEHS requested a preferential pathway study to detail potential migration pathways. On page 3 of that letter, Ms. Drogos stated: “Further, boring logs from subsequent investigations at the site, also of limited depth, indicate the presence of root holes, and increasing sand and gravel content at depths below 16’ bgs, suggesting that a more permeably geology may underlie areas where contamination was observed….A review of geologic logs from fuel leak sites in the vicinity of the subject site suggest that permeable units are present in the shallow aquifer beneath the subject site. Data from the Shell site at 15275 Washington Avenue document the presence of silty sand and sand at depths of 23’-25’ bgs to boring completion depths of 40’ bgs. The likelihood of coarse-grained sediments occurring beneath the shallow fine-grained sediments at the subject site should have been anticipated by the consultants working at the site…the existence of extensive coarse-grained sediments at depths below 20’-25’ bgs throughout the East Bay Plain is well documented in the technical literature.”

Further in that same letter, on page 4, ACEHS stated: “MTBE plumes can be long, narrow, and erratic (meandering). Movement of MTBE plumes, as with other dissolved contaminants, is primarily controlled by groundwater flowlines. These flowlines can be dramatically affected by discontinuities and can drop vertically in certain parts of our groundwater basins, such as recharge zones, cascade zones, and near pumping wells.”

Also on page 4, she stated: “Additionally, intermittent depth to water measurements from 1992 to current indicate groundwater has fluctuated from 6.52’ to 16.5’ bgs.”

And on page 6 of that letter, she stated: "Additionally, factors such as water level fluctuations, gradient changes, local hydrogeology, groundwater extraction, and groundwater recharge activities (natural and artificial) can significantly alter groundwater flow conditions."

In another comment letter, dated November 2005, Mr. Chan of ACEHS stated on page 2: "We also discussed the use of CPT borings to identify the presence of multiple water bearing zones in lieu of assuming the existence of multiple zones at certain depths based upon borings from nearby sites."

And further in that letter: "At this time, we request that you gather detailed lithologic information by continuously coring borings or cone penetrometer to understand the hydrogeology at your site. We request that you prepare detailed cross sections and rose diagrams for groundwater gradient to address this item and submit in the SWI (Soil and Water Investigation) report requested below."

It is clear from those quotations that ACEHS is aware that units of varying permeability are present in the subsurface in this area, that coarser and more permeable units have been documented by others below the clayey soil that is dominant above 15 feet, that these permeable units can exert significant control over groundwater flow and contaminant migration, that groundwater elevation changes can also cause changes in the groundwater flow regime, that understanding these factors is crucial to predicting the fate and transport of contaminants and in designing optimum field investigations, and that the construction of detailed cross sections and maps is the key to deciphering the complexities of the local hydrogeology.

ESTC has complied with the request for a preferential pathway study and the construction of cross sections and maps. The Site Conceptual Model submitted by ESTC contained a detailed stratigraphic/structural cross section from north to south through the center of the site and utilized six borings, including three CPT logs. A second section was also constructed, and although it was not included in the report it correlated well with the section in the report. These sections identified a distinctly more permeable sand body in the interval between about 18 and 25 feet, and an isopach map of this bed was created to illustrate its geometry in map view. These exhibits provided strong evidence that this sand bed, which was informally termed “sand bed A”,

1) is a markedly linear body that trends in a north-northwest direction from the southern margin of the site to about the center of the site, and then curves westward near the northwest corner of the property. The bed is more than 8 feet thick along its axis, but thins and pinches out to the east and west. The geometry and fining-upward character of this bed probably indicate that it is a minor fluvial channel. The westward curve in this bed closely matches the distribution of MTBE in soil and groundwater, as contoured in Figures 3 and 4 of the SCM.

2) Is present at a depth of 18 to 20 feet south of the site, at 18 to 25 feet near the pre-1986 UST’s, and at about 23 to 25 feet farther north between the pre-1986 UST’s and the post-1990 UST’s. This indicates a northward or northwestward dip. The bed rises to a depth of about 21 feet at the latter UST’s, and dies out east of those UST’s. The axis, or thickest and probably most permeable portion of this bed, trends through the east side of the pre-1986 UST cavity and lies 30 feet west of the post-1990 UST’s.

3) This bed exhibited strong gasoline odors in boring GP-4, and TPHg was detected at its base (23.5 feet) at a concentration that exceeds that of any other soil sample collected at the site (1,100 mg/kg). Samples from this bed in other borings also exhibited hydrocarbon odors, which facilitated correlation of the bed through the site area.

4) The bed fines upward to silt, and TPHg, MTBE, and TBA were detected in GP-4 in the upper part of the bed at concentrations of 0.230 mg/kg, 0.180 mg/kg, and 0.250 mg/kg. All of these hydrocarbons are also present in the overlying silt, but at reduced concentrations. We interpret the downward increase in concentrations in this interval as indicative of downward leaching into more permeable sediment, and the sudden drop in concentrations below this bed as evidence that hydrocarbons were preferentially concentrated within "sand bed A".

Hence, we are at a loss to understand why ACEHS made no comment about any of these exhibits but instead stated: ""ACEH does not concur with ESTC's hypothesis that dissolved contamination detected in MW-1 and MW-5 is from the 1st generation USTs and strongly disagrees that the dissolved phase plumes make any 90-degree turns at this site." As you well know, the purpose of doing a preferential pathway study is to determine whether contaminants take straight-line paths in the subsurface or (as noted by ACEHS in the August 2004 letter) take "erratic (meandering) paths." Therefore, reluctance on the part of ACEHS to accept the evidence in our maps and cross sections that strongly favors the view that the northward to northwestward trend of "sand bed A" constrained the movement of the hydrocarbons along this linear to arcuate path is inconsistent with the prior experience and general knowledge of the ACEHS staff.

4. Utility Survey

Your reluctance to accept the possibility of non-planar flow and contaminant migration is all the more perplexing because in section 4 of your letter you again request a preferential pathway study. In this section you discuss only a utility survey and make no mention of natural pathways, which suggests that you do not view linear sand bodies as preferential flow pathways. If you would like references in the technical literature to support this observation, we would be happy to provide you with examples.

5. Feasibility Study

In this comment, ACEHS claims that "the contaminant plumes associated with this site have not been adequately defined, the SCM has not been validated, and the draft CAP does not meet the requirements for a CAP document…" We can accept the notion that a more detailed CAP can and should be developed, but to claim that the plumes have not been defined is patently absurd. The SCM contained maps showing the distribution of the important contaminants in both soil and groundwater, borings have been drilled to depths of as much as 60 feet and demonstrated that contamination does not extend below 25 feet, and several dozen maps showing the distribution of TPHg, benzene, and MTBE in groundwater have been included in previous quarterly monitoring reports. Again, we realize that you are new to this site and were not involved during the investigation, so we request that you review these exhibits to become more familiar with the site.

5.b Soil Remediation Plan

In this comment, ACEHS requests a discussion of confirmation soil sampling and cleanup levels. ACEHS again focuses on the post-1990 UST's and concludes that the soil excavation activities proposed in our CAP do not address contamination in that area.

ESTC is open to submitting a revised discussion of proposed soil excavation activities, including confirmation sampling. Proposed cleanup levels were already given in section 7.1 of the SCM/CAP and conform to commonly accepted guidelines.

Regarding remediation in the vicinity of the existing (post-1990) UST's, the existing evidence implies that there is little residual soil contamination in that area. No hydrocarbons were detected in either GP-5 or GP-6 in 2007, and dissolved-phase concentrations in MW-1 have declined so far that there is no hint of a residual soil source in the vicinity. The only borings near these UST's that had detectable soil concentrations were SB-B and SB-E, and the data from those borings are now 11 years old and should not be considered an up-to-date proxy for soil concentrations near those tanks. Therefore, we view groundwater as the only medium in the vicinity of those tanks that may need to be addressed. If ACEHS insists, we will revise our CAP to include some form of groundwater treatment plan in that area. However, we should point out that air sparging, the method proposed for the area around the pre-1986 UST's, is unlikely to be feasible because the main contaminant pathway ("sand bed A") varies from a feather edge to a maximum of 5 feet in thickness near the post-1990 tanks. Air sparging in silt and clay beds is rarely effective.

6. Soil Vapor Assessment

We are aware of this requirement and concur with ACEHS that the appropriate time to perform this study is after the soil and groundwater remedial program has been completed.

In summary, the well established concept of Multiple Working Hypotheses dictates that scientific objectivity must be maintained throughout an investigation of this type and all viable interpretations must be scrutinized to assess their conformance to the available data. We have considered both sets of UST's as possible sources, and on balance the evidence comes down on the side of the pre-1986 UST's. However, as we stated in our Site Conceptual Model report, "Thus, although the data do not conclusively rule out the 1990 UST's as a source of contamination, we believe that the bulk of the evidence favors the pre-1986 UST's as the principal source." The arguments presented in the ACEHS letter of February 2009 for the post-1990 UST's as the only source of MTBE have not swayed us from that view. Regardless of whether there was one release source or two, there is only one dissolved plume beneath the site. In our view, delaying remediation and continuing to debate the source fails to focus on the more important issue. To require that we discard our interpretation and submit a revised SCM that embraces your hypothesis is neither good science nor smart public policy.

If you would like to discuss the site further after you have reviewed this correspondence, please feel to contact our office at 408-297-1500 or via email at info@envirosoiltech.com.

Sincerely,

ENVIRO SOIL TECH CONSULTANT

FRANK HAMEDI-FARD
PROJECT MANAGER

VICTOR B. CHERVEN, Ph.D., P.G.
R. G. #3475

cc: Mr. Mehdi Mohammadian, Cal Gas, 15595 Washington Avenue, San Lorenzo

Ms. Cherie McCaulou, SFRWQCB, 1515 Clay Street, Suite 1400, Oakland, 94612

Ms. Agnes Calleri, 10901 Cliffland Dr., Oakland CA 94606

Mr. Ian Robb, Chevron Corp., 6111 Bollinger Canyon Road, Room 3612, San Ramon, CA 94583

Mr. Denis Brown, Shell Oil Products US, 20945 S. Wilmington Ave. Carson, 90810

Ms. Marjorie Kaner, c/o Burt Kubo Trust, 20321 Via Espana, Salinas, CA 93908

Mr. Jeff Delgado and Ms. Jennifer Nitta, SWRCB, Division of Financial Assistance, P. O. Box 944212, Sacramento, CA 94244-2120

File No. 12-99-702-SI

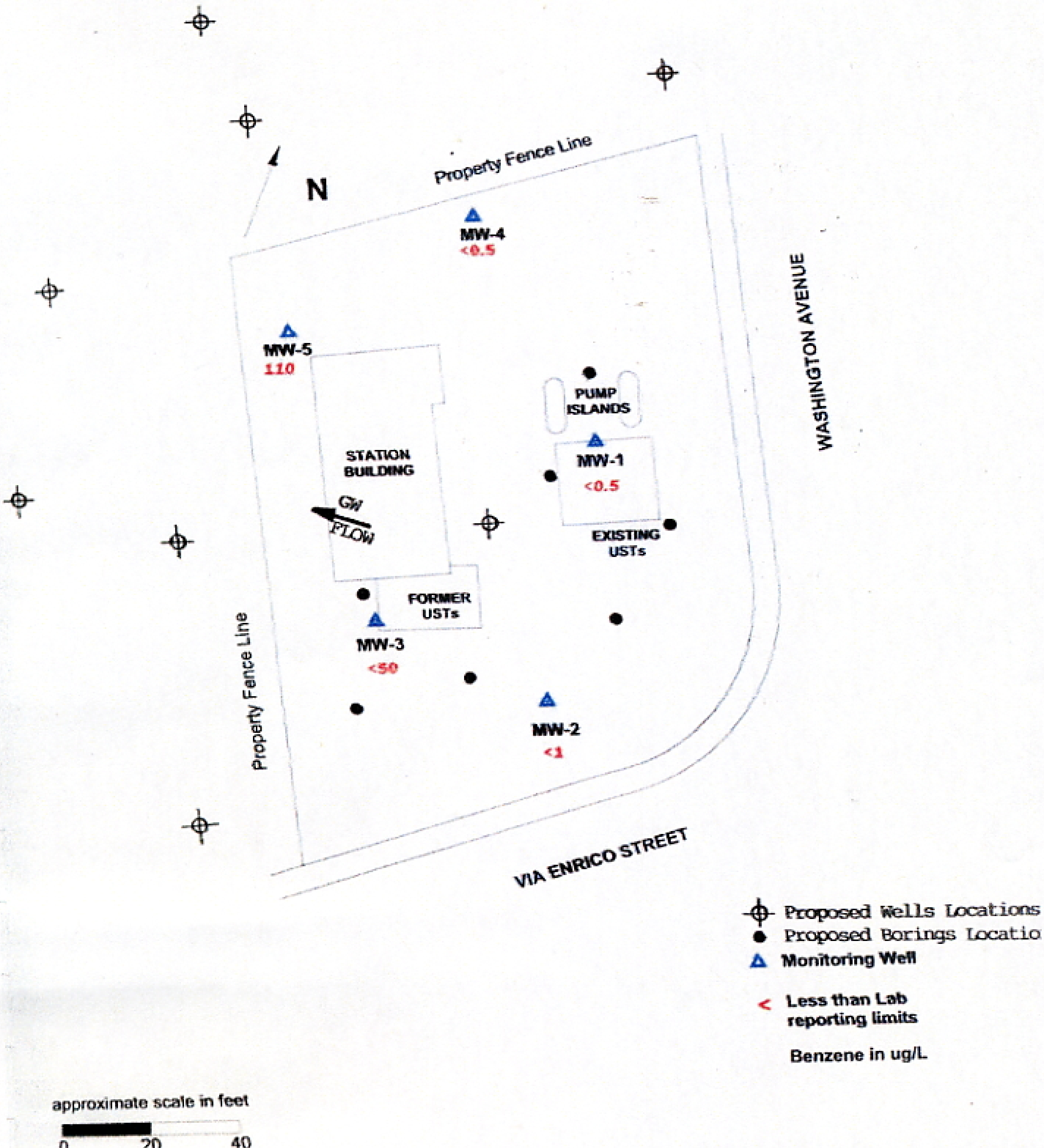

Figure 1: Proposed Subsurface Investigation

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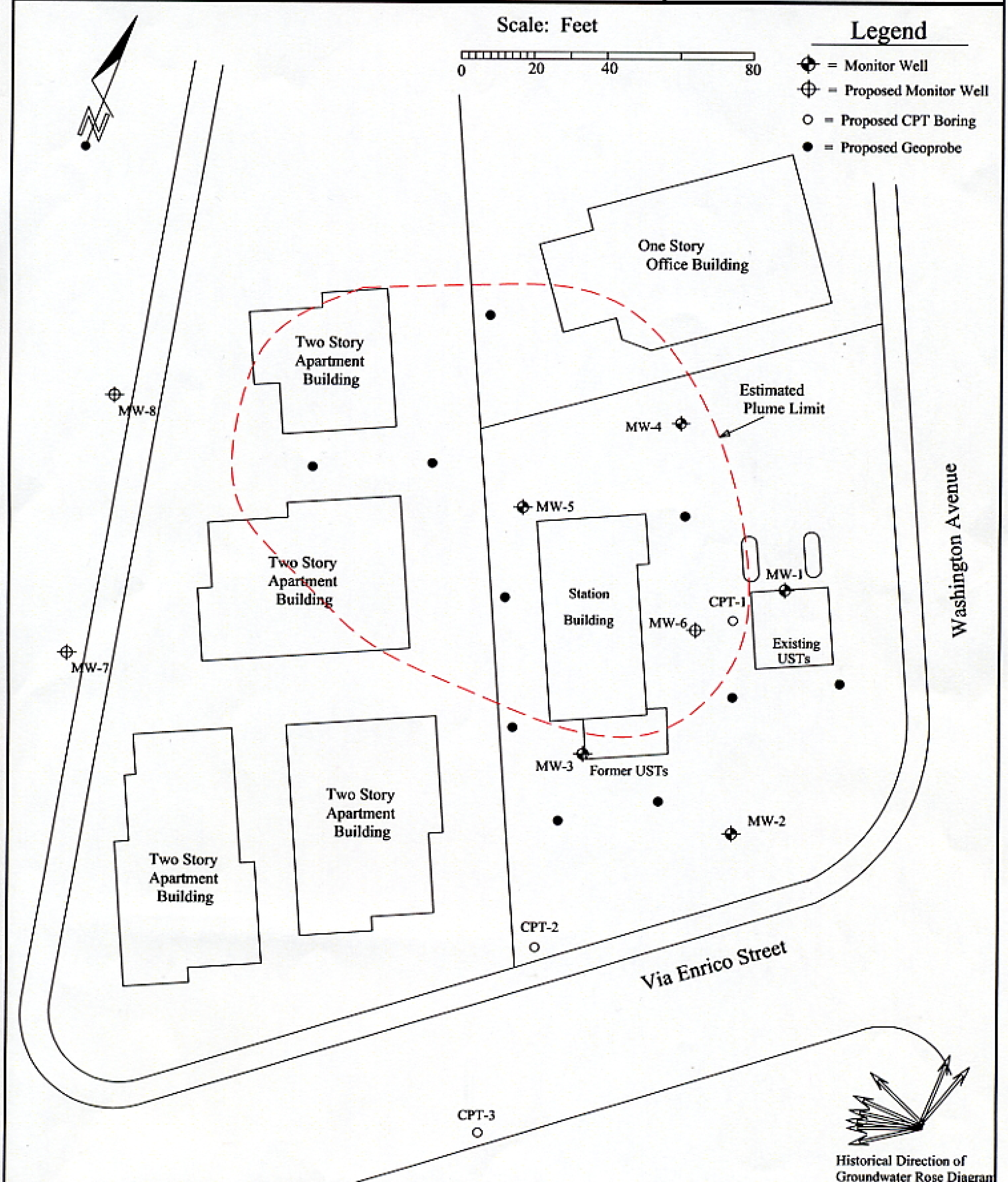
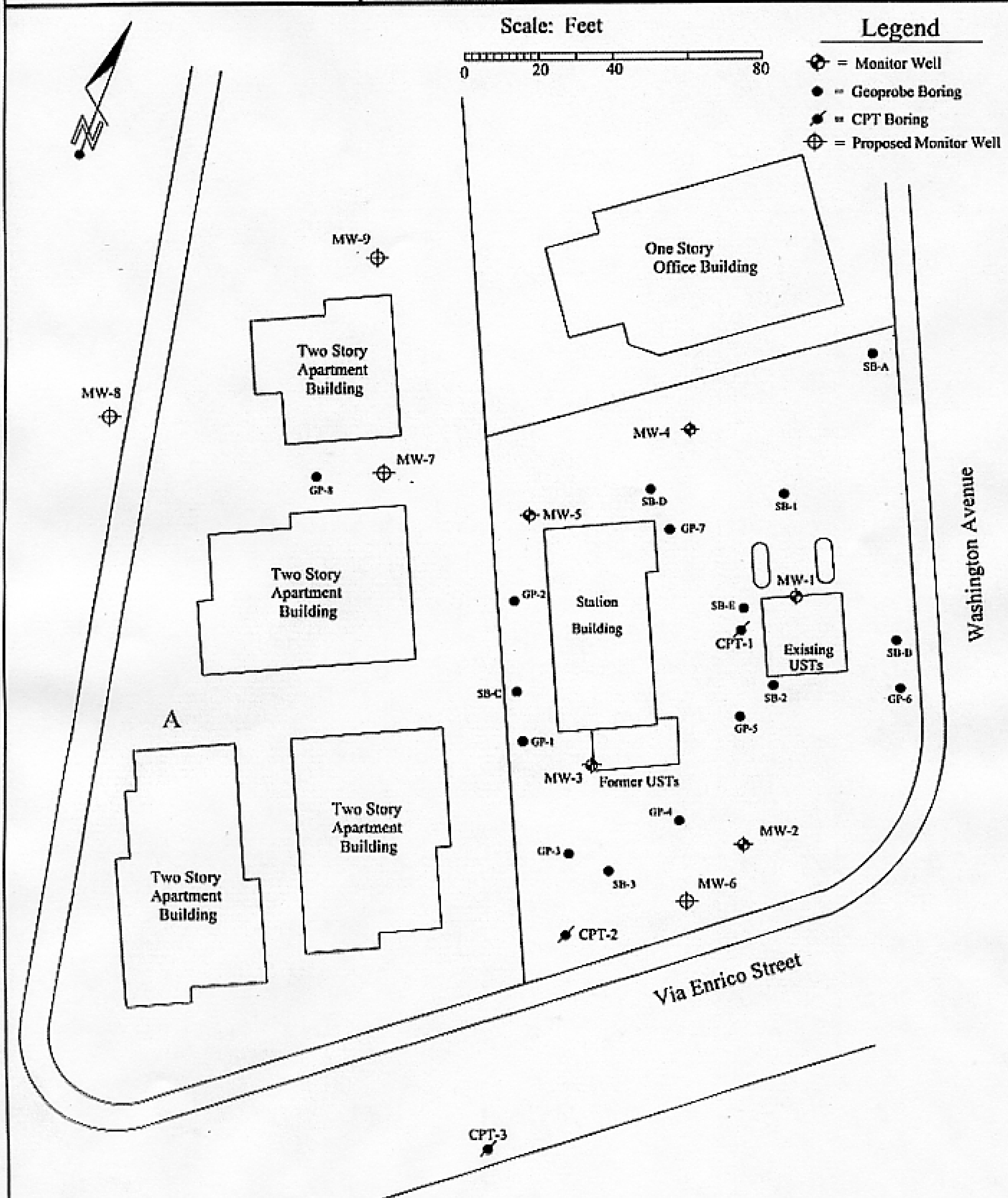
Enviro Soil Tech Consultants 131 Tully Road San Jose, CA 95112	PROJECT 15595 Washington Avenue San Lorenzo, California PROJECT # 12-99-702-SI DATE: 6/7/2006	**Figure 2** Proposed Drilling Locations



Enviro Soil Tech Consultants 131 Tully Road San Jose, CA 95112	PROJECT 15595 Washington Avenue San Lorenzo, California PROJECT # 12-99-702-SI DATE: 2/20/2007	Figure 3 Proposed Monitor Wells



Enviro Soil Tech Consultants 131 Tully Road San Jose, CA 95112	PROJECT 15595 Washington Avenue San Lorenzo, California PROJECT # 12-99-702-SI DATE: 4/28/2009	Figure 4 Site Map