Golder Associates Inc.
2580 Wyandotte Street, Suite G
Mountain View, CA USA 94043
Telephone: (650) 386-3828
Fax: (650) 386-3815
www.golder.com

June 22, 2007 Our Ref.: 053-7020

Ms. Donna Drogos
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

RE: RESPONSE TO ACEH COMMENTS AND SCM 2.0 TRANSMITTAL, FUEL LEAK CASE RO0000278, DESERT PETROLEUM/B&C GAS MINI MART, 2008 FIRST STREET, LIVERMORE, CA

Dear Ms. Drogos:

This letter provides responses to Alameda County Environmental Health Services (ACEH) comments and transmits the updated version (2.0) of the electronic Site Conceptual Model (SCM) for Fuel Leak Case No. R00000278, Desert Petroleum, 2008 First Street, Livermore, CA. ACEH staff reviewed several recent site documents and provided comments, which are addressed below and/or in the SCM (2.0). In addition, comments from previous ACEH correspondence also are addressed.

A report titled *Field Investigation for Source Zone Remediation* was submitted on June 6, 2006, which included a *Screening Vapor Intrusion Risk Assessment, Groth Brothers Oldsmobile Property*. Following the investigation report the *Source Zone Remediation Plan* was submitted August 11, 2006. ACEH provided comments on these reports by letter dated March 26, 2007. As required in the March 26, 2007 letter, a *Source Zone Remediation Plan Addendum* was submitted on April 27, 2007. A subsequent meeting with ACEH staff resulted in an ACEH letter dated May 25, 2007, which provided additional comments. As required by the May 25, 2007 letter, an implementation schedule was transmitted on May 30, 2007.

The following provides the ACEH comments (in italics) followed by responses that address the comments.

TECHNICAL COMMENTS (SECTION A)

1. Vertical Extent of Source Area Contamination – *Source area sampling, in the field investigation report, included locations on the Desert Petroleum site and off-site on the Groth property to define the lateral and vertical extent of contamination. Golder's field investigation report states that "the zone of contamination is generally confined to the lower coarse grained unit with the majority of the impacted sediment from 36 to 48 feet bgs," and recommends NAPL source mitigation be focused on shallow NAPL near the water table. The water table during this phase of work was 26 feet bgs. As the depth to groundwater has historically varied from 17' bgs in 1997 to 69 feet bgs in 1992,*

it is unclear why the current depth to water is the target depth for remedial efforts.

We note that soil sampling from this and previous work identified significant residual soil contamination that was left in place on the Desert site during UST removal (TPHG: 8500 ppm, benzene: 61 ppm, and MTBE 96 ppm) and was detected during monitoring well installation, at depths as shallow as 14 feet bgs. Data from the Groth site indicates a deeper source area for which the recommended remediation depth appears to address. Therefore the remedial efforts appear to target the Groth property while potentially leaving significant shallow and deep residual source in place on the Desert site which could be an ongoing source of contamination to groundwater and on-site soil gas.

A source area of significant vertical extent exist on both the B&C and the Groth properties and the remediation approach cannot selectively address cleanup depths (2006 water levels) nor focus on one property (Groth). Please provide a proposal and rationale for specifying target cleanup zones for both properties in the work plan addendum and SCM 2.0 requested below.

This is addressed in detail under separate cover in Golder's current revision to the *Source Zone Remediation Plan Addendum* dated June 22, 2007. A brief point of clarification here, the proposed remediation is focused on the highest levels of remaining mass in place from 36 to 48 feet bgs. We recognize that there may be mass in the vadose zone directly under the tank pit, however, in exploration immediately adjacent to the tank (CMT-4 and MIP-14) there is little evidence at the present time that there is significant mass in the vadose zone. Biodegradation and volatilization processes may have significantly degraded whatever mass was sorbed onto soil over the past ten years. Regardless, our source zone remediation plan will address removal and reduction of vapor and mass in the vadose zone.

2. Multiple Hypotheses for Contaminant Transport

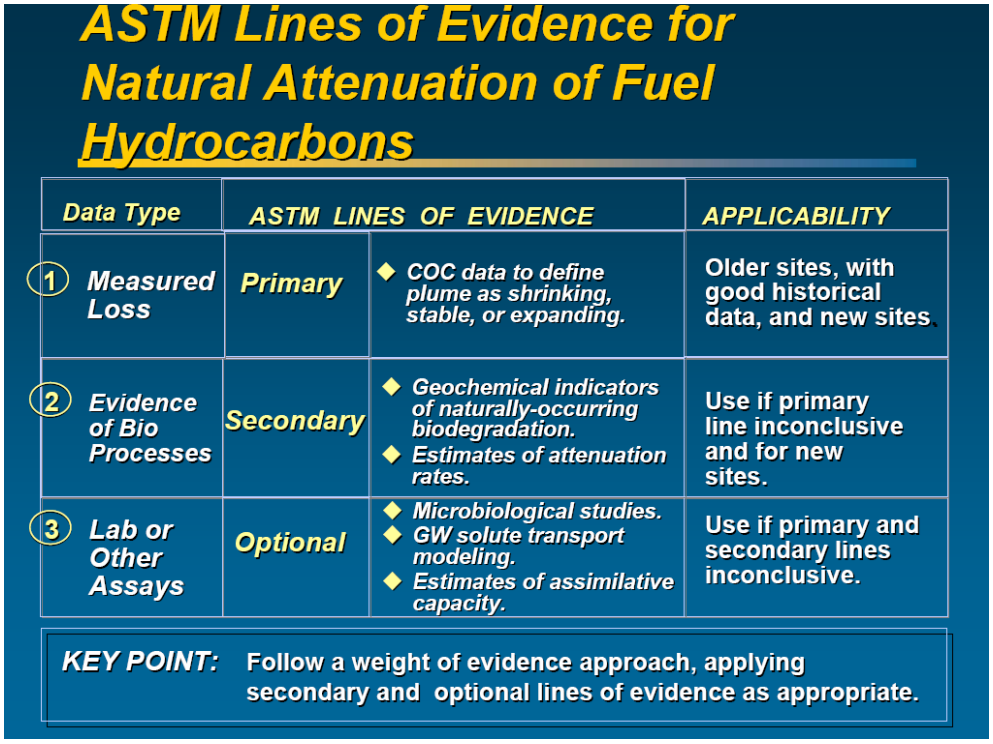
Golder's field investigation, risk assessment, and quarterly reports state that the "Concentrations of MTBE and BTEX have been declining throughout the plume since 1995. Declining concentrations appear to be due to natural attenuation based on positive chemical indicators of natural attenuation and the shrinking dimensions of the BTEX plume."

We note that Golder has not supported their conclusionary statement regarding MTBE natural attenuation. ACEH has commented on Golder's statements regarding natural attenuation of MTBE; requested that you collect evidence to demonstrate your hypothesis for natural attenuation for MTBE; provided a valid alternative hypothesis for the apparent "declining" concentrations of dissolved phase MTBE i.e., detached plume; and asked for specific data collection to evaluate this hypothesis. ACEH's comments were provided to you as stated in Sections B.1. and C.3 below. To date, you have not performed this work, significant data gaps exist in SCM 1.1, and ACEH's requests have not been addressed in SCM 2.0 as previously requested of you. Golder's conclusions cannot be supported without having addressed these data gaps. As previously stated we do not concur with Golder's conclusions.

ACEH has reviewed the data from this site in detail and maintains there is sufficient evidence at this site to suggest that the MTBE plume may have detached from the source. This is a valid hypothesis for the dissolved phase

MTBE contamination at your site and it is required to be evaluated by your consultant. You are required to perform the work as previously requested of you, and to report your results in SCM 2.0.

ASTM lines of evidence for natural attenuation of fuel hydrocarbons include three potential types of data: primary, secondary, and optional (see slide below). The primary line of evidence is measured loss, whether the plume is shrinking or stable. The secondary line of evidence is evidence of biological processes through geochemical indicators of naturally-occurring biodegradation (dissolved oxygen, methane, nitrate, sulfate, iron, manganese, carbon dioxide). The third, optional, line of evidence is laboratory or other assays, microbiological studies, or solute transport modeling. The primary line of evidence is evaluated first and the subsequent lines are used if the primary line of evidence is inconclusive. The third, optional line of evidence is used if the primary and secondary lines of evidence are inconclusive. Therefore, since the benzene plume is shrinking, and the MTBE plume is stable or shrinking (the issue of a theoretical detached plume is discussed in more detail later in this letter) , the primary line of evidence indicates there is natural attenuation of the plume. The last ten years of data, as reported in quarterly reports, all support this conclusion. In addition, all of the geochemical indicators provide evidence of biological processes within the plume. Therefore, the secondary line of evidence also indicates that there is natural attenuation of the plume (discussed in more detail below). Regarding the third line of evidence, based on the ASTM standard, it has been our on-going opinion that there has not been sufficient justification to pursue the third line of evidence since both the primary and secondary lines of evidence were well established. This is reinforced by the recent published literature discussed below.



(from: Air Force Center for Engineering and the Environment, http://www.afcee.brooks.af.mil/products/techtrans/MonitoredNaturalAttenuation/ASTMLinesofEvidence.ppt)

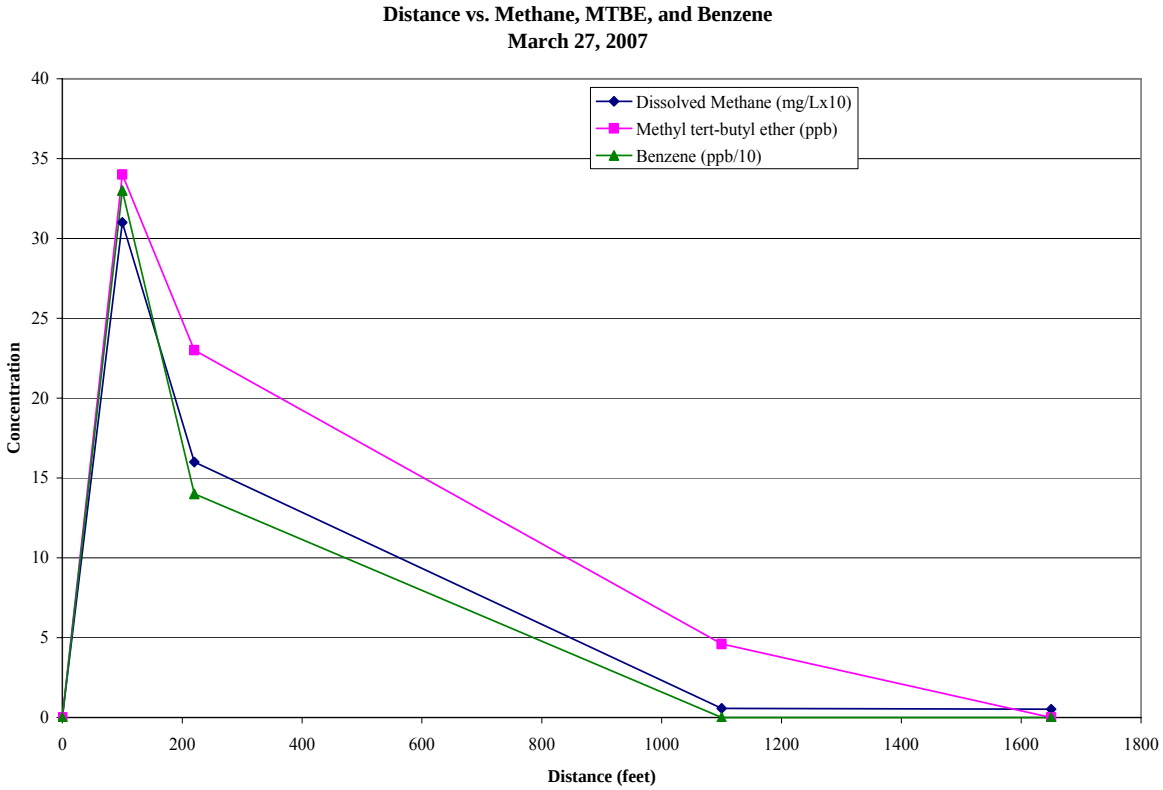
The following statements are from an EPA document by J.T. Wilson and others (*Monitored Natural Attenuation of MTBE as a Risk Management Option at Leaking Underground Storage Tank Sites*, January 2005, J. T. Wilson, P. M. Kaiser and C. Adair, EPA/600/R-04/1790)

"Microcosm studies should only be undertaken when they are absolutely necessary to obtain biodegradation rate estimates that could not be obtained using the other lines of evidence or when the specific mechanism of degradation is not known". "Microcosm studies of MTBE biodegradation are expensive, time consuming, and often yield equivocal results. As a consequence, they are rarely done as part of the risk evaluation at gasoline spill sites."

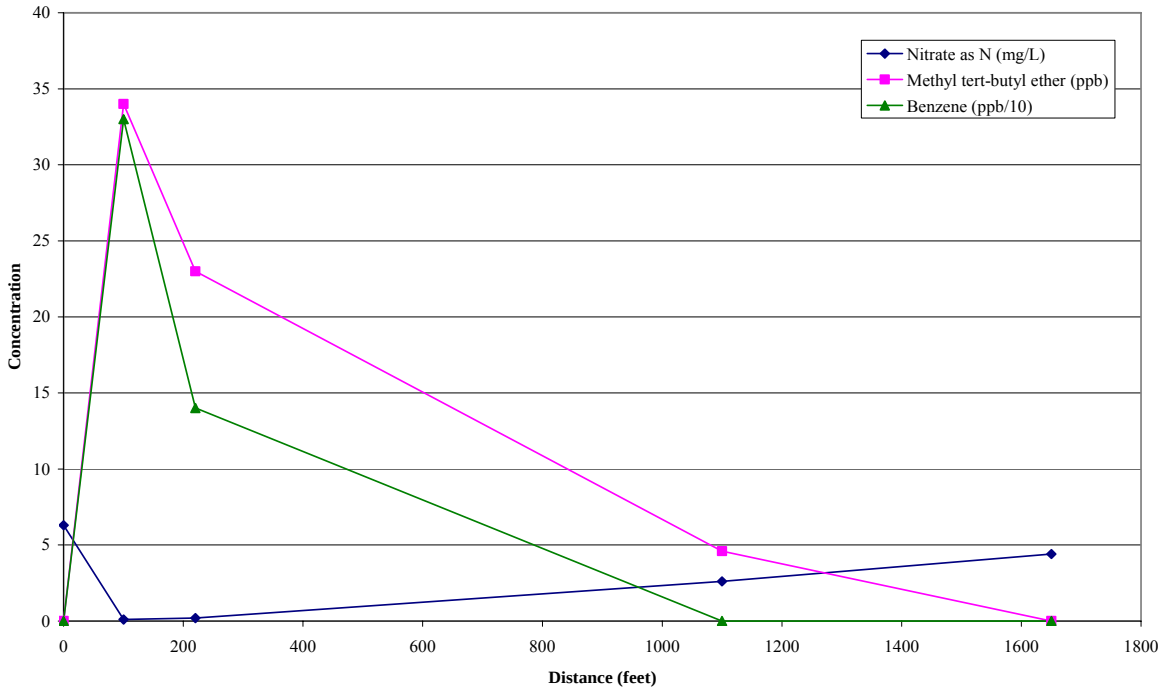
While the evidence gathered to date indicates that MTBE and BTEX are undergoing natural attenuation, to address the ACEH concern, we plan to obtain groundwater samples during the next sampling event and submit the samples to Microbial Insights, Inc., a laboratory that specializes in cutting edge genetic and chemical diagnostic tests to describe and quantify microbes and microbial communities. Laboratory tests will be run to detect a strain of bacteria that are one of the groups responsible for aerobic MTBE degradation. These results will be reported in the second quarter 2007 monitoring report.

Geochemical Indicators of Natural Attenuation

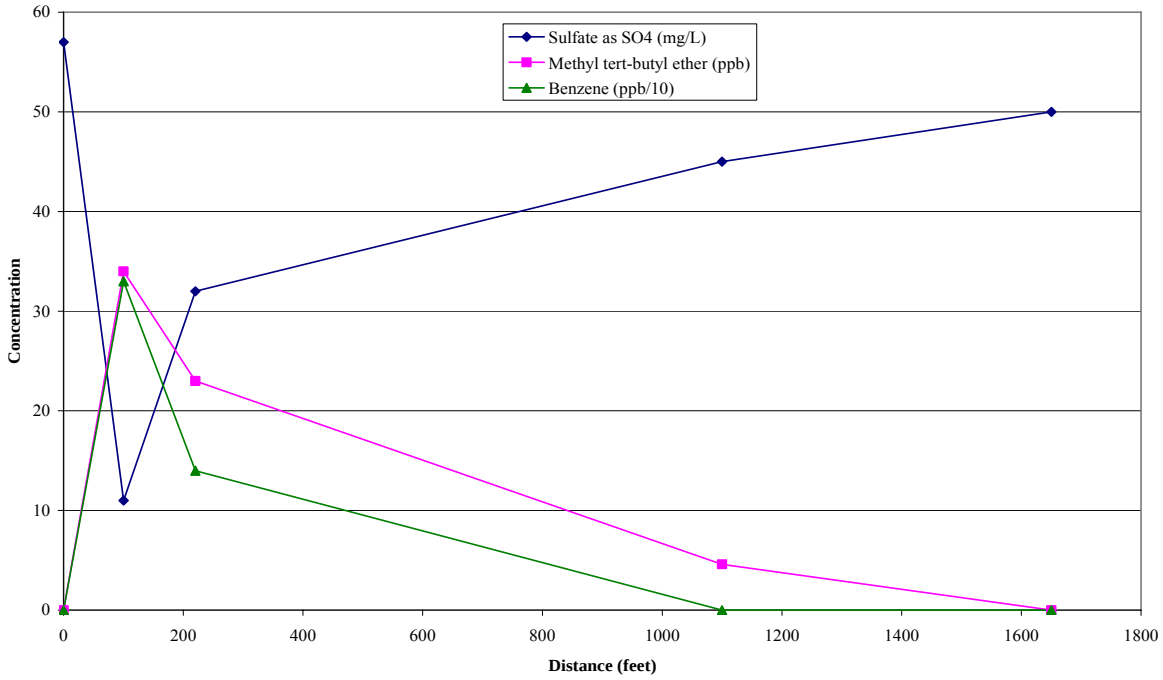
The following charts provide summaries of the geochemical indicators of natural attenuation along a longitudinal profile for the plume (Wells MW-4 upgradient background, MW-2 source zone, MW-5 distal source zone, MW-13 distal plume, CMT-2 plume margin). The charts depict the changes in concentrations of each of the indicator parameters versus distance from the site. These data are compared to the observed decrease in MTBE and benzene concentrations with distance from the site. The change in the natural attenuation indicators along the profile all demonstrate that that natural attenuation is occurring both within the source zone and downgradient of the site, serving to limit the extent of the impacted groundwater plume.



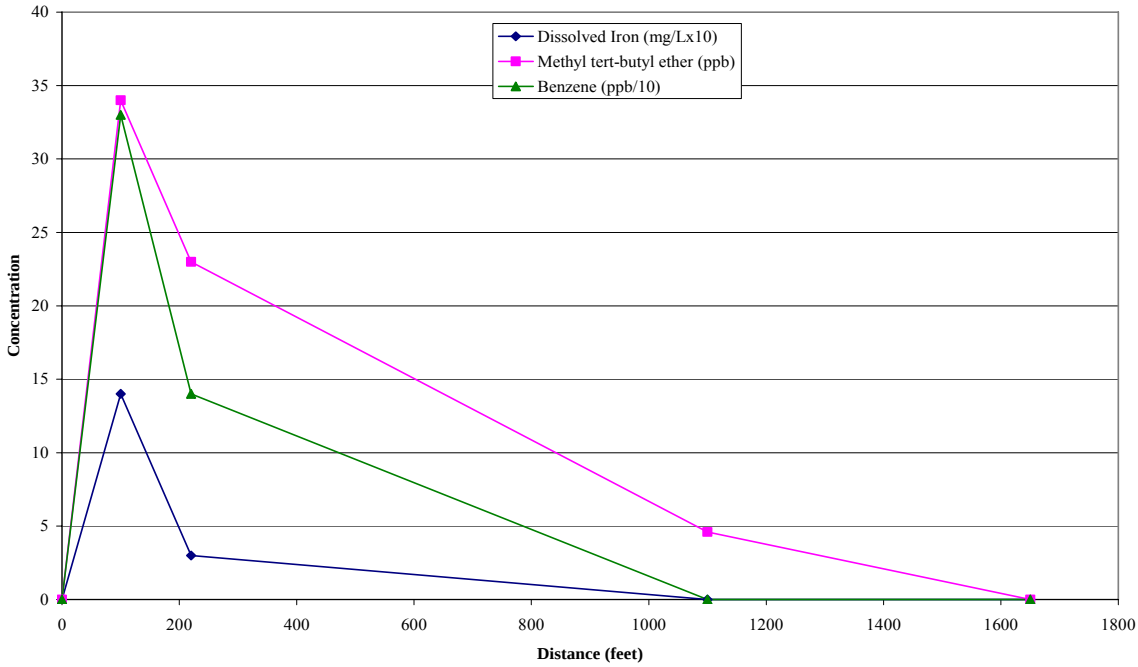
Distance vs. Nitrate, MTBE, and Benzene
March 27, 2007



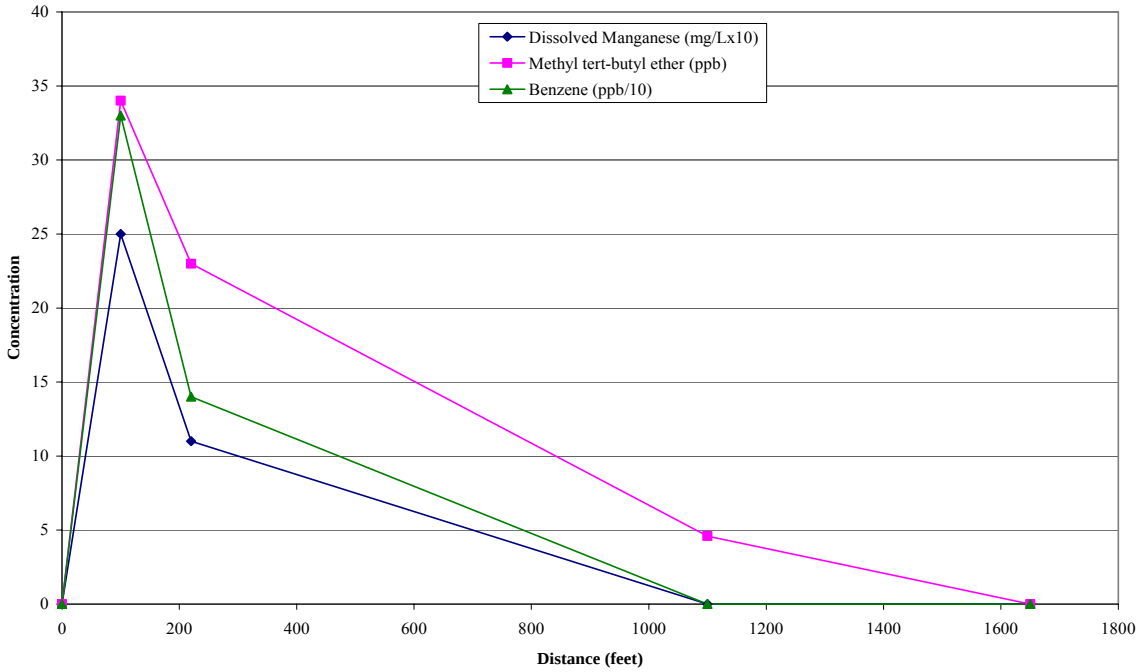
Distance vs. Sulfate, MTBE, and Benzene
March 27, 2007

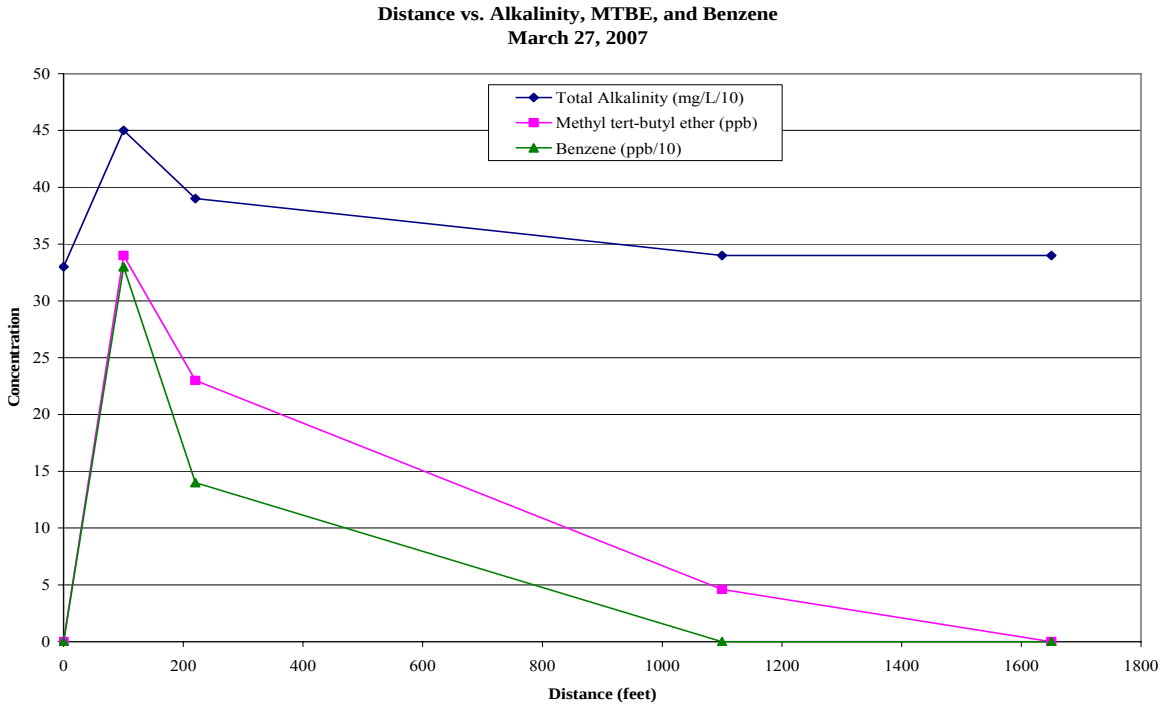


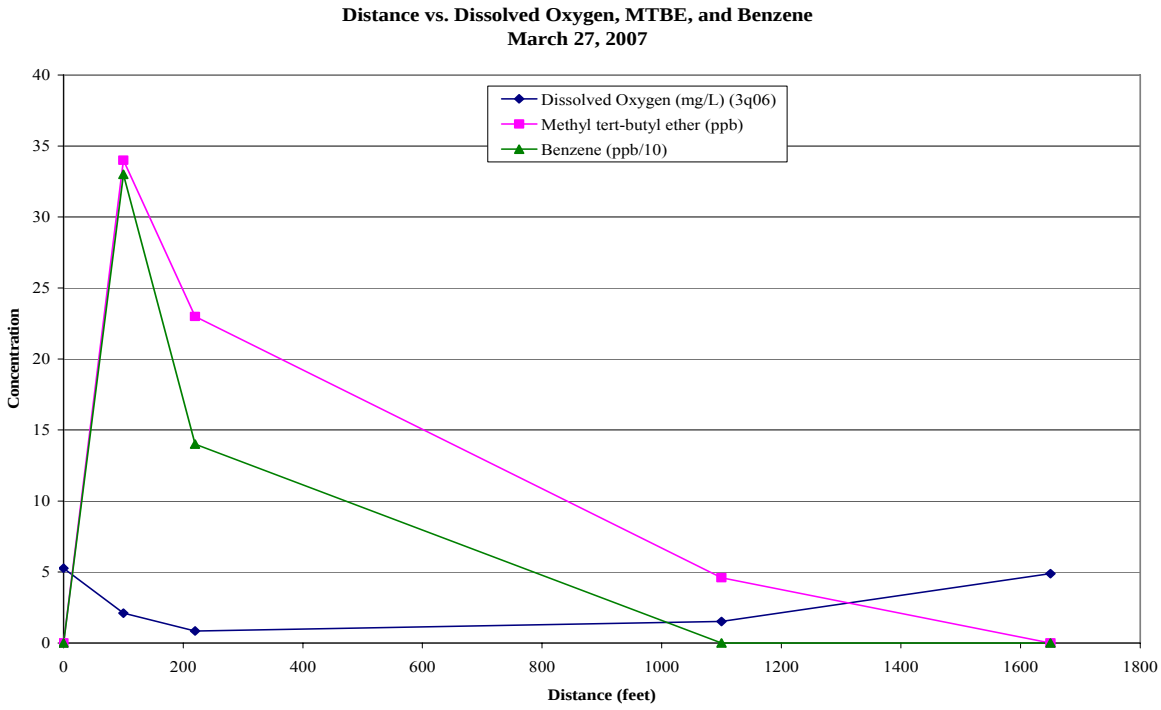
Distance vs. Iron, MTBE, and Benzene
March 27, 2007



Distance vs. Manganese, MTBE, and Benzene
March 27, 2007







MTBE Fate and Transport and the Potential for a Detached Plume

To address the issue of a potential detached plume, Golder (1) reviewed the time-concentration data for the site for evidence of a high concentration slug of MTBE emanating and detaching from the source zone, and (2) performed a fate and transport model to estimate potential plume

lengths, and potential travel distances of a detached plume, of methyl *tert*-butyl ether (MTBE) based on the site-specific hydrogeologic parameters and site specific data for concentrations of MTBE versus time.

We have reviewed the time-concentration graphs and find no compelling evidence for a detached plume with any significant concentration of MTBE. There are instances where some downgradient wells (e.g. MW-13; 332 ug/l in 7/99) have slightly higher concentrations of MTBE and BTEX than upgradient wells (e.g., MW-7; 44 ug/l in 7/99). We concur the dissolved mass emanating from the source zone may not be steady over time (likely due to seasonal and longer term changes in groundwater levels), and that "pulses" of varying concentrations of dissolved MTBE may have emanated from the source zone; however, this does not prove a plume of MTBE with significant concentration detached itself from the source zone. By definition, to be "detached" the monitoring data would need to show an area between the source zone and the downgradient plume with little or no concentration of MTBE. This condition has never been observed in the monitoring network. At all times in the monitoring record there is dissolved MTBE measured along the entirety of the longitudinal profile out to the downgradient margin of the plume. In fact, at most times in the monitoring record there is a relatively uniform decrease in both BTEX and MTBE components as monitored from the source to the distal margin of the plume.

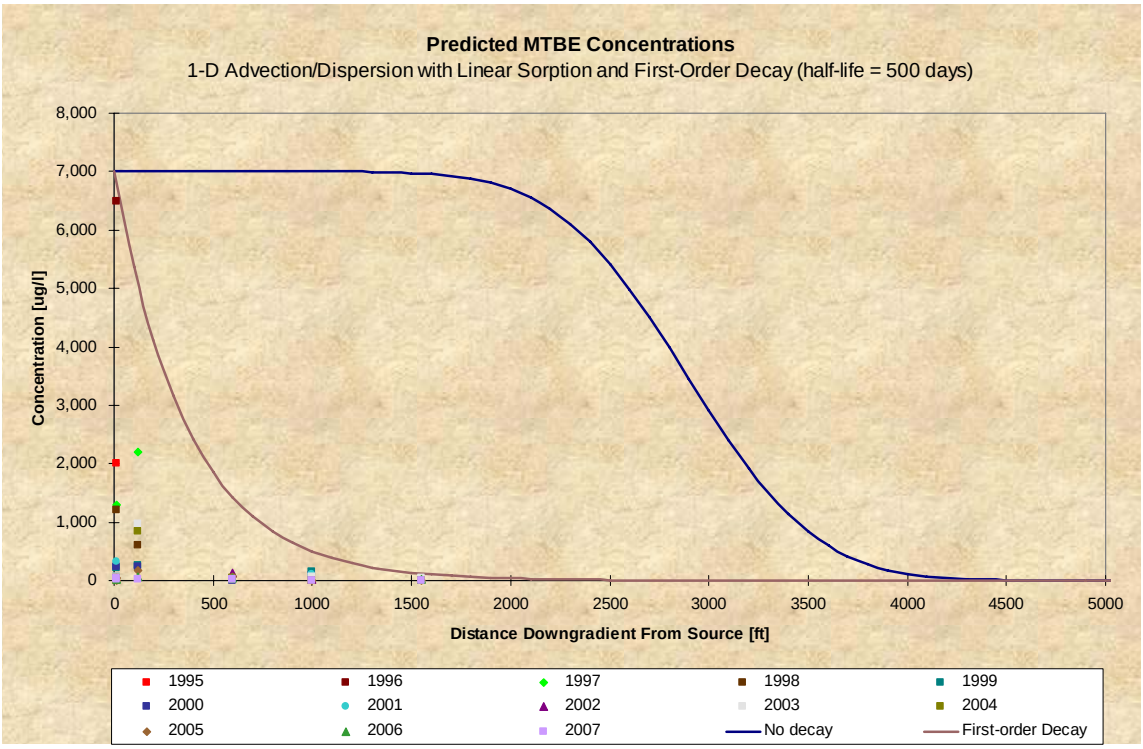
Looking at the timing of a detached plume, if it is assumed a major pulse of MTBE emanated from the source starting with a rise in water levels in about June 1992 this pulse should have been detected in downgradient wells MW-11 and MW-12 which were installed in June 1999. Assuming a travel time for the leading edge of the pulse of 280 ft/year, the leading edge would have migrated approximately 1,960 feet downgradient from the source. MW-11 and MW-12 are located approximately 1700 to 1800 feet from the source. The wells should therefore have been in the plume just behind the leading edge yet there are no significant detections of MTBE in these wells. The June 1999 sampling event for MW-11 did indicate low level detections of BTEX compounds (1 to 2 ug/l) which subsequently declined to non detect. These initial detections could possibly reflect the pulse of contamination associated with the rising water level, however, the concentrations are low enough that they are not considered a risk to downgradient water supply wells. And because there were detections of BTEX, and no associated significant levels of MTBE, it indicates that it is unlikely a major pulse of MTBE at significant concentrations escaped detection.

Similarly there are no significant detections of MTBE in the downgradient CMT wells which are located about 1600 to 1700 feet downgradient. These wells were installed in August 2003. If the pulse was generated throughout the period of rising water table there should have been a significant pulse through the summer or late fall of 1997. Assuming the pulse trailed off starting with the drop in water level in 1997 the trailing edge of the pulse would have migrated about 1600 to 1700 feet by the time the CMT's were installed. Given the effects of longitudinal dispersion on the plume it seems reasonable that if there were significant concentrations associated with the trailing edge of the hypothetical detached plume that they would have been observed in the CMT wells in 2003. CMT-2-Z2 did show detections of MTBE in the range of 38 to 49 ug/l in 2003 which then declined. It is possible that this represents the trailing edge of a pulse of MTBE, however, the concentrations are relatively low and clearly do not represent a risk at that level to a water supply well as demonstrated in SCM 1.0 due to the effects of dilution associated with pumping.

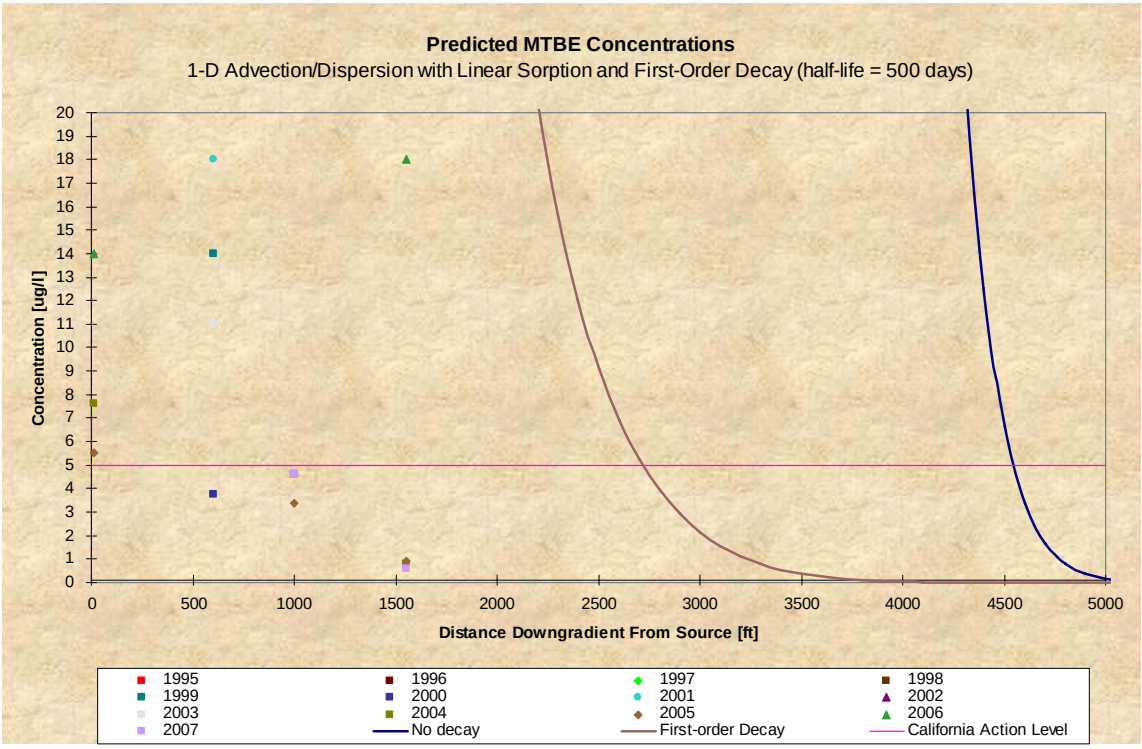
In summary, the variation in concentrations along the longitudinal access of the plume indicates variable and non-steady conditions at the source, in combination with the affect of longitudinal dispersion and aerobic degradation of MTBE downgradient from the source. However, to evaluate the potential downgradient risk associated with a detached plume of MTBE, we have

estimated the transport of MTBE from the Desert Petroleum site using the one-dimensional dispersion model developed by de Marsily (1986) for a constituent in a semi-infinite medium (Attachment A).

The transport model input parameters include Darcy velocity (the product of hydraulic conductivity multiplied by the hydraulic gradient), effective porosity, dispersion coefficient, retardation factor (a function of the octanol-water partition coefficient, the media bulk density of the solid media and the fraction of organic carbon in the solid media), and half-life time for concentration decay (a parameter that accounts for concentration reductions primarily due to biodegradation). The model input parameter values for each of these parameters are provided in the attached memo. The model does not explicitly account for dilution of constituents, but estimates a maximum center-line concentration. Should dilution be included (using 2- and 3-dimensional models), the maximum center-line concentrations would be even lower than those provided in this analysis (i.e., the model is conservative).



The figure shows expected concentrations of MTBE downgradient of the source for two conditions: one assuming no degradation of MTBE, and one assuming reasonable degradation of MTBE as established in the literature for many sites. As shown on Figures 1 above, steady-state simulations indicate for a source concentration of approximately 7,000 micrograms per liter (µg/L) MTBE (based on historic high concentrations observed at monitoring well MW-2), and assuming no contaminant degradation, a plume length (as defined by the 1 µg/L contour) of approximately 4,800 feet would be expected (as shown in Figures 1 and in the "blow-up" shown on Figure 2). The anticipated distance to the 5 µg/L California State Secondary maximum contaminant level (MCL) is about 4,500 feet (as shown on Figure 2).



Assuming a half-life decay for MTBE degradation of 500 days (which is well within the range of estimates provided in the published literature), a plume length (as defined by the 1 µg/L contour) of approximately 3,300 feet would be expected (as shown in Figure 2). The anticipated distance to the 5 µg/L California State Secondary MCL is about 2,700 feet (Figure 2). As shown on Figure 1, all historic data is within the "envelope" of concentrations described by the first-order decay curve, and thus the simulation is conservative with respect to predicted downgradient concentrations.

The model demonstrates that the observed MTBE concentrations at the site can be reasonably justified and evaluated using a simple fate and transport model. The model also demonstrates that the maximum likely downgradient extent of any MTBE associated with the Desert Petroleum site would be on the order of 3,000 feet with a "worst-case" scenario of 4,800 feet. The nearest downgradient municipal supply well beyond well CWS #8 (Well 8K2) is Well 7P3. If the plume path is projected downgradient along a flow path perpendicular to groundwater contours, the hypothetical detached plume would pass approximately 800 north of well 7P3, and at a downgradient distance of approximately 9000 feet. Therefore, the potential for a detached plume to impact municipal supply wells downgradient of CWS#8 is considered to be extremely low to non-existent. In our opinion, the fate and transport evaluation coupled with the lack of data to support a detached plume of significant concentration effectively addresses this issue.

3. QMR Report Conclusions *- ACEH has been concerned about petroleum hydrocarbon contamination in CMT-4 consistently being detected in the ports below the aquitard. You were requested to explain the reason for these detections utilizing plots of head vs. depth over time for this well.*

You presented multiple hypotheses for these detections as 1) carry down of contamination as part of drilling; 2) cross contamination resulting from diffusion of BTEX through CMT chamber walls; 3) cross contamination due to MW-1 penetration of the aquitard; and 4) cross contamination via the well bore for the CMT pipe. You provided a bar graph of depth vs. head over time (SCM 1.1); however it is unclear what this method of plotting demonstrated, and you provided no rationale to support any of your hypotheses.

ACEH has prepared a Head Profile plot for CMT-4 (attached) for your reference. A review of this plot shows the same head levels in ports above 75-feet bgs which are completed in the shallow unconfined aquifer. Below 75-feet bgs an aquitard exists as evidenced by head levels much different than in the ports above the aquitard. Also, a very strong downward gradient below a depth of 75-feet is apparent.

Regarding Golder's hypotheses, the consistent head data above the aquitard and strong downward gradient below the aquitard from these plots immediately discount theory 4) cross contamination via the well bore for the CMT pipe, Golder has no data to substantiate this theory. For hypothesis 1) carry down of contamination as part of drilling; if this were the case it would be expected that these detections would likely have ceased several months after well installation due to the limited mass. Instead you are still detecting the contamination nearly 4-years after well installation. Regarding hypothesis 2) cross contamination resulting from diffusion of BTEX through CMT chamber walls; ACEH does not concur with this as diffusion through the walls would require a significant concentration gradient for diffusion to occur and your analytical data do not support this hypothesis. Hypothesis 3) cross contamination due to MW-1 penetration of the aquitard, does seem likely as MW-1 is cross connecting the aquifers, and both ACEH and Golder have recommended decommissioning this well. We request that your consultant continue to study this plot and evaluate other potential hypotheses and provide rationale to validate or discount each hypothesis. Include the results of this evaluation in SCM 2.0.

Regarding determining whether cross-contamination is occurring in MW-1, ACEH's January 22, 2003, letter is excerpted as follows:

7) Velocity Profiling/Depth Discrete Sampling & Destroy Long Screen Monitoring Well(s)

On-site monitoring well MW-1 is located within the source zone and screened from 27 to 77 feet bgs. This long screen well could potentially act as a conduit for the deeper migration of dissolved contaminants beneath your site. We recommend that you destroy this monitoring well and propose destruction of additional monitoring wells as appropriate. Prior to destruction we request that you profile ambient groundwater flow in the well (using a heat-pulse flowmeter or similar tool), and perform depth discrete groundwater sampling and analysis. Analyze the groundwater samples for the analytes requested in Technical Comment 8 below. Perform this same testing and analysis in other conventional monitoring wells in the source area, as needed, to determine if existing onsite monitoring wells may be conveying shallow contaminants to greater depths via ambient flow within the wells. Report the results of your work in the SWI Report requested below.

We specifically note that data is collected in the field to validate a hypothesis such as the one regarding MW-1 above. However, Golder is proposing, and in some cases stating, hypotheses as fact without validation.

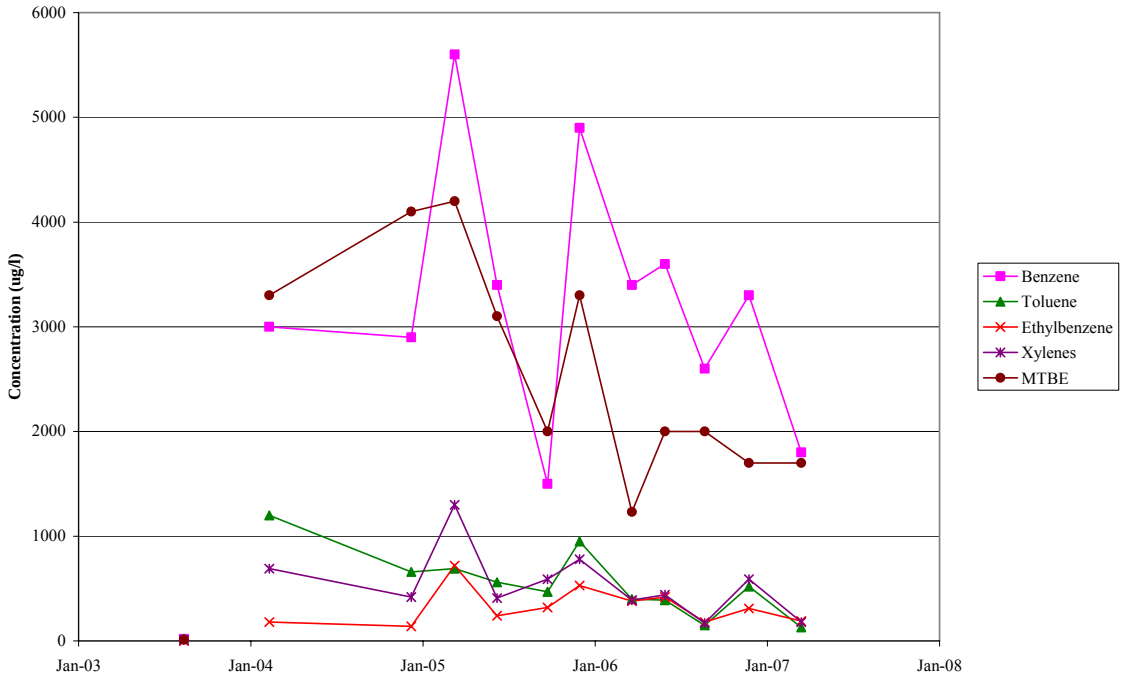
ACEH does not concur that the issue of deep contamination in the source area is a result of your CMT well. Your depth discrete monitoring well network (CMT wells) is providing valuable data to evaluate this site. It is giving more reliable data on depth discrete contaminant concentrations and head data that (sic) the long screened wells previously installed at the site are incapable of providing. The data has allowed ACEH to consider reducing the perceived severity of your site regarding threat posed to CWS-8 (provided your consultant completes and validates the evaluations previously requested of you as part of SCM 2.0). Therefore, it is unclear to ACEH as to why it appears that your consultant is attempting to discount the data from the CMT wells, and provide alternative hypothesis without any rationale or data to support their hypotheses. This makes ACEH more concerned about the long term threat posed by your site due to the data gaps in your consultant's hypotheses.

We also note that Golder provides conclusionary statements regarding the migration and fate of contamination from this site in each of their quarterly reports. However, there are still significant data gaps and alternative hypothesis that Golder does not have the data to discount nor validate as they have not completed the work required to address these data gaps nor reported their results in SCM 2.0. We therefore do not concur and in some cases disagree with the conclusions provided to date by Golder within their quarterly reports. We request that SCM 2.0 be completed immediately, and include evaluation and testing of both alternative and existing hypotheses. Additionally, PCE has been detected in your monitoring well network, including the CMT ports below the aquitard, (see attachment) in the split samples collected by Zone 7 Water Agency and in your MIP samples. Please also include a consideration of this data when evaluating hypotheses for contaminant transport in SCM 2.0.

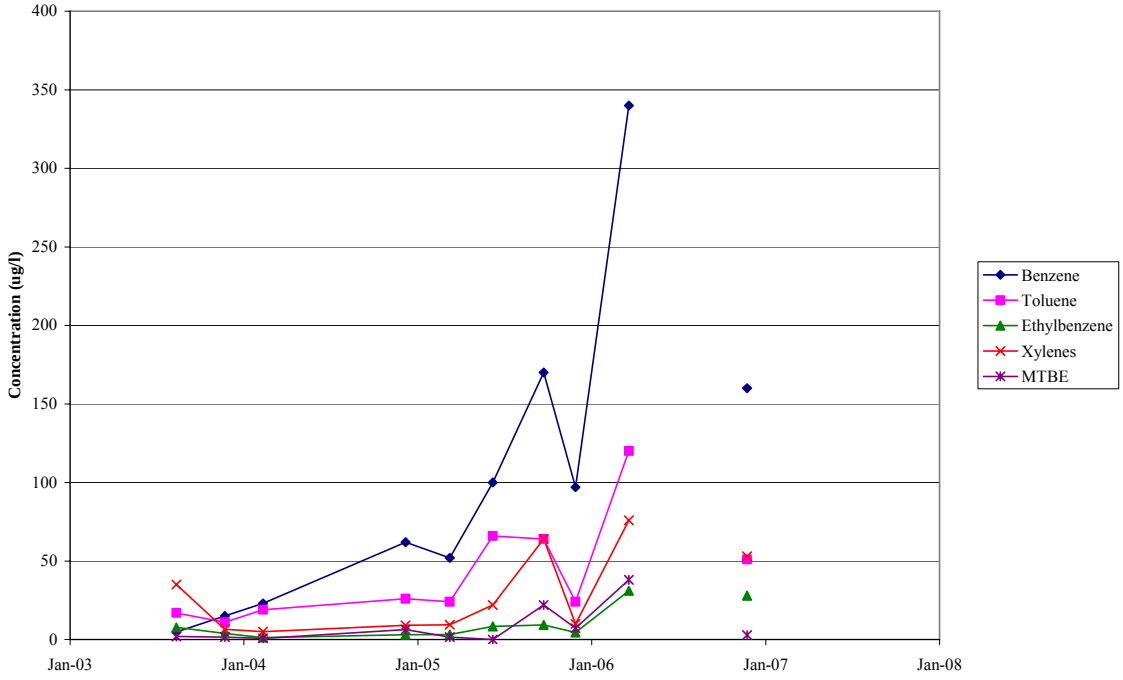
There are several possible causes for the occurrence of hydrocarbons in the CMT-4 zones below the aquitard. It may not be possible to unequivocally determine the specific cause based on the data at hand. Regardless of the cause, this issue does not affect our decision-making at this point in time regarding remediation of the source zone for the site. We agree that this issue will need be addressed further with regard to a long-term CAP inclusive of dissolved phase contamination related to the source zone.

Per your request, the following discussion addresses several of the potential causes for the hydrocarbons in the CMT zones below the aquitard. To provide a basis for the discussion, time concentration graphs charts showing the historical detections in the CMT-4 zones are provided below.

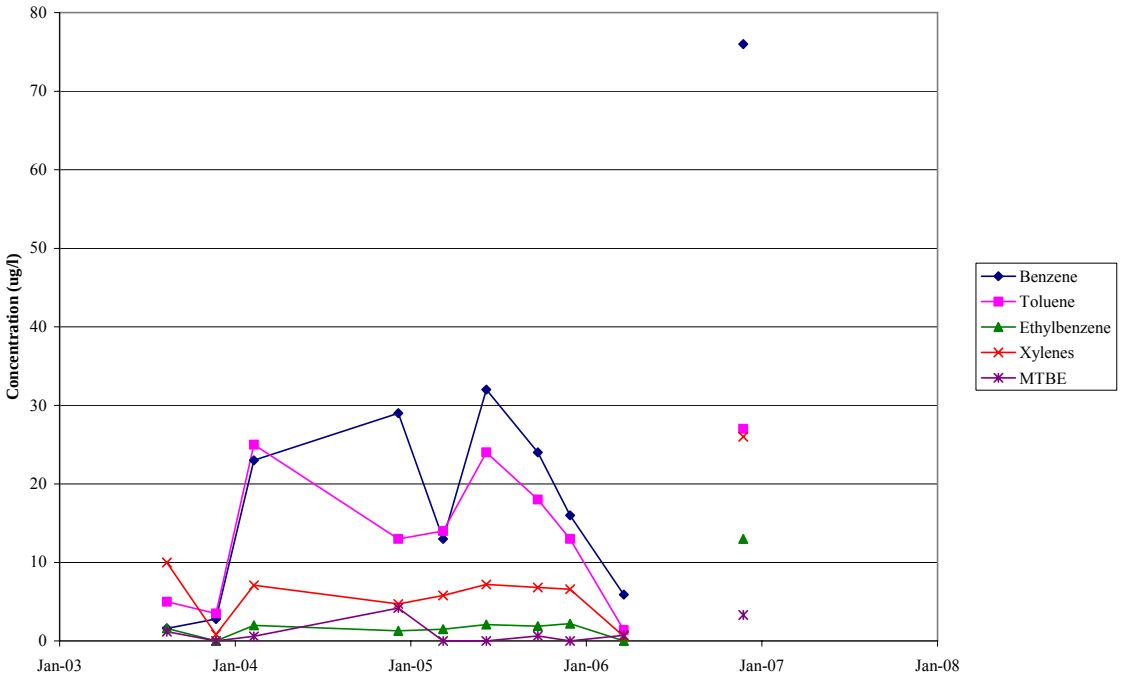
CMT-4 Z2



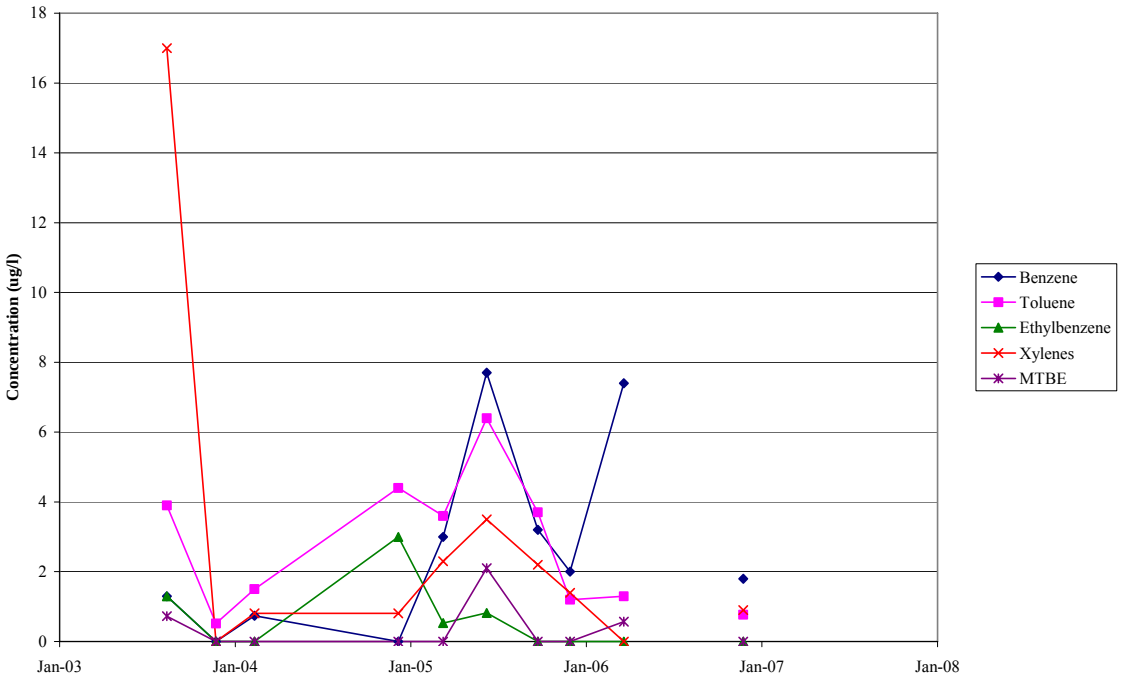
CMT-4 Z3



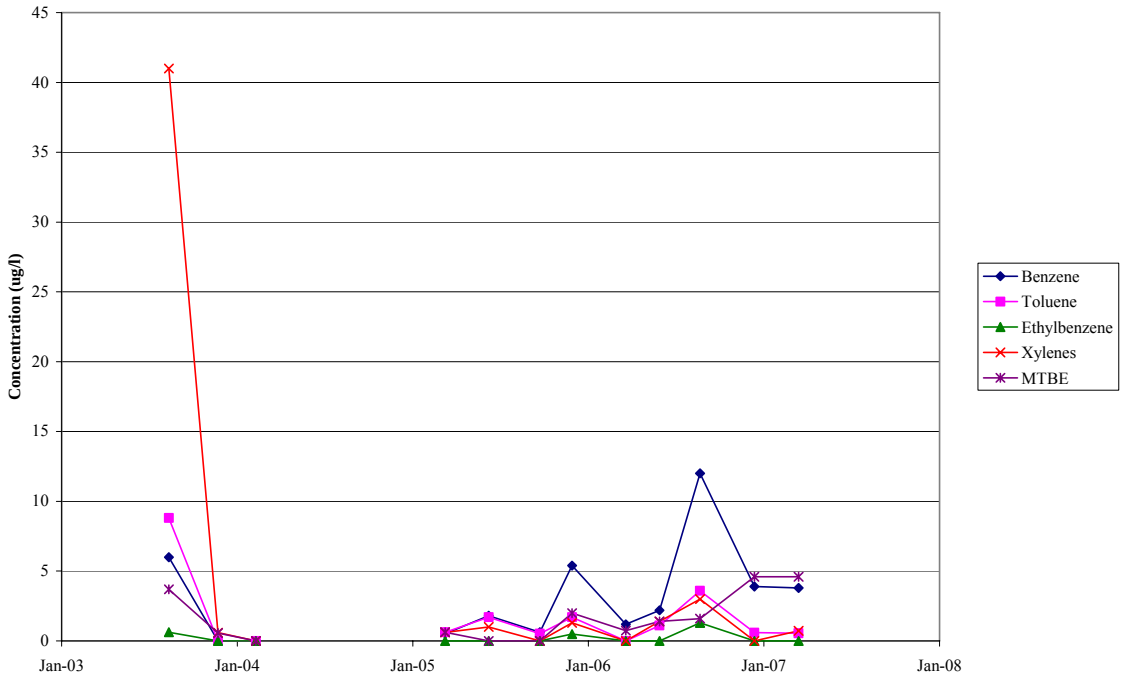
CMT-4 Z4



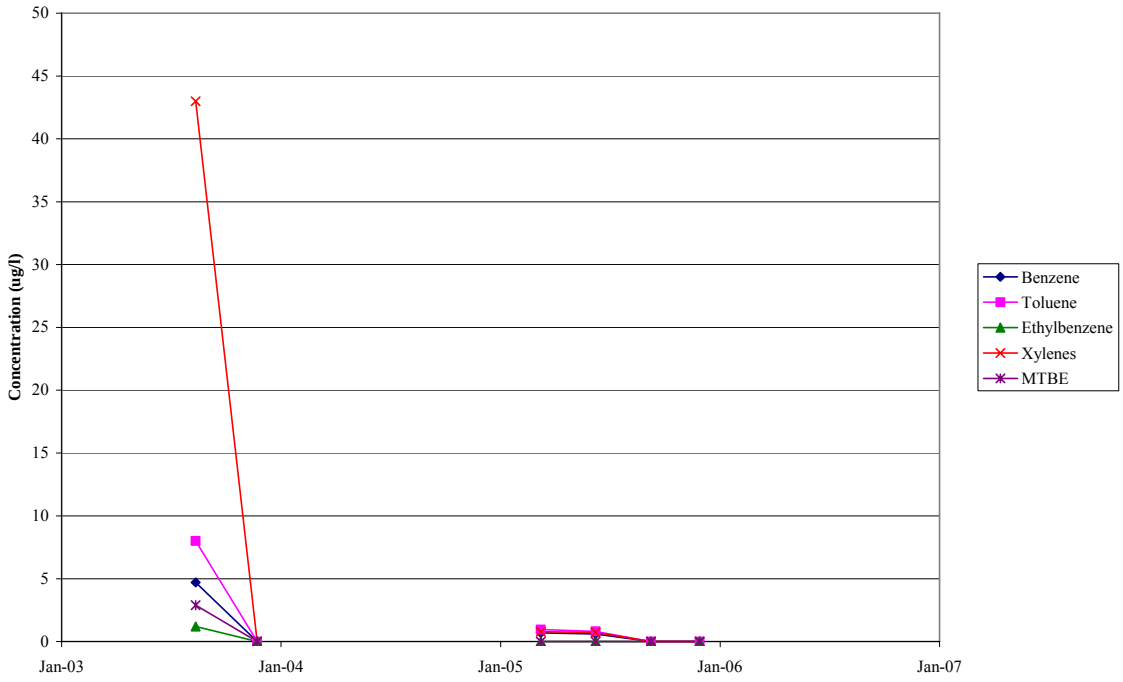
CMT-4 Z5



CMT-4 Z6



CMT-4 Z7



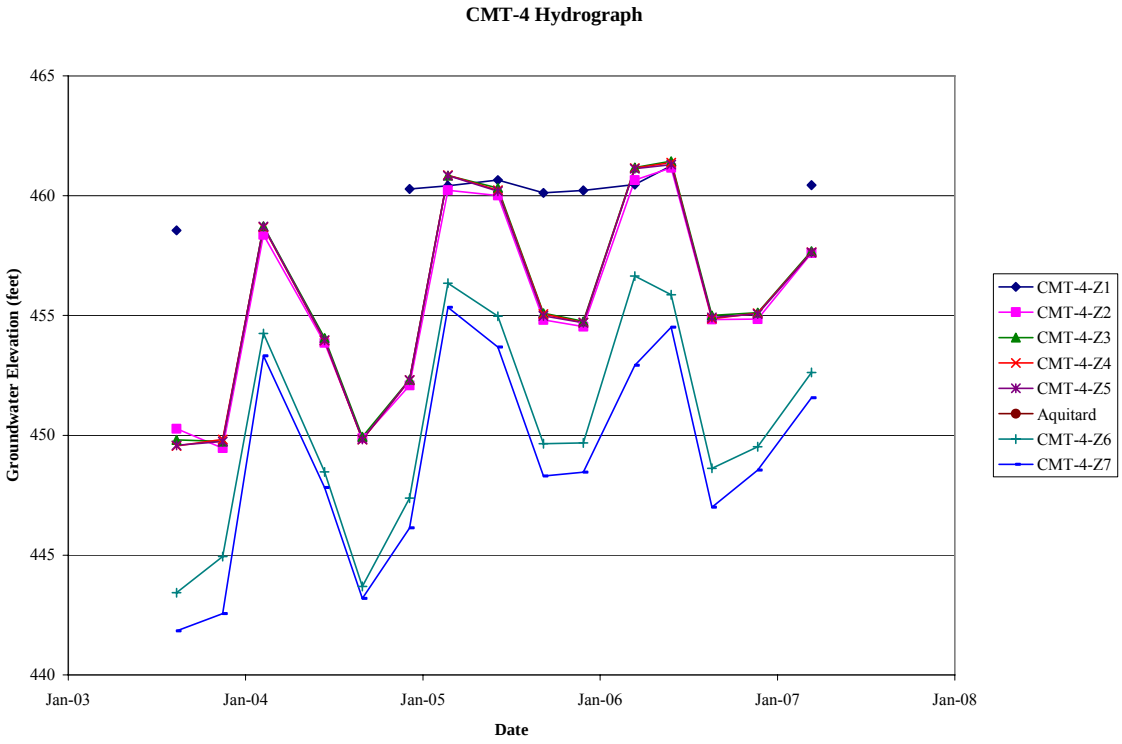
1. **Carry down of contaminated soil as part of the sonic drilling –** The character of the initial hydrocarbon detections (2003) in the lower zones of CMT-4 (Zones 5, 6 and 7) are all similar (high xylene, followed by toluene, benzene, MTBE, and ethylbenzene). The initial detections in the zones below the aquitard (Z-6 and Z-7) subsequently went away in the next monitoring events (2004) following the drilling, which led us to conclude the initial detections were related to the drilling; we still believe this to be a valid conclusion. However, very low detections returned in early 2005 in Z-6, and the character of the hydrocarbons detected has changed to be relatively high in benzene and MTBE, which is more typical of the site contamination we currently observe (see upper zones of CMT-4). Note that Z-7 has not had detections since second quarter 2005. We would concur that drilling carry down in is no longer a viable explanation for Z-6.

2. **Cross contamination resulting from diffusion through chamber walls of the CMT pipe –** The CMT material, polyethylene, is known to be susceptible to diffusion of VOCs. The following two quotes from the manufacturer and one of the developers of the CMT point out the potential for diffusion through the CMT. Quote from Solinst CMT Vapor Monitoring brochure – "Vapors have the potential to diffuse rapidly through some materials including polyethylene from which the CMT is constructed. In order to limit the adverse effects of diffusion through the outer CMT channel wall or the inner chambers it is recommended that a protocol be developed that ensures a representative sample is obtained directly from the port intake area." (see pdf for additional discussion).

   Quote from Einarson, M.D. and Cherry, J.A. in: *A New Multilevel Ground Water Monitoring System Using Multichannel Tubing*, Groundwater Monitoring & Remediation, V. 22, no. 4, Fall 2002, pg. 52-65 – "the CMT tubing is susceptible to both positive and negative biases caused by sorption, desorption, and diffusion."

   We believe the concentration gradient between zones is sufficient for diffusion to occur and cannot be discounted at this time. Furthermore, the presence of high vapor concentrations in Z-1 would be in contact with the common CMT wall with Z-6 and the increasing concentrations over time would also be consistent with a diffusion model whereby it takes some period of time for sorption and diffusion through the pipe wall to occur. An evaluation of vapor in Z-1 versus Z-6 would provide additional data on this possible mechanism.

3. **Cross contamination via the well bore for the CMT pipe –** The following chart shows the historical water levels in each of the CMT-4 zones. The aquitard is present between zones 5 and 6 and is accompanied by an approximate six-foot drop in water level. This large difference in water level shows that the seal between the zones above and below the aquitard is sound, and that there is a relatively large downward gradient across the aquitard. As pointed out by ACEH, cross-contamination via the well bore is not likely since the data indicates that a strong gradient exists between the upper and lower zones discounting significant leakage. There is also good chemical evidence against leakage, since the zone directly above the aquitard (Z-5) has lower concentrations (with no MTBE detected) than the zone below the aquitard (Z-6).



4. **Downward migration of hydrocarbons across the aquitard –** Similar to the above hypthesis, this model is not supported due to the fact that there is a strong head contrast across the aquitard, and that the monitoring zone directly above the aquitard (Z-5) has lower concentrations (with no MTBE detected) than the zone below the aquitard (Z-6).

5. **Downward migration of hydrocarbons via MW-1 –** We put this forward as a possible mechanism, however, based on a review of the boring log and well construction it does not appear that the well bore for MW-1 penetrates the aquiclude. As logged in CMT-4, the aquiclude is present from approximately 74 to 88 feet bgs. The well log for MW-1 indicates a drilling depth of 77 feet bgs which would only be 3 feet into the aquitard, therefore it does seem likely that MW-1 provides a pathway to CMT Z-6. However, the well does indeed provide a significant downward pathway from the most impacted depths in the source zone (36 to 48 feet) down to 77 feet. Therefore, regardless of whether this well is the culprit for the detections in Z-6 of CMT-4 we concur that it should be destroyed.

6. **Upgradient Source –** An upgradient source from the site cannot be precluded since site upgradient well MW-4 only provides background monitoring for the monitoring interval above the aquiclude. Combined with the data from ACEH and Zone 7 that indicate widespread occurrence of PCE below the aquitard, including the B&C site, there is a possibility that an upgradient source could be responsible for the detections of MTBE and Benzene in Z-6.

Based on the above, we consider the potential diffusion through the CMT wall, and a potential upgradient source as the most likely explanations. While this remains unresolved, we don't consider this data gap significant with regard to implementing remediation of the source zone.

The concentrations are currently low, and assuming they remain low, this level of impact is not considered a risk to any downgradient receptors (i.e., CWS #8). If the impact in Z-6 is related to the Desert Petroleum source zone, the source zone remediation efforts should result in reduced concentrations over time. In the meantime, on-going monitoring will be performed in CMT-4 to continue to evaluate the detections. In addition, we recommend sampling the vapor in CMT4-Z-1 and comparing it with vapor from CMT4-Z-6 to provide additional data regarding the potential for vapor diffusion from the Z-1 chamber to the Z-6 chamber of the CMT.

We will also schedule to properly destroy MW-1. Vertical profiling of the well is not necessary as the data requested at that time is now available from CMT-4.

> ***4. Estimated Extent of Groundwater Impact Map –*** *ACEH finds the graphics for the mapped estimated extent of groundwater impact in the field investigation report (Figure 4) curious. The map appears to decrease the previously mapped dissolved contaminant plume area from previous reports by mapping extent of TPH rather than extent of dissolved phase MTBE and benzene contamination. Thus, erroneously depicting the dissolved contaminant plume area. In particular MS-MW1 has had detections of MTBE but is depicted as outside of the dissolved plume area in Figure 4. Please include corrected maps that more accurately reflect monitored conditions in SCM 2.0 requested below and in all future reports for this site.*

The figure referred to by ACEH depicts two delineated areas: (1) the "Estimated Extent of Groundwater Impact" and (2) "Approximate Limit of Source Zone". These areas were based on current data (March 2006) when the report was prepared. For the "Estimated Extent of Groundwater Impact", the area is the same as that depicted on Figure 3 and labeled as ">0.5 µg/L MtBE" utilizing data from March 2006. Note that when the figures were created, the March 2006 concentration of MtBE in MS-MW-1 was <0.5 µg/L. The area on Figure 4 showing the "Approximate Limit of Source Zone" includes the area identified during the most recent field investigation as having sorbed hydrocarbons on the soil and substantially higher hydrocarbon concentrations. The map does show a decreased extent for the dissolved phase from previous reports because the plume has decreased in size, which is typical for a plume that is undergoing natural attenuation.

> ***5. Soil Gas –*** *The evaluation of risk posed by soil gas was performed in reference to the Groth site. The evaluation included a modeling study to evaluate potential indoor vapor concentrations for a future building on the Groth site. Significant risk posed by volatilization from groundwater and NAPL (particularly with a decrease in water table elevation) was identified at the Groth site. ACEH concurs with these conclusions.*
>
> *An evaluation of the risk posed by the soil gas pathway for the Desert Petroleum site was not performed. This risk evaluation for the Desert site is required. Risk evaluations used to determine cleanup levels need to consider all locations of contamination. Report the results of your evaluation in the CAP requested below.*

Vapor risk at the Desert Petroleum site will be addressed in the requested CAP.

> *Overall soil gas sampling was limited to a one time event at during the rainy season (high water table) and we concur with the recommendation that*

permanent soil gas sampling probes be installed and monitored. Also, we request that soil gas sampling from permanent monitoring point, port 1 of CMT-4, when it is dry, be incorporated during monitoring events. Include your proposal for locations of permanent soil gas sampling probes in SCM 2.0 below.

Permanent soil gas sampling probes were installed in April 2006 (June 6, 2007 report) on the Groth property (at location SV-MIP-8 on Figure 4 of the June 6, 2007 report) and on the Desert Petroleum site (at location SV-MW-2 shown on Figure 4 of the June 6, 2007 report).

6. Benzene Plume Length – *The risk assessment erroneously states that the benzene plume has been limited to 600 – 800' feet. The benzene plume has historically extended to at least 1,400 feet d/g.*

We apologize for the misstatement in the risk assessment; however, the risk assessment was focused on the current conditions of the benzene plume, as there is no reason to evaluate current risk based on past conditions that are no longer valid.

7. Contaminants of Concern (COCs) and Receptors – *The risk assessment back calculated a groundwater cleanup level for benzene of 418 ppb to address indoor air concerns on the Groth property. A risk evaluation for potential vapor intrusion at the Desert site was not performed. Cleanup levels for the drinking water basin were specifically excluded from the risk assessment. Also, cleanup levels were not evaluated for all COCs at the site, including MTBE. Further, the effect of increasing or decreasing groundwater elevations on the risk posed by residual contamination was not evaluated. Any evaluation of risk must consider the threat posed by the residual pollution under changing conditions (e.g. increasing and decreasing groundwater levels, new supply well installed nearby, etc.) for as long as the residual pollution (adsorbed and dissolved) remains in place in the environment. The threat posed by the residual source must be evaluated under all conditions, and reasonable use or occurrence scenarios cannot be excluded. ACEH therefore, cannot concur with cleanup levels proposed in Golder's risk assessment which "Recommends that NAPL source mitigation be implemented, focused on shallow NAPL near the water table. … Alternate approach may be to rely on soil vapor measurements for development of remediation goals (i.e., as opposed to groundwater).*

To be a complete risk evaluation used to develop a CAP, all COCs and all receptors need to be evaluated; the threat posed by the residual pollution under changing conditions for as long as the residual pollution remains in place in the environment evaluated; cleanup levels (active remediation) and cleanup goals (water quality objectives) determined; and the time it will take to reach cleanup levels and goals calculated.

As such the risk evaluation for source remediation is incomplete and cannot be approved. ACEH notes that the tasks previously required of you as part of your SCM 2.0 need to be completed before your consultant can undertake this risk evaluation. Also, the additional information obtained from the pilot scale test will assist in developing a remediation strategy. Please address these items in your risk evaluation as part of the CAP requested below.

> ***8. Groundwater Ingestion –*** *Golder's risk assessment states that "The ingestion of groundwater used for drinking water is not considered to be of concern based on water use in the area of the site, which is limited to municipal water supply, and absence of known drinking water wells near to the site." The subject site is located above the municipal drinking water aquifer which supplies drinking water to the City of Livermore. Dissolved plumes from your site are in the immediate vicinity of active municipal supply well CWS-8 and appear to be migrating into an area for which you have not yet performed a well survey (as previously required of you in SCM 2.0). Thus, this pathway cannot be eliminated from your risk assessment. Please address this data gap in SCM 2.0 and this pathway in your risk evaluation as part of the CAP requested below.*

The statement regarding the ingestion of groundwater used for drinking water referred to the source of drinking water for the proposed development of the Groth site, which is the municipal water supply. Therefore, because the proposed development will receive its' water supply from the municipal system, we believe it was reasonable to assume that there is no direct pathway for the groundwater plume underlying the site to reach the residents, other than through the municipal supply system.

The referenced risk assessment, which was included in our June 6, 2006 report, was specifically limited in scope to evaluate the risk of vapor intrusion to the Groth property. There was no representation, nor implication, that it was intended as a global risk assessment for the final CAP for the site. The final CAP will address this issue.

A one-mile radius well survey was conducted utilizing data from the Zone 7 Water District (Attachment B) and an EDR search (Attachment C) to supplement the well survey that was previously performed for the site and included in SCM 1.0. Wells in the downgradient direction from the plume were previously evaluated, and there is no evidence to support the statement that the plume is migrating further downgradient into areas where we have not conducted a well survey. Based on the data, the plume limits are, and have always been, within the limits of the well survey that was performed. Be that as it may, the most recent well survey has not identified any previously undiscovered wells which might act as contaminant pathways.

> ***9. Preferential Pathways –*** *Golder's risk assessment states that vapor migration along utility corridors was not specifically evaluated. This is a data gap in your SCM that you were requested to evaluate and have not. Free product, reported as fresh gasoline, was detected 900- feet downgradient of your site in MS-MW1. Deep utilities and a potential petroleum pipeline, (associated with previous land use at the Mill Spring Apartments) are reported to be in the vicinity of your site and the Groth site, and could act as a preferential pathway for contamination to move from your site, to the Groth site, and to Mill Springs Apartments, and/or other locations. This is a key data gap that could affect your analysis of risk to the Groth site. Please address this data gap in SCM 2.0 and this pathway in your risk evaluation as part of the CAP requested below.*

Historical Sanborn Fire Insurance maps (1884 to 1953) were evaluated for evidence of petroleum pipe lines. There were no oil pipelines identifiable on the historical Sanborn maps (Attachment D). Pipelines were observed on the Sanborn maps, but these are water lines that connect a windmill, above-ground tank, and hydrants.

Reports in ACEH files indicate that oil lines at Mills Springs were removed in 1988 and testing was performed to document releases to soil (see Attachment E and Aqua Resources September

12, 1988 report). The oil lines were shallow (within 3 to 5 feet bgs) and contained residual fuel oil, but did not apparently connect to any of the subsurface vaults located on site. There is no information that indicates the oil lines extended off site. The oil lines are no longer in existence and too shallow to provide a horizontal conduit for the release at the B&C site. The "petroleum pipeline" originating on the Mill Springs Apartment Complex is not considered a viable pathway and should be eliminated as a data gap.

Underground utilities located adjacent to the Desert Petroleum site are identified in a City of Livermore utility map (Attachment F). Trenches for the sewer lines are reportedly up to 12 feet deep, while the electrical, gas, and water lines are reportedly 3 to 5 feet deep. All the lines run parallel to and within the right-of-way for L Street. There are no known utility corridors that run from the area of the source zone across the Groth property and onto the Mills Springs property. Given the shallow depth of the utility trenches in comparison to the depth of the release (~14 feet bgs), and the known depth of (> 25 feet) of the impacted soil directly downgradient from the tank pit as documented in CMT-4, and the orientation of the utility trenches, the utility corridors do not appear to be potential conduits for migration of LNAPL to (MS)MW-1.

> ***10. Depth to water –*** *The remediation plan states that depth to water has varied from 18 to 37-feet bgs since 1995. More correctly depth to water has varied from 17' bgs in 1997 to 69 feet bgs in 1992, and the first reported release at the site occurred in 1988. It is unclear why pre-1995 water levels are excluded. Please address this comment in the work plan addendum requested below.*

This is addressed in detail under separate cover in Golder's current revision to the *Source Zone Remediation Plan Addendum* dated June 22, 2007.

> ***11. Remediation Pilot Test*** *– We concur with your remediation plan's proposal to evaluate the use of in-situ chemical oxidation (ISCO) with ozone as a pilot test. However, we request that you submit an amended plan for this work, by the date specified below, that addresses the following comments:*
>
> ***a. COCs*** *- The remediation plan focuses only on treating benzene and NAPL near the water table (assumed current) and affecting cleanup for the Groth Property (see also Technical Comment A.1. regarding target cleanup zones). No other known COCs were discussed. For example, although MTBE is also a primary contaminant of concern contributing to a long-term groundwater problem, it is not mentioned in the source zone cleanup plan. Additionally, PCE (see attached) has been detected in both the MIP and monitoring wells associated with your site (see attachment) and your treatment approach must consider this contaminant also. Your source zone remediation plan is required to address all known COCs at the site.*

This is addressed in detail under separate cover in Golder's current revision to the *Source Zone Remediation Plan Addendum* dated June 22, 2007.

> ***b. By-Products –*** *Please include an evaluation of all anticipated reaction byproducts for all COCs and those potentially produced by the treatment method.*

This is addressed in detail under separate cover in Golder's current revision to the *Source Zone Remediation Plan Addendum* dated June 22, 2007.

c. Monitoring Network for Pilot Test – *The proposed network of wells to monitor the effectiveness of the pilot test is insufficient. Monitoring in the down-gradient direction is not proposed. A sampling and monitoring program to monitor oxidant dispersion and treatment effectiveness in three dimensions is an essential component for evaluation of your pilot test. We recommend that you install additional monitoring points to meet these criteria. Please include an explanation of your rationale for locating additional monitoring points and your monitoring frequencies. Include your plan for monitoring to differentiate between displacement of contaminated water and actual mass destruction.*

This is addressed in detail under separate cover in Golder's current revision to the *Source Zone Remediation Plan Addendum* dated June 22, 2007.

d. Pilot Test Frequency – *Please specify the time frames for your pilot test, how long before rebound is anticipated, timeframes to evaluate displacement, the basis for estimating these timeframes, proposed frequencies for different monitoring activities, etc.*

This is addressed in detail under separate cover in Golder's current revision to the *Source Zone Remediation Plan Addendum* dated June 22, 2007.

e. Well Construction – *Golder proposes the installation of nested wells for their treatment system. Nested wells are not acceptable at contaminated sites due to the difficulties in ensuring reliable seals between sampling zones. Poor seals can result in leakage between zones and are therefore not allowed. We request that you consider an alternative design for these wells.*

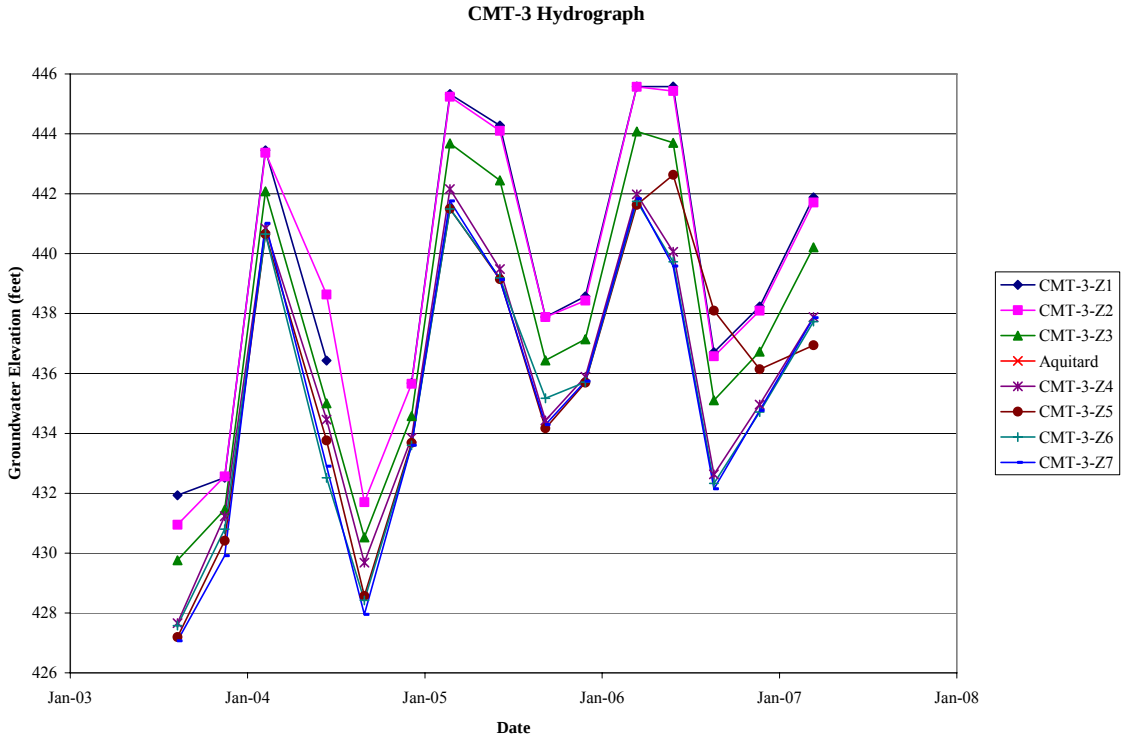
This is addressed in detail under separate cover in Golder's current revision to the *Source Zone Remediation Plan Addendum* dated June 22, 2007.

f. Utility Survey – *The utility survey portion of your conduit study has not been completed, as noted in SCM 1.1 and the risk assessment. The presence of deep utilities and a potential petroleum pipeline are reported to be in the vicinity of your site and the Groth site and could act as a preferential pathway for contamination, oxidant and/or byproducts of the reaction. We request that you complete your evaluation of this data gap for your pilot test proposal.*

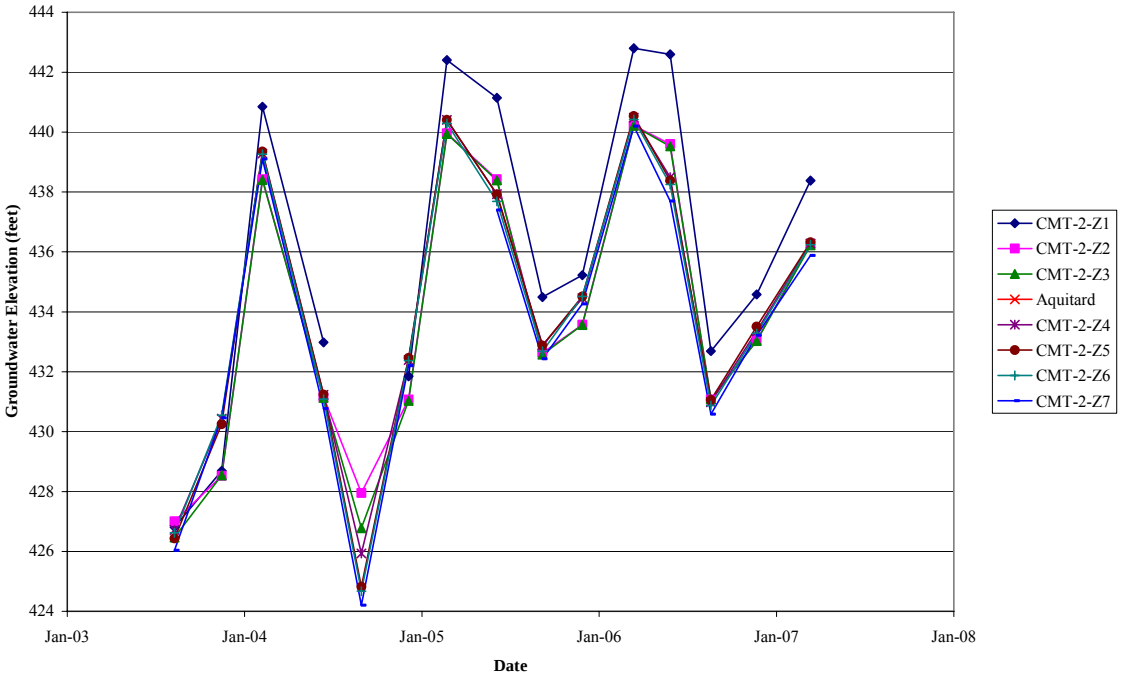
This is addressed in detail under separate cover in Golder's current revision to the *Source Zone Remediation Plan Addendum* dated June 22, 2007 as it pertains to the pilot test, and also in this current document as it pertains to migration of LNAPL.

12. Vertical Gradient - *Anomalous data regarding vertical gradient in well pairs MW-11, MW-12, D-1, and D-2 has consistently been reported in the quarterly reports. We request that these anomalies be analyzed and the rationale for their occurrence be provided in SCM 2.0. Please include hydrographs and head profiles for these wells, your depth discrete wells (CMT), supply wells, etc., and an analysis of these graphs and other data to support your evaluation.*

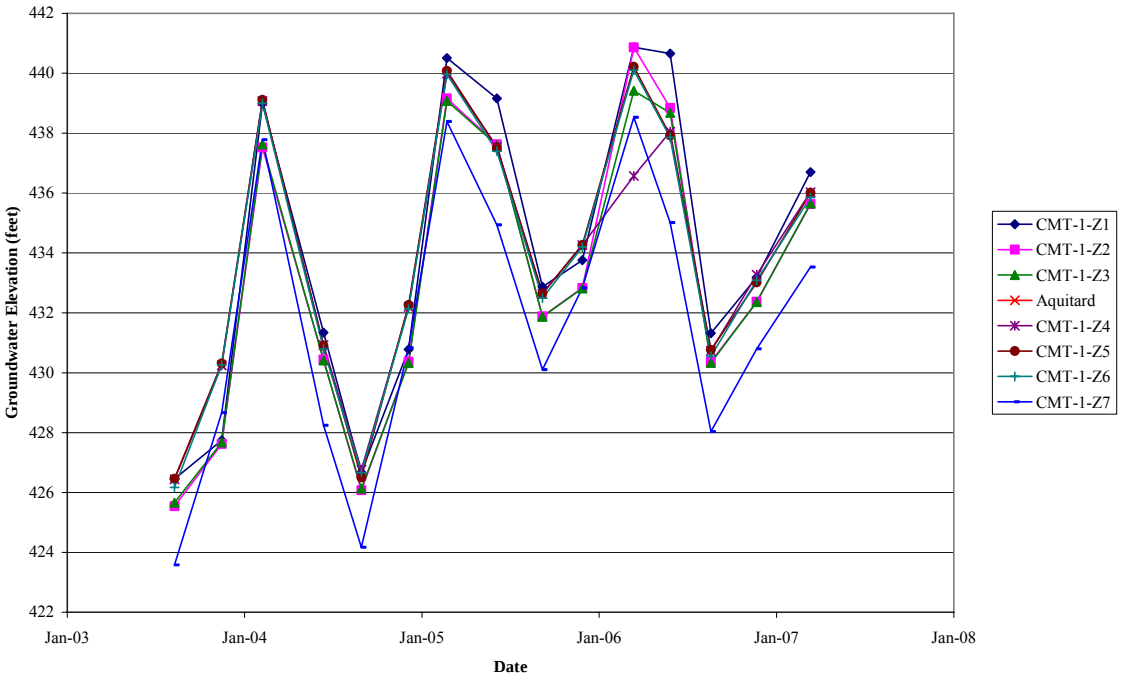
The vertical gradients do not appear to be anomalous, other than an occasional seasonal reversal. Hydrographs of the CMT wells (except CMT-4, which was presented above) and the paired shallow and deep wells (MW-11 and D-1, MW-12 and D-2) are presented below. The hydrographs show that there is usually a downward gradient across the aquitard. Occasionally, the head in the deeper aquifer approaches or gets higher than the head in the shallow aquifer. The reversal in head direction appears to occur late in the year and is likely related to a reduction in the groundwater pumping of the basin near the end of the fall season. Refer to the last chart in this group that shows the historical pumping record in CWS#8. The pumping usually ends during the fall season and water levels rise immediately.

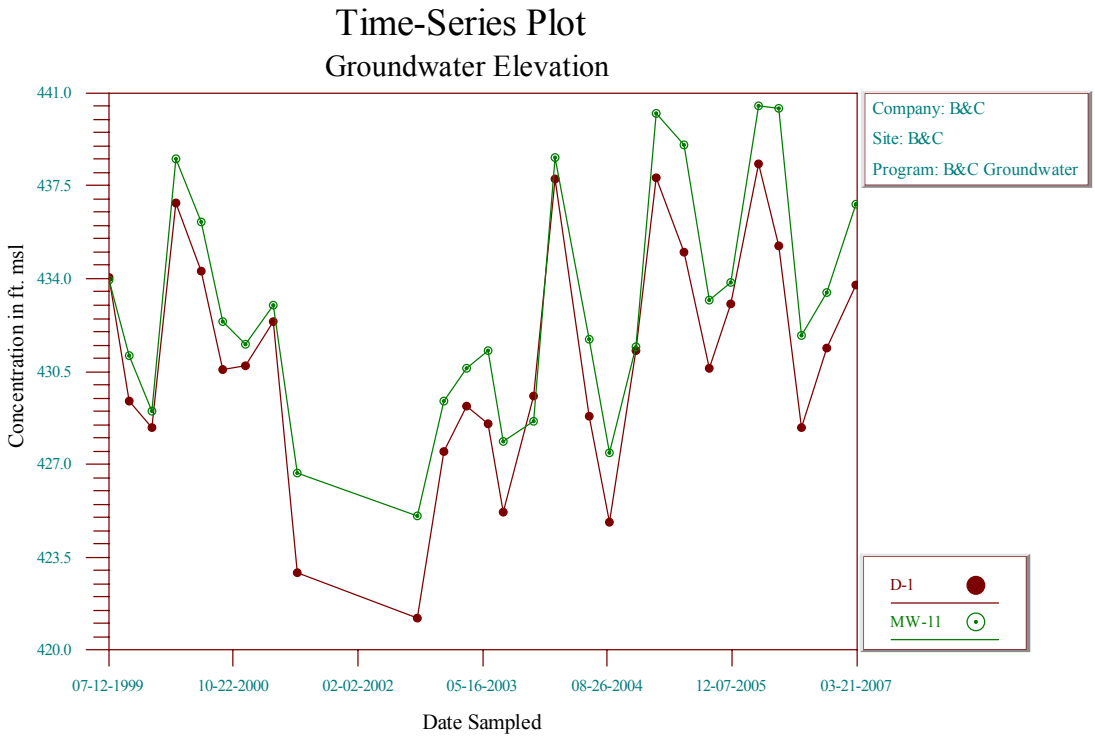


CMT-2 Hydrograph



CMT-1 Hydrograph




Time-Series Plot
Groundwater Elevation
441.0
437.5
434.0
430.5
427.0
423.5
420.0
Concentration in ft. msl
07-12-1999
10-22-2000
02-02-2002
05-16-2003
08-26-2004
12-07-2005
03-21-2007
Date Sampled
Company: B&C
Site: B&C
Program: B&C Groundwater
D-1
MW-11


Time-Series Plot
Groundwater Elevation
440.0
435.0
430.0
425.0
420.0
Concentration in ft. msl
07-12-1999
10-22-2000
02-02-2002
05-16-2003
08-26-2004
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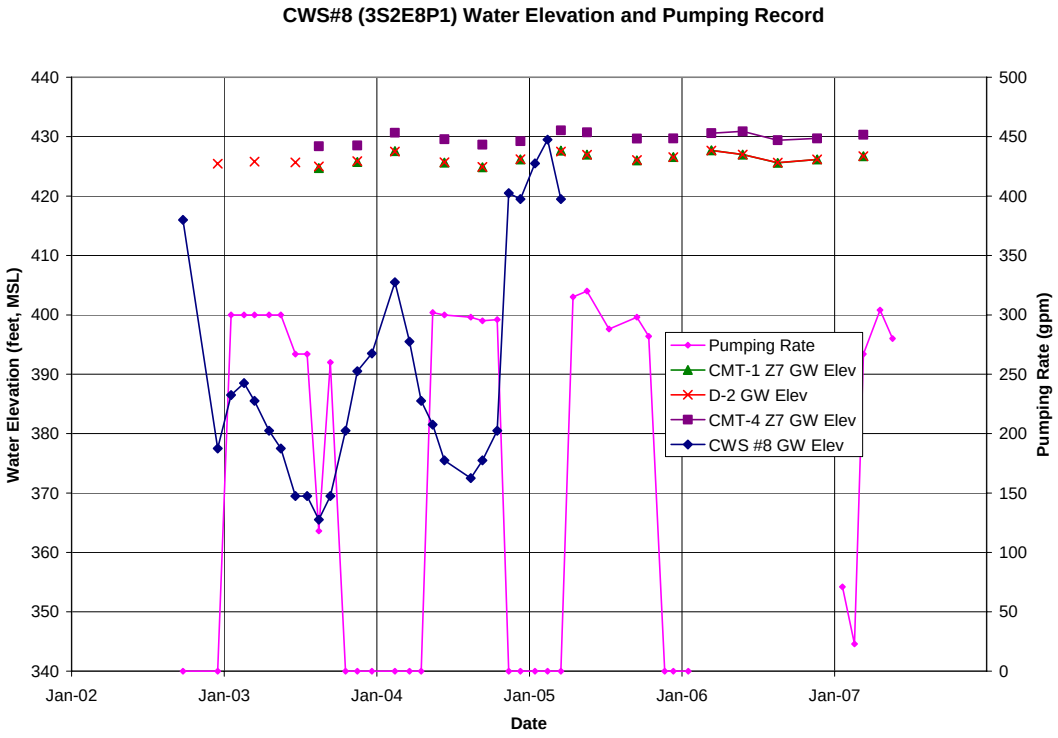
Program: B&C Groundwater
D-2
MW-12



13. SCM Data Needs *- Include all soil & groundwater analytical results and sample location maps, boring logs, and cross-sections in the SCM 2.0 requested below. This request encompasses data and maps from UST removal and/or closure through site investigation activities.*

We believe that all available information has been included in the SCM. If ACEH is aware of specific documents that are not included please provide the appropriate reference and we will add them to the SCM.

TECHNICAL COMMENTS (SECTION B) – ACEH's February 24, 2006, Directive Letter

A majority of the work requested in ACEH's February 24, 2006, letter has not been performed. The technical comments from this letter are included below with comments and incomplete items noted in italic and underlined.

February 24, 2006, Directive Letter:

1. Natural Attenuation of Contaminant Plumes – *Your consultant hypothesizes that decreasing concentrations of MTBE throughout the plume are due to natural attenuation. Golder appears to base their hypothesis for MTBE degradation on measurements of chemical indicators for natural attenuation and the shrinking dimensions of the BTEX plume. Please note that apparent attenuation could be due to other mechanisms such as source depletion or migration of the plume out of the groundwater monitoring network in addition to biodegradation. Declining concentrations could be due to biodegradation however there is disagreement in the literature as to the ability to convincingly demonstrate biological removal of MTBE. Biodegradation would need to be demonstrated by several lines of*

evidence such as measurement of by-products, consumption of electron acceptors, isotope analyses, and concentration versus distance plots using appropriately located and constructed monitoring wells. Research in California has indicated the presence of active microbial populations in lab tests of samples from contaminated sites however; other contaminated sites have not exhibited any native aerobic MTBE degrading capability. Also, many MTBE sites may not be aerobic or aerobic in limited areas which would eliminate or limit any potential natural aerobic biodegradation. ACEH maintains there is sufficient evidence at this site to suggest that the MTBE plume may have detached from the source and looks forward to working with your consultant to address this issue.

INCOMPLETE –Technical response remains unaddressed.

See response to ACEH comment # 2 above.

2. Off-Site LNAPL – *ACEH's July 5, 2005, letter included the following technical comment:*

c. Off-Site LNAPL *As discussed in SCM Rev. 1.1, LNAPL has been detected in the subsurface as far away as 900 (feet [sic]) from your site (i.e., in DP borings and in Well MSMW1 at the Mill Springs Apartment complex. The issue of the source, extent, and significance of the LNAPL (1) as an ongoing source of groundwater contamination and (2) as a potential source of vapors that could pose risks to above-ground receptors has not been adequately addressed. As we discussed in our meetings with your consultants, this is a key data gap in the current SCM for your site. The occurrence, source, mobility, longevity, and risk posed by the LNAPL needs to be evaluated. In particular, please assess whether the LNAPL detected offsite is LNAPL that has migrated from your site or LNAPL that may exist from prior activities at neighboring properties. Please present a concise workplan describing the scope of your evaluation for our approval in SCM Revision 2.0 requested below. This data gap is not addressed in your work plan. We request that you do address this issue during your next phase of work. Please submit your plan to address this data gap by* ***March 10, 2006****. Please note this plan can be developed concurrent with implementing the next phase of fieldwork at this site.*

INCOMPLETE – Data gap remains unaddressed.

The occurrence of LNAPL was addressed in detail in the June 6, 2006 Field Investigation for Source Zone Remediation report. First, there is no longer any evidence of LNAPL in any wells or subsurface explorations conducted for the site. The field investigation demonstrated that the current source zone (created by the previous extent of LNAPL) is limited to a distance of approximately 400 feet downgradient of the site as shown on Figure 4 of the June 5, 2006 report. The potential for vapor intrusion risk was evaluated for the Groth property, due to pending redevelopment of that property (June 6, 2006 report). A source zone remediation plan proposing a pilot remediation test was submitted on August 11, 2006. While this plan was intended to target the Groth property due to the pending redevelopment, the remediation plan is intended to be a pilot test and can be expanded as necessary to include the Desert Petroleum site.

3. Vapor Pathway – *We request that a vapor sample also be collected from CMT-4 Z1. NOT PERFORMED - Include soil gas samples from this port in the CMT when it is dry.*

A permanent soil vapor probe (SV-MW-2) was installed on the Desert Petroleum site, adjacent to monitoring well MW-2. The results of vapor monitoring at SV-MW-2 were provided in the June 5, 2006 report. Because this vapor probe was designed to provide vapor samples and CMT-4 was redundant, we did not obtain a sample from CMT-4. In addition, the CMT-4-Z1 port is located at a depth of approximately 25 feet bgs which will provide non-comparable results to the vapor wells which were installed at 5 foot depth consistent with accepted protocol. However, due to the issue regarding possible diffusion across the CMT chambers we will obtain a sample from CMT-4-Z1 and Z6.

TECHNICAL COMMENTS (SECTION C) – ACEH July 5, 2005, Directive Letter

A majority of the work requested in ACEH's July 5, 2005, letter has not been performed. The technical comments from those letters are included below with comments and incomplete items noted in italic and underlined.

July 5, 2005, Directive Letter:

Data from the transect installation indicates that the dissolved MTBE plume is located in a shallow aquifer overlying lower permeability strata. The lower permeability strata, in turn, overlie a coarse-grained sand and gravel aquifer that is pumped by water supply wells, including CWS-8 located less than ½-mile downgradient of your site. A review of breakthrough curve data (i.e., plots of time versus concentration data for samples collected from monitoring wells) plotted over the plume distance suggests that the MTBE plume may have detached from the source; with a MTBE plume flowing downgradient from your site at an approximate average velocity of 0.8 feet/day.

INCOMPLETE – Valid hypothesis for dissolved plume migration disregarded.

See response to ACEH comment # 2 above.

Analysis of the breakthrough curves suggests that the dissolved MTBE plume may have already flowed past the sampling transect installed in 2003 and may now be in the vicinity of CWS-8. Your consultant has hypothesized that contamination of CWS-8 with MTBE is unlikely because that well pumps from a deeper aquifer and that the deeper aquifer is protected from shallow contamination by the aquitard that separates the two aquifers. We concur with this part of your SCM but feel that continued monitoring of the multi-level transect, especially ports completed in the deeper aquifer is necessary to ensure that CWS-8 is not at risk. Continued monitoring of data from CWS-8 is needed as well as completing an assessment of potential risks to downgradient water supply sources and resources, as described in more detail below.

INCOMPLETE –Technical response remains unaddressed.

CWS-8 monitoring data was obtained from California Water Service Company and Zone 7 Water District. We have been told the data is confidential and cannot be distributed or reproduced without their permission, but based on a review of the data, no BTEX or MtBE have been detected in CWS #8 from 1984 through January of 2007.

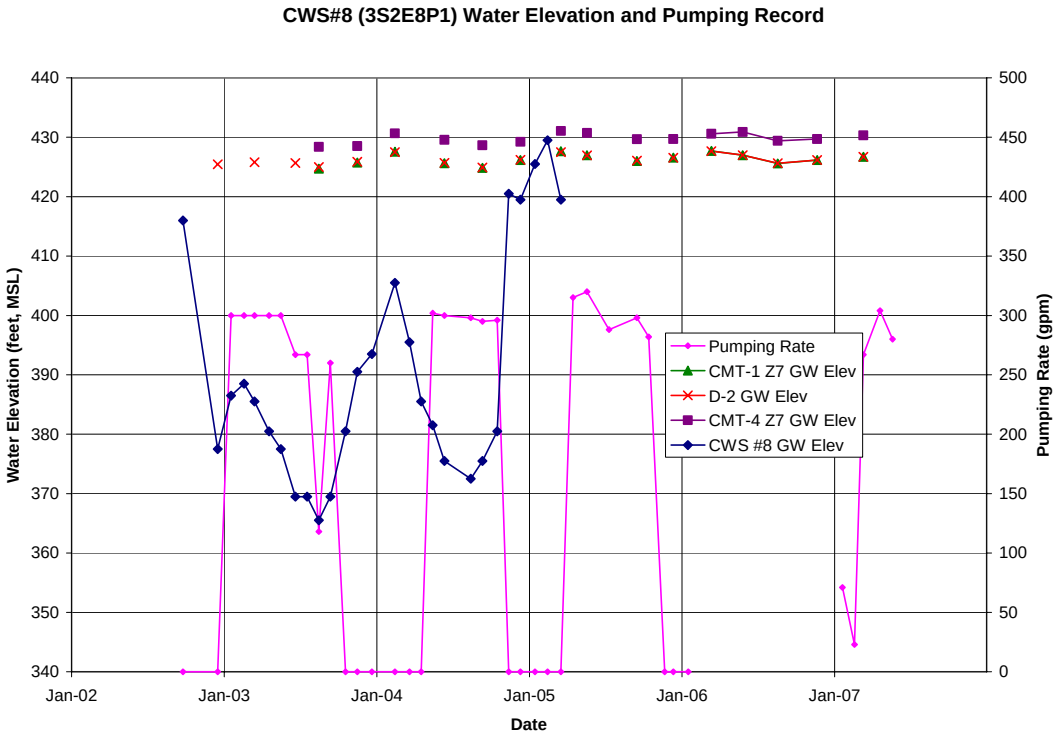
Additionally, the City of Livermore is planning on redeveloping downtown Livermore and has adopted a Downtown Specific Plan (http://www.ci.livermore.ca.us) that outlines the scope of the revitalization efforts. Much of downtown, including the immediate vicinity of your site, has been rezoned to include both commercial and residential uses. Several

residential projects are proposed near your site. This has created a new driver to complete the assessment and cleanup of the contamination associated with your site. Moreover, the cleanup strategy and scope needs to consider land use consistent with the planned redevelopment.

***1. Regional Groundwater Pumping** – We request that you continue monitoring pumping data, flow data, contaminant concentration data, etc., from CWS-8 and update your SCM to include this information on a quarterly basis for at least the next year as a precautionary measure. In addition to evaluating current pumping rates, please update the SCM to include CWS-8 data since the August 2003 CMT transect installation. Please submit as detailed of records as are available (i.e., daily pumping rates) and also summarize the data as necessary (e.g., monthly) to facilitate comparison with water level data for the site. Please present the results of your work as a revision to the e-SCM (i.e., Revision 2.0) and the Quarterly Monitoring Reports as requested below.*

INCOMPLETE – Data gap remains unaddressed.

CWS # 8 pumping and water level data, with a comparison to water level data from monitoring wells screened below the aquitard (CMT-1 Zone 7 and D-2), has been included in the SCM through 2007 (see chart below which will be updated to include 2006 data which was mistakenly not sent by Zone 7). Note that the water levels in the deep zone monitoring wells (CMT-1 Z-7, CMT-4 Z-7, and D-2) have similar seasonal changes, even though CMT-4 is located approximately 1,600 feet upgradient of CMT-1 and D-2, which are approximately 500 to 600 feet upgradient of CWS #8. The water level change in CWS #8 is drawn down approximately 50 feet due to pumping of the well. The combined water level changes in the monitoring wells indicate that these wells show the regional deep aquifer response to groundwater withdrawal during the dry season, not a response to pumping at an individual water supply well (CWS #8).



2. Preferential Pathway Study –

a. Detailed Well Survey - *In SCM Rev. 1.1 your consultant has identified one of 17 abandoned wells as a potential vertical conduit. However, supporting documentation for why this well is considered a potential conduit and other wells are not (i.e., location, construction, description, etc.) is not clear. We request that you provide further information to support your detailed well survey. Please include well completion logs and tables summarizing well information (e.g., date installed, diameter, depth, screen interval, decommissioning details, etc) for all known supply wells (whether active, inactive, decommissioned, or abandoned) and the rationale to support the vertical conduit analysis in your updated SCM. Additionally, our January 22, 2003 letter requested a 1-mile radius well survey. The well survey in SCM Rev. 1.1 was completed to a ½-mile radius. Please increase your radius an additional ½-mile in the downgradient direction, to evaluate all wells within 1-mile downgradient of the subject site. Include your results in SCM Rev. 2.0.*

INCOMPLETE – Data gap remains unaddressed.

See response to ACEH comment # 8 above. In addition, the following summarizes the water supply well data provided by Zone 7.

Water Supply Well Data

State Well ID	Other Well ID	Installation Date	Status	Total Depth (ft bgs)	Completed Depth (ft. bgs)	Screen Interval (ft. bgs)
3S/2E 16B1	NIA	NIA	NIA	NIA	NIA	NIA
3S/2E 16B3	NIA	NIA	NIA	NIA	NIA	NIA
3S/2E 16C1	NIA	NIA	NIA	NIA	NIA	NIA
3S/2E 16E5	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
3S/2E 16F1	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
3S/2E 16L1	NIA	NIA	NIA	NIA	NIA	NIA
3S/2E 17B1	NIA	NIA	AS	NIA	NIA	NIA
3S/2E 17C1	NIA	NIA	AS	NIA	NIA	NIA
3S/2E 17G1	NIA	NIA	NIA	NIA	NIA	NIA
3S/2E 17L1	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

3S/2E 8F1	CWS #10	1/4/54	In Use	576	470	143 - 433
3S/2E 8G1	CWS #19	5/30/60	In Use	465	465	120 - 455
3S/2E 8J3	NIA	NIA	NIA	NIA	NIA	NIA
3S/2E 8J4	NIA	NIA	DC - 7/18/88	NIA	NIA	NIA
3S/2E 8N2	CWS #14	1/16/58	In Use	530	526	140 - 515
3S/2E 8P1	CWS #8	Fall 1948	In Use	273	NIA	120 - 141, 150 - 158, 163 - 167, 177 - 194, 195 - 203, 218 - 231, 262 - 263
3S/2E 8P2	CWS #3	11/18/24	DC - 5/1/01	420	415	280 - 412
3S/2E 8P3	NIA	NIA	DC - 3/8/88	NIA	NIA	NIA
3S/2E 9D1	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
3S/2E 9K1	NIA	NIA	AS	NIA	NIA	NIA
3S/2E 9P1	CWS #12	5/3/56	In Use	515	504	192 - 492
3S/2E 9Q1	NIA	NIA	NIA	NIA	NIA	NIA

NIA - No Information Available

Unknown - Unknown or cathodic protection

AS - Abandoned Supply

DC - Decommissioned

ft. bgs - feet below grounds surface

b. Utility Survey *- The SCM Rev. 1.1 identifies data gaps regarding potential deep horizontal utility locations and we request that you complete your evaluation of this pathway. Specifically, please evaluate whether or not past and/or present utility lines may be responsible for conveying LNAPL from your site to the Mill Springs Apartment area where LNAPL has been detected (e.g., in Well MS-MW1). Include your results in SCM Rev. 2.0.*

INCOMPLETE – Data gap remains unaddressed.

See response to ACEH comment # 9 above

3. Evaluation of Potential Risks Posed by Off-Site Dissolved Contaminants -

a. Off-Site MTBE Plume*. In SCM Rev. 1.1, a detached plume of MTBE from your site is thought to be currently in the vicinity of Well CWS-8. While this plume does not appear to pose a threat to Well CWS-8 for the reasons described above, an evaluation of the potential risk of the detached plume to other downgradient supply wells needs to be performed. We therefore request that you specifically assess the likelihood of downgradient water wells potentially being impacted by the shallow plume of MTBE that is presumed to have detached from your site and continues to flow downgradient of the sampling transect installed by your consultant in 2003. Moreover, your evaluation should consider whether the plume could pose a risk to supply wells that could potentially be installed in the path of the off-site plume in the future. We expect that this evaluation will require that your consultant (1) estimate the trajectory and attenuation of the detached plume and (2) confer with local planners and water managers to assess the planned utilization of groundwater downgradient of the current location of the detached plume. Note that this evaluation is critical for us to determine the level of work that may be necessary to protect water resources in the area. If, for example, your consultant's analysis cannot show that downgradient water supplies are not at risk, it may be necessary for you to track and extract your detached MTBE plume. We recognize that this could be a very expensive undertaking which is why the risk evaluation performed by your consultant should be as accurate as possible. Please present the results of your assessment in SCM Revision 2.0 requested below.*

INCOMPLETE – Data gap remains unaddressed.

See response to ACEH comment # 2 above.

b. Off-Site Petroleum Hydrocarbon Plume*. As described in SCM Rev. 1.1, high concentrations of dissolved BTEX and other petroleum hydrocarbons have been detected as far as 1,300 feet downgradient from your site. The fact that these compounds have not been detected in the sentry transect of multi-level wells installed by your consultant in 2003 may show that dissolved BTEX biodegrades in the aquifer before reaching the transect. Please evaluate this hypothesis and present the scope, results, and conclusions of your evaluation in SCM Revision 2.0 requested below.*

INCOMPLETE – Data gap remains unaddressed. Please note this comment is exclusive to BTEX. It does not refer to nor infer MTBE.

We disagree with the statement that "*high concentrations of dissolved BTEX and other petroleum hydrocarbons have been detected as far as 1,300 feet downgradient from your site."* Our monitoring has shown sporadic, not reproducible, low concentrations in wells that are greater than 1000 feet downgradient of the site (well MW-13 is 1000 feet downgradient). The following table shows detected TPH-G and BTEX concentrations in the wells located further downgradient than MW-13. Note the following –

- MW-8 had low benzene in 2002, but has been non detectable since then.
- MW-10 had one detection of TPH-G in 2000, but has been non detectable since then.
- MW-11 had one detection of TPH-G and BTEX during the initial sampling of this well, but the well has had non detectable concentrations since then.
- CMT-1 Z1 had two low level toluene detections in 2003 and 2004, but has been non detectable since then. All other zones in CMT-1 have been non detect for TPH-G and BTEX.

- All zones in CMT-2 have been non detect for TPH-G and BTEX.
- CMT-3 Z1 had low concentrations of TPH-G in 2005, but was non detect when last sampled in 2006.
- CMT-3 zones 5 and 6 had low concentrations of toluene in 2003, but both zones have been non detectable since then.

Summary of Detected TPH-G and BTEX Downgradient of MW-13

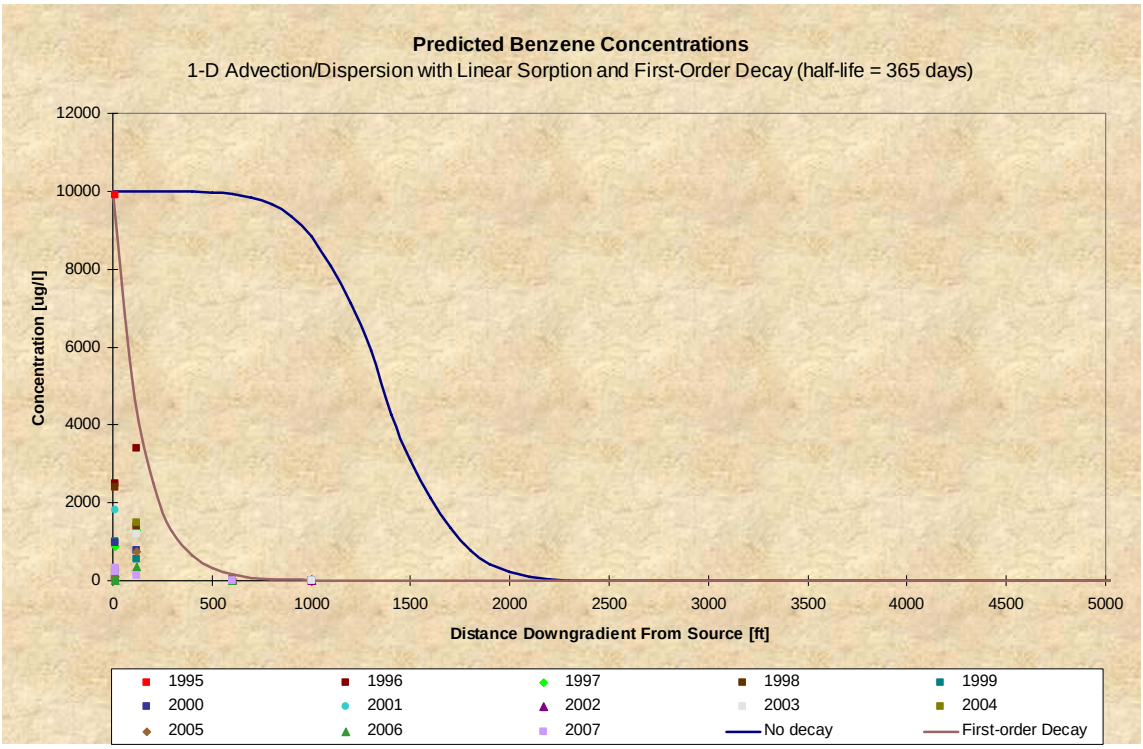
Well Number	Zone	Distance Downgradient (feet)	Date Measured	TPH-G (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)
MW-8		1,200	09/16/02	<50	**0.52**	<0.5	<0.5	<0.5
MW-8			12/23/02	<50	**0.52**	<0.5	<0.5	<0.5
MW-10		1,450	03/21/00	**52.7**	<0.5	<0.5	<0.5	<0.5
MW-11		1,700	06/28/99	**91.3**	**0.68**	**2.02**	**1.07**	**2.62**
MW-12		1,750	06/28/99	<50	<0.5	<0.5	<0.5	<0.5
CMT-1	Z1	1,650	12/03/03	<50	<0.5	**0.56**	<0.5	<0.5
CMT-1	Z1			ND				
CMT-1	Z1		02/18/04	<50	<0.5	**0.6**	<0.5	<0.5
CMT-1	Z1			ND				
CMT-1	Z2			ND				
CMT-1	Z3			ND				
CMT-1	Z4			ND				
CMT-1	Z5			ND				

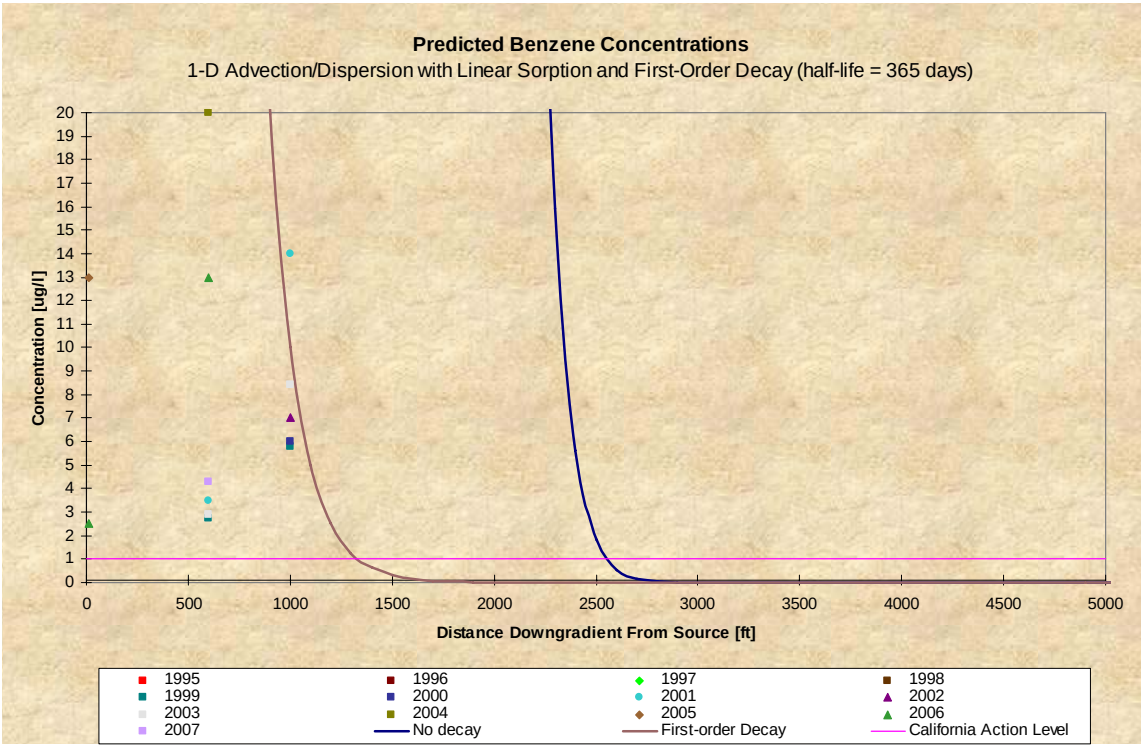
CMT-1	Z6			ND				
CMT-1	Z7			ND				
CMT-2	Z1	1,550		ND				
CMT-2	Z2			ND				
CMT-2	Z3			ND				
CMT-2	Z4			ND				
CMT-2	Z5			ND				
CMT-2	Z6			ND				
CMT-2	Z7			ND				
CMT-3	Z1	1,350	03/15/05	**58**	<0.50	<0.50	<0.50	<0.50
CMT-3	Z1		09/20/05	**67**	<0.5	<0.5	<0.5	<0.5
CMT-3	Z2			ND				
CMT-3	Z3			ND				
CMT-3	Z4			ND				
CMT-3	Z5		08/18/03	<50	<0.5	**0.56**	<0.5	<0.5
CMT-3	Z6		08/19/03	<50	<0.5	**0.51**	<0.5	<0.5
CMT-3	Z7			ND				

As shown in the response to ACEH comment # 2 above, all of the monitored geochemical parameters (dissolved oxygen, pH, methane, dissolved iron, dissolved manganese, nitrate, sulfate, carbon dioxide, and alkalinity) have concentration changes within the groundwater plume that are indicative of natural degradation and of biodegradation. The combination of the BTEX plume being stable or getting smaller in size with time, the decrease in BTEX concentrations in downgradient wells over time, and the multiple positive geochemical indicators of biodegradation and natural attenuation, points toward biodegradation of BTEX within the plume.

In parallel with the evaluation of MTBE, Golder performed a fate and transport model to estimate potential plume length of benzene based on the site-specific hydrogeologic parameters. We conservatively estimated the transport of benzene in the natural environment using the one-dimensional dispersion model developed by de Marsily (1986) for a constituent in a semi-infinite medium (Attachment A).

The transport model input parameters include Darcy velocity (the product of hydraulic conductivity multiplied by the hydraulic gradient), effective porosity, dispersion coefficient, retardation factor (a function of the octanol-water partition coefficient, the media bulk density of the solid media and the fraction of organic carbon in the solid media), and half-life time for concentration decay (a parameter that accounts for concentration reductions primarily due to biodegradation). The model does not explicitly account for dilution of constituents, but estimates a maximum center-line concentration. Should dilution be included (using 2- and 3-dimensional models), the maximum center-line concentrations would be even lower than those provided in this analysis.





As shown on the above figures, steady-state simulations indicate for a source concentration of approximately 10,000 micrograms per liter (µg/L) benzene (based on historic high concentrations observed at monitoring well MW-6), and assuming no contaminant degradation, a plume length (as defined by the California State maximum contaminant level (MCL) of 1 µg/L) of approximately 2,500 feet would be expected (as shown in Figures 1 and in the "blow-up" Figure 2).

Assuming a half-life decay for benzene degradation of 365 days (which is well within estimates provided in the published literature), a plume length (as defined by the 1 µg/L contour) of approximately 1,400 feet would be expected (as shown in Figure 2). As shown on Figure 1 and 2, all historic data (excepting one result from MW-13 which likely reflects the presence of product in the samples) are within the "envelope" of concentrations described by the first-order decay curve, and thus the simulation is conservative with respect to predicted downgradient concentrations.

The model demonstrates that the observed benzene concentrations agree well with those predicted using a simple fate and transport model. Therefore, the model results combined with the evaluation of decreasing benzene plume size, decreasing concentrations in monitoring wells, and positive geochemical indicators, demonstrate to a sufficient degree that biodegradation of the benzene plume is occurring.

As discussed above, the City of Livermore is planning to redevelop portions of downtown Livermore. These plans include areas that overlie subsurface contaminants that have been released from your site. Therefore, please evaluate whether dissolved BTEX or other petroleum hydrocarbons may present an unacceptable risk of exposure via any pathway, including vapor migration, to receptors. Please be sure to consider the

redevelopment plans in your evaluation. Please present the scope and findings of your evaluation in SCM Revision 2.0 requested below.

INCOMPLETE – Data gap is incomplete.

This evaluation was included in the August 2006 Source Zone Remediation Plan.

***c. Off-Site LNAPL –** As discussed in SCM Rev. 1.1, LNAPL has been detected in the subsurface as far away as 900 from your site (i.e., in DP borings and in Well MS-MW1 at the Mill Springs Apartment complex. The issue of the source, extent, and significance of the LNAPL (1) as an ongoing source of groundwater contamination and (2) as a potential source of vapors that could pose risks to above-ground receptors has not been adequately addressed. As we discussed in our meetings with your consultants, this is a key data gap in the current SCM for your site. The occurrence, source, mobility, longevity, and risk posed by the LNAPL needs to be evaluated. In particular, please assess whether the LNAPL detected offsite is LNAPL that has migrated from your site or LNAPL that may exist from prior activities at neighboring properties. Please present a concise workplan describing the scope of your evaluation for our approval in SCM Revision 2.0 requested below.*

INCOMPLETE – Data gap remains unaddressed.

The occurrence of LNAPL was addressed in the *Field Investigation for Source Zone Remediation* submitted on June 6, 2006 and also see response to ACEH comment #9 above.

***3. Additional Downgradient Monitoring Wells** – We do not concur with your proposal to install two additional monitoring wells downgradient of the transect. This is because the purpose of these additional wells has not been described in the SCM (i.e., what specific hypotheses would those wells test?). Please re-evaluate your proposal for additional monitoring wells considering the results after performing your detailed well survey (Technical Comment 2a) and evaluation of the risks posed by the offsite MTBE and BTEX plumes (Technical Comments 3a and 3b) and report your results in the SCM Revision 2.0 requested below.*

INCOMPLETE – Data gap remains unaddressed.

As a result of the evaluation of the fate and transport of the BTEX and MTBE plumes, in addition to the recent monitoring results at the furthest downgradient wells, additional downgradient wells are no longer considered necessary.

***4. Groundwater Monitoring Schedule** – We concur with your groundwater monitoring schedule proposed in the "First Quarter 2005" report with the following modifications. We request that you collect and analyze groundwater samples from the following wells on a quarterly basis for the next 3 quarters: all ports of the CMT wells, 8K2, and MS-MW1. Include updated groundwater monitoring tables in the SCM Revision 2.0 requested below. Report your groundwater monitoring results in the Quarterly Reports requested below. Please continue to submit data tables from Quarterly Reports for this site by e-mail to ACEH (donna.drogos@acgov.org) at the time the reports are submitted to our agency.*

INCOMPLETE – Request for work ignored. Groundwater monitoring schedule as approved not implemented. You have failed to collect data in the specified timeframe to meet your data analysis and interpretation requirement. You will need to propose an alternative to satisfy this requirement.

Groundwater samples were obtained from all zones of the CMT wells for the four sampling events in 2005. Essentially no hydrocarbons were detected in the non-routine monitoring zones of CMT-1, CMT-2, and CMT-3 and subsequent monitoring was performed according to the normal monitoring schedule. Well MS-MW-1 was not sampled quarterly, often due to the presence of small quantities of free-phase hydrocarbons encountered during well purging. Well 8K2, a Zone 7 water-level monitoring well, was not sampled quarterly during 2005, partially due to access issues. These two wells were sampled at least annually during 2005 and 2006.

> *ACEH's January 22, 2003 letter requested specific modifications to your groundwater monitoring data tables to facilitate review and interpretation of the data by our agency. Some of the requested modifications were performed, however most were not. Please revise your data reporting format to meet the requirements of our January 22, 2003 letter, the text of which is included below for your reference:*
>
> ***"b) Groundwater Monitoring Data Tables***
>
> *The cumulative groundwater data tables in technical reports submitted for your site appear to be incomplete. Examples include but are not limited to: early sampling data for MW-1 is missing, analytical results for some monitoring events in 1995 are missing, dates for sampling and gauging do not corroborate and in some instances are weeks off, analytical data appears to be missing for several monitoring events, some events have gauging data but no analytical results or analytical results are included but gauging data is not, the current quarterly monitoring report does not include cumulative monitoring data, some monitoring wells are not sampled and no explanation of why sampling was not performed is given, etc.*
>
> *Quarterly Reports submitted for this site are required to include cumulative data tables containing all analytical results, groundwater measurements, groundwater elevations, free product thickness, presence of sheen, explanation for not sampling well(s), etc., from all previous and current groundwater monitoring events for all wells monitored in relation to this site. We request that your gauging and analytical data tables be combined into one table to facilitate presentation of this data and identify missing data, and that dates are tabulated in a month/day/year format. Additionally, please include depth discrete groundwater monitoring data in your tables. Please update your cumulative groundwater data tables to include this information and include in all future Quarterly Reports submitted for this site."*
>
> *INCOMPLETE – Data tables missing analytical data, contain incorrect data, etc. Including but not limited to, analytes not reported for Fourth Quarter 2006, amended elevation data for monitoring wells not updated, and CMT-4 Z1 events with depth to water measurements translated as dry for MSL.*

The first quarter 2007 historical report table should have included the corrected data requested above. We have included all historical data that are in our files for the site. In some cases we cannot comply with your request as the data simply does not exist. An example of one of the issues with the site historical data prior to our involvement at the site is shown below (excerpted from first quarter 1997 RSI monitoring report), where specific dates (rather than month and year) were sometimes not used in historical data tables from old reports.

Well	Date Measured	Depth to Free Product	Depth to Water
MW-1	Sep-88		60.50
	Aug-90		43.10
	Oct-91		66.39
	Jan-92		68.72
	May-93		34.76
	Sep-93		38.70

5. Deep Contamination in CMT-4 *– Data from installation of CMT-4 indicates subsurface geologic conditions similar to those encountered in the borings for the transect of multilevel wells installed 1,600-feet downgradient from the release site in March 2003. As described in the SCM, a shallow aquifer overlies lower permeability strata which in turn overlies a coarse-grained sand and gravel aquifer pumped by water supply wells in the area. The hypothesis in your SCM is that the deeper aquifer is protected from shallow contamination by the aquitard that separates the two aquifers. However, petroleum hydrocarbon contamination in CMT-4 has been consistently detected in the ports below the aquitard. Please evaluate the data from CMT-4 and provide an explanation for the detections of deeper contamination and evaluate whether contaminants detected in the deeper aquifer presents a potential threat to downgradient supply wells. We recommend that your data analysis also include plots of head vs. depth over time for this well. Please report your results in the SCM Revision 2.0 requested below.*

INCOMPLETE – Data gap remains unaddressed. Statements of alternative hypotheses provided without technical justification and validation. See technical comment A.3. above.

See response to ACEH comment # 3 above.

6. Source Area Sampling of Vapor Pathway – *We concur with your proposal to investigate the vapor pathway in the source area of the subject site and on the property immediately downgradient. We request that you re-evaluate the sampling locations proposed in SCM Rev. 1.1 as it appears additional sampling points are needed to evaluate the vapor pathway. We recommend that you also collect vapor samples from CMT-4 Z1. Additionally, please note it appears that residential use is being proposed by the City of Livermore for the Groth Bros. site, immediately downgradient of the subject site. Include your proposal for this work in the SCM Revision 2.0 requested below.*

INCOMPLETE – Vapor samples from CMT-4 Z1 not collected. Include soil gas samples from this port in the CMT as part of your quarterly monitoring.

See response to ACEH comment # 5 above. Sampling of CMT-4 Z1 was considered redundant, because there is a permanent soil vapor monitoring probe (SV-MW-2) located on-site adjacent to MW-2 located at the proper depth as required by existing protocol. However, as discussed above we will sample vapor form CMT-4-Z1 and Z6 to provide additional data regarding soil vapor and to provide data to evaluate the hypothesis of diffusion across chambers in the CMT well.

7. Definition of Lateral Extent of Source Area *– We concur with your proposal to investigate the extent of NAPL immediately downgradient of your site. Please provide a more detailed map (larger scale, with data of soil concentrations with depth) of your sampling locations. We recommend that you consider additional sampling location(s) in the vicinity of H-2 to H-3. Include your proposal for this work in the SCM Revision 2.0 requested below. Additionally, the City of Livermore is scheduled to perform street and utility upgrade activities at First and L Streets this summer. We encourage you to coordinate your field activities with theirs in the event they uncover potential source areas and/or utilities that would provide data for your site.*

COMPLETED

8. Interim Remediation – *We previously approved a workplan, dated March 27, 2003, for interim remediation at this site, however, it does not appear that any of the work proposed in that plan was implemented. Remediation of soil and groundwater contamination at the subject site is required. Please provide an update on your progress on implementing the interim remediation workplan and/or your recommended adjusted plan based upon the results of your SCM Rev. 1.1. Include your proposal and schedule in the Revised Interim Remediation Plan requested below. PENDING - To be addressed in CAP*

9. Corrective Action Plan *– The purpose of the CAP is to use the information obtained during investigation activities to propose cost-effective final cleanup objectives for the entire contaminant plume and remedial alternatives for soil and groundwater that will adequately protect human health and safety, the environment, eliminate nuisance conditions, and protect water resources. We require that you prepare a CAP for the final cleanup of contamination (MTBE, petroleum products, and associated blending compounds and additives) in soil and groundwater caused by an unauthorized release at your site. The CAP shall detail at least three technically and economically feasible methods to restore and protect beneficial uses of water and to meet the cleanup objectives for each contaminant established in the CAP. The CAP must propose verification sampling and monitoring to confirm completion of corrective actions and evaluate CAP implementation effectiveness. Please submit your CAP by the date below. PENDING – Requirements as specified in technical comment A.14. above.*

The CAP will address these issues.

Additional ACEH comments provided in a May 25, 2007 letter.

4) Please evaluate the sampling protocol for all monitoring wells at the site.

Site monitoring wells were purged using the typical three-casing volume purge method until 1999, when a one-casing volume purge was used. The reason or technical details for switching the purge volume are not documented in our files, however, we believe this was done based on verbal discussion and concurrence with the former case worker for the site. It is likely that the purge volume was reduced to minimize the amount of contaminated purge water that had to be transported back to the site, and the associated level of effort and time required, and disposed of through the City sanitary sewer. Note that the historical hydrocarbon concentrations do not appear to have been affected by the change in well purging protocol. CMT wells are purged under different protocol developed in consultation with Murray Einarson at the time of well installations in 2003.

While there is sufficient evidence throughout the published literature (*The California Well Purging Study*, The Western States Petroleum Association (WSPA), October 1996) to justify a no-purge water sampling protocol, all of the site wells do not meet the specific criteria for having water levels within the well screen interval.

To evaluate whether the site should return to a three-casing volume purge, or remain using the one-casing volume purge, we propose that several wells will be sampled during the next sampling event (June 2007) using the one- and three-casing volume purge protocol. Separate samples will be submitted to the laboratory for analysis and the results will be compared. The one- and three-casing volume purge results will be used to develop future sampling protocol, which will be presented in the second quarter 2007 monitoring report.

Summary and Conclusions

The information and data evaluations presented in this letter are intended to address the remaining open data gaps to the extent possible at this time. The following summarize the primary conclusions regarding the open data gaps and also outline what further work, if any is necessary:

- The issue of the vertical extent of contamination and our proposed source zone remediation approach is addressed in detail under separate cover in Golder's revision to the *Source Zone Remediation Plan Addendum* dated June 22, 2007. The proposed remediation is focused on the highest levels of remaining mass in place from 36 to 48 feet bgs as defined in our source zone study. We recognize that there may be mass in the vadose zone directly under the tank pit, however, in exploration immediately adjacent to the tank (CMT-4 and MIP-14) there is little evidence at the present time that there is significant mass in the vadose zone. Biodegradation and volatilization processes may have significantly degraded whatever mass was sorbed onto soil over the past ten years. Regardless, our source zone remediation plan will address removal and reduction of vapor and mass in the vadose zone.
- Natural attenuation is effectively reducing the BTEX portion of the plume over time, and this is supported by historical chemistry which documents the reduction in the plume size over time, and natural attenuation parameters from a longitudinal profile which indicate biodegradation of the BTEX plume is occurring.
- It is our opinion, based on the reduction in the size of the MTBE plume, concentrations in individual wells, and the accumulating body of literature supporting both anaerobic and aerobic degradation of MTBE (Wilson, et al, 2005), that natural attenuation processes are reducing the MTBE portion of the plume. Biodegradation of MTBE is difficult to prove through geochemical methods at the field scale. To provide additional evidence that degradation is occurring we will perform microbial testing to document that microorganisms capable of degrading MTBE are present.
- There is evidence that the source zone may have been unsteady over time leading to variable concentrations of MTBE along the longitudinal axis of the plume. However, downgradient wells were in place in the time frame that a hypothetical "slug" of MTBE related to rising water levels in the mid-1990's would have been passing through. Relatively low concentrations of BTEX and MTBE were observed in early monitoring data from the downgradient sentinel wells (MW-11, MW-12, and CMT-1 through 3) which then subsequently dissipated. This may have been an indication of a possible slug of relatively higher levels of BTEX and MTBE. However, there is no convincing data

that a slug of MTBE of high concentration (>100 ug/l) progressed downgradient beyond the sentinel wells. In other words, both models may in fact be correct. The unsteady source may have produced pulses of varying concentration in response to rising water levels, however, natural attenuation including the processes of biodegradation, dispersion, dilution, sorption, and volatilization appears to reduced the level of contaminants to relatively low levels by the time they reach the sentinel wells.

- The above conclusion is supported by a site-specific fate and transport model based on actual MTBE detections at the site. Using very conservative assumptions, the model demonstrated that the maximum likely downgradient extent of MTBE associated with the Desert Petroleum site would be on the order of 3,000 feet with a "worst-case" scenario (no degradation at all) of 4,800 feet.

- The nearest downgradient municipal supply well is CWS #8 (Well 8K2) which is protected by the aquiclude underlying the first encountered water bearing zone. Based on data provided to us by California Water Services there have been no detections of BTEX or MTBE from 1984 to January 2007 in this well. The next supply well in the projected path of the plume beyond well CWS #8 (Well 8K2) is Well 7P3. This well is at a distance of 9000 feet from the source zone ─ about three times the distance that the fate and transport model indicates the plume could travel. Based on the evidence of natural attenuation and the fate and transport model, it is our opinion that the municipal water supply is not currently at risk from the site contamination.

- Hydrocarbon detections below the aquitard on-site at CMT-4 are not resolved. The data indicates that the early detections were likely from carry down related to drilling, however, the current detections appear to have a different source. Since there is a strong head difference across the aquifer it seems unlikely that the detections are related to cross communication either through short-circuiting through a borehole or through natural defects in the aquifer. Furthermore, the chemistry of the detections is unlike that of the chemistry measured in CMT-4-Z5 located at the top of the aquiclude. At this time, we believe that detections may be due to vapor diffusion through between Zone 1 and Zone 6 and subsequent impact to Zone 6. It is also possible that the detections are from possible upgradient sources since we do see PCE impacts related to upgradient sources. Regardless, this issue does not impact our remedial strategy for the source zone at this time, and continued monitoring will be required. In addition, we recommend obtaining vapor samples from Z1 and Z6 to determine if the diffusion mechanism is a viable hypothesis.

- We believe our maps showing the estimated extent of groundwater impact for the site to be accurate based on current information. Current maps do show a decreased extent for the dissolved phase plume compared to previous reports because the plume has continued to decrease in size.

- Based on a supplemental review of ACEH case files and Sanborn Maps there are no preferential pathways (deep utilities or oil pipelines) that have affected or can affect the migration of LNAPL from the site. Based on the source zone remediation investigation, including all of the recent investigation work by others at the Groth Brothers property, there is no compelling evidence that product observed in (MS) MW-1 migrated from the Desert Petroleum site. All subsurface investigations indicate that the maximum downgradient extent of LNAPL from the site was approximately 200 feet. We think it is possible that the floating product that "re-appeared" in (MS) MW-1 was re-mobilized

from the vadose zone by the dramatic thirty-foot water level rise that occurred in the well between 1992 and 1995. Regardless, the work performed for the site zone characterization has largely rendered this issue moot, as the source zone for the site clean up has been defined laterally and vertically.

- We have completed a well survey for a one-mile radius of the site and have not identified any wells which could act as conduits in the source area or the area of the dissolved phase plume.

- The information regarding vertical gradients at the site are not anomalous when considered in the context of the regional hydrogeology. In general we see relatively strong downward gradients across the regional aquitard but these gradients have occasionally reversed likely as a result of seasonal fluctuations in groundwater pumping.

- With regard to the risk assessment submitted to ACEH (included in our June 6, 2006 report), this assessment was specifically limited in scope to evaluate the risk of vapor intrusion to the Groth property due to the pending residential development. There was no representation, nor implication, that it was intended as a global risk assessment for the final corrective plan for the site as whole. Permanent soil gas sampling probes were installed on the Groth property and on the Desert Petroleum site. These soil gas points, as well CMT-4, will be used to assess vapor risk at the Desert Petroleum site concurrent with implementation of the source zone remedial plan. In addition, the issue of risk related to groundwater contamination including all receptors and all COC's will be addressed as necessary in the requested CAP.

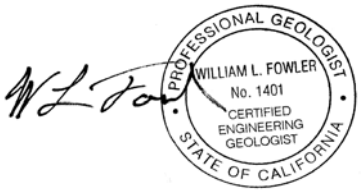
- To evaluate whether the site should return to a three-casing volume purge, or remain using the one-casing volume purge, we propose that several wells will be sampled during the next sampling event (June 2007) using the one- and three-casing volume purge protocol. Separate samples will be submitted to the laboratory for analysis and the results will be compared. The one- and three-casing volume purge results will be used to develop future sampling protocol, which will be presented in the second quarter 2007 monitoring report.

If you have any questions regarding this letter or the attached SCM (2.0), please feel free to call us to discuss.

Sincerely,

GOLDER ASSOCIATES INC.

Kris H. Johnson, C.E.G. 1763
Senior Consultant



William L. Fowler, C.E.G. 1401
Senior Consultant
Attachments:

- Attachment A –Technical Memo – Fate and Transport Model for Desert Petroleum Site
- Attachment B – One-mile Radius Well Survey
- Attachment C – EDR Search
- Attachment D – Sanborn Maps
- Attachment E – Map of Removed Oil Lines (Aqua Resources September 12, 1988)
- Attachment F – City of Livermore Utility Map

ATTACHMENT A

Technical Memo: Fate and Transport Model for Desert Petroleum Site

TECHNICAL MEMORANDUM

TO:	Kris Johnson	**DATE:**	June 14, 2007
FR:	Todd H. Rees, Ph.D., P.E. – Golder Associates Inc.	**OUR REF:**	053-7020
RE:	**EVALUATION OF MTBE MIGRATION IN GROUNDWATER AT THE VALLEY GAS SITE**		

Golder performed a fate and transport model to estimate potential plume lengths of methyl *tert*-butyl ether (MTBE) based on the site-specific hydrogeologic parameters. We conservatively estimated the transport of MTBE in the natural environment using the one-dimensional dispersion model developed by de Marsily (1986) for a constituent in a semi-infinite medium. The governing equation is:

$$D\frac{\partial^2 C}{\partial x^2} - U\frac{\partial C}{\partial x} = \omega R(\frac{\partial C}{\partial t} + \lambda C)$$

where:

C = constituent concentration;

t = time;

x = distance;

U = the Darcy velocity (considered constant for one-dimensional flow);

D = the dispersion coefficient (considered constant, using only longitudinal dispersion for one-dimensional model);

ω = the effective porosity;

R = the retardation factor of the constituent due to adsorption; and,

λ = the coefficient of exponential (first-order) decay.

Here, λ is determined from:

$$C/2 = C\exp(-\lambda t)$$

The transport model input parameters include Darcy velocity (the product of hydraulic conductivity multiplied by the hydraulic gradient), effective porosity, dispersion coefficient, retardation factor (a function of the octanol-water partition coefficient, the media bulk density of the solid media and the fraction of organic carbon in the solid media), and half-life time for concentration decay (a parameter that accounts for concentration reductions primarily due to biodegradation). The model does not explicitly account for dilution of constituents, but estimates a maximum center-line concentration. Should dilution be included (using 2- and 3-dimensional models), the maximum center-line concentrations would be even lower than those provided in this analysis. The model input parameter values for each of these parameters are provided on both Figures 1 and 2.

As shown on Figures 1 and 2, steady-state simulations indicate for a source concentration of approximately 7,000 micrograms per liter (µg/L) MTBE (based on historic high concentrations observed at monitoring well MW-2), and assuming no contaminant degradation, a plume length (as defined by the 1 µg/L contour) of approximately 4,700 feet would be expected (as shown in Figures 1 and in the "blow-up" Figure 2). The anticipated distance to the 5 µg/L California State Secondary maximum contaminant level (MCL) is about 4,500 feet (as shown of Figure 2).

Assuming a half-life decay for MTBE degradation of 500 days (which is well within estimates provided in the published literature), a plume length (as defined by the 1 µg/L contour) of approximately 3,200 feet would be expected (as shown in Figure 1). The anticipated distance to the 5 µg/L California State Secondary MCL is about 2,700 feet (as shown of Figure 2). As shown on Figure 1, all historic data (excepting a single anomalous 20,000 µg/L value at MW-5 in 1996) is within the "envelope" of concentrations described by the first-order decay curve, and thus the simulation is conservative with respect to predicted downgradient concentrations.

Figure 1
Predicted MTBE Concentrations Downgradient of Valley Gas: 17-Year Simulation

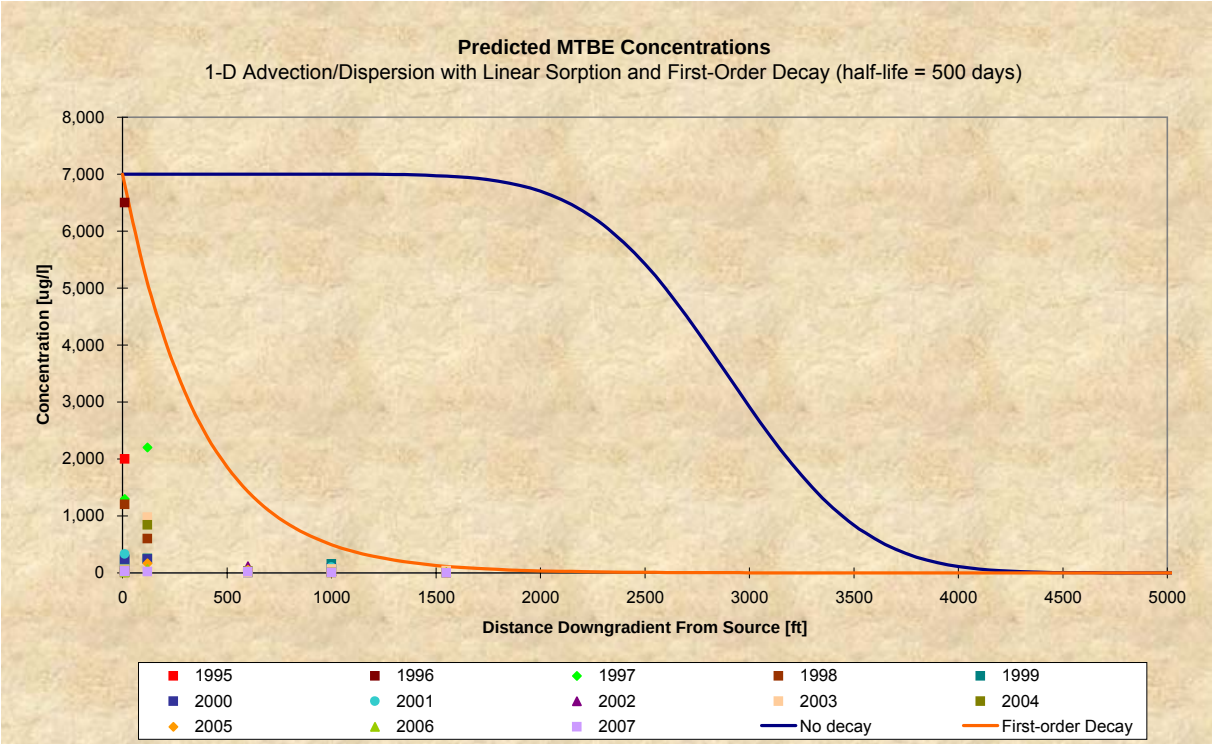
Steady State One-Dimensional Advection/Dispersion Model with Reaction Terms (Degradation)

$$C(x,t) = \frac{C_o}{2} exp\left(\frac{Ux}{2D}\right)\left\{exp(-Bx)erfc\left[\frac{x - t\sqrt{(U/\omega R)^2 + 4\lambda D/\omega R}}{2\sqrt{Dt/\omega R}}\right] + exp(Bx)erfc\left[\frac{x + t\sqrt{(U/\omega R)^2 + 4\lambda D/\omega R}}{2\sqrt{Dt/\omega R}}\right]\right\}$$

where: $B = \sqrt{(U/2D)^2 + (\lambda\omega R/D)}$ (Ref. deMarsily, *Quantitative Hydrogeology* , 1986)

Model Input Parameters

Darcy Velocity	U = K i	0.09638	[ft/yr]
Diffusivity	α	46.4	[ft]
Dispersion Coefficient	D = α*U	4.47	[ft^2/day]
Effective Porosity	ω	0.20	[Dimensionless]
Initial Concentration	C_o	7000	[mg/l]
Retardation Factor	R = 1 + K_d ρ_b/n	1.03	[Dimensionless]
Bulk Density	ρ_b	2.16	[g/cm^3]
Distribution Coefficient	K_d	0.003	[cm^3/g] [ml/g]
Decay Coefficient	λ = (ln2) / $t_{1/2}$	0.51	[/year]
Half-Life Time	$t_{1/2}$	500	[days]
	$t_{1/2}$	1.4	[years]
Simulation Time	t	17	[years]



Prepared by: THR 6/13/07
Checked by:
Reviewed by: JRS 6/14/07

Figure 2
Predicted MTBE Concentrations Downgradient of Valley Gas: 17-Year Simulation
('Blow Up" of Figure 1)

Steady State One-Dimensional Advection/Dispersion Model with Reaction Terms (Degradation)

$$C(x,t) = \frac{C_o}{2} exp\left(\frac{Ux}{2D}\right)\left\{exp(-Bx)erfc\left[\frac{x - t\sqrt{(U/\omega R)^2 + 4\lambda D/\omega R}}{2\sqrt{Dt/\omega R}}\right] + exp(Bx)erfc\left[\frac{x + t\sqrt{(U/\omega R)^2 + 4\lambda D/\omega R}}{2\sqrt{Dt/\omega R}}\right]\right\}$$

where: $B = \sqrt{(U/2D)^2 + (\lambda\omega R/D)}$ (Ref. deMarsily, *Quantitative Hydrogeology* , 1986)

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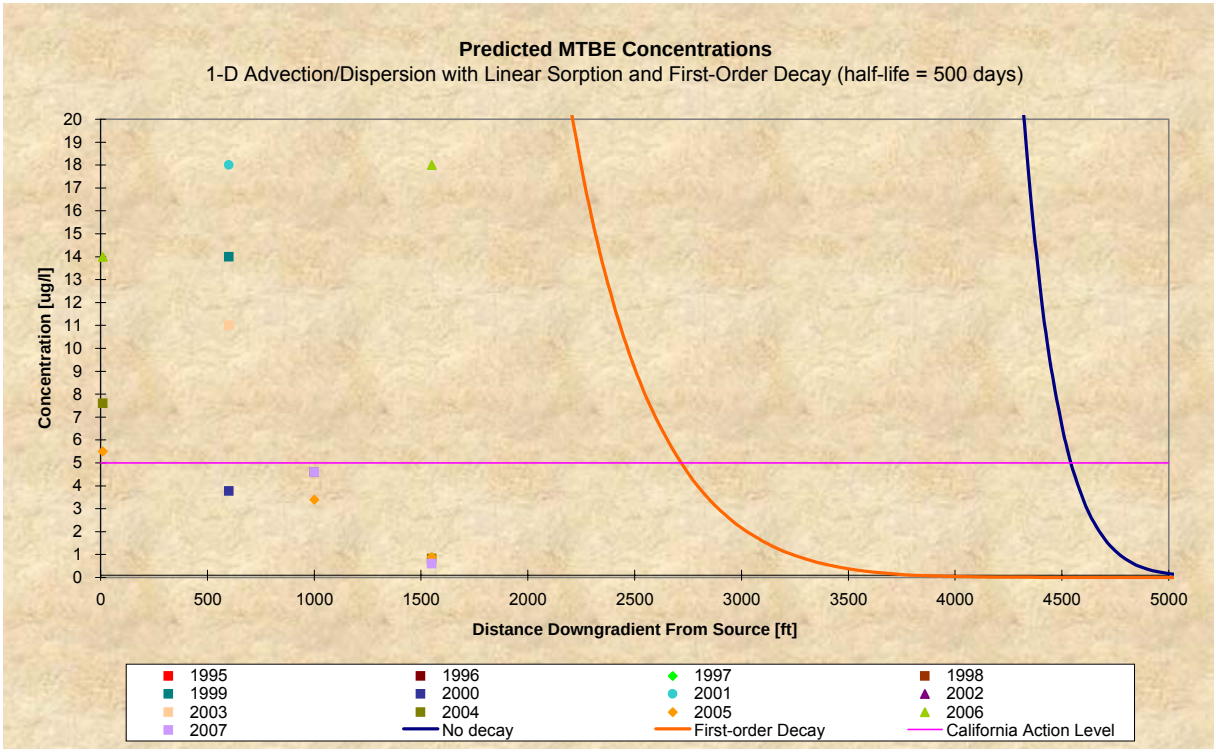
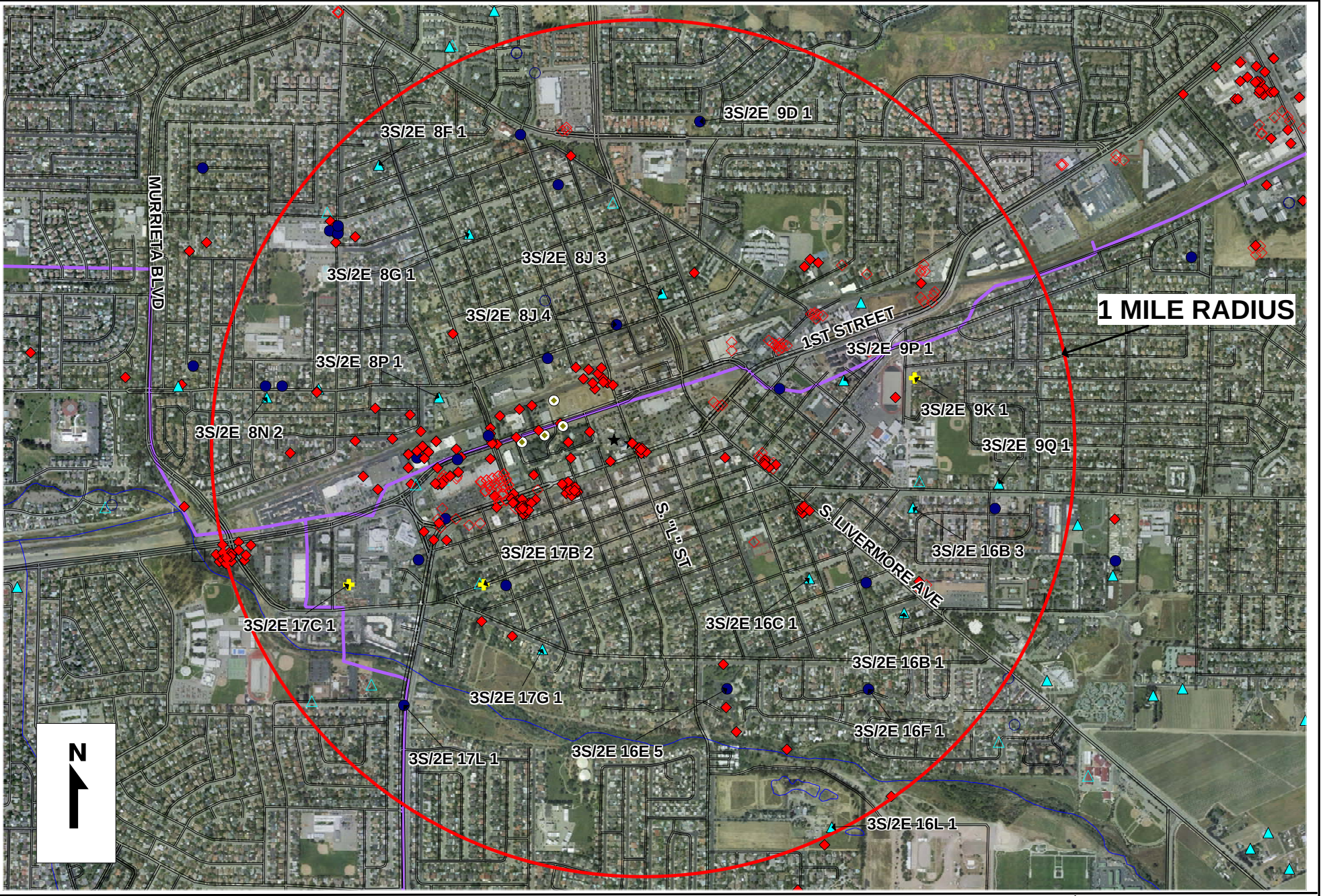
Dispersion Coefficient	D = α*U	4.47	[ft^2/day]
Effective Porosity	ω	0.20	[Dimensionless]
Initial Concentration	C_o	7000	[mg/l]
Retardation Factor	R = 1 + K_d ρ_b/n	1.03	[Dimensionless]
Bulk Density	ρ_b	2.16	[g/cm^3]
Distribution Coefficient	K_d	0.003	[cm^3/g] [ml/g]
Decay Coefficient	λ = (ln2) / $t_{1/2}$	0.51	[/year]
Half-Life Time	$t_{1/2}$	500	[days]
	$t_{1/2}$	1.4	[years]
Simulation Time	t	17	[years]



Prepared by: THR 6/13/07
Checked by:
Reviewed by: JRS 6/14/07

ATTACHMENT B

One-mile Radius Well Survey



ZONE 7 WATER AGENCY
100 NORTH CANYONS PARKWAY
LIVERMORE, CA 94551

WELL LOCATION MAP

SCALE: 1"= 1500 ft

DATE: 4/7/06

2008 - 1st Street
H:\FLOOD\REFERALLS\REFERALLS.WOR

ATTACHMENT C

EDR Search

The EDR GeoCheck® Report

2008 First St.
2008 First St.
Livermore, CA 94550

Inquiry Number: 1649220.1s

April 05, 2006

EDR® Environmental Data Resources Inc

The Standard in Environmental Risk Management Information

440 Wheelers Farms Road
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

FORM-NULL-VLA

TABLE OF CONTENTS

SECTION **PAGE**

GEOCHECK ADDENDUM

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

GEOCHECK® - PHYSICAL SETTING SOURCE REPORT

TARGET PROPERTY ADDRESS

2008 FIRST ST.
2008 FIRST ST.
LIVERMORE, CA 94550

TARGET PROPERTY COORDINATES

Latitude (North):	37.68100 - 37° 40' 51.6''
Longitude (West):	121.7711 - 121° 46' 16.0''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	608364.6
UTM Y (Meters):	4170927.8
Elevation:	489 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	37121-F7 LIVERMORE, CA
Most Recent Revision:	1980

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

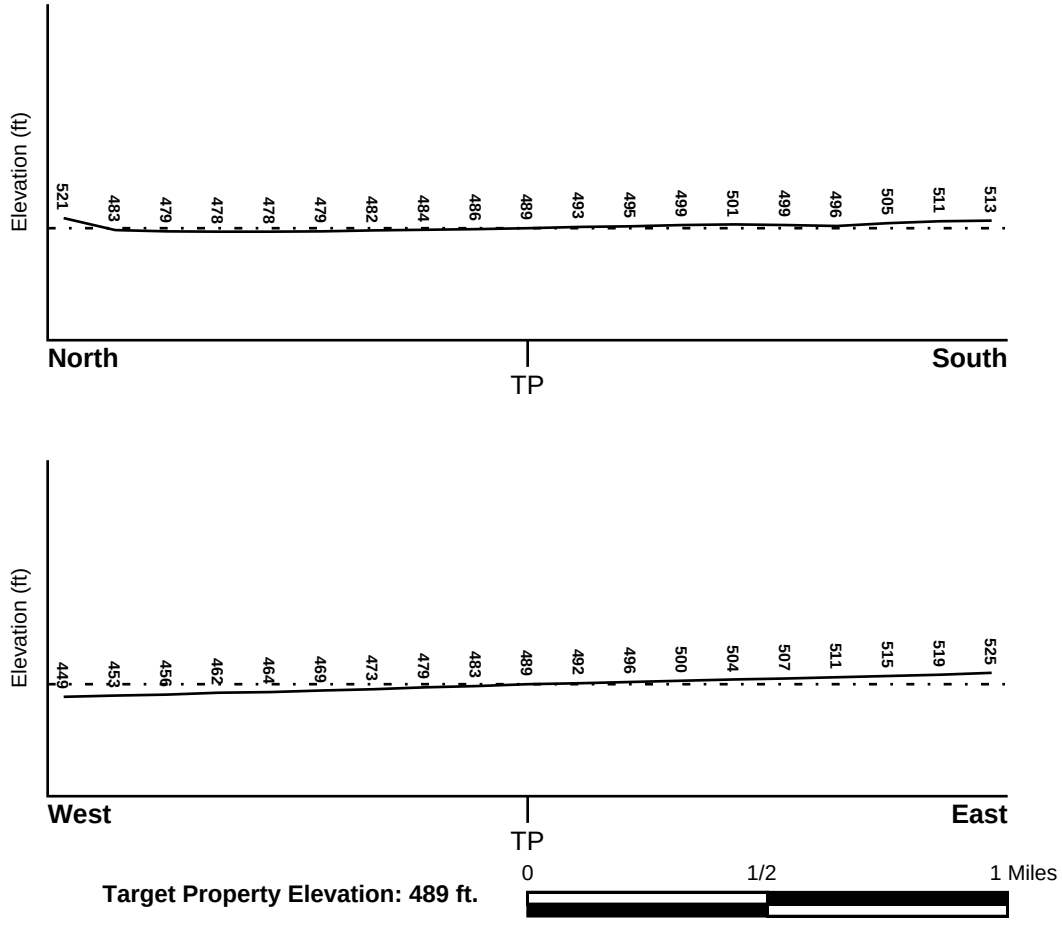
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General WNW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
ALAMEDA, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 0600080005A

Additional Panels in search area: 0600080010A

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
LIVERMORE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Location Relative to TP:	1 - 2 Miles WNW
Site Name:	Livermore Sewage Ponds/Livermore Sewage Trtmnt Pla
Site EPA ID Number:	CAD982400434
Groundwater Flow Direction:	NWN.
Inferred Depth to Water:	25 feet.
Hydraulic Connection:	An aquitard does not exist at the site or in the area east of the site. As a result, aquifers beneath the site appear to be hydraulically connected.
Sole Source Aquifer:	No information about a sole source aquifer is available
Data Quality:	Information is inferred in the CERCLIS investigation report(s)

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
A1	1/8 - 1/4 Mile ENE	Varies

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
A2	1/8 - 1/4 Mile ENE	Varies
B8	1/8 - 1/4 Mile NNW	Not Reported
B9	1/8 - 1/4 Mile NNW	Not Reported
D16	1/4 - 1/2 Mile WSW	NW
C17	1/4 - 1/2 Mile NE	NW
C18	1/4 - 1/2 Mile NE	Not Reported
D19	1/4 - 1/2 Mile WSW	Not Reported
D20	1/4 - 1/2 Mile WSW	Not Reported
26	1/4 - 1/2 Mile WSW	NW
E28	1/4 - 1/2 Mile ENE	Not Reported
E29	1/4 - 1/2 Mile ENE	Not Reported
G34	1/2 - 1 Mile NE	Not Reported
G35	1/2 - 1 Mile NE	Not Reported
G36	1/2 - 1 Mile NE	Not Reported
37	1/2 - 1 Mile WSW	N
E38	1/2 - 1 Mile ENE	Not Reported
E39	1/2 - 1 Mile ENE	Not Reported
H42	1/2 - 1 Mile NE	Varies
I45	1/2 - 1 Mile ESE	Not Reported
I46	1/2 - 1 Mile ESE	Not Reported
56	1/2 - 1 Mile NNW	N
K57	1/2 - 1 Mile NW	N
L60	1/2 - 1 Mile NNW	W
L61	1/2 - 1 Mile NNW	W
M62	1/2 - 1 Mile WSW	Varies
M63	1/2 - 1 Mile WSW	Varies

For additional site information, refer to Physical Setting Source Map Findings.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

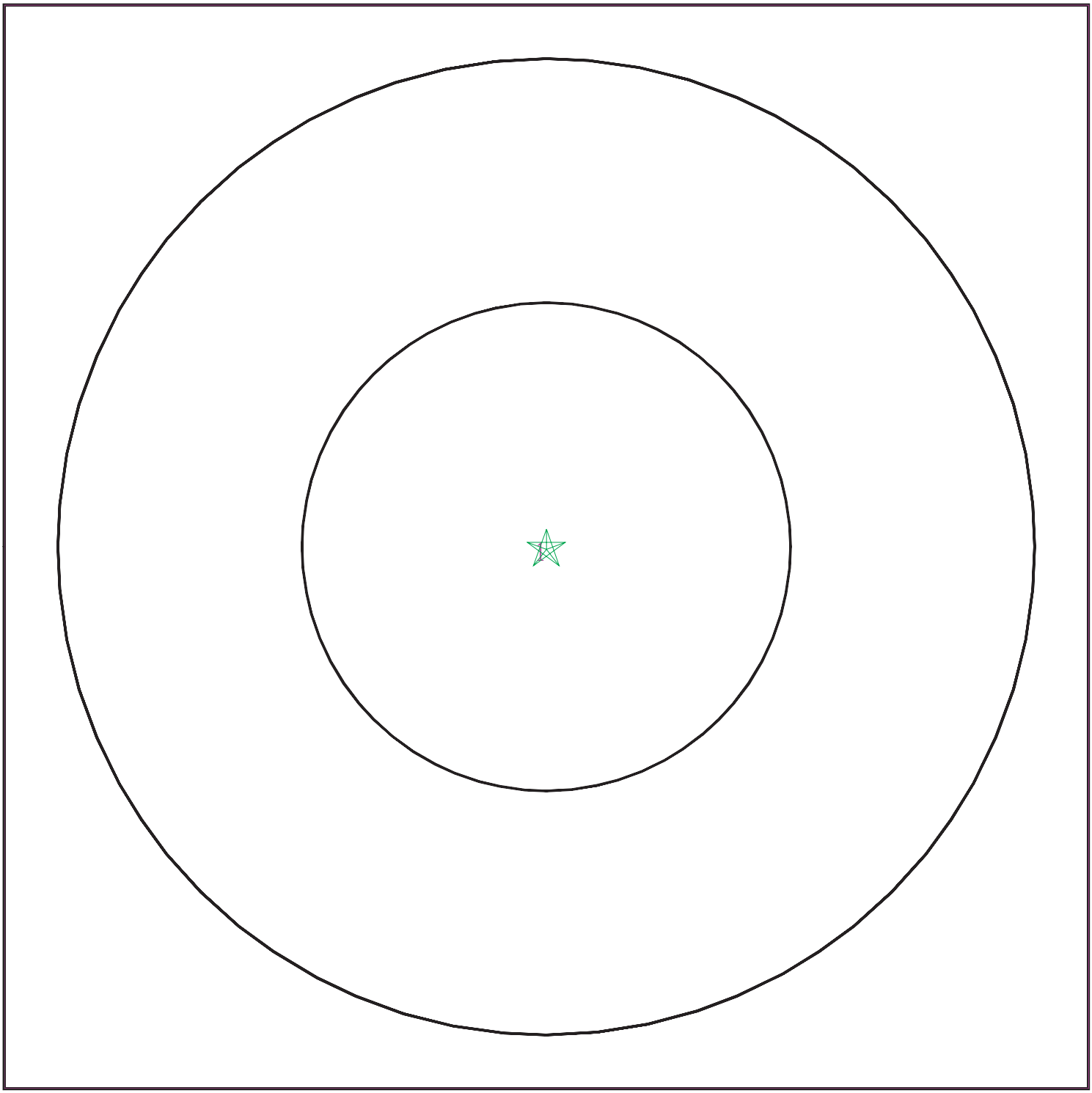
Era:	Cenozoic
System:	Tertiary
Series:	Pliocene
Code:	Tpc *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Continental Deposits

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 1649220.1s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	2008 First St.	CLIENT:	Golder Associates
ADDRESS:	2008 First St.	CONTACT:	Dianna Ferrand
	Livermore CA 94550	INQUIRY #:	1649220.1s
LAT/LONG:	37.6810 / 121.7711	DATE:	April 05, 2006

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: LIVERMORE

Soil Surface Texture: very gravelly - coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Somewhat excessive. Soils have high hydraulic conductivity and low water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: MODERATE

Depth to Bedrock Min: > 0 inches

Depth to Bedrock Max: > 0 inches

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	12 inches	very gravelly - coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 6.00 Min: 2.00	Max: 7.30 Min: 6.10
2	12 inches	34 inches	very gravelly - coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Silty Gravel	Max: 20.00 Min: 6.00	Max: 7.30 Min: 6.60
3	34 inches	60 inches	very gravelly - loamy coarse sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Gravels, Clean gravels, Poorly Graded Gravel.	Max: 20.00 Min: 6.00	Max: 7.30 Min: 6.60

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	1.000
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
21	USGS3223246	1/4 - 1/2 Mile West
22	USGS3223271	1/4 - 1/2 Mile WNW
23	USGS3223261	1/4 - 1/2 Mile West
24	USGS3223202	1/4 - 1/2 Mile SSE
25	USGS3223277	1/4 - 1/2 Mile WNW
E27	USGS3223270	1/4 - 1/2 Mile ENE
30	USGS3223214	1/4 - 1/2 Mile SE
F31	USGS3223145	1/2 - 1 Mile North
32	USGS3223203	1/2 - 1 Mile SW
33	USGS3223374	1/2 - 1 Mile SSW
F40	USGS3223150	1/2 - 1 Mile North
H41	USGS3223287	1/2 - 1 Mile NE
43	USGS3223136	1/2 - 1 Mile NW
44	USGS3223257	1/2 - 1 Mile East
47	USGS3223156	1/2 - 1 Mile NNW
I48	USGS3223207	1/2 - 1 Mile ESE
54	USGS3223218	1/2 - 1 Mile WSW
55	USGS3223243	1/2 - 1 Mile East
58	USGS3223152	1/2 - 1 Mile NW
K59	USGS3223149	1/2 - 1 Mile NW
64	USGS3223229	1/2 - 1 Mile East

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A3	CA0105002	1/8 - 1/4 Mile ENE
A4	CA5500052	1/8 - 1/4 Mile ENE
A5	CA0105010	1/8 - 1/4 Mile ENE
A6	CA0707501	1/8 - 1/4 Mile ENE
A7	CA0110003	1/8 - 1/4 Mile ENE

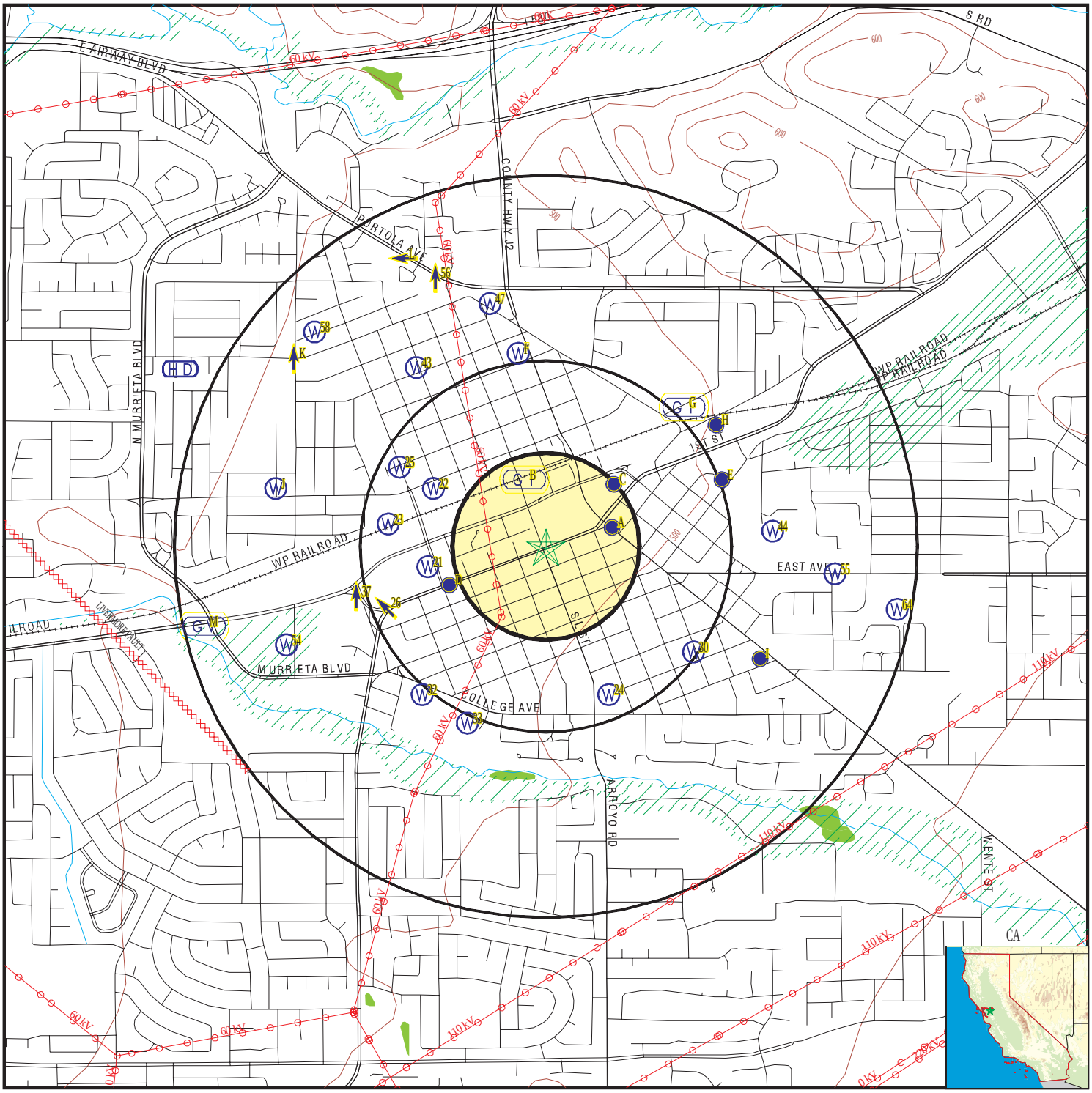
Note: PWS System location is not always the same as well location.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
C10	3479	1/8 - 1/4 Mile NE
C11	3482	1/8 - 1/4 Mile NE
C12	3483	1/8 - 1/4 Mile NE
C13	3473	1/8 - 1/4 Mile NE
C14	3474	1/8 - 1/4 Mile NE
C15	3478	1/8 - 1/4 Mile NE
J49	3475	1/2 - 1 Mile WNW
J50	3476	1/2 - 1 Mile WNW
J51	3477	1/2 - 1 Mile WNW
J52	3472	1/2 - 1 Mile WNW
J53	19	1/2 - 1 Mile WNW

PHYSICAL SETTING SOURCE MAP - 1649220.1s



- County Boundary
- Major Roads
- Contour Lines
- Power transmission lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

0 1/4 1/2 1 Miles

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells
- 100-year flood zone
- 500-year flood zone
- Wetlands

SITE NAME: 2008 First St.	CLIENT: Golder Associates
ADDRESS: 2008 First St.	CONTACT: Dianna Ferrand
Livermore CA 94550	INQUIRY #: 1649220.1s
LAT/LONG: 37.6810 / 121.7711	DATE: April 05, 2006

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

			Database	EDR ID Number
A1 **ENE** **1/8 - 1/4 Mile** **Higher**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	Not Reported Varies 53.31 68.84 Not Reported 09/13/1994	**AQUIFLOW**	**52442**

			Database	EDR ID Number
A2 **ENE** **1/8 - 1/4 Mile** **Higher**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	4033 Varies Not Reported Not Reported 60 11/12/1991	**AQUIFLOW**	**52441**

A3
ENE
1/8 - 1/4 Mile
Higher

FRDS PWS **CA0105002**

PWS ID:	CA0105002	PWS Status:	Active
Date Initiated:	9307	Date Deactivated:	Not Reported
PWS Name:	DEL'S BOAT HARBOR DEL'S BOAT HARBOR 6020 LINDEMANN RD BYRON, CA 94514		
Addressee / Facility:	System Owner/Responsible Party DEL'S BOAT HARBOR 6020 LINDEMANN ROAD LIVERMORE, CA 94550		
Facility Latitude:	37 40 54	Facility Longitude:	121 46 00
City Served:	Not Reported		
Treatment Class:	Treated	Population:	00000250

PWS currently has or had major violation(s) or enforcement: Yes

VIOLATIONS INFORMATION:

Violation ID:	9304001	Source ID:	Not Reported	PWS Phone:	Not Reported
Vio. beginning Date:	09/01/93	Vio. end Date:	09/30/93	Vio. Period:	001 Months
Num required Samples:	Not Reported	Number of Samples Taken:		Not Reported	
Analysis Result:	Not Reported	Maximum Contaminant Level:		Not Reported	
Analysis Method:	Not Reported				
Violation Type:	Monitoring, Routine Major (TCR)				
Contaminant:	COLIFORM (TCR)				
Vio. Awareness Date:	111593				

A4
ENE
1/8 - 1/4 Mile
Higher

FRDS PWS **CA5500052**

PWS ID:	CA5500052	PWS Status:	Active
Date Initiated:	7706	Date Deactivated:	Not Reported
PWS Name:	LAKE TULLOCH WATER SYSTEM 3 LAKE TULLOCH WATER SYSTEM 3 95 SHADY LN LAKE TULLOCH, CA 95327		
Addressee / Facility:	System Owner/Responsible Party LAKE TULLOCH WATER SYSTEM 3 310 N WESTERN AVENUE SANTA MARIA, CA 93454		
Facility Latitude:	37 40 54	Facility Longitude:	121 46 00
City Served:	Not Reported		
Treatment Class:	Untreated	Population:	00000035

PWS currently has or had major violation(s) or enforcement: No

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A5
ENE
1/8 - 1/4 Mile
Higher

FRDS PWS **CA0105010**

PWS ID:	CA0105010	PWS Status:	Active
Date Initiated:	9307	Date Deactivated:	Not Reported
PWS Name:	EBRPD - DEL VALLE REGIONAL PARK DEL VALLE RECREATION AREA 7000 DEL VALLE RD OAKLAND, CA 946050381		
Addressee / Facility:	System Owner/Responsible Party DEL VALLE RECREATION AREA 7000 DEL VALLE ROAD LIVERMORE, CA 94550		
Facility Latitude:	37 40 54	Facility Longitude	121 46 00
City Served:	Not Reported		
Treatment Class:	Treated	Population:	00002800

PWS currently has or had major violation(s) or enforcement: Yes

VIOLATIONS INFORMATION:

Violation ID:	9404003	Source ID:	Not Reported	PWS Phone:	Not Reported
Vio. beginning Date:	07/01/94	Vio. end Date:	07/31/94	Vio. Period:	Not Reported
Num required Samples:	Not Reported	Number of Samples Taken:		Not Reported	
Analysis Result:	Not Reported	Maximum Contaminant Level:		Not Reported	
Analysis Method:	Not Reported				
Violation Type:	Operations Report				
Contaminant:	Not Reported				
Vio. Awareness Date:	Not Reported				

ENFORCEMENT INFORMATION:

System Name:	EBRPD - DEL VALLE REGIONAL		
Violation Type:	Monitoring, Routine Minor (TCR)		
Contaminant:	COLIFORM (TCR)		
Compliance Period:	1994-07-01 - 1994-07-31	Analytical Value:	00000000.00
Violation ID:	9404002	Enforcement ID:	9404002
Enforcement Date:	1994-07-19	Enf. Action:	State Violation/Reminder Notice

ENFORCEMENT INFORMATION:

System Name:	EBRPD - DEL VALLE REGIONAL		
Violation Type:	Operations Report		
Contaminant:	Not Reported		
Compliance Period:	1994-07-01 - 1994-07-31	Analytical Value:	00000000.00
Violation ID:	9404003	Enforcement ID:	Not Reported
Enforcement Date:	Not Reported	Enf. Action:	Not Reported

A6
ENE
1/8 - 1/4 Mile
Higher

FRDS PWS CA0707501

PWS ID:	CA0707501	PWS Status:	Not Reported
Date Initiated:	Not Reported	Date Deactivated:	Not Reported
PWS Name:	ANGLER'S RANCH #3 BETHEL ISLAND, CA 94511		

Addressee / Facility:	System Owner/Responsible Party ANGLER'S RANCH WATER CO 3 P O BOX 8 BETHEL ISLAND, CA 94511

Facility Latitude:	37 40 54	Facility Longitude	121 46 00
City Served:	Not Reported		
Treatment Class:	Untreated	Population:	60

PWS currently has or had major violation(s) or enforcement: Yes

Violations information not reported.

ENFORCEMENT INFORMATION:

System Name:	ANGLER'S RANCH #3		
Violation Type:	Initial Tap Sampling for Pb and Cu		
Contaminant:	LEAD & COPPER RULE		
Compliance Period:	1993-07-01 - 2000-04-04	Analytical Value:	0000000.000000000
Violation ID:	95V0001	Enforcement ID:	0089899
Enforcement Date:	2000-04-04	Enf. Action:	State Compliance Achieved

System Name:	ANGLER'S RANCH #3		
Violation Type:	Initial Tap Sampling for Pb and Cu		
Contaminant:	LEAD & COPPER RULE		
Compliance Period:	1993-07-01 - 2000-04-04	Analytical Value:	0
Violation ID:	95V0001	Enforcement ID:	0089899
Enforcement Date:	2000-04-04	Enf. Action:	State Compliance Achieved

System Name:	ANGLER'S RANCH #3		
Violation Type:	Initial Tap Sampling for Pb and Cu		
Contaminant:	LEAD & COPPER RULE		
Compliance Period:	1993-07-01 - 2000-04-04	Analytical Value:	0
Violation ID:	95V0001	Enforcement ID:	0089899
Enforcement Date:	2000-04-04	Enf. Action:	State Compliance Achieved

System Name:	ANGLER'S RANCH #3		
Violation Type:	Initial Tap Sampling for Pb and Cu		
Contaminant:	LEAD & COPPER RULE		
Compliance Period:	1993-07-01 - 2000-04-04	Analytical Value:	0000000.000000000
Violation ID:	95V0001	Enforcement ID:	0089899
Enforcement Date:	2000-04-04	Enf. Action:	State Compliance Achieved

ENFORCEMENT INFORMATION:

System Name:	ANGLER'S RANCH #3		
Violation Type:	Initial Tap Sampling for Pb and Cu		
Contaminant:	LEAD & COPPER RULE		
Compliance Period:	7/1/1993 0:00:00 - 4/4/2000 0:00:00	Analytical Value:	0
Violation ID:	95V0001	Enforcement ID:	Not Reported
Enforcement Date:	4/4/2000 0:00:00	Enf. Action:	State Compliance Achieved
System Name:	ANGLER'S RANCH #3		
Violation Type:	Initial Tap Sampling for Pb and Cu		
Contaminant:	LEAD & COPPER RULE		
Compliance Period:	1993-07-01 - 2015-12-31	Analytical Value:	0000000.000000000
Violation ID:	95V0001	Enforcement ID:	Not Reported
Enforcement Date:	Not Reported	Enf. Action:	Not Reported

A7
ENE
1/8 - 1/4 Mile
Higher

FRDS PWS **CA0110003**

PWS ID:	CA0110003	PWS Status:	Not Reported
Date Initiated:	Not Reported	Date Deactivated:	Not Reported
PWS Name:	CALIFORNIA WATER SERVICE - LIVERMORE LIVERMORE, CA 945504350		

Source: Purchases surface water

Treatment Objective: DISINFECTION	Process: HYPOCHLORINATION, PRE
Treatment Objective: INORGANICS REMOVAL	Process: RAPID MIX
Treatment Objective: ORGANICS REMOVAL	Process: AERATION, SPRAY

Addressee / Facility: Not Reported

Facility Latitude:	37 40 54	Facility Longitude:	121 46 00
City Served:	LIVERMORE		
Treatment Class:	Treated	Population:	53540

PWS currently has or had major violation(s) or enforcement: Yes

Violations information not reported.

ENFORCEMENT INFORMATION:

System Name:	CALIFORNIA WATER SERVICE -		
Violation Type:	Initial Tap Sampling for Pb and Cu		
Contaminant:	LEAD & COPPER RULE		
Compliance Period:	1992-01-01 - 2015-12-31	Analytical Value:	0000000.000000000
Violation ID:	92V0001	Enforcement ID:	93E0001
Enforcement Date:	1993-12-15	Enf. Action:	Fed Compliance Achieved

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B8
NNW
1/8 - 1/4 Mile
Lower

AQUIFLOW **52404**

Site ID:	Not Reported
Groundwater Flow:	Not Reported
Shallow Water Depth:	Not Reported
Deep Water Depth:	Not Reported
Average Water Depth:	43
Date:	12/22/1989

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database | EDR ID Number

B9
NNW
1/8 - 1/4 Mile
Lower

AQUIFLOW **52401**

Site ID:	Not Reported
Groundwater Flow:	Not Reported
Shallow Water Depth:	Not Reported
Deep Water Depth:	Not Reported
Average Water Depth:	43
Date:	12/22/1989

C10
NE
1/8 - 1/4 Mile
Higher

CA WELLS **3479**

Water System Information:

Prime Station Code:	03S/02E-09P01 M	User ID:	ENG
FRDS Number:	0110003009	County:	Alameda
District Number:	04	Station Type:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	374100.0 1214600.0	Precision:	Undefined
Source Name:	WELL 12-01		
System Number:	0110003		
System Name:	CALIFORNIA WATER SERVICE - LIVERMORE		
Organization That Operates System:			
	P O BOX 1150		
	SAN JOSE, CA 95108		
Pop Served:	50670	Connections:	14951
Area Served:	LIVERMORE		

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	06/30/1986	Findings:	21.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	06/30/1986	Findings:	780.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	06/30/1986	Findings:	7.530
Chemical:	PH (LABORATORY)		
Sample Collected:	06/30/1986	Findings:	261.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	06/30/1986	Findings:	317.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06/30/1986	Findings:	.700 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	06/30/1986	Findings:	.390 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	06/30/1986	Findings:	358.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	06/30/1986	Findings:	49.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	06/30/1986	Findings:	57.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06/30/1986	Findings:	37.000 MG/L
Chemical:	SODIUM		
Sample Collected:	06/30/1986	Findings:	.850
Chemical:	SODIUM ABSORPTION RATIO		

Sample Collected:	06/30/1986	Findings:	1.700 MG/L
Chemical:	POTASSIUM		
Sample Collected:	06/30/1986	Findings:	65.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	06/30/1986	Findings:	.140 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	06/30/1986	Findings:	26.000 MG/L
Chemical:	SILICA		
Sample Collected:	06/30/1986	Findings:	499.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06/30/1986	Findings:	.170
Chemical:	LANGELIER INDEX @ 60 C		
Sample Collected:	06/30/1986	Findings:	53.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/30/1986	Findings:	.017 UG/L
Chemical:	IODIDE		
Sample Collected:	06/30/1986	Findings:	.300 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	04/28/1987	Findings:	49.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/08/1987	Findings:	46.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/03/1988	Findings:	20.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	06/03/1988	Findings:	1.000 UNITS
Chemical:	COLOR		
Sample Collected:	06/03/1988	Findings:	865.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	06/03/1988	Findings:	7.800
Chemical:	PH (LABORATORY)		
Sample Collected:	06/03/1988	Findings:	264.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	06/03/1988	Findings:	319.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06/03/1988	Findings:	1.400 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	06/03/1988	Findings:	.250 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	06/03/1988	Findings:	366.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	06/03/1988	Findings:	49.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	06/03/1988	Findings:	59.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06/03/1988	Findings:	37.000 MG/L
Chemical:	SODIUM		
Sample Collected:	06/03/1988	Findings:	.840
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	06/03/1988	Findings:	1.800 MG/L
Chemical:	POTASSIUM		

Sample Collected:	06/03/1988	Findings:	64.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	06/03/1988	Findings:	.130 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	06/03/1988	Findings:	32.000 MG/L
Chemical:	SILICA		
Sample Collected:	06/03/1988	Findings:	330.000 UG/L
Chemical:	BARIUM		
Sample Collected:	06/03/1988	Findings:	1.100 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	06/03/1988	Findings:	504.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06/03/1988	Findings:	.380
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	06/03/1988	Findings:	55.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/03/1988	Findings:	.016 UG/L
Chemical:	IODIDE		
Sample Collected:	06/03/1988	Findings:	.100 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	12/11/1991	Findings:	20.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	12/11/1991	Findings:	4.000 UNITS
Chemical:	COLOR		
Sample Collected:	12/11/1991	Findings:	885.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	12/11/1991	Findings:	7.710
Chemical:	PH (LABORATORY)		
Sample Collected:	12/11/1991	Findings:	269.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	12/11/1991	Findings:	326.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	12/11/1991	Findings:	1.100 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	12/11/1991	Findings:	.260 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	12/11/1991	Findings:	374.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	12/11/1991	Findings:	52.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	12/11/1991	Findings:	55.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	12/11/1991	Findings:	39.000 MG/L
Chemical:	SODIUM		
Sample Collected:	12/11/1991	Findings:	.880
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	12/11/1991	Findings:	1.900 MG/L
Chemical:	POTASSIUM		
Sample Collected:	12/11/1991	Findings:	68.000 MG/L
Chemical:	CHLORIDE		

Sample Collected:	12/11/1991	Findings:	.170 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	12/11/1991	Findings:	30.000 MG/L
Chemical:	SILICA		
Sample Collected:	12/11/1991	Findings:	290.000 UG/L
Chemical:	BARIUM		
Sample Collected:	12/11/1991	Findings:	18.000 UG/L
Chemical:	CHROMIUM (TOTAL)		
Sample Collected:	12/11/1991	Findings:	508.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	12/11/1991	Findings:	.320
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	12/11/1991	Findings:	52.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	12/11/1991	Findings:	.200 UG/L
Chemical:	IODIDE		
Sample Collected:	12/11/1991	Findings:	.200 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	12/11/1991	Findings:	1.500 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	12/11/1991	Findings:	1.200 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	05/20/1992	Findings:	3.570 UG/L
Chemical:	DI(2-ETHYLHEXYL)PHTHALATE		
Sample Collected:	03/23/1993	Findings:	57.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03/21/1994	Findings:	57.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	10/06/1994	Findings:	19.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	10/06/1994	Findings:	1.000 UNITS
Chemical:	COLOR		
Sample Collected:	10/06/1994	Findings:	856.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	10/06/1994	Findings:	7.680
Chemical:	PH (LABORATORY)		
Sample Collected:	10/06/1994	Findings:	263.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	10/06/1994	Findings:	319.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	10/06/1994	Findings:	1.000 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	10/06/1994	Findings:	.280 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	10/06/1994	Findings:	365.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	10/06/1994	Findings:	51.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	10/06/1994	Findings:	69.000 MG/L
Chemical:	MAGNESIUM		

Sample Collected:	10/06/1994	Findings:	41.000 MG/L
Chemical:	SODIUM		
Sample Collected:	10/06/1994	Findings:	.930
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	10/06/1994	Findings:	2.500 MG/L
Chemical:	POTASSIUM		
Sample Collected:	10/06/1994	Findings:	76.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	10/06/1994	Findings:	.190 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	10/06/1994	Findings:	32.000 MG/L
Chemical:	SILICA		
Sample Collected:	10/06/1994	Findings:	262.000 UG/L
Chemical:	BARIUM		
Sample Collected:	10/06/1994	Findings:	15.000 UG/L
Chemical:	CHROMIUM (TOTAL)		
Sample Collected:	10/06/1994	Findings:	17.000 UG/L
Chemical:	NICKEL		
Sample Collected:	10/06/1994	Findings:	525.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	10/06/1994	Findings:	.260
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	10/06/1994	Findings:	56.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	10/06/1994	Findings:	.027 UG/L
Chemical:	IODIDE		
Sample Collected:	10/06/1994	Findings:	.100 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	10/06/1994	Findings:	1.400 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	10/06/1994	Findings:	1.800 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	01/17/1995	Findings:	4.200 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	01/17/1995	Findings:	2.200 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	08/09/1995	Findings:	2.500 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	05/14/1997	Findings:	21.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	05/14/1997	Findings:	8.000 UNITS
Chemical:	COLOR		
Sample Collected:	05/14/1997	Findings:	785.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	05/14/1997	Findings:	7.850
Chemical:	PH (LABORATORY)		
Sample Collected:	05/14/1997	Findings:	266.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	05/14/1997	Findings:	321.000 MG/L
Chemical:	BICARBONATE ALKALINITY		

Sample Collected:	05/14/1997	Findings:	1.500 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	05/14/1997	Findings:	.140 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	05/14/1997	Findings:	390.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	05/14/1997	Findings:	49.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	05/14/1997	Findings:	78.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05/14/1997	Findings:	40.000 MG/L
Chemical:	SODIUM		
Sample Collected:	05/14/1997	Findings:	40.000
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	05/14/1997	Findings:	2.200 MG/L
Chemical:	POTASSIUM		
Sample Collected:	05/14/1997	Findings:	91.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	05/14/1997	Findings:	28.000 MG/L
Chemical:	SILICA		
Sample Collected:	05/14/1997	Findings:	418.000 UG/L
Chemical:	BARIUM		
Sample Collected:	05/14/1997	Findings:	24.000 UG/L
Chemical:	CHROMIUM (TOTAL)		
Sample Collected:	05/14/1997	Findings:	110.000 UG/L
Chemical:	IRON		
Sample Collected:	05/14/1997	Findings:	14.000 UG/L
Chemical:	NICKEL		
Sample Collected:	05/14/1997	Findings:	101.000 UG/L
Chemical:	ALUMINUM		
Sample Collected:	05/14/1997	Findings:	.030 UG/L
Chemical:	FOAMING AGENTS (MBAS)		
Sample Collected:	05/14/1997	Findings:	530.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05/14/1997	Findings:	.441
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	05/14/1997	Findings:	51.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05/14/1997	Findings:	1.300 NTU
Chemical:	TURBIDITY (LAB)		

C11
NE
1/8 - 1/4 Mile
Higher

CA WELLS **3482**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Water System Information:

Prime Station Code:	03S/02E-16C01 M	User ID:	ENG
FRDS Number:	0110003011	County:	Alameda
District Number:	04	Station Type:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type:	Well/Groundwater	Well Status:	Active Untreated
Source Lat/Long:	374100.0 1214600.0	Precision:	Undefined
Source Name:	WELL 15-01		
System Number:	0110003		
System Name:	CALIFORNIA WATER SERVICE - LIVERMORE		
Organization That Operates System:			
	P O BOX 1150		
	SAN JOSE, CA 95108		
Pop Served:	50670	Connections:	14951
Area Served:	LIVERMORE		

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	05/08/1986	Findings:	21.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	05/08/1986	Findings:	2.000 UNITS
Chemical:	COLOR		
Sample Collected:	05/08/1986	Findings:	790.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	05/08/1986	Findings:	7.840
Chemical:	PH (LABORATORY)		
Sample Collected:	05/08/1986	Findings:	281.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	05/08/1986	Findings:	339.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05/08/1986	Findings:	1.600 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	05/08/1986	Findings:	.280 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	05/08/1986	Findings:	314.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	05/08/1986	Findings:	46.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	05/08/1986	Findings:	48.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05/08/1986	Findings:	44.000 MG/L
Chemical:	SODIUM		
Sample Collected:	05/08/1986	Findings:	1.080
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	05/08/1986	Findings:	1.900 MG/L
Chemical:	POTASSIUM		
Sample Collected:	05/08/1986	Findings:	48.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	05/08/1986	Findings:	.140 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	05/08/1986	Findings:	36.000 MG/L
Chemical:	SILICA		
Sample Collected:	05/08/1986	Findings:	220.000 UG/L
Chemical:	BARIUM		

Sample Collected:	05/08/1986	Findings:	467.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05/08/1986	Findings:	.500
Chemical:	LANGELIER INDEX @ 60 C		
Sample Collected:	05/08/1986	Findings:	13.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05/08/1986	Findings:	.030 UG/L
Chemical:	IODIDE		
Sample Collected:	05/08/1986	Findings:	.300 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	06/03/1988	Findings:	20.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	06/03/1988	Findings:	810.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	06/03/1988	Findings:	7.720
Chemical:	PH (LABORATORY)		
Sample Collected:	06/03/1988	Findings:	289.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	06/03/1988	Findings:	349.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06/03/1988	Findings:	1.200 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	06/03/1988	Findings:	.250 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	06/03/1988	Findings:	320.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	06/03/1988	Findings:	43.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	06/03/1988	Findings:	52.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06/03/1988	Findings:	45.000 MG/L
Chemical:	SODIUM		
Sample Collected:	06/03/1988	Findings:	1.090
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	06/03/1988	Findings:	2.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	06/03/1988	Findings:	52.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	06/03/1988	Findings:	.120 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	06/03/1988	Findings:	34.000 MG/L
Chemical:	SILICA		
Sample Collected:	06/03/1988	Findings:	260.000 UG/L
Chemical:	BARIUM		
Sample Collected:	06/03/1988	Findings:	1.500 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	06/03/1988	Findings:	472.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06/03/1988	Findings:	.290
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		

Sample Collected:	06/03/1988	Findings:	19.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/03/1988	Findings:	.032 UG/L
Chemical:	IODIDE		
Sample Collected:	06/03/1988	Findings:	.100 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	06/17/1991	Findings:	1.000 UNITS
Chemical:	COLOR		
Sample Collected:	06/17/1991	Findings:	800.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	06/17/1991	Findings:	7.730
Chemical:	PH (LABORATORY)		
Sample Collected:	06/17/1991	Findings:	267.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	06/17/1991	Findings:	324.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06/17/1991	Findings:	1.200 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	06/17/1991	Findings:	292.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	06/17/1991	Findings:	39.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	06/17/1991	Findings:	50.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06/17/1991	Findings:	56.000 MG/L
Chemical:	SODIUM		
Sample Collected:	06/17/1991	Findings:	2.600 MG/L
Chemical:	POTASSIUM		
Sample Collected:	06/17/1991	Findings:	64.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	06/17/1991	Findings:	.160 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	06/17/1991	Findings:	250.000 UG/L
Chemical:	BARIUM		
Sample Collected:	06/17/1991	Findings:	13.000 UG/L
Chemical:	CHROMIUM (TOTAL)		
Sample Collected:	06/17/1991	Findings:	.030 UG/L
Chemical:	FOAMING AGENTS (MBAS)		
Sample Collected:	06/17/1991	Findings:	470.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06/17/1991	Findings:	17.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/17/1991	Findings:	.150 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	03/06/1992	Findings:	1.400 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	03/06/1992	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	06/30/1994	Findings:	2.400 PCI/L
Chemical:	GROSS ALPHA		

Sample Collected:	06/30/1994	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	10/06/1994	Findings:	20.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	10/06/1994	Findings:	756.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	10/06/1994	Findings:	7.700
Chemical:	PH (LABORATORY)		
Sample Collected:	10/06/1994	Findings:	281.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	10/06/1994	Findings:	341.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	10/06/1994	Findings:	1.200 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	10/06/1994	Findings:	.210 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	10/06/1994	Findings:	351.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	10/06/1994	Findings:	45.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	10/06/1994	Findings:	67.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	10/06/1994	Findings:	29.000 MG/L
Chemical:	SODIUM		
Sample Collected:	10/06/1994	Findings:	.670
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	10/06/1994	Findings:	2.600 MG/L
Chemical:	POTASSIUM		
Sample Collected:	10/06/1994	Findings:	47.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	10/06/1994	Findings:	.180 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	10/06/1994	Findings:	28.000 MG/L
Chemical:	SILICA		
Sample Collected:	10/06/1994	Findings:	265.000 UG/L
Chemical:	BARIUM		
Sample Collected:	10/06/1994	Findings:	14.000 UG/L
Chemical:	CHROMIUM (TOTAL)		
Sample Collected:	10/06/1994	Findings:	200.000 UG/L
Chemical:	IRON		
Sample Collected:	10/06/1994	Findings:	441.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	10/06/1994	Findings:	.280
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	10/06/1994	Findings:	12.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	10/06/1994	Findings:	.010 UG/L
Chemical:	IODIDE		
Sample Collected:	10/06/1994	Findings:	.150 NTU
Chemical:	TURBIDITY (LAB)		

Sample Collected:	10/06/1994	Findings:	2.100 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	10/06/1994	Findings:	1.900 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	01/17/1995	Findings:	2.100 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	01/17/1995	Findings:	1.700 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	03/20/1995	Findings:	5.740 UG/L
Chemical:	ANTHRACENE		
Sample Collected:	03/20/1995	Findings:	3.000 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	03/20/1995	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	11/26/1996	Findings:	9.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05/14/1997	Findings:	12.200 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	05/14/1997	Findings:	690.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	05/14/1997	Findings:	7.820
Chemical:	PH (LABORATORY)		
Sample Collected:	05/14/1997	Findings:	272.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	05/14/1997	Findings:	329.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05/14/1997	Findings:	1.500 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	05/14/1997	Findings:	.260 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	05/14/1997	Findings:	312.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	05/14/1997	Findings:	42.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	05/14/1997	Findings:	62.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05/14/1997	Findings:	53.000 MG/L
Chemical:	SODIUM		
Sample Collected:	05/14/1997	Findings:	53.000
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	05/14/1997	Findings:	2.500 MG/L
Chemical:	POTASSIUM		
Sample Collected:	05/14/1997	Findings:	70.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	05/14/1997	Findings:	32.000 MG/L
Chemical:	SILICA		
Sample Collected:	05/14/1997	Findings:	258.000 UG/L
Chemical:	BARIUM		
Sample Collected:	05/14/1997	Findings:	13.000 UG/L
Chemical:	CHROMIUM (TOTAL)		

Sample Collected:	05/14/1997	Findings:	40.000 UG/L
Chemical:	MANGANESE		
Sample Collected:	05/14/1997	Findings:	466.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05/14/1997	Findings:	.240
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	05/14/1997	Findings:	12.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05/14/1997	Findings:	.100 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	07/08/1997	Findings:	1.300 UG/L
Chemical:	BROMOFORM (THM)		

C12
NE **CA WELLS** **3483**
1/8 - 1/4 Mile
Higher

Water System Information:

Prime Station Code:	03S/02E-18B01 M	User ID:	ENG
FRDS Number:	0110003014	County:	Alameda
District Number:	04	Station Type:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type:	Well/Groundwater	Well Status:	Active Untreated
Source Lat/Long:	374100.0 1214600.0	Precision:	1 Mile (One Minute)
Source Name:	WELL 20-01		
System Number:	0110003		
System Name:	CALIFORNIA WATER SERVICE - LIVERMORE		
Organization That Operates System:			
	P O BOX 1150 SAN JOSE, CA 95108		
Pop Served:	50670	Connections:	14951
Area Served:	LIVERMORE		

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	03/27/1989	Findings:	20.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	03/27/1989	Findings:	3.000 UNITS
Chemical:	COLOR		
Sample Collected:	03/27/1989	Findings:	570.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	03/27/1989	Findings:	7.590
Chemical:	PH (LABORATORY)		
Sample Collected:	03/27/1989	Findings:	186.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	03/27/1989	Findings:	225.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03/27/1989	Findings:	.600 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	03/27/1989	Findings:	.270 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	03/27/1989	Findings:	210.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	03/27/1989	Findings:	29.000 MG/L
Chemical:	CALCIUM		

Sample Collected:	03/27/1989	Findings:	33.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03/27/1989	Findings:	40.000 MG/L
Chemical:	SODIUM		
Sample Collected:	03/27/1989	Findings:	1.200
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	03/27/1989	Findings:	1.600 MG/L
Chemical:	POTASSIUM		
Sample Collected:	03/27/1989	Findings:	39.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	03/27/1989	Findings:	.110 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	03/27/1989	Findings:	32.000 MG/L
Chemical:	SILICA		
Sample Collected:	03/27/1989	Findings:	210.000 UG/L
Chemical:	BARIUM		
Sample Collected:	03/27/1989	Findings:	342.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03/27/1989	Findings:	- .170
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	03/27/1989	Findings:	26.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03/27/1989	Findings:	.013 UG/L
Chemical:	IODIDE		
Sample Collected:	03/27/1989	Findings:	.150 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	12/12/1989	Findings:	1.200 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	12/12/1989	Findings:	.900 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	01/28/1993	Findings:	19.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	01/28/1993	Findings:	3.000 UNITS
Chemical:	COLOR		
Sample Collected:	01/28/1993	Findings:	780.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	01/28/1993	Findings:	7.810
Chemical:	PH (LABORATORY)		
Sample Collected:	01/28/1993	Findings:	196.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	01/28/1993	Findings:	238.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01/28/1993	Findings:	1.000 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	01/28/1993	Findings:	.190 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	01/28/1993	Findings:	222.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	01/28/1993	Findings:	30.000 MG/L
Chemical:	CALCIUM		

Sample Collected:	01/28/1993	Findings:	38.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01/28/1993	Findings:	49.000 MG/L
Chemical:	SODIUM		
Sample Collected:	01/28/1993	Findings:	1.430
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	01/28/1993	Findings:	1.400 MG/L
Chemical:	POTASSIUM		
Sample Collected:	01/28/1993	Findings:	54.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	01/28/1993	Findings:	.200 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	01/28/1993	Findings:	24.000 MG/L
Chemical:	SILICA		
Sample Collected:	01/28/1993	Findings:	280.000 UG/L
Chemical:	BARIUM		
Sample Collected:	01/28/1993	Findings:	60.000 UG/L
Chemical:	ZINC		
Sample Collected:	01/28/1993	Findings:	.020 UG/L
Chemical:	FOAMING AGENTS (MBAS)		
Sample Collected:	01/28/1993	Findings:	372.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01/28/1993	Findings:	.060
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	01/28/1993	Findings:	25.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01/28/1993	Findings:	.020 UG/L
Chemical:	IODIDE		
Sample Collected:	01/28/1993	Findings:	.200 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	01/28/1993	Findings:	1.700 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	01/28/1993	Findings:	1.900 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	03/15/1993	Findings:	4.020 UG/L
Chemical:	DI(2-ETHYLHEXYL)PHTHALATE		
Sample Collected:	07/07/1993	Findings:	22.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/16/1994	Findings:	28.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03/20/1995	Findings:	3.600 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	03/20/1995	Findings:	2.600 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	11/06/1995	Findings:	18.300 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	11/06/1995	Findings:	4.000 UNITS
Chemical:	COLOR		
Sample Collected:	11/06/1995	Findings:	808.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		

Sample Collected:	11/06/1995	Findings:	7.830
Chemical:	PH (LABORATORY)		
Sample Collected:	11/06/1995	Findings:	215.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	11/06/1995	Findings:	260.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	11/06/1995	Findings:	1.200 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	11/06/1995	Findings:	.280 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	11/06/1995	Findings:	308.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	11/06/1995	Findings:	40.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	11/06/1995	Findings:	58.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	11/06/1995	Findings:	34.000 MG/L
Chemical:	SODIUM		
Sample Collected:	11/06/1995	Findings:	34.000
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	11/06/1995	Findings:	1.800 MG/L
Chemical:	POTASSIUM		
Sample Collected:	11/06/1995	Findings:	64.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	11/06/1995	Findings:	26.000 MG/L
Chemical:	SILICA		
Sample Collected:	11/06/1995	Findings:	277.000 UG/L
Chemical:	BARIUM		
Sample Collected:	11/06/1995	Findings:	230.000 UG/L
Chemical:	IRON		
Sample Collected:	11/06/1995	Findings:	73.000 UG/L
Chemical:	ALUMINUM		
Sample Collected:	11/06/1995	Findings:	.060 UG/L
Chemical:	FOAMING AGENTS (MBAS)		
Sample Collected:	11/06/1995	Findings:	408.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	11/06/1995	Findings:	.232
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	11/06/1995	Findings:	24.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	11/06/1995	Findings:	.450 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	11/26/1996	Findings:	24.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	12/17/1996	Findings:	26.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	10/27/1997	Findings:	27.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	12/09/1997	Findings:	24.000 MG/L
Chemical:	NITRATE (AS NO3)		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

C13
NE | **CA WELLS** | **3473**
1/8 - 1/4 Mile
Higher

Water System Information:

Prime Station Code:	03S/02E-08G01 M	User ID:	ENG
FRDS Number:	0110003013	County:	Alameda
District Number:	04	Station Type:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	374100.0 1214600.0	Precision:	Undefined
Source Name:	WELL 19-01		
System Number:	0110003		
System Name:	CALIFORNIA WATER SERVICE - LIVERMORE		
Organization That Operates System:			
	P O BOX 1150		
	SAN JOSE, CA 95108		
Pop Served:	50670	Connections:	14951
Area Served:	LIVERMORE		

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	08/28/1987	Findings:	55.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/08/1987	Findings:	54.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/30/1988	Findings:	1.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/27/1989	Findings:	20.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	03/27/1989	Findings:	1.000 UNITS
Chemical:	COLOR		
Sample Collected:	03/27/1989	Findings:	930.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	03/27/1989	Findings:	7.640
Chemical:	PH (LABORATORY)		
Sample Collected:	03/27/1989	Findings:	292.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	03/27/1989	Findings:	355.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	03/27/1989	Findings:	1.100 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	03/27/1989	Findings:	.160 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	03/27/1989	Findings:	410.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	03/27/1989	Findings:	53.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	03/27/1989	Findings:	68.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	03/27/1989	Findings:	37.000 MG/L
Chemical:	SODIUM		

Sample Collected:	03/27/1989	Findings:	.790
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	03/27/1989	Findings:	1.900 MG/L
Chemical:	POTASSIUM		
Sample Collected:	03/27/1989	Findings:	71.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	03/27/1989	Findings:	.110 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	03/27/1989	Findings:	30.000 MG/L
Chemical:	SILICA		
Sample Collected:	03/27/1989	Findings:	430.000 UG/L
Chemical:	BARIUM		
Sample Collected:	03/27/1989	Findings:	558.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	03/27/1989	Findings:	.290
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	03/27/1989	Findings:	66.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03/27/1989	Findings:	.016 UG/L
Chemical:	IODIDE		
Sample Collected:	03/27/1989	Findings:	.150 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	06/05/1989	Findings:	.900 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/11/1989	Findings:	1.200 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	12/12/1989	Findings:	1.100 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	12/12/1989	Findings:	1.200 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	03/06/1991	Findings:	1.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/05/1991	Findings:	1.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/27/1991	Findings:	1.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	12/04/1991	Findings:	.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/03/1992	Findings:	1.300 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/10/1992	Findings:	1.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	07/21/1992	Findings:	21.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	07/21/1992	Findings:	5.000 UNITS
Chemical:	COLOR		
Sample Collected:	07/21/1992	Findings:	875.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	07/21/1992	Findings:	7.790
Chemical:	PH (LABORATORY)		

Sample Collected:	07/21/1992	Findings:	175.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	07/21/1992	Findings:	211.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07/21/1992	Findings:	.900 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	07/21/1992	Findings:	.110 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	07/21/1992	Findings:	270.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	07/21/1992	Findings:	36.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	07/21/1992	Findings:	42.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07/21/1992	Findings:	62.000 MG/L
Chemical:	SODIUM		
Sample Collected:	07/21/1992	Findings:	1.640
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	07/21/1992	Findings:	3.300 MG/L
Chemical:	POTASSIUM		
Sample Collected:	07/21/1992	Findings:	110.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	07/21/1992	Findings:	21.000 MG/L
Chemical:	SILICA		
Sample Collected:	07/21/1992	Findings:	190.000 UG/L
Chemical:	BARIUM		
Sample Collected:	07/21/1992	Findings:	.020 UG/L
Chemical:	FOAMING AGENTS (MBAS)		
Sample Collected:	07/21/1992	Findings:	458.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07/21/1992	Findings:	.070
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	07/21/1992	Findings:	22.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07/21/1992	Findings:	.022 UG/L
Chemical:	IODIDE		
Sample Collected:	07/21/1992	Findings:	.200 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	07/21/1992	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	07/28/1992	Findings:	3.800 UG/L
Chemical:	DI(2-ETHYLHEXYL)PHTHALATE		
Sample Collected:	07/28/1992	Findings:	5.130 UG/L
Chemical:	DI(2-ETHYLHEXYL)ADIPATE		
Sample Collected:	09/04/1992	Findings:	1.200 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/23/1993	Findings:	63.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/09/1993	Findings:	17.800 UG/L
Chemical:	BROMOFORM (THM)		

Sample Collected:	06/09/1993	Findings:	1.100 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	06/09/1993	Findings:	1.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/09/1993	Findings:	18.900 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	08/24/1993	Findings:	3.180 UG/L
Chemical:	DI(2-ETHYLHEXYL)PHTHALATE		
Sample Collected:	09/15/1993	Findings:	5.300 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	09/15/1993	Findings:	1.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/15/1993	Findings:	5.800 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	10/12/1993	Findings:	6.010 UG/L
Chemical:	DI(2-ETHYLHEXYL)PHTHALATE		
Sample Collected:	03/01/1994	Findings:	11.000 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	03/01/1994	Findings:	1.200 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	03/01/1994	Findings:	6.900 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	03/01/1994	Findings:	12.500 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	03/01/1994	Findings:	31.600 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	06/02/1994	Findings:	16.700 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	06/02/1994	Findings:	1.700 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	06/02/1994	Findings:	1.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/02/1994	Findings:	18.400 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	08/24/1994	Findings:	3.180 UG/L
Chemical:	DI(2-ETHYLHEXYL)PHTHALATE		
Sample Collected:	09/06/1994	Findings:	11.500 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	09/06/1994	Findings:	.800 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	09/06/1994	Findings:	1.900 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/06/1994	Findings:	12.300 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	11/28/1994	Findings:	10.500 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	11/28/1994	Findings:	.700 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	11/28/1994	Findings:	.900 UG/L
Chemical:	TETRACHLOROETHYLENE		

Sample Collected:	11/28/1994	Findings:	11.200 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	08/08/1995	Findings:	48.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	08/15/1995	Findings:	48.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	08/22/1995	Findings:	47.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/05/1995	Findings:	50.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/05/1995	Findings:	1.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/05/1995	Findings:	2.700 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	09/15/1995	Findings:	3.100 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	09/19/1995	Findings:	47.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/26/1995	Findings:	51.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	10/03/1995	Findings:	65.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	11/06/1995	Findings:	16.700 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	11/06/1995	Findings:	2.000 UNITS
Chemical:	COLOR		
Sample Collected:	11/06/1995	Findings:	1036.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	11/06/1995	Findings:	7.930
Chemical:	PH (LABORATORY)		
Sample Collected:	11/06/1995	Findings:	294.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	11/06/1995	Findings:	354.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	11/06/1995	Findings:	2.000 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	11/06/1995	Findings:	.200 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	11/06/1995	Findings:	434.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	11/06/1995	Findings:	55.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	11/06/1995	Findings:	92.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	11/06/1995	Findings:	35.000 MG/L
Chemical:	SODIUM		
Sample Collected:	11/06/1995	Findings:	35.000
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	11/06/1995	Findings:	1.900 MG/L
Chemical:	POTASSIUM		

Sample Collected:	11/06/1995	Findings:	76.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	11/06/1995	Findings:	24.000 MG/L
Chemical:	SILICA		
Sample Collected:	11/06/1995	Findings:	405.000 UG/L
Chemical:	BARIUM		
Sample Collected:	11/06/1995	Findings:	13.000 UG/L
Chemical:	CHROMIUM (TOTAL)		
Sample Collected:	11/06/1995	Findings:	190.000 UG/L
Chemical:	IRON		
Sample Collected:	11/06/1995	Findings:	56.000 UG/L
Chemical:	ALUMINUM		
Sample Collected:	11/06/1995	Findings:	.040 UG/L
Chemical:	FOAMING AGENTS (MBAS)		
Sample Collected:	11/06/1995	Findings:	549.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	11/06/1995	Findings:	.553
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	11/06/1995	Findings:	54.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	11/06/1995	Findings:	.300 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	11/06/1995	Findings:	2.700 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	11/06/1995	Findings:	5.300 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	12/07/1995	Findings:	5.000 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	12/07/1995	Findings:	.600 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	12/07/1995	Findings:	.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	12/07/1995	Findings:	5.600 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	07/22/1996	Findings:	1.200 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	07/22/1996	Findings:	1.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	07/22/1996	Findings:	1.200 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	12/17/1996	Findings:	54.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02/03/1997	Findings:	53.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03/13/1997	Findings:	4.200 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	03/13/1997	Findings:	2.300 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	04/09/1997	Findings:	52.000 MG/L
Chemical:	NITRATE (AS NO3)		

Sample Collected:	04/15/1997	Findings:	51.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/29/1997	Findings:	50.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/04/1997	Findings:	14.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/05/1997	Findings:	1.200 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/04/1997	Findings:	1.700 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	09/04/1997	Findings:	1.900 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	11/19/1997	Findings:	2.900 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	11/19/1997	Findings:	1.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	11/19/1997	Findings:	3.100 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		

C14
NE **CA WELLS** **3474**
1/8 - 1/4 Mile
Higher

Water System Information:

Prime Station Code:	03S/02E-08H01 M	User ID:	ENG
FRDS Number:	0110003004	County:	Alameda
District Number:	04	Station Type:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type:	Well/Groundwater	Well Status:	Inactive Untreated
Source Lat/Long:	374100.0 1214600.0	Precision:	Undefined
Source Name:	WELL 04-01 - INACTIVE		
System Number:	0110003		
System Name:	CALIFORNIA WATER SERVICE - LIVERMORE		
Organization That Operates System:			
	P O BOX 1150		
	SAN JOSE, CA 95108		
Pop Served:	50670	Connections:	14951
Area Served:	LIVERMORE		

C15
NE **CA WELLS** **3478**
1/8 - 1/4 Mile
Higher

Water System Information:

Prime Station Code:	03S/02E-09L01 M	User ID:	ENG
FRDS Number:	0110003012	County:	Alameda
District Number:	04	Station Type:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	374100.0 1214600.0	Precision:	Undefined
Source Name:	WELL 17-01		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

System Number: 0110003
System Name: CALIFORNIA WATER SERVICE - LIVERMORE
Organization That Operates System:
P O BOX 1150
SAN JOSE, CA 95108
Pop Served: 50670 Connections: 14951
Area Served: LIVERMORE

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	05/15/1985	Findings:	4.000 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	10/02/1985	Findings:	4.000 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	10/28/1985	Findings:	4.000 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	06/03/1988	Findings:	21.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	06/03/1988	Findings:	1.000 UNITS
Chemical:	COLOR		
Sample Collected:	06/03/1988	Findings:	1000.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	06/03/1988	Findings:	7.620
Chemical:	PH (LABORATORY)		
Sample Collected:	06/03/1988	Findings:	270.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	06/03/1988	Findings:	328.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06/03/1988	Findings:	.900 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	06/03/1988	Findings:	.250 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	06/03/1988	Findings:	416.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	06/03/1988	Findings:	55.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	06/03/1988	Findings:	67.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06/03/1988	Findings:	47.000 MG/L
Chemical:	SODIUM		
Sample Collected:	06/03/1988	Findings:	1.000
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	06/03/1988	Findings:	1.600 MG/L
Chemical:	POTASSIUM		
Sample Collected:	06/03/1988	Findings:	92.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	06/03/1988	Findings:	.150 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	06/03/1988	Findings:	32.000 MG/L
Chemical:	SILICA		
Sample Collected:	06/03/1988	Findings:	350.000 UG/L
Chemical:	BARIUM		

Sample Collected:	06/03/1988	Findings:	1.700 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	06/03/1988	Findings:	1.600 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	06/03/1988	Findings:	591.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06/03/1988	Findings:	.260
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	06/03/1988	Findings:	80.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/03/1988	Findings:	.024 UG/L
Chemical:	IODIDE		
Sample Collected:	06/03/1988	Findings:	.150 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	05/10/1989	Findings:	20.100 UG/L
Chemical:	TRICHLOROFLUOROMETHANE		
Sample Collected:	05/10/1989	Findings:	212.300 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	05/23/1989	Findings:	8.800 UG/L
Chemical:	TRICHLOROFLUOROMETHANE		
Sample Collected:	05/23/1989	Findings:	197.200 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	06/05/1989	Findings:	9.200 UG/L
Chemical:	TRICHLOROFLUOROMETHANE		
Sample Collected:	06/05/1989	Findings:	245.900 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	09/11/1989	Findings:	16.200 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	03/06/1990	Findings:	108.000 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	06/04/1990	Findings:	83.300 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	03/06/1991	Findings:	7.200 UG/L
Chemical:	TRICHLOROFLUOROMETHANE		
Sample Collected:	03/06/1991	Findings:	238.000 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	06/05/1991	Findings:	128.500 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	06/17/1991	Findings:	20.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	06/17/1991	Findings:	6.000 UNITS
Chemical:	COLOR		
Sample Collected:	06/17/1991	Findings:	1035.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	06/17/1991	Findings:	7.700
Chemical:	PH (LABORATORY)		
Sample Collected:	06/17/1991	Findings:	277.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	06/17/1991	Findings:	336.000 MG/L
Chemical:	BICARBONATE ALKALINITY		

Sample Collected:	06/17/1991	Findings:	1.100 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	06/17/1991	Findings:	.240 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	06/17/1991	Findings:	405.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	06/17/1991	Findings:	52.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	06/17/1991	Findings:	69.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06/17/1991	Findings:	51.000 MG/L
Chemical:	SODIUM		
Sample Collected:	06/17/1991	Findings:	1.100
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	06/17/1991	Findings:	2.100 MG/L
Chemical:	POTASSIUM		
Sample Collected:	06/17/1991	Findings:	98.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	06/17/1991	Findings:	.170 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	06/17/1991	Findings:	32.000 MG/L
Chemical:	SILICA		
Sample Collected:	06/17/1991	Findings:	360.000 UG/L
Chemical:	BARIUM		
Sample Collected:	06/17/1991	Findings:	14.000 UG/L
Chemical:	CHROMIUM (TOTAL)		
Sample Collected:	06/17/1991	Findings:	60.000 UG/L
Chemical:	ALUMINUM		
Sample Collected:	06/17/1991	Findings:	.050 UG/L
Chemical:	FOAMING AGENTS (MBAS)		
Sample Collected:	06/17/1991	Findings:	592.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06/17/1991	Findings:	.310
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	06/17/1991	Findings:	69.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/17/1991	Findings:	.023 UG/L
Chemical:	IODIDE		
Sample Collected:	06/17/1991	Findings:	.700 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	08/27/1991	Findings:	45.800 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	03/03/1992	Findings:	36.700 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	03/06/1992	Findings:	1.400 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	03/06/1992	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	06/10/1992	Findings:	49.500 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		

Sample Collected:	09/04/1992	Findings:	12.600 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	03/04/1993	Findings:	5.400 UG/L
Chemical:	TRICHLOROFLUOROMETHANE		
Sample Collected:	03/04/1993	Findings:	24.000 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	06/09/1993	Findings:	52.700 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	07/07/1993	Findings:	5.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/15/1993	Findings:	12.100 UG/L
Chemical:	TRICHLOROFLUOROMETHANE		
Sample Collected:	09/15/1993	Findings:	31.300 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	03/01/1994	Findings:	12.000 UG/L
Chemical:	TRICHLOROFLUOROMETHANE		
Sample Collected:	03/01/1994	Findings:	14.700 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	06/02/1994	Findings:	12.400 UG/L
Chemical:	TRICHLOROFLUOROMETHANE		
Sample Collected:	06/02/1994	Findings:	14.200 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	06/30/1994	Findings:	1.900 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	06/30/1994	Findings:	1.700 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	09/06/1994	Findings:	10.600 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	10/06/1994	Findings:	21.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	10/06/1994	Findings:	7.000 UNITS
Chemical:	COLOR		
Sample Collected:	10/06/1994	Findings:	1034.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	10/06/1994	Findings:	7.590
Chemical:	PH (LABORATORY)		
Sample Collected:	10/06/1994	Findings:	287.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	10/06/1994	Findings:	348.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	10/06/1994	Findings:	.900 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	10/06/1994	Findings:	.150 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	10/06/1994	Findings:	433.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	10/06/1994	Findings:	58.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	10/06/1994	Findings:	85.000 MG/L
Chemical:	MAGNESIUM		

Sample Collected:	10/06/1994	Findings:	51.000 MG/L
Chemical:	SODIUM		
Sample Collected:	10/06/1994	Findings:	1.070
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	10/06/1994	Findings:	2.300 MG/L
Chemical:	POTASSIUM		
Sample Collected:	10/06/1994	Findings:	108.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	10/06/1994	Findings:	.210 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	10/06/1994	Findings:	30.000 MG/L
Chemical:	SILICA		
Sample Collected:	10/06/1994	Findings:	335.000 UG/L
Chemical:	BARIUM		
Sample Collected:	10/06/1994	Findings:	14.000 UG/L
Chemical:	CHROMIUM (TOTAL)		
Sample Collected:	10/06/1994	Findings:	350.000 UG/L
Chemical:	IRON		
Sample Collected:	10/06/1994	Findings:	148.000 UG/L
Chemical:	ALUMINUM		
Sample Collected:	10/06/1994	Findings:	616.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	10/06/1994	Findings:	.270
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	10/06/1994	Findings:	71.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	10/06/1994	Findings:	.027 UG/L
Chemical:	IODIDE		
Sample Collected:	10/06/1994	Findings:	.500 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	10/06/1994	Findings:	3.600 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	10/06/1994	Findings:	2.500 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	11/28/1994	Findings:	14.600 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	12/07/1995	Findings:	18.100 UG/L
Chemical:	TRICHLOROFLUOROMETHANE		
Sample Collected:	12/07/1995	Findings:	20.300 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	11/26/1996	Findings:	51.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	12/17/1996	Findings:	30.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05/14/1997	Findings:	10.600 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	05/14/1997	Findings:	10.000 UNITS
Chemical:	COLOR		
Sample Collected:	05/14/1997	Findings:	898.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		

Sample Collected:	05/14/1997	Findings:	7.760
Chemical:	PH (LABORATORY)		
Sample Collected:	05/14/1997	Findings:	302.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	05/14/1997	Findings:	365.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05/14/1997	Findings:	1.400 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	05/14/1997	Findings:	.250 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	05/14/1997	Findings:	439.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	05/14/1997	Findings:	61.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	05/14/1997	Findings:	79.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05/14/1997	Findings:	51.000 MG/L
Chemical:	SODIUM		
Sample Collected:	05/14/1997	Findings:	51.000
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	05/14/1997	Findings:	2.000 MG/L
Chemical:	POTASSIUM		
Sample Collected:	05/14/1997	Findings:	110.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	05/14/1997	Findings:	.120 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	05/14/1997	Findings:	28.000 MG/L
Chemical:	SILICA		
Sample Collected:	05/14/1997	Findings:	448.000 UG/L
Chemical:	BARIUM		
Sample Collected:	05/14/1997	Findings:	15.000 UG/L
Chemical:	CHROMIUM (TOTAL)		
Sample Collected:	05/14/1997	Findings:	660.000 UG/L
Chemical:	IRON		
Sample Collected:	05/14/1997	Findings:	.030 UG/L
Chemical:	FOAMING AGENTS (MBAS)		
Sample Collected:	05/14/1997	Findings:	612.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05/14/1997	Findings:	.340
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	05/14/1997	Findings:	58.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05/14/1997	Findings:	1.500 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	06/05/1997	Findings:	13.500 UG/L
Chemical:	TRICHLOROFLUOROMETHANE		
Sample Collected:	11/19/1997	Findings:	16.200 UG/L
Chemical:	TRICHLOROFLUOROMETHANE		
Sample Collected:	11/19/1997	Findings:	25.800 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

			Database	EDR ID Number
D16 **WSW** **1/4 - 1/2 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	Not Reported NW 35 65 Not Reported 11/06/1990	**AQUIFLOW**	**52402**
C17 **NE** **1/4 - 1/2 Mile** **Higher**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	4137 NW Not Reported Not Reported 25 07/14/1997	**AQUIFLOW**	**52466**
C18 **NE** **1/4 - 1/2 Mile** **Higher**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	3016 Not Reported 26 29 Not Reported 04/22/1994	**AQUIFLOW**	**52449**
D19 **WSW** **1/4 - 1/2 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	Not Reported Not Reported Not Reported Not Reported 45 11/12/1992	**AQUIFLOW**	**52411**
D20 **WSW** **1/4 - 1/2 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	Not Reported Not Reported Not Reported Not Reported 45 11/12/1992	**AQUIFLOW**	**52412**

21
West
1/4 - 1/2 Mile
Lower

FED USGS **USGS3223246**

Agency cd:	USGS	Site no:	374049121463301
Site name:	003S002E08P002M		
Latitude:	374049		
Longitude:	1214633	Dec lat:	37.68020795
Dec lon:	-121.77689801	Coor meth:	M
Coor accr:	T	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	SWSESW S08 T03S R02E M
Location map:	LIVERMORE	Map scale:	24000

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Altitude:	463.00	Altitude method:	L
Altitude accuracy:	005	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19241118
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	412	Hole depth:	420
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1976-06-15
Water quality data end date:	1977-01-24	Water quality data count:	2
Ground water data begin date:	1966-08-31	Ground water data end date:	1983-09-00
Ground water data count:	115		

Ground-water levels, Number of Measurements: 115

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1983-09	90		1983-06	71	
1983-03	57		1982-12	63	
1982-10	65		1982-04-30	75	
1982-03-31	109		1981-11	84	
1981-09	74		1981-05	84	
1981-03	100		1981-01	80	
1980-11	70		1980-10	85	
1980-04	45.0		1979-04	40.0	
1978-10	82.0		1977-10	60.0	
1974-06-05	57		1974-05-22	47.7	
1974-04-10	41.3		1974-03-13	46	
1974-03	46				
1974-02-13	0.00				
Note: The site was being pumped.					
1974-01-02	85		1973-12-05	98	
1973-11-07	105		1973-10-10	109	
1973-09-12	121		1973-09	121	
1973-08-01	116		1973-07-05	128	
1973-06-06	114		1973-05-09	108	
1973-04-11	78		1973-03-14	63	
1973-03	63		1973-02-15	82.5	
1973-01-03	83		1972-12-06	89	
1972-11-08	93		1972-10-11	93	
1972-09-12	140		1972-08-02	144	
1972-07-05	139		1972-06-07	129	
1972-05-10	112		1972-04-12	102	
1972-03-01	72		1972-02-02	65	
1972-01-05	80		1971-12-08	71	
1971-11-10	112		1971-10-13	115	
1971-09-01	124		1971-08-04	127	
1971-07-07	122		1971-06-09	124	
1971-04-28	69		1971-04-14	67	
1971-03-03	67.5		1971-02-03	105	
1971-01-06	70		1970-12-09	79	
1970-11-25	90		1970-10-14	84	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel
1970-09-02	101	
1970-06-24	90	
1970-05-12	82	
1970-03-04	86	
1970-01-08	93	
1969-10-29	103	
1969-09-03	152	
1969-07-02	136	
1969-05-08	92	
1969-03-05	113	
1969-01-02	120	
1968-11-06	140	
1968-09-05	166	
1968-07-03	138	
1968-05-01	119	
1968-03-06	115	
1968-01-03	123	
1967-11-01	128	
1967-09-06	140	
1967-07-05	159.5	
1967-05-03	105	
1967-03-01	170	
1967-01-04	140	
1966-11-09	163	
1966-08-31	191	
1970-08-05	91	
1970-06-10	84	
1970-04-01	78	
1970-02-04	86	
1969-12-11	105	
1969-10-01	111	
1969-08-06	138	
1969-06-04	130	
1969-04-02	95.5	
1969-02-05	117	
1968-12-04	117	
1968-10-02	142	
1968-08-09	165	
1968-06-05	163	
1968-04-03	112	
1968-02-07	115	
1967-12-06	123	
1967-10-04	135	
1967-08-01	171	
1967-06-07	110	
1967-04-05	120	
1967-02-01	168	
1966-12-14	143	
1966-10-03	190	

22
WNW
1/4 - 1/2 Mile
Lower

FED USGS **USGS3223271**

Agency cd:	USGS	Site no:	374100121463201
Site name:	003S002E08N002M		
Latitude:	374100		
Longitude:	1214632	Dec lat:	37.68326341
Dec lon:	-121.77662023	Coor meth:	M
Coor accr:	F	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	S8 T3S R2E M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	452.00	Altitude method:	L
Altitude accuracy:	.1	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19580116
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	526	Hole depth:	530
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data end date: 2001-05-03
Ground water data begin date: 1960-03-00
Ground water data count: 77
Water quality data begin date: 1976-02-11
Water quality data count: 4
Ground water data end date: 1981-12-00

Ground-water levels, Number of Measurements: 77

Date	Feet below Surface	Feet to Sealevel
1981-12	37	
1981-10	86	
1981-05	51	
1981-03	37	
1981-01	48	
1980-10-10	46.5	
1980-07	35	
1980-05	34	
1980-04	28	
1980-02	31	
1979-08	50	
1979-04	26	
1978-05	27	
1977-09	52	
1977-02-18	42.5	
1977-01-19	35.2	
1976-11-23	42.1	
1976-09-17	54.6	
1976-08	70	
1976-06-16	114.6	
1976-04-28	115.0	
1976-03	37	
1976-01-27	38.9	
1975-04	32	
1974-04	32	
1973-04	42	
1972-02	46	
1971-04	42	
1970-04	57	
1969-05	78	
1968-03	87	
1967-05	84	
1966-03	58	
1965-05	57	
1964-01	61	
1963-05	54	
1962-04	64	
1961-01	122	
1960-03	102	
1981-11	41	
1981-09	38	
1981-04-28	94.5	
1981-02	38	
1980-11	33	
1980-09	38	
1980-06	33	
1980-04-08	29.4	
1980-03	28	
1980-01	41	
1979-04-20	32.5	
1978-11	54	
1977-10-03	50.8	
1977-03-29	39.7	
1977-02	37	
1976-12-20	39.1	
1976-10-22	47.8	
1976-08-26	117.3	
1976-07-06	119.4	
1976-05-28	108.7	
1976-03-25	33.4	
1976-02-11	36.0	
1975-06	72	
1974-07	52	
1973-07	57	
1972-09	86	
1971-09	63	
1970-08	102	
1969-09	98	
1968-08	64	
1967-11	110	
1966-09	136	
1965-10	126	
1964-09	142	
1963-07	125	
1962-09	146	
1961-09	130	
1960-09	132	

23
West
1/4 - 1/2 Mile
Lower

FED USGS **USGS3223261**

Agency cd:	USGS	Site no:	374055121464001
Site name:	003S002E08P001M		
Latitude:	374055		
Longitude:	1214640	Dec lat:	37.68187457
Dec lon:	-121.77884252	Coor meth:	M
Coor accr:	F	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	S8 T3S R2E M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	465.50	Altitude method:	L
Altitude accuracy:	.1	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19481001
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	273	Hole depth:	273
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	2001-06-20
Water quality data end date:	2001-06-20	Water quality data count:	1
Ground water data begin date:	1975-05-00	Ground water data end date:	1981-12-00
Ground water data count:	35		

Ground-water levels, Number of Measurements: 35

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1981-12	44		1981-11	51	
1981-10	50		1981-09	49	
1981-06	44		1981-05	47	
1981-04	43		1981-03	42	
1981-02	46		1981-01	45	
1980-12	43		1980-11	42	
1980-10-10	44.3		1980-10	46	
1980-09	56		1980-07	41	
1980-06	40		1980-05	35	
1980-04-08	34.6		1980-04	34	
1980-03	35		1980-02	40	
1980-01	44		1979-09	46	
1979-04-20	38.8		1979-03	39	
1978-09	50		1978-05	37	
1977-10-03	56.6		1977-09	59	
1977-01	43		1976-07	64	
1976-03	43		1975-09	60	
1975-05	40				

24
SSE
1/4 - 1/2 Mile
Higher

FED USGS **USGS3223202**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Agency cd:	USGS	Site no:	374031121460101
Site name:	003S002E16E004M		
Latitude:	374031		
Longitude:	1214601	Dec lat:	37.67520806
Dec lon:	-121.76800884	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	SWSWNWS16 T 3S R 2E M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	503.60	Altitude method:	L
Altitude accuracy:	.1	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19771116
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	45.0	Hole depth:	50.0
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1978-01-03
Water quality data end date:	1983-06-01	Water quality data count:	23
Ground water data begin date:	1977-12-14	Ground water data end date:	1981-12-21
Ground water data count:	83		

Ground-water levels, Number of Measurements: 83

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1981-12-21	21.3		1981-11-18	22.3	
1981-11-02	22.5		1981-09-29	19.8	
1981-08-31	17.7		1981-08-10	17.7	
1981-08-03	17.6		1981-06-29	17.7	
1981-06-04	17.3		1981-06-01	17.3	
1981-05-26	17.4		1981-05-19	17.5	
1981-05-12	17.5		1981-05-05	17.4	
1981-04-28	17.4		1981-04-21	17.3	
1981-04-14	17.2		1981-04-07	17.0	
1981-03-31	16.9		1981-03-24	16.5	
1981-03-17	17.1		1981-03-12	17.4	
1981-03-10	17.4		1981-03-03	17.2	
1981-02-25	17.2		1981-02-17	17.3	
1981-02-10	17.1		1981-02-03	16.7	
1981-01-27	17.6		1981-01-19	17.8	
1981-01-12	17.8		1981-01-05	17.8	
1980-12-29	17.8		1980-12-22	17.7	
1980-12-16	17.7		1980-12-09	17.6	
1980-12-02	17.6		1980-11-25	17.6	
1980-11-18	17.5		1980-11-10	17.4	
1980-11-03	17.4		1980-10-27	17.3	
1980-10-17	17.3		1980-10-01	17.2	
1980-08-26	16.9		1980-08-01	16.7	
1980-07-29	16.7		1980-06-26	16.6	
1980-05-28	16.3		1980-05-21	16.2	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel
1980-05-05	16.0	
1980-03-05	15.0	
1980-01-22	15.9	
1979-11-27	17.5	
1979-10-02	17.4	
1979-07-21	17.1	
1979-06-26	17.0	
1979-06-11	17.0	
1979-05-21	16.8	
1979-05-03	16.6	
1979-04-02	16.4	
1979-03-19	16.2	
1979-02-20	16.6	
1979-01-08	17.4	
1978-08-08	16.8	
1978-05-30	16.4	
1977-12-14	25.3	
1980-03-26	15.7	
1980-02-26	14.6	
1979-12-20	17.9	
1979-10-23	17.5	
1979-08-17	18.4	
1979-07-18	17.1	
1979-06-18	17.1	
1979-06-04	16.8	
1979-05-07	16.5	
1979-04-09	16.5	
1979-03-27	16.3	
1979-03-12	16.0	
1979-01-16	16.0	
1978-11-27	17.2	
1978-06-20	16.8	
1978-01-03	25.7	

25
WNW **FED USGS** **USGS3223277**
1/4 - 1/2 Mile
Lower

Agency cd:	USGS	Site no:	374103121463801
Site name:	003S002E08K002M		
Latitude:	374103		
Longitude:	1214638	Dec lat:	37.68409672
Dec lon:	-121.77828695	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	SWNWSES8 T 3S R 2E M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	461.50	Altitude method:	L
Altitude accuracy:	.1	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19771020
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	74.0	Hole depth:	75.0
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1977-12-29
Water quality data end date:	1983-07-20	Water quality data count:	22
Ground water data begin date:	1977-12-13	Ground water data end date:	1982-01-29
Ground water data count:	156		

Ground-water levels, Number of Measurements: 156

Date	Feet below Surface	Feet to Sealevel
1982-01-29	30.2	
1982-01-12	30.3	
1981-12-28	37.6	
1981-12-17	38.0	
1981-12-07	37.2	
1981-11-23	36.9	
1981-11-09	38.7	
1981-10-26	39.0	
1981-10-13	38.4	
1981-09-29	37.7	
1981-09-14	37.6	
1981-08-31	37.2	
1981-08-17	37.1	
1981-08-05	37.3	
1981-07-27	37.0	
1981-07-13	35.9	
1981-06-22	35.4	
1981-06-08	35.0	
1981-06-01	34.8	
1981-05-19	35.1	
1981-05-05	35.0	
1981-04-21	33.8	
1981-04-07	32.7	
1981-03-24	32.6	
1981-03-10	33.9	
1981-02-25	33.5	
1981-02-10	33.4	
1981-02-03	33.4	
1981-01-19	36.1	
1981-01-05	35.7	
1980-12-22	35.5	
1980-12-09	35.2	
1980-11-25	34.8	
1980-11-10	34.6	
1980-10-24	34.9	
1980-10-17	34.9	
1980-10-06	54.6	
1980-09-22	33.5	
1980-09-09	33.2	
1980-08-25	32.9	
1980-08-12	32.6	
1980-07-28	31.8	
1980-07-15	31.6	
1980-07-08	31.9	
1980-06-23	31.7	
1980-06-09	30.7	
1980-05-26	30.1	
1980-05-12	29.2	
1980-04-27	28.3	
1980-04-14	27.8	
1980-03-31	27.4	
1980-03-17	27.0	
1980-03-05	27.2	
1980-02-25	28.0	
1980-02-11	31.0	
1982-01-18	30.4	
1982-01-04	35.0	
1981-12-21	32.9	
1981-12-08	36.8	
1981-11-30	37.1	
1981-11-16	37.6	
1981-11-02	38.6	
1981-10-19	39.0	
1981-10-05	38.1	
1981-09-21	37.5	
1981-09-08	37.8	
1981-08-26	36.9	
1981-08-10	37.2	
1981-08-03	37.2	
1981-07-20	36.4	
1981-06-29	35.5	
1981-06-16	35.1	
1981-06-03	34.9	
1981-05-26	34.9	
1981-05-12	35.3	
1981-04-28	34.4	
1981-04-14	33.3	
1981-03-31	32.5	
1981-03-17	33.7	
1981-03-03	33.6	
1981-02-17	33.6	
1981-02-09	33.4	
1981-01-27	35.5	
1981-01-12	35.9	
1980-12-29	35.6	
1980-12-16	35.0	
1980-12-02	34.7	
1980-11-18	34.7	
1980-11-03	34.8	
1980-10-20	35.0	
1980-10-14	34.8	
1980-09-29	34.1	
1980-09-15	33.2	
1980-09-02	33.1	
1980-08-18	32.7	
1980-08-06	32.3	
1980-07-21	31.5	
1980-07-14	31.7	
1980-07-02	32.3	
1980-06-16	31.3	
1980-06-02	30.3	
1980-05-19	29.6	
1980-05-04	28.7	
1980-04-20	28.0	
1980-04-07	27.5	
1980-03-24	27.1	
1980-03-10	26.8	
1980-03-03	27.2	
1980-02-18	30.3	
1980-02-04	30.9	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1980-01-28	30.3		1980-01-21	31.0	
1980-01-14	32.4		1979-12-31	35.2	
1979-12-18	36.3		1979-12-03	36.2	
1979-11-19	36.3		1979-11-05	36.3	
1979-10-22	36.8		1979-10-19	36.6	
1979-10-08	37.3		1979-09-24	37.1	
1979-09-10	36.8		1979-08-27	36.1	
1979-08-13	35.3		1979-07-30	34.3	
1979-07-21	34.3		1979-07-09	33.7	
1979-06-25	33.5		1979-06-18	33.3	
1979-06-12	33.2		1979-06-04	32.3	
1979-05-21	30.7		1979-05-07	30.8	
1979-04-30	30.8		1979-04-26	30.7	
1979-04-09	30.0		1979-04-02	30.0	
1979-03-27	30.4		1979-03-19	29.8	
1979-03-12	29.9		1979-02-27	30.7	
1979-02-20	31.9		1979-02-16	32.6	
1979-02-13	32.2		1979-02-06	32.5	
1979-01-30	31.8		1979-01-23	32.0	
1979-01-16	33.0		1979-01-08	35.7	
1978-12-29	48.8		1978-11-22	37.4	
1978-08-09	35.6		1978-06-20	32.6	
1978-05-30	31.4		1977-12-13	50.6	

26
WSW
1/4 - 1/2 Mile
Lower

AQUIFLOW **52445**

Site ID:	2944
Groundwater Flow:	NW
Shallow Water Depth:	14.98
Deep Water Depth:	28.50
Average Water Depth:	Not Reported
Date:	06/27/1995

E27
ENE
1/4 - 1/2 Mile
Higher

FED USGS **USGS3223270**

Agency cd:	USGS	Site no:	374100121454201
Site name:	003S002E09P001M		
Latitude:	374100		
Longitude:	1214542	Dec lat:	37.68326336
Dec lon:	-121.7627309	Coor meth:	M
Coor accr:	F	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	S9 T3S R2E M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	498.60	Altitude method:	L
Altitude accuracy:	.1	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19560503
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag: Y
Type of ground water site: Single well, other than collector or Ranney type
Aquifer Type: Not Reported
Aquifer: ALLUVIUM (QUATERNARY)

Well depth:	504	Hole depth:	515
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1956-05-00	Ground water data end date:	1981-12-00
Ground water data count:	72		

Ground-water levels, Number of Measurements: 72

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1981-12	83		1981-11	98	
1981-10	139		1981-09	109	
1981-05	100		1981-04	81	
1981-03	84		1981-02	84	
1981-01	89		1980-12	90	
1980-11	99		1980-10-15	98.7	
1980-10	109		1980-09	103	
1980-07	92		1980-06	90	
1980-05	77		1980-04-08	70.6	
1980-04	71		1980-03	73	
1980-02	79		1980-01	95	
1979-08	104		1979-04-20	73.3	
1979-04	69		1978-10	107	
1978-05	73		1977-10-11	101.1	
1977-09	99		1977-02	80	
1976-08	131		1976-03	79	
1975-08	144		1975-03	78	
1974-08	111		1974-04	84	
1973-05	124		1973-03	99	
1972-09	131		1972-03	89	
1971-09	128		1971-03	99	
1970-07	144		1970-03	116	
1969-09	156		1969-04	119	
1968-09	159		1968-03	130	
1967-09	164		1967-05	125	
1966-09	184		1966-03	144	
1965-10	170		1965-05	143	
1964-10	185		1964-08	143	
1963-09	169		1963-05	144	
1962-07	205		1962-02	167	
1961-09	211		1961-03	159	
1960-08	200		1960-03	133	
1959-10	161		1959-01	112	
1958-10	132		1958-06	109	
1958-01	134		1957-03	110	
1956-08	132		1956-05	106	

E28
ENE
1/4 - 1/2 Mile
Higher

Site ID:	Not Reported
Groundwater Flow:	Not Reported
Shallow Water Depth:	35
Deep Water Depth:	45
Average Water Depth:	Not Reported
Date:	09/29/1994

AQUIFLOW **52457**

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

E29
ENE
1/4 - 1/2 Mile
Higher

Site ID:	3612
Groundwater Flow:	Not Reported
Shallow Water Depth:	35
Deep Water Depth:	45
Average Water Depth:	Not Reported
Date:	09/29/1994

AQUIFLOW **52456**

30
SE
1/4 - 1/2 Mile
Higher

FED USGS **USGS3223214**

Agency cd:	USGS	Site no:	374037121454601
Site name:	003S002E16C001M		
Latitude:	374037		
Longitude:	1214546	Dec lat:	37.67687466
Dec lon:	-121.76384204	Coor meth:	M
Coor accr:	F	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	S16 T3S R 2E M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	508.30	Altitude method:	L
Altitude accuracy:	.1	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19580218
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	574	Hole depth:	584
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1976-07-06
Water quality data end date:	2001-05-02	Water quality data count:	3
Ground water data begin date:	1958-04-00	Ground water data end date:	1981-12-00
Ground water data count:	76		

Ground-water levels, Number of Measurements: 76

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1981-12	100		1981-11	110	
1981-09	152		1981-05	151	
1981-04	93		1981-03	95	
1981-01	75		1980-12	104	
1980-11	114				
1980-10-15	135.5				
Note: The site was being pumped.					
1980-09	157		1980-08	147	
1980-07	147		1980-05	80	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel
1980-04	79	
1980-02	91	
1979-08	160	
1979-04-20	75.2	
Note: The site was being pumped.		
1979-04	76	
1978-05	76	
1977-07	116	
1977-03-29	82.6	
Note: The site was being pumped.		
1977-03	84	
1977-02-18	83.5	
Note: The site was being pumped.		
1977-01-19	85.6	
Note: The site was being pumped.		
1976-12-21	88.8	
Note: The site was being pumped.		
1976-11-23	94.0	
Note: The site was being pumped.		
1976-11-04	98.9	
Note: The site was being pumped.		
1976-09-24	115.3	
1976-08-26	121.5	
Note: The site was being pumped.		
1976-07	150	
1976-04-29	99.7	
1976-03	80	
1976-01-26	86.7	
1975-04	76	
1974-04	80	
1973-04	92	
1972-03	94	
1971-05	96	
1970-04	114	
1969-05	114	
1968-03	122	
1967-05	120	
1965-11	180	
1964-09	180	
1963-09	186	
1962-07	200	
1961-08	220	
1960-07	192	
1959-11	162	
1958-11	178	

Date	Feet below Surface	Feet to Sealevel
1980-03	82	
1980-01	121	
1978-09	156	
1977-10-11	105.2	
1976-05-24	114.8	
1976-03-19	81.3	
1976-02-25	82.2	
1975-09	130	
1974-06	138	
1973-10	124	
1972-09	142	
1971-08	144	
1970-07	176	
1969-09	160	
1968-09	154	
1967-07	154	
1966-07	166	
1965-05	136	
1964-04	142	
1963-06	138	
1962-04	148	
1961-04	126	
1960-03	138	
1959-03	110	
1958-04	106	

F31
North
1/2 - 1 Mile
Lower

FED USGS **USGS3223145**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Agency cd:	USGS	Site no:	374118121461701
Site name:	003S002E08G001M		
Latitude:	374118		
Longitude:	1214617	Dec lat:	37.68826325
Dec lon:	-121.77245344	Coor meth:	M
Coor accr:	F	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	S8 T3S R2E M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	474.50	Altitude method:	L
Altitude accuracy:	.1	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19290318
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	625	Hole depth:	625
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	2001-06-20
Water quality data end date:	2001-06-20	Water quality data count:	1
Ground water data begin date:	1957-08-22	Ground water data end date:	1980-10-27
Ground water data count:	144		

Ground-water levels, Number of Measurements: 144

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1980-10-27	64.4		1980-10-01	69.0	
1980-08-26	69.3		1980-07-29	64.1	
1980-06-26	62.0		1980-05-28	57.3	
1980-05-05	52.6		1980-03-26	48.1	
1980-02-26	50.7		1980-01-22	57.8	
1979-12-20	66.3		1979-11-27	65.8	
1979-10-23	66.4		1979-10-04	71.4	
1979-08-17	70.7		1979-05-31	63.2	
1979-04-20	52.3		1978-09-20	74.2	
1978-03-21	52.7		1977-11-08	71.8	
1977-10-11	71.9		1977-09-12	74.7	
1977-08-10	72.5		1977-07-08	70.9	
1977-06-07	66.9		1977-05-10	62.1	
1977-04-11	60.1		1977-03-11	60.7	
1977-02-07	58.4		1977-01-10	59.4	
1976-12-07	64.0		1976-11-10	69.6	
1976-10-13	77.6		1976-09-08	84.0	
1976-08-12	87.2		1976-07-16	90.0	
1976-06-09	80.2		1976-05-12	74.0	
1976-04-16	59.5		1976-03-08	55.7	
1976-02-09	59.4		1976-01-15	61.5	
1975-11-25	63.1		1975-10-30	68.0	
1975-10-01	75.5		1975-09-11	77.6	
1975-08-06	82.9		1975-07-30	79.9	
1975-07-09	69.2		1975-06-11	75.1	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel
1975-05-16	62.7	
1975-03-17	53.9	
1975-01-27	62.5	
1974-11-25	71.7	
1974-10-02	79.1	
1974-08-09	75.5	
1974-06-12	131.6	
1974-04-11	73.7	
1974-02-26	73.7	
1973-12-27	84.4	
1973-11-26	117.9	
1973-10-03	76.6	
1973-08-08	76.9	
1973-06-13	74.7	
1973-04-18	67.5	
1973-02-21	68.6	
1972-11-29	87.8	
1972-10-04	94.3	
1972-08-10	102.8	
1972-06-14	91.5	
1972-04-19	76.2	
1972-02-23	66.3	
1971-12-29	77.9	
1971-11-03	72.7	
1971-09-08	89.0	
1971-07-14	88.9	
1971-05-19	139.6	
1971-03-24	72.8	
1971-01-27	74.8	
1970-12-02	87.0	
1970-10-08	135.0	
1970-08-12	110.0	
1970-06-17	100.5	
1970-04-22	135.0	
1970-02-25	153	
1969-12-30	135.0	
1969-11-05	158.0	
1969-09-17	120.0	
1969-04-30	173	
1968-03-04	113.0	
1967-04-02	116.0	
1966-03-31	179.0	
1965-04-01	133.0	
1964-02-29	132.0	
1963-02-28	143.0	
1962-03-28	163.0	
1961-03-01	135.0	

Date	Feet below Surface	Feet to Sealevel
1975-04-16	50.9	
1975-02-19	56.8	
1974-12-26	68.1	
1974-10-31	68.0	
1974-09-05	75.7	
1974-07-10	74.8	
1974-05-15	121.4	
1974-03-20	110.7	
1974-01-23	73.8	
1973-12-26	115.4	
1973-10-31	119.6	
1973-09-05	72.3	
1973-07-11	75.1	
1973-05-16	110.0	
1973-03-22	67.6	
1973-01-24	80.0	
1972-11-11	91.0	
1972-09-06	103.5	
1972-07-13	100.2	
1972-05-18	80.2	
1972-03-22	76.3	
1972-01-26	66.9	
1971-12-01	133.5	
1971-10-06	80.4	
1971-08-11	97.6	
1971-06-16	91.9	
1971-04-21	73.0	
1971-02-24	74.5	
1970-12-30	82.0	
1970-11-04	93.0	
1970-09-10	124.0	
1970-07-15	104.4	
1970-05-20	140.0	
1970-03-25	92.5	
1970-01-28	151.0	
1969-12-03	145.0	
1969-10-08	159.0	
1969-08-28	127.5	
1968-10-01	132	
1967-10-01	168.0	
1966-10-03	207.0	
1965-10-04	157.0	
1964-09-01	167.0	
1963-07-31	153.0	
1962-09-01	181.0	
1961-09-30	184.0	
1957-08-22	174.0	

32
SW
1/2 - 1 Mile
Lower

FED USGS **USGS3223203**

Agency cd:	USGS	Site no:	374031121463401
Site name:	003S002E17G002M		
Latitude:	374031		
Longitude:	1214634	Dec lat:	37.6752081
Dec lon:	-121.7771758	Coor meth:	M
Coor accr:	U	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	Not Reported	Altitude method:	Not Reported
Altitude accuracy:	10	Altitude datum:	Not Reported
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported	Project number:	Not Reported
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

33
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS3223374**

Agency cd:	USGS	Site no:	374027121462601
Site name:	003S002E17G001M		
Latitude:	374027		
Longitude:	1214626	Dec lat:	37.67409701
Dec lon:	-121.7749535	Coor meth:	M
Coor accr:	U	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	Not Reported	Altitude method:	Not Reported
Altitude accuracy:	10	Altitude datum:	Not Reported
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported	Project number:	Not Reported
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data begin date: 1976-05-03
Water quality data end date: 1977-08-15
Water quality data count: 16
Ground water data begin date: 0000-00-00
Ground water data end date: 0000-00-00
Ground water data count: 0

Ground-water levels, Number of Measurements: 0

G34
NE
1/2 - 1 Mile
Higher

Site ID:	Not Reported
Groundwater Flow:	Not Reported
Shallow Water Depth:	Not Reported
Deep Water Depth:	Not Reported
Average Water Depth:	59
Date:	09/13/1991

AQUIFLOW **53591**

G35
NE
1/2 - 1 Mile
Higher

Site ID:	Not Reported
Groundwater Flow:	Not Reported
Shallow Water Depth:	Not Reported
Deep Water Depth:	Not Reported
Average Water Depth:	59
Date:	09/13/1991

AQUIFLOW **53590**

G36
NE
1/2 - 1 Mile
Higher

Site ID:	Not Reported
Groundwater Flow:	Not Reported
Shallow Water Depth:	Not Reported
Deep Water Depth:	Not Reported
Average Water Depth:	59
Date:	09/13/1991

AQUIFLOW **53592**

37
WSW
1/2 - 1 Mile
Lower

Site ID:	Not Reported
Groundwater Flow:	N
Shallow Water Depth:	43
Deep Water Depth:	45
Average Water Depth:	Not Reported
Date:	10/03/1990

AQUIFLOW **52317**

E38
ENE
1/2 - 1 Mile
Higher

Site ID:	Not Reported
Groundwater Flow:	Not Reported
Shallow Water Depth:	41.67
Deep Water Depth:	54.17
Average Water Depth:	Not Reported
Date:	11/06/1992

AQUIFLOW **52422**

E39
ENE
1/2 - 1 Mile
Higher

Site ID:	Not Reported
Groundwater Flow:	Not Reported
Shallow Water Depth:	41.67
Deep Water Depth:	54.17
Average Water Depth:	Not Reported
Date:	11/06/1992

AQUIFLOW **52405**

F40
North
1/2 - 1 Mile
Lower

FED USGS **USGS3223150**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Agency cd:	USGS	Site no:	374120121461701
Site name:	003S002E08H001M		
Latitude:	374120		
Longitude:	1214617	Dec lat:	37.68881879
Dec lon:	-121.77245344	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	S8 T3S R2E M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	472.50	Altitude method:	L
Altitude accuracy:	1	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19290101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	625	Hole depth:	625
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1968-07-00	Ground water data end date:	1981-12-00
Ground water data count:	78		

Ground-water levels, Number of Measurements: 78

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1981-12	66		1981-11	66	
1981-10	69		1981-09	69	
1981-07	72		1981-06	45	
1981-05-20	41.5		1981-05	68	
1981-04-22	37.2		1981-04	57	
1981-03-25	31.8		1981-03-09	34.0	
1981-03	59		1981-02-26	35.2	
1981-02	49		1981-01-28	40.0	
1981-01	62		1980-12-03	41.9	
1980-12	63		1980-11-12	42.1	
1980-11	64		1980-10-27	64.4	
1980-10-15	41.7		1980-09	64	
1980-08-26	69.3		1980-08	65	
1980-07-29	64.1		1980-07-15	38.8	
1980-07	61		1980-06-26	62.0	
1980-06-24	39.4		1980-06	57	
1980-05-28	57.3		1980-05-05	52.6	
1980-05	52		1980-04-04	34.6	
1980-04	49		1980-03-26	48.1	
1980-03	50		1980-02-26	50.7	
1980-02	54		1980-01-22	57.8	
1980-01	66		1979-12-20	66.3	
1979-11-27	65.8		1979-10-23	66.4	
1979-10-04	71.4		1979-08-17	70.7	
1979-08	70		1979-05-31	63.2	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1979-05	44		1979-04-20	52.3	
1978-10	86		1978-09-25	74.2	
1978-05	50		1978-03-21	52.7	
1977-11-08	71.8		1977-10-11	71.9	
1977-10	74		1977-09-12	74.7	
1977-02	48		1976-08	92	
1976-03	56		1975-09	98	
1975-03	57		1974-07	98	
1974-02	64		1973-08	80	
1973-04	67		1972-09	106	
1972-03	68		1971-08	98	
1971-05	70		1970-08	107	
1970-04	94		1969-11	124	
1969-06	108		1968-07	146	

H41
NE
1/2 - 1 Mile
Higher

FED USGS **USGS3223287**

Agency cd:	USGS	Site no:	374108121454201
Site name:	003S002E09L001M		
Latitude:	374108		
Longitude:	1214542	Dec lat:	37.68548552
Dec lon:	-121.76273091	Coor meth:	M
Coor accr:	F	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	S9 T3S R2E M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	496.70	Altitude method:	L
Altitude accuracy:	.1	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19600113
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	516	Hole depth:	529
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	2001-06-20
Water quality data end date:	2001-06-20	Water quality data count:	1
Ground water data begin date:	1960-09-00	Ground water data end date:	1981-12-00
Ground water data count:	61		

Ground-water levels, Number of Measurements: 61

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1981-12	88		1981-11	99	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel
1981-10	146	
1981-05	102	
1981-03	84	
1981-01	87	
1980-11	139	
1980-09	116	
1980-05	78	
1980-04	66	
1980-02	81	
1979-09	124	
1979-04-20	64.4	
1978-05	67	
1977-09	115	
1976-10	152	
1975-09	148	
1974-09	105	
1973-09	112	
1972-09	148	
1971-09	117	
1970-07	164	
1969-10	140	
1968-09	141	
1967-10	148	
1966-09	173	
1965-11	182	
1964-08	182	
1963-09	195	
1962-07	263	
1961-09	243	
1960-09	240	

Date	Feet below Surface	Feet to Sealevel
1981-09	131	
1981-04	79	
1981-02	82	
1980-12	148	
1980-10-15	135.5	
1980-07	115	
1980-04-08	64.9	
1980-03	73	
1980-01	109	
1979-05	63	
1978-09	113	
1977-10-14	115.0	
1977-06	73	
1976-04	76	
1975-04	68	
1974-04	66	
1973-04	80	
1972-03	84	
1971-05	89	
1970-04	100	
1969-05	97	
1968-04	105	
1967-05	109	
1966-04	124	
1965-05	126	
1964-04	132	
1963-05	127	
1962-04	148	
1961-03	144	

H42
NE
1/2 - 1 Mile
Higher

AQUIFLOW **52436**

Site ID:	Not Reported
Groundwater Flow:	Varies
Shallow Water Depth:	53.31
Deep Water Depth:	68.84
Average Water Depth:	Not Reported
Date:	09/13/1994

43
NW
1/2 - 1 Mile
Lower

FED USGS **USGS3223136**

Agency cd:	USGS	Site no:	374117121463501
Site name:	003S002E18G001M		
Latitude:	374117		
Longitude:	1214635	Dec lat:	37.68798549
Dec lon:	-121.77745359	Coor meth:	M
Coor accr:	F	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	S8 T3S R2E M
Location map:	LIVERMORE	Map scale:	24000

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Altitude:	462.40	Altitude method:	L
Altitude accuracy:	.1	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19600503
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	465	Hole depth:	465
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1962-05-01	Ground water data end date:	1980-10-10
Ground water data count:	128		

Ground-water levels, Number of Measurements: 128

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1980-10-10	53.2		1980-04-04	37.9	
1979-10-04	54.1		1979-04-20	44.5	
1978-09-20	58.4		1978-03-21	42.3	
1977-11-08	60.5		1977-10-11	60.6	
1977-09-12	63.6		1977-08-10	62.6	
1977-07-08	59.6		1977-06-07	58.5	
1977-05-10	53.0		1977-04-11	52.3	
1977-03-11	51.2		1977-02-07	47.7	
1977-01-10	47.7		1976-12-07	51.6	
1976-11-10	55.5		1976-10-13	60.7	
1976-09-08	63.8		1976-08-12	67.5	
1976-07-16	68.8		1976-06-09	64.6	
1976-05-12	61.9		1976-04-16	50.8	
1976-03-08	47.8		1976-02-09	49.0	
1976-01-15	49.6		1975-11-25	52.6	
1975-10-30	60.0		1975-10-01	61.1	
1975-09-11	59.5		1975-08-06	63.9	
1975-07-30	62.8		1975-07-09	55.8	
1975-06-11	57.4		1975-05-15	51.2	
1975-04-16	42.7		1975-03-17	44.9	
1975-02-19	44.9		1975-01-27	53.5	
1974-12-26	50.6		1974-11-25	58.2	
1974-10-31	56.6		1974-10-02	57.8	
1974-09-05	61.3		1974-08-09	58.3	
1974-07-10	53.7		1974-06-12	55.7	
1974-05-15	48.3		1974-04-17	50.6	
1974-03-20	45.9		1974-02-20	47.5	
1974-01-23	46.8		1973-12-27	75.5	
1973-12-26	49.5		1973-11-26	53.9	
1973-10-31	56.0		1973-10-03	60.3	
1973-09-05	58.5		1973-08-08	60.5	
1973-07-11	83.4		1973-06-13	60.0	
1973-05-16	59.7		1973-04-18	51.2	
1973-03-22	51.4		1973-02-21	58.8	
1973-01-24	69.4		1972-11-29	76.9	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1972-11-11	78.5		1972-10-04	82.0	
1972-09-06	85.6		1972-08-10	85.1	
1972-07-13	103.9		1972-06-14	97.0	
1972-05-18	68.5		1972-04-19	64.3	
1972-03-22	60.4		1972-02-23	56.1	
1972-01-26	53.0		1971-12-29	58.7	
1971-12-01	59.8		1971-11-03	57.9	
1971-10-06	63.9		1971-09-08	67.5	
1971-08-11	72.8		1971-07-14	85.5	
1971-06-16	69.1		1971-05-19	63.2	
1971-04-21	60.5		1971-03-24	61.0	
1971-02-24	61.0		1971-01-27	58.5	
1970-12-30	65.0		1970-12-02	69.4	
1970-11-04	73.0		1970-10-08	98.0	
1970-09-10	90.0		1970-08-12	85.0	
1970-07-15	80.0		1970-06-17	74.0	
1970-05-20	118.0		1970-04-22	110.0	
1970-03-25	92.5		1970-02-25	76.0	
1970-01-28	77.0		1969-12-30	89.0	
1969-12-03	90.0		1969-11-05	91.0	
1969-10-08	91.7		1969-09-17	93.7	
1969-08-28	119		1969-04-30	114	
1968-10	113		1968-03-04	95	
1967-10-01	162		1967-04-02	103	
1966-10-03	135		1966-04-30	120	
1965-10-01	183				
Note: The site was being pumped.					
1965-05-01	108		1964-10-01	140	
1964-04-30	120		1963-10-31	117	
1963-05-01	103		1962-10-01	132	
1962-05-01	133				

44
East
1/2 - 1 Mile
Higher

FED USGS **USGS3223257**

Agency cd:	USGS	Site no:	374054121453201
Site name:	003S002E09Q004M		
Latitude:	374054		
Longitude:	1214532	Dec lat:	37.68159673
Dec lon:	-121.75995304	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	S 7 T 3S R 2E M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	501.70	Altitude method:	L
Altitude accuracy:	.1	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19771122
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	80.0	Hole depth:	80.0
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1978-01-19
Water quality data end date:	1983-06-02	Water quality data count:	22
Ground water data begin date:	1977-12-13	Ground water data end date:	1981-11-18
Ground water data count:	98		

Ground-water levels, Number of Measurements: 98

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1981-11-18	34.1		1981-11-12	35.5	
1981-09-30	34.7		1981-08-31	34.5	
1981-08-06	34.2		1981-08-03	34.0	
1981-06-29	32.8		1981-06-03	32.1	
1981-06-01	31.9		1981-05-26	31.9	
1981-05-19	31.5		1981-05-12	31.0	
1981-05-05	30.6		1981-04-28	30.2	
1981-04-21	29.9		1981-04-14	29.7	
1981-04-07	29.2		1981-03-31	29.4	
1981-03-24	30.0		1981-03-17	31.5	
1981-03-10	31.7		1981-03-03	31.4	
1981-02-25	31.2		1981-02-17	31.3	
1981-02-10	31.1		1981-02-03	31.0	
1981-01-27	34.6		1981-01-26	33.8	
1981-01-19	33.8		1981-01-12	33.6	
1981-01-05	33.1		1980-12-29	33.0	
1980-12-22	32.7		1980-12-16	32.3	
1980-12-09	32.3		1980-12-02	31.9	
1980-11-25	31.9		1980-11-18	31.6	
1980-11-10	31.0		1980-11-03	30.9	
1980-10-24	30.4		1980-10-17	29.6	
1980-10-14	29.4		1980-09-29	28.4	
1980-09-15	27.4		1980-09-02	26.4	
1980-08-18	25.5		1980-08-06	24.9	
1980-07-21	24.5		1980-07-15	24.3	
1980-07-02	24.0		1980-06-16	23.1	
1980-06-02	22.1		1980-03-24	21.3	
1980-03-10	21.6		1980-03-05	22.7	
1980-02-25	25.3		1980-02-11	28.5	
1980-01-28	28.7		1980-01-14	32.2	
1979-12-31	35.5		1979-12-18	36.4	
1979-12-03	35.4		1979-11-19	35.4	
1979-11-05	35.2		1979-10-23	34.8	
1979-10-22	35.0		1979-10-08	34.4	
1979-09-24	33.5		1979-09-10	32.5	
1979-08-27	31.8		1979-08-13	31.3	
1979-07-30	30.8		1979-07-21	30.7	
1979-07-09	29.8		1979-06-25	29.2	
1979-06-18	28.9		1979-06-13	28.7	
1979-06-04	27.7		1979-05-21	27.0	
1979-05-07	26.6		1979-04-30	26.4	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1979-04-26	26.2		1979-04-09	26.0	
1979-04-02	25.8		1979-03-27	26.1	
1979-03-19	26.1		1979-03-12	26.2	
1979-02-20	30.0		1979-01-16	31.6	
1979-01-08	35.2		1978-11-22	34.0	
1978-08-08	28.2		1978-06-20	26.7	
1978-05-31	26.2		1978-01-19	42.8	
1977-12-28	51.8		1977-12-13	51.9	

I45
ESE
1/2 - 1 Mile
Higher

AQUIFLOW **53572**

Site ID:	Not Reported
Groundwater Flow:	Not Reported
Shallow Water Depth:	Not Reported
Deep Water Depth:	Not Reported
Average Water Depth:	40
Date:	02/11/1988

I46
ESE
1/2 - 1 Mile
Higher

AQUIFLOW **53571**

Site ID:	Not Reported
Groundwater Flow:	Not Reported
Shallow Water Depth:	Not Reported
Deep Water Depth:	Not Reported
Average Water Depth:	40
Date:	02/11/1988

47
NNW
1/2 - 1 Mile
Lower

FED USGS **USGS3223156**

Agency cd:	USGS	Site no:	374126121462201
Site name:	003S002E08H002M		
Latitude:	374126		
Longitude:	1214622	Dec lat:	37.69048541
Dec lon:	-121.77384237	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	NWNENES 8 T 3S R 2E M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	467.40	Altitude method:	L
Altitude accuracy:	.1	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19760526
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	46.0	Hole depth:	47.0
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data begin date: 1976-10-28
Water quality data end date: 1983-06-02
Water quality data count: 23
Ground water data begin date: 1976-06-14
Ground water data end date: 1981-12-21
Ground water data count: 59

Ground-water levels, Number of Measurements: 59

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1981-12-21	41.7		1981-11-18	39.6	
1981-11-13	41.6		1981-10-26	41.7	
1981-09-30	39.5		1981-08-31	41.3	
1981-08-04	41.7		1981-08-03	41.6	
1981-06-29	35.9		1981-05-28	41.7	
1981-05-20	41.5		1981-04-22	37.2	
1981-03-25	31.8		1981-03-09	34.0	
1981-02-26	35.2		1981-01-28	40.0	
1980-12-03	41.9		1980-11-12	42.1	
1980-10-15	41.7		1980-07-15	38.8	
1980-06-24	39.4		1980-04-04	34.6	
1980-03-05	27.0		1979-10-19	41.6	
1979-07-21	41.2		1979-06-25	36.5	
1979-06-18	36.8		1979-06-12	40.0	
1979-06-04	39.1		1979-05-21	39.6	
1979-05-07	38.8		1979-04-30	38.4	
1979-04-26	38.1		1979-04-09	34.7	
1979-04-02	32.2		1979-03-27	29.7	
1979-03-19	29.3		1979-03-16	37.9	
1979-03-12	29.3		1979-02-27	30.3	
1979-01-16	29.9		1979-01-08	41.9	
1978-11-22	39.2		1978-08-09	35.6	
1978-05-30	32.4		1978-04-06	28.7	
1977-12-08	37.8		1977-11-01	39.8	
1977-10-03	41.7		1977-02-16	41.6	
1977-01-21	41.3		1976-12-27	37.0	
1976-12-03	41.6		1976-11-19	36.9	
1976-10-28	32.1		1976-10-25	32.1	
1976-07-08	33.3		1976-06-16	33.5	
1976-06-14	33.1				

I48
ESE
1/2 - 1 Mile
Higher

FED USGS **USGS3223207**

Agency cd:	USGS	Site no:	374034121453401
Site name:	003S002E16B001M		
Latitude:	374034		
Longitude:	1214534	Dec lat:	37.67604134
Dec lon:	-121.7605086	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	SWNWNES16 T 3S R 2E M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	517.60	Altitude method:	L
Altitude accuracy:	.1	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19440701
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	410	Hole depth:	Not Reported
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1978-03-13
Water quality data end date:	2001-06-20	Water quality data count:	6
Ground water data begin date:	1962-11-01	Ground water data end date:	1981-11-00
Ground water data count:	82		

Ground-water levels, Number of Measurements: 82

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1981-11	105		1981-09	144	
1981-07	170		1981-05	116	
1981-03	90		1981-01	95	
1980-11	115		1980-09	124	
1980-07	121		1980-05	81	
1980-04-04	74.3		1980-04	77	
1980-03	81		1980-02	89	
1980-01	106		1979-11	144	
1979-10-02	160.8		1979-05	76	
1979-02-24	109.6		1979-02-14	109.6	
1979-01-09	84.8		1978-12-12	93.2	
1978-11-07	135.7		1978-10-18	144.6	
1978-09-21	155.5		1978-09-18	155.0	
1978-09	132		1978-08-23	160.0	
1978-06-09	144.0		1978-05-11	108.6	
1978-05	75		1978-04-13	76.1	
1978-03-13	83.4		1978-02-17	93.5	
1977-11	110		1977-09-08	104.0	
1977-08-08	103.0		1977-03-11	110.8	
1977-03	83		1976-10-04	114.5	
1976-07	155		1976-03-04	82.6	
1976-03	83		1975-09-18	131.7	
1975-08	152		1975-03-25	70.6	
1975-03	73		1974-09-13	134.3	
1974-09	111		1974-04	72	
1974-03-19	74.6		1973-10	112	
1973-09-26	131.0		1973-04	82	
1973-03-13	92.0		1972-10-02	119.0	
1972-08	130		1972-03-13	117.0	
1972-03	94		1971-09-10	158.0	
1971-09	133		1971-04-20	94.0	
1971-04	94		1970-09-29	151.0	
1970-09	163		1970-03-24	146.0	
1970-03	110		1969-10-23	163.0	
1969-04-30	122.0		1968-10-31	137.0	
1968-03-04	115.0		1967-10-01	161.0	
1967-04-02	116.0		1966-10-03	190.0	
1966-04-30	140.0		1965-10-01	183.0	
1965-05-01	137.0		1964-10-01	106.0	
1964-04-20	152.0		1963-10-31	165.0	
1963-05-01	137.0		1962-11-01	172.0	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

J49
WNW
1/2 - 1 Mile
Lower | **CA WELLS** | **3475**

Water System Information:

Prime Station Code:	03S/02E-08N02 M	User ID:	ENG
FRDS Number:	0110003010	County:	Alameda
District Number:	04	Station Type:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type:	Well/Groundwater	Well Status:	Active Untreated
Source Lat/Long:	374100.0 1214700.0	Precision:	Undefined
Source Name:	WELL 14-01		
System Number:	0110003		
System Name:	CALIFORNIA WATER SERVICE - LIVERMORE		
Organization That Operates System:			
	P O BOX 1150		
	SAN JOSE, CA 95108		
Pop Served:	50670	Connections:	14951
Area Served:	LIVERMORE		

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	05/08/1986	Findings:	20.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	05/08/1986	Findings:	7.000 UNITS
Chemical:	COLOR		
Sample Collected:	05/08/1986	Findings:	795.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	05/08/1986	Findings:	7.600
Chemical:	PH (LABORATORY)		
Sample Collected:	05/08/1986	Findings:	301.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	05/08/1986	Findings:	365.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05/08/1986	Findings:	1.000 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	05/08/1986	Findings:	.160 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	05/08/1986	Findings:	362.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	05/08/1986	Findings:	46.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	05/08/1986	Findings:	60.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05/08/1986	Findings:	37.000 MG/L
Chemical:	SODIUM		
Sample Collected:	05/08/1986	Findings:	.850
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	05/08/1986	Findings:	1.800 MG/L
Chemical:	POTASSIUM		
Sample Collected:	05/08/1986	Findings:	56.000 MG/L
Chemical:	CHLORIDE		

Sample Collected:	05/08/1986	Findings:	.130 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	05/08/1986	Findings:	32.000 MG/L
Chemical:	SILICA		
Sample Collected:	05/08/1986	Findings:	250.000 UG/L
Chemical:	BARIUM		
Sample Collected:	05/08/1986	Findings:	494.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05/08/1986	Findings:	.290
Chemical:	LANGELIER INDEX @ 60 C		
Sample Collected:	05/08/1986	Findings:	23.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05/08/1986	Findings:	.016 UG/L
Chemical:	IODIDE		
Sample Collected:	05/08/1986	Findings:	.400 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	06/03/1988	Findings:	20.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	06/03/1988	Findings:	1.000 UNITS
Chemical:	COLOR		
Sample Collected:	06/03/1988	Findings:	810.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	06/03/1988	Findings:	7.630
Chemical:	PH (LABORATORY)		
Sample Collected:	06/03/1988	Findings:	282.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	06/03/1988	Findings:	342.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06/03/1988	Findings:	1.000 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	06/03/1988	Findings:	.210 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	06/03/1988	Findings:	344.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	06/03/1988	Findings:	46.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	06/03/1988	Findings:	56.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06/03/1988	Findings:	36.000 MG/L
Chemical:	SODIUM		
Sample Collected:	06/03/1988	Findings:	.840
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	06/03/1988	Findings:	1.900 MG/L
Chemical:	POTASSIUM		
Sample Collected:	06/03/1988	Findings:	50.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	06/03/1988	Findings:	.130 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	06/03/1988	Findings:	32.000 MG/L
Chemical:	SILICA		

Sample Collected:	06/03/1988	Findings:	340.000 UG/L
Chemical:	BARIUM		
Sample Collected:	06/03/1988	Findings:	468.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06/03/1988	Findings:	.220
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	06/03/1988	Findings:	27.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/03/1988	Findings:	.011 UG/L
Chemical:	IODIDE		
Sample Collected:	06/03/1988	Findings:	.200 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	08/08/1988	Findings:	2.500 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	08/08/1988	Findings:	1.700 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	06/17/1991	Findings:	20.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	06/17/1991	Findings:	780.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	06/17/1991	Findings:	7.610
Chemical:	PH (LABORATORY)		
Sample Collected:	06/17/1991	Findings:	269.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	06/17/1991	Findings:	327.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06/17/1991	Findings:	.900 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	06/17/1991	Findings:	.170 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	06/17/1991	Findings:	325.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	06/17/1991	Findings:	41.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	06/17/1991	Findings:	56.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06/17/1991	Findings:	38.000 MG/L
Chemical:	SODIUM		
Sample Collected:	06/17/1991	Findings:	.920
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	06/17/1991	Findings:	2.300 MG/L
Chemical:	POTASSIUM		
Sample Collected:	06/17/1991	Findings:	54.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	06/17/1991	Findings:	.160 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	06/17/1991	Findings:	30.000 MG/L
Chemical:	SILICA		
Sample Collected:	06/17/1991	Findings:	330.000 UG/L
Chemical:	BARIUM		

Sample Collected:	06/17/1991	Findings:	11.000 UG/L
Chemical:	CHROMIUM (TOTAL)		
Sample Collected:	06/17/1991	Findings:	.050 UG/L
Chemical:	FOAMING AGENTS (MBAS)		
Sample Collected:	06/17/1991	Findings:	451.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06/17/1991	Findings:	.130
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	06/17/1991	Findings:	20.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/17/1991	Findings:	.013 UG/L
Chemical:	IODIDE		
Sample Collected:	06/17/1991	Findings:	.100 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	03/06/1992	Findings:	2.900 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	03/06/1992	Findings:	1.300 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	07/28/1992	Findings:	5.510 UG/L
Chemical:	DI(2-ETHYLHEXYL)PHTHALATE		
Sample Collected:	05/18/1993	Findings:	62.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/15/1993	Findings:	1.000 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	09/15/1993	Findings:	1.000 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	03/10/1994	Findings:	15.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	08/24/1994	Findings:	5.150 UG/L
Chemical:	DI-N-BUTYLPHTHALATE		
Sample Collected:	08/24/1994	Findings:	5.150 UG/L
Chemical:	DI-N-BUTYLPHTHALATE		
Sample Collected:	09/16/1994	Findings:	18.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	10/06/1994	Findings:	20.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	10/06/1994	Findings:	3.000 UNITS
Chemical:	COLOR		
Sample Collected:	10/06/1994	Findings:	802.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	10/06/1994	Findings:	7.640
Chemical:	PH (LABORATORY)		
Sample Collected:	10/06/1994	Findings:	279.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	10/06/1994	Findings:	338.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	10/06/1994	Findings:	1.000 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	10/06/1994	Findings:	.130 UG/L
Chemical:	PHOSPHATE		

Sample Collected:	10/06/1994	Findings:	365.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	10/06/1994	Findings:	45.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	10/06/1994	Findings:	73.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	10/06/1994	Findings:	31.000 MG/L
Chemical:	SODIUM		
Sample Collected:	10/06/1994	Findings:	.710
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	10/06/1994	Findings:	2.500 MG/L
Chemical:	POTASSIUM		
Sample Collected:	10/06/1994	Findings:	64.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	10/06/1994	Findings:	.180 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	10/06/1994	Findings:	26.000 MG/L
Chemical:	SILICA		
Sample Collected:	10/06/1994	Findings:	291.000 UG/L
Chemical:	BARIUM		
Sample Collected:	10/06/1994	Findings:	30.000 UG/L
Chemical:	NICKEL		
Sample Collected:	10/06/1994	Findings:	467.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	10/06/1994	Findings:	.220
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	10/06/1994	Findings:	18.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	10/06/1994	Findings:	.010 UG/L
Chemical:	IODIDE		
Sample Collected:	10/06/1994	Findings:	.350 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	01/17/1995	Findings:	1.800 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	01/17/1995	Findings:	1.900 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	03/20/1995	Findings:	2.300 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	03/20/1995	Findings:	2.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	08/09/1995	Findings:	.900 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	08/09/1995	Findings:	.900 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	09/07/1995	Findings:	16.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	11/26/1996	Findings:	12.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	12/17/1996	Findings:	13.000 MG/L
Chemical:	NITRATE (AS NO3)		

Sample Collected:	05/14/1997	Findings:	11.100 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	05/14/1997	Findings:	1.000 UNITS
Chemical:	COLOR		
Sample Collected:	05/14/1997	Findings:	787.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	05/14/1997	Findings:	7.730
Chemical:	PH (LABORATORY)		
Sample Collected:	05/14/1997	Findings:	278.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	05/14/1997	Findings:	337.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05/14/1997	Findings:	1.200 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	05/14/1997	Findings:	.180 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	05/14/1997	Findings:	343.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	05/14/1997	Findings:	43.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	05/14/1997	Findings:	67.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05/14/1997	Findings:	38.000 MG/L
Chemical:	SODIUM		
Sample Collected:	05/14/1997	Findings:	38.000
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	05/14/1997	Findings:	2.300 MG/L
Chemical:	POTASSIUM		
Sample Collected:	05/14/1997	Findings:	63.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	05/14/1997	Findings:	28.000 MG/L
Chemical:	SILICA		
Sample Collected:	05/14/1997	Findings:	394.000 UG/L
Chemical:	BARIUM		
Sample Collected:	05/14/1997	Findings:	458.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05/14/1997	Findings:	.162
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	05/14/1997	Findings:	15.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05/14/1997	Findings:	.100 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	08/06/1997	Findings:	.900 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	01/12/1998	Findings:	16.000 MG/L
Chemical:	NITRATE (AS NO3)		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

J50
WNW
1/2 - 1 Mile
Lower | **CA WELLS** | **3476**

Water System Information:

Prime Station Code:	03S/02E-08P01 M	User ID:	ENG
FRDS Number:	0110003006	County:	Alameda
District Number:	04	Station Type:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	374100.0 1214700.0	Precision:	Undefined
Source Name:	WELL 08-01		
System Number:	0110003		
System Name:	CALIFORNIA WATER SERVICE - LIVERMORE		
Organization That Operates System:			
	P O BOX 1150		
	SAN JOSE, CA 95108		
Pop Served:	50670	Connections:	14951
Area Served:	LIVERMORE		

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	07/25/1984	Findings:	.800 UG/L
Chemical:	TRICHLOROETHYLENE		
Sample Collected:	08/17/1984	Findings:	.700 UG/L
Chemical:	TRICHLOROETHYLENE		
Sample Collected:	05/08/1986	Findings:	.900 UG/L
Chemical:	TRICHLOROETHYLENE		
Sample Collected:	04/28/1987	Findings:	26.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/28/1987	Findings:	.900 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	07/08/1987	Findings:	20.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	07/08/1987	Findings:	1.000 UNITS
Chemical:	COLOR		
Sample Collected:	07/08/1987	Findings:	928.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	07/08/1987	Findings:	7.570
Chemical:	PH (LABORATORY)		
Sample Collected:	07/08/1987	Findings:	313.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	07/08/1987	Findings:	380.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07/08/1987	Findings:	1.000 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	07/08/1987	Findings:	.110 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	07/08/1987	Findings:	400.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	07/08/1987	Findings:	51.000 MG/L
Chemical:	CALCIUM		

Sample Collected:	07/08/1987	Findings:	66.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07/08/1987	Findings:	34.000 MG/L
Chemical:	SODIUM		
Sample Collected:	07/08/1987	Findings:	.740
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	07/08/1987	Findings:	2.200 MG/L
Chemical:	POTASSIUM		
Sample Collected:	07/08/1987	Findings:	59.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	07/08/1987	Findings:	.120 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	07/08/1987	Findings:	24.000 MG/L
Chemical:	SILICA		
Sample Collected:	07/08/1987	Findings:	360.000 UG/L
Chemical:	BARIUM		
Sample Collected:	07/08/1987	Findings:	513.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07/08/1987	Findings:	- .310
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	07/08/1987	Findings:	33.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07/08/1987	Findings:	.007 UG/L
Chemical:	IODIDE		
Sample Collected:	07/08/1987	Findings:	.200 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	11/15/1990	Findings:	25.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	11/15/1990	Findings:	3.000 UNITS
Chemical:	COLOR		
Sample Collected:	11/15/1990	Findings:	900.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	11/15/1990	Findings:	7.790
Chemical:	PH (LABORATORY)		
Sample Collected:	11/15/1990	Findings:	292.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	11/15/1990	Findings:	353.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	11/15/1990	Findings:	1.500 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	11/15/1990	Findings:	.110 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	11/15/1990	Findings:	406.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	11/15/1990	Findings:	48.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	11/15/1990	Findings:	100.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	11/15/1990	Findings:	31.000 MG/L
Chemical:	SODIUM		

Sample Collected:	11/15/1990	Findings:	.670
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	11/15/1990	Findings:	2.800 MG/L
Chemical:	POTASSIUM		
Sample Collected:	11/15/1990	Findings:	62.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	11/15/1990	Findings:	.130 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	11/15/1990	Findings:	19.000 MG/L
Chemical:	SILICA		
Sample Collected:	11/15/1990	Findings:	500.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	11/15/1990	Findings:	.480
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	11/15/1990	Findings:	34.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	11/15/1990	Findings:	.005 UG/L
Chemical:	IODIDE		
Sample Collected:	11/15/1990	Findings:	.150 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	08/20/1991	Findings:	2.800 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	08/20/1991	Findings:	1.300 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	07/28/1992	Findings:	3.100 UG/L
Chemical:	DI(2-ETHYLHEXYL)PHTHALATE		
Sample Collected:	05/19/1993	Findings:	17.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	05/19/1993	Findings:	4.000 UNITS
Chemical:	COLOR		
Sample Collected:	05/19/1993	Findings:	940.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	05/19/1993	Findings:	7.500
Chemical:	PH (LABORATORY)		
Sample Collected:	05/19/1993	Findings:	297.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	05/19/1993	Findings:	360.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05/19/1993	Findings:	.800 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	05/19/1993	Findings:	.120 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	05/19/1993	Findings:	402.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	05/19/1993	Findings:	50.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	05/19/1993	Findings:	79.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05/19/1993	Findings:	35.000 MG/L
Chemical:	SODIUM		

Sample Collected:	05/19/1993	Findings:	.760
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	05/19/1993	Findings:	2.100 MG/L
Chemical:	POTASSIUM		
Sample Collected:	05/19/1993	Findings:	66.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	05/19/1993	Findings:	.140 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	05/19/1993	Findings:	24.000 MG/L
Chemical:	SILICA		
Sample Collected:	05/19/1993	Findings:	470.000 UG/L
Chemical:	BARIUM		
Sample Collected:	05/19/1993	Findings:	503.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05/19/1993	Findings:	.090
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	05/19/1993	Findings:	25.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05/19/1993	Findings:	.009 UG/L
Chemical:	IODIDE		
Sample Collected:	05/19/1993	Findings:	.150 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	05/19/1993	Findings:	1.300 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	06/01/1993	Findings:	11.000 UG/L
Chemical:	DI(2-ETHYLHEXYL)ADIPATE		
Sample Collected:	07/14/1993	Findings:	6.160 UG/L
Chemical:	DI(2-ETHYLHEXYL)ADIPATE		
Sample Collected:	10/12/1993	Findings:	12.300 UG/L
Chemical:	DI(2-ETHYLHEXYL)PHTHALATE		
Sample Collected:	08/24/1994	Findings:	15.200 UG/L
Chemical:	DI-N-BUTYLPHTHALATE		
Sample Collected:	08/09/1995	Findings:	7.800 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	08/09/1995	Findings:	2.000 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	08/09/1995	Findings:	1.300 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	08/09/1995	Findings:	9.800 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	09/07/1995	Findings:	23.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07/30/1996	Findings:	18.900 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	07/30/1996	Findings:	7.000 UNITS
Chemical:	COLOR		
Sample Collected:	07/30/1996	Findings:	890.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	07/30/1996	Findings:	7.630
Chemical:	PH (LABORATORY)		

Sample Collected:	07/30/1996	Findings:	294.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	07/30/1996	Findings:	356.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07/30/1996	Findings:	1.000 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	07/30/1996	Findings:	.070 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	07/30/1996	Findings:	392.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	07/30/1996	Findings:	48.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	07/30/1996	Findings:	70.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07/30/1996	Findings:	35.000 MG/L
Chemical:	SODIUM		
Sample Collected:	07/30/1996	Findings:	35.000
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	07/30/1996	Findings:	2.600 MG/L
Chemical:	POTASSIUM		
Sample Collected:	07/30/1996	Findings:	76.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	07/30/1996	Findings:	24.000 MG/L
Chemical:	SILICA		
Sample Collected:	07/30/1996	Findings:	418.000 UG/L
Chemical:	BARIUM		
Sample Collected:	07/30/1996	Findings:	.030 UG/L
Chemical:	FOAMING AGENTS (MBAS)		
Sample Collected:	07/30/1996	Findings:	501.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07/30/1996	Findings:	.233
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	07/30/1996	Findings:	18.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07/30/1996	Findings:	.200 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	02/03/1997	Findings:	25.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/28/1997	Findings:	1.400 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	04/28/1997	Findings:	.600 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	07/16/1997	Findings:	1.200 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	07/16/1997	Findings:	.500 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	09/04/1997	Findings:	1.300 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	09/04/1997	Findings:	.400 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

J51
WNW
1/2 - 1 Mile
Lower | **CA WELLS** | **3477**

Water System Information:

Prime Station Code:	03S/02E-08P02 M	User ID:	ENG
FRDS Number:	0110003003	County:	Alameda
District Number:	04	Station Type:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type:	Well/Groundwater	Well Status:	Active Untreated
Source Lat/Long:	374100.0 1214700.0	Precision:	Undefined
Source Name:	WELL 03-01		
System Number:	0110003		
System Name:	CALIFORNIA WATER SERVICE - LIVERMORE		
Organization That Operates System:			
	P O BOX 1150		
	SAN JOSE, CA 95108		
Pop Served:	50670	Connections:	14951
Area Served:	LIVERMORE		

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	05/28/1986	Findings:	.900 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	04/28/1987	Findings:	19.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	04/28/1987	Findings:	845.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	04/28/1987	Findings:	7.990
Chemical:	PH (LABORATORY)		
Sample Collected:	04/28/1987	Findings:	275.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	04/28/1987	Findings:	332.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04/28/1987	Findings:	2.200 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	04/28/1987	Findings:	.200 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	04/28/1987	Findings:	332.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	04/28/1987	Findings:	44.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	04/28/1987	Findings:	54.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04/28/1987	Findings:	38.000 MG/L
Chemical:	SODIUM		
Sample Collected:	04/28/1987	Findings:	.910
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	04/28/1987	Findings:	2.200 MG/L
Chemical:	POTASSIUM		
Sample Collected:	04/28/1987	Findings:	44.000 MG/L
Chemical:	CHLORIDE		

Sample Collected:	04/28/1987	Findings:	.130 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	04/28/1987	Findings:	34.000 MG/L
Chemical:	SILICA		
Sample Collected:	04/28/1987	Findings:	320.000 UG/L
Chemical:	BARIUM		
Sample Collected:	04/28/1987	Findings:	14.000 UG/L
Chemical:	CHROMIUM (TOTAL)		
Sample Collected:	04/28/1987	Findings:	450.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04/28/1987	Findings:	.620
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	04/28/1987	Findings:	19.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/28/1987	Findings:	.012 UG/L
Chemical:	IODIDE		
Sample Collected:	04/28/1987	Findings:	.500 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	04/28/1987	Findings:	1.100 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	05/15/1990	Findings:	770.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	05/15/1990	Findings:	7.830
Chemical:	PH (LABORATORY)		
Sample Collected:	05/15/1990	Findings:	289.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	05/15/1990	Findings:	349.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	05/15/1990	Findings:	1.600 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	05/15/1990	Findings:	.280 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	05/15/1990	Findings:	338.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	05/15/1990	Findings:	46.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	05/15/1990	Findings:	56.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	05/15/1990	Findings:	37.000 MG/L
Chemical:	SODIUM		
Sample Collected:	05/15/1990	Findings:	.880
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	05/15/1990	Findings:	2.200 MG/L
Chemical:	POTASSIUM		
Sample Collected:	05/15/1990	Findings:	47.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	05/15/1990	Findings:	.170 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	05/15/1990	Findings:	32.000 MG/L
Chemical:	SILICA		

Sample Collected:	05/15/1990	Findings:	290.000 UG/L
Chemical:	BARIUM		
Sample Collected:	05/15/1990	Findings:	12.000 UG/L
Chemical:	CHROMIUM (TOTAL)		
Sample Collected:	05/15/1990	Findings:	461.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	05/15/1990	Findings:	21.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05/15/1990	Findings:	.012 UG/L
Chemical:	IODIDE		
Sample Collected:	05/15/1990	Findings:	.100 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	02/06/1991	Findings:	3.100 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	02/06/1991	Findings:	1.500 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		

J52
WNW **CA WELLS** **3472**
1/2 - 1 Mile
Lower

Water System Information:

Prime Station Code:	03S/02E-08F01 M	User ID:	ENG
FRDS Number:	0110003008	County:	Alameda
District Number:	04	Station Type:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	374100.0 1214700.0	Precision:	Undefined
Source Name:	WELL 10-01		
System Number:	0110003		
System Name:	CALIFORNIA WATER SERVICE - LIVERMORE		
Organization That Operates System:			
	P O BOX 1150		
	SAN JOSE, CA 95108		
Pop Served:	50670	Connections:	14951
Area Served:	LIVERMORE		

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	07/25/1984	Findings:	1.700 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/17/1984	Findings:	3.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	05/15/1985	Findings:	3.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/24/1985	Findings:	2.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/07/1985	Findings:	8.300 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/14/1985	Findings:	7.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/14/1985	Findings:	5.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/14/1985	Findings:	7.400 UG/L
Chemical:	TETRACHLOROETHYLENE		

Sample Collected:	08/20/1985	Findings:	7.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/26/1985	Findings:	11.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	10/08/1985	Findings:	8.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	10/16/1985	Findings:	23.099 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	10/28/1985	Findings:	8.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	12/02/1985	Findings:	8.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	01/27/1986	Findings:	8.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/24/1986	Findings:	8.200 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	04/23/1986	Findings:	9.900 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	05/28/1986	Findings:	10.200 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/30/1986	Findings:	14.410 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/30/1986	Findings:	21.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	06/30/1986	Findings:	870.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	06/30/1986	Findings:	7.410
Chemical:	PH (LABORATORY)		
Sample Collected:	06/30/1986	Findings:	299.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	06/30/1986	Findings:	363.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06/30/1986	Findings:	.600 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	06/30/1986	Findings:	.240 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	06/30/1986	Findings:	428.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	06/30/1986	Findings:	54.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	06/30/1986	Findings:	71.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06/30/1986	Findings:	34.000 MG/L
Chemical:	SODIUM		
Sample Collected:	06/30/1986	Findings:	.710
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	06/30/1986	Findings:	1.700 MG/L
Chemical:	POTASSIUM		
Sample Collected:	06/30/1986	Findings:	70.000 MG/L
Chemical:	CHLORIDE		

Sample Collected:	06/30/1986	Findings:	.120 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	06/30/1986	Findings:	34.000 MG/L
Chemical:	SILICA		
Sample Collected:	06/30/1986	Findings:	563.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	06/30/1986	Findings:	.160
Chemical:	LANGELIER INDEX @ 60 C		
Sample Collected:	06/30/1986	Findings:	51.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/30/1986	Findings:	.012 UG/L
Chemical:	IODIDE		
Sample Collected:	06/30/1986	Findings:	.250 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	08/04/1986	Findings:	10.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/03/1986	Findings:	8.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/30/1986	Findings:	9.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	12/10/1986	Findings:	5.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	12/15/1986	Findings:	5.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	01/25/1988	Findings:	16.300 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	01/25/1988	Findings:	12.700 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	01/25/1988	Findings:	12.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	01/25/1988	Findings:	9.100 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	01/25/1988	Findings:	13.200 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	01/25/1988	Findings:	9.100 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	01/25/1988	Findings:	3.500 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	01/25/1988	Findings:	1.900 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	01/25/1988	Findings:	34.900 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	02/08/1988	Findings:	13.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/08/1988	Findings:	5.900 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	02/08/1988	Findings:	14.500 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	02/08/1988	Findings:	5.100 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		

Sample Collected:	02/08/1988	Findings:	.800 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	02/08/1988	Findings:	.700 UG/L
Chemical:	TOLUENE		
Sample Collected:	02/08/1988	Findings:	1.500 UG/L
Chemical:	ETHYLBENZENE		
Sample Collected:	02/08/1988	Findings:	2.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/08/1988	Findings:	4.200 UG/L
Chemical:	XYLENES (TOTAL)		
Sample Collected:	02/08/1988	Findings:	5.800 UG/L
Chemical:	METHYL ISOBUTYL KETONE		
Sample Collected:	02/08/1988	Findings:	26.300 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	02/09/1988	Findings:	14.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/09/1988	Findings:	5.600 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	02/09/1988	Findings:	1.400 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	02/09/1988	Findings:	2.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/09/1988	Findings:	1.600 UG/L
Chemical:	XYLENES (TOTAL)		
Sample Collected:	02/09/1988	Findings:	7.000 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	02/10/1988	Findings:	2.700 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/10/1988	Findings:	11.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/10/1988	Findings:	2.700 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/11/1988	Findings:	2.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/11/1988	Findings:	14.200 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/19/1988	Findings:	17.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/19/1988	Findings:	2.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/26/1988	Findings:	14.200 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/26/1988	Findings:	3.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/01/1988	Findings:	13.200 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/01/1988	Findings:	2.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/08/1988	Findings:	12.800 UG/L
Chemical:	TETRACHLOROETHYLENE		

Sample Collected:	03/08/1988	Findings:	2.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/15/1988	Findings:	14.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/15/1988	Findings:	2.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/22/1988	Findings:	15.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/22/1988	Findings:	2.900 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/03/1988	Findings:	20.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	06/03/1988	Findings:	1.000 UNITS
Chemical:	COLOR		
Sample Collected:	06/03/1988	Findings:	895.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	06/03/1988	Findings:	7.740
Chemical:	PH (LABORATORY)		
Sample Collected:	06/03/1988	Findings:	286.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	06/03/1988	Findings:	347.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	06/03/1988	Findings:	1.300 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	06/03/1988	Findings:	.140 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	06/03/1988	Findings:	396.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	06/03/1988	Findings:	51.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	06/03/1988	Findings:	65.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	06/03/1988	Findings:	34.000 MG/L
Chemical:	SODIUM		
Sample Collected:	06/03/1988	Findings:	.740
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	06/03/1988	Findings:	1.900 MG/L
Chemical:	POTASSIUM		
Sample Collected:	06/03/1988	Findings:	62.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	06/03/1988	Findings:	.120 MG/L
Chemical:	FLUORIDE (TEMPERATURE DEPENDENT)		
Sample Collected:	06/03/1988	Findings:	28.000 MG/L
Chemical:	SILICA		
Sample Collected:	06/03/1988	Findings:	400.000 UG/L
Chemical:	BARIUM		
Sample Collected:	06/03/1988	Findings:	1.300 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	06/03/1988	Findings:	520.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		

Sample Collected:	06/03/1988	Findings:	.370
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	06/03/1988	Findings:	50.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/03/1988	Findings:	.013 UG/L
Chemical:	IODIDE		
Sample Collected:	06/03/1988	Findings:	.100 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	11/08/1988	Findings:	8.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	04/06/1989	Findings:	6.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	04/11/1989	Findings:	6.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	04/19/1989	Findings:	7.300 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/06/1989	Findings:	9.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/04/1990	Findings:	4.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	04/23/1991	Findings:	.700 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	04/23/1991	Findings:	.700 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	04/23/1991	Findings:	1.000 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	04/23/1991	Findings:	.900 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	04/23/1991	Findings:	5.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	04/23/1991	Findings:	3.300 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	04/24/1991	Findings:	3.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	04/30/1991	Findings:	.600 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	04/30/1991	Findings:	1.700 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	04/30/1991	Findings:	2.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	04/30/1991	Findings:	2.300 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	05/09/1991	Findings:	2.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	05/13/1991	Findings:	2.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	05/17/1991	Findings:	6.700 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	05/21/1991	Findings:	2.500 UG/L
Chemical:	TETRACHLOROETHYLENE		

Sample Collected:	05/28/1991	Findings:	3.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/04/1991	Findings:	5.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/11/1991	Findings:	6.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/20/1991	Findings:	7.700 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/20/1991	Findings:	.700 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	06/20/1991	Findings:	.800 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	06/20/1991	Findings:	1.500 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	06/24/1991	Findings:	4.300 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	07/03/1991	Findings:	.600 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	07/03/1991	Findings:	2.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	07/03/1991	Findings:	.600 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	07/08/1991	Findings:	.800 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	07/08/1991	Findings:	2.700 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	07/08/1991	Findings:	.800 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	07/16/1991	Findings:	2.300 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	07/22/1991	Findings:	3.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	07/30/1991	Findings:	3.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/06/1991	Findings:	6.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/13/1991	Findings:	9.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/20/1991	Findings:	6.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/27/1991	Findings:	5.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/03/1991	Findings:	4.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	10/15/1991	Findings:	5.320 UG/L
Chemical:	DI(2-ETHYLHEXYL)PHTHALATE		
Sample Collected:	11/05/1991	Findings:	4.200 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	12/04/1991	Findings:	3.600 UG/L
Chemical:	TETRACHLOROETHYLENE		

Sample Collected:	02/25/1992	Findings:	4.200 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/25/1992	Findings:	2.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/16/1992	Findings:	4.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	05/05/1992	Findings:	1.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	05/05/1992	Findings:	17.400 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	05/05/1992	Findings:	.700 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	05/05/1992	Findings:	10.700 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	05/05/1992	Findings:	23.700 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	05/05/1992	Findings:	2.200 UG/L
Chemical:	MONOCHLOROBENZENE		
Sample Collected:	05/05/1992	Findings:	52.500 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	06/23/1992	Findings:	3.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/23/1992	Findings:	2.900 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	06/23/1992	Findings:	5.000 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	06/23/1992	Findings:	5.700 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	06/23/1992	Findings:	1.200 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	06/23/1992	Findings:	2.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/23/1992	Findings:	14.800 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	07/16/1992	Findings:	5.200 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	07/21/1992	Findings:	20.000 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	07/21/1992	Findings:	2.000 UNITS
Chemical:	COLOR		
Sample Collected:	07/21/1992	Findings:	925.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	07/21/1992	Findings:	7.620
Chemical:	PH (LABORATORY)		
Sample Collected:	07/21/1992	Findings:	270.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	07/21/1992	Findings:	327.000 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07/21/1992	Findings:	.900 MG/L
Chemical:	CARBONATE ALKALINITY		

Sample Collected:	07/21/1992	Findings:	.120 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	07/21/1992	Findings:	376.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	07/21/1992	Findings:	47.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	07/21/1992	Findings:	59.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07/21/1992	Findings:	37.000 MG/L
Chemical:	SODIUM		
Sample Collected:	07/21/1992	Findings:	.830
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	07/21/1992	Findings:	1.900 MG/L
Chemical:	POTASSIUM		
Sample Collected:	07/21/1992	Findings:	72.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	07/21/1992	Findings:	28.000 MG/L
Chemical:	SILICA		
Sample Collected:	07/21/1992	Findings:	300.000 UG/L
Chemical:	BARIUM		
Sample Collected:	07/21/1992	Findings:	260.000 UG/L
Chemical:	COPPER		
Sample Collected:	07/21/1992	Findings:	500.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07/21/1992	Findings:	.190
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	07/21/1992	Findings:	37.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07/21/1992	Findings:	.018 UG/L
Chemical:	IODIDE		
Sample Collected:	07/21/1992	Findings:	.150 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	07/21/1992	Findings:	1.800 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	07/21/1992	Findings:	1.200 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	08/25/1992	Findings:	4.700 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/22/1992	Findings:	8.200 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	09/22/1992	Findings:	.700 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	09/22/1992	Findings:	4.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/22/1992	Findings:	8.900 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	10/20/1992	Findings:	5.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	11/17/1992	Findings:	5.200 UG/L
Chemical:	TETRACHLOROETHYLENE		

Sample Collected:	01/11/1993	Findings:	1.500 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	01/27/1993	Findings:	4.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/23/1993	Findings:	3.900 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/23/1993	Findings:	38.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03/23/1993	Findings:	3.700 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	04/15/1993	Findings:	4.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	05/28/1993	Findings:	3.900 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/09/1993	Findings:	5.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	07/12/1993	Findings:	4.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/23/1993	Findings:	4.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/15/1993	Findings:	4.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	10/12/1993	Findings:	5.620 UG/L
Chemical:	DI(2-ETHYLHEXYL)PHTHALATE		
Sample Collected:	11/29/1993	Findings:	3.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	12/09/1993	Findings:	4.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/07/1994	Findings:	.900 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/01/1994	Findings:	1.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	04/12/1994	Findings:	3.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	05/09/1994	Findings:	6.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/02/1994	Findings:	6.700 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	07/20/1994	Findings:	4.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/10/1994	Findings:	29.000 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	08/10/1994	Findings:	4.300 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/10/1994	Findings:	29.500 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	08/24/1994	Findings:	4.090 UG/L
Chemical:	DI(2-ETHYLHEXYL)PHTHALATE		
Sample Collected:	08/24/1994	Findings:	6.160 UG/L
Chemical:	DI-N-BUTYLPHTHALATE		

Sample Collected:	09/16/1994	Findings:	11.100 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	09/16/1994	Findings:	1.000 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	09/16/1994	Findings:	3.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/16/1994	Findings:	12.100 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	10/18/1994	Findings:	5.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	11/09/1994	Findings:	1.700 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	11/09/1994	Findings:	1.300 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	11/09/1994	Findings:	6.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	11/09/1994	Findings:	3.000 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	12/05/1994	Findings:	6.100 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	12/05/1994	Findings:	5.700 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	12/05/1994	Findings:	6.100 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	02/21/1996	Findings:	2.000 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	02/21/1996	Findings:	2.300 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/21/1996	Findings:	2.000 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	07/22/1996	Findings:	3.500 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	07/22/1996	Findings:	.700 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	07/22/1996	Findings:	4.700 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	07/22/1996	Findings:	4.200 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	07/30/1996	Findings:	18.900 C
Chemical:	SOURCE TEMPERATURE C		
Sample Collected:	07/30/1996	Findings:	4.000 UNITS
Chemical:	COLOR		
Sample Collected:	07/30/1996	Findings:	882.000 UMHO
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	07/30/1996	Findings:	7.870
Chemical:	PH (LABORATORY)		
Sample Collected:	07/30/1996	Findings:	278.000 MG/L
Chemical:	TOTAL ALKALINITY (AS CACO3)		
Sample Collected:	07/30/1996	Findings:	336.000 MG/L
Chemical:	BICARBONATE ALKALINITY		

Sample Collected:	07/30/1996	Findings:	1.700 MG/L
Chemical:	CARBONATE ALKALINITY		
Sample Collected:	07/30/1996	Findings:	.160 UG/L
Chemical:	PHOSPHATE		
Sample Collected:	07/30/1996	Findings:	373.000 MG/L
Chemical:	TOTAL HARDNESS (AS CACO3)		
Sample Collected:	07/30/1996	Findings:	49.000 MG/L
Chemical:	CALCIUM		
Sample Collected:	07/30/1996	Findings:	60.000 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07/30/1996	Findings:	44.000 MG/L
Chemical:	SODIUM		
Sample Collected:	07/30/1996	Findings:	44.000
Chemical:	SODIUM ABSORPTION RATIO		
Sample Collected:	07/30/1996	Findings:	2.200 MG/L
Chemical:	POTASSIUM		
Sample Collected:	07/30/1996	Findings:	82.000 MG/L
Chemical:	CHLORIDE		
Sample Collected:	07/30/1996	Findings:	26.000 MG/L
Chemical:	SILICA		
Sample Collected:	07/30/1996	Findings:	336.000 UG/L
Chemical:	BARIUM		
Sample Collected:	07/30/1996	Findings:	11.000 UG/L
Chemical:	NICKEL		
Sample Collected:	07/30/1996	Findings:	.020 UG/L
Chemical:	FOAMING AGENTS (MBAS)		
Sample Collected:	07/30/1996	Findings:	505.000 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07/30/1996	Findings:	.455
Chemical:	LANGELIER INDEX @ SOURCE TEMP.		
Sample Collected:	07/30/1996	Findings:	27.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07/30/1996	Findings:	.050 NTU
Chemical:	TURBIDITY (LAB)		
Sample Collected:	09/05/1996	Findings:	10.400 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	09/05/1996	Findings:	.600 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	09/05/1996	Findings:	16.300 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/05/1996	Findings:	1.300 UG/L
Chemical:	DICHLORODIFLUOROMETHANE		
Sample Collected:	09/05/1996	Findings:	11.000 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	11/04/1996	Findings:	.600 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	11/04/1996	Findings:	6.200 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	11/04/1996	Findings:	2.300 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		

Sample Collected:	11/04/1996	Findings:	2.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	11/04/1996	Findings:	9.100 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	12/17/1996	Findings:	22.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01/14/1997	Findings:	4.500 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	01/14/1997	Findings:	1.000 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	01/14/1997	Findings:	3.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/03/1997	Findings:	22.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	02/12/1997	Findings:	10.500 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	02/12/1997	Findings:	2.200 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	02/12/1997	Findings:	6.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/13/1997	Findings:	9.200 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	03/13/1997	Findings:	35.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	04/09/1997	Findings:	27.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/15/1997	Findings:	26.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/15/1997	Findings:	6.000 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	04/15/1997	Findings:	2.000 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	04/15/1997	Findings:	5.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	04/29/1997	Findings:	31.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05/13/1997	Findings:	.900 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	05/13/1997	Findings:	3.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	05/27/1997	Findings:	27.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/04/1997	Findings:	33.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/05/1997	Findings:	1.400 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	06/05/1997	Findings:	18.700 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	07/01/1997	Findings:	28.000 MG/L
Chemical:	NITRATE (AS NO3)		

Sample Collected:	07/08/1997	Findings:	18.000 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07/08/1997	Findings:	4.200 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	07/08/1997	Findings:	10.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/06/1997	Findings:	5.500 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	08/06/1997	Findings:	1.400 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	08/06/1997	Findings:	10.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/04/1997	Findings:	1.900 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	09/04/1997	Findings:	1.800 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	09/04/1997	Findings:	5.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	10/15/1997	Findings:	2.500 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	10/15/1997	Findings:	11.000 UG/L
Chemical:	TETRACHLOROETHYLENE		

J53
WNW
1/2 - 1 Mile
Lower

CA WELLS **19**

Water System Information:

Prime Station Code:	0110003-016BLND	User ID:	ENG
FRDS Number:	0110003016	County:	Alameda
District Number:	04	Station Type:	COMP/WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type:	M	Well Status:	CM
Source Lat/Long:	374100.0 1214700.0	Precision:	100 Feet (one Second)
Source Name:	WELL 10-01 - BLENDED		
System Number:	0110003		
System Name:	CALIFORNIA WATER SERVICE - LIVERMORE		
Organization That Operates System:			
	P O BOX 1150		
	SAN JOSE, CA 95108		
Pop Served:	50670	Connections:	14951
Area Served:	LIVERMORE		

Sample Information: * Only Findings Above Detection Level Are Listed

Sample Collected:	07/16/1992	Findings:	2.700 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/25/1992	Findings:	3.400 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	08/25/1992	Findings:	6.300 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	08/25/1992	Findings:	6.100 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	08/25/1992	Findings:	1.100 UG/L
Chemical:	CHLOROFORM (THM)		

Sample Collected:	08/25/1992	Findings:	2.200 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/25/1992	Findings:	.800 UG/L
Chemical:	XYLENES (TOTAL)		
Sample Collected:	08/25/1992	Findings:	16.900 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	08/25/1992	Findings:	.800 UG/L
Chemical:	M,P-XYLENE		
Sample Collected:	09/17/1992	Findings:	1.000 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	09/22/1992	Findings:	2.600 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	09/22/1992	Findings:	2.700 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	09/22/1992	Findings:	4.100 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	09/22/1992	Findings:	1.300 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	09/22/1992	Findings:	2.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/22/1992	Findings:	10.700 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	10/20/1992	Findings:	5.500 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	10/20/1992	Findings:	4.700 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	10/20/1992	Findings:	.600 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	10/20/1992	Findings:	2.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	10/20/1992	Findings:	10.800 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	11/17/1992	Findings:	2.700 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	11/17/1992	Findings:	11.700 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	11/17/1992	Findings:	6.200 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	11/17/1992	Findings:	.600 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	11/17/1992	Findings:	2.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	11/17/1992	Findings:	21.200 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	01/27/1993	Findings:	3.500 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	01/27/1993	Findings:	1.100 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	01/27/1993	Findings:	6.800 UG/L
Chemical:	CHLOROFORM (THM)		

Sample Collected:	01/27/1993	Findings:	1.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	01/27/1993	Findings:	11.400 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	02/23/1993	Findings:	.600 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	02/23/1993	Findings:	4.900 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	02/23/1993	Findings:	2.300 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	02/23/1993	Findings:	5.500 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	03/23/1993	Findings:	3.500 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	03/23/1993	Findings:	.900 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	03/23/1993	Findings:	6.500 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	03/23/1993	Findings:	2.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/23/1993	Findings:	10.900 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	04/15/1993	Findings:	5.700 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	04/15/1993	Findings:	.800 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	04/15/1993	Findings:	2.800 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	04/15/1993	Findings:	6.400 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	04/15/1993	Findings:	2.300 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	04/15/1993	Findings:	15.700 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	04/15/1993	Findings:	1.300 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	04/15/1993	Findings:	1.300 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	05/28/1993	Findings:	5.000 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	05/28/1993	Findings:	1.500 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	05/28/1993	Findings:	5.100 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	05/28/1993	Findings:	4.500 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	05/28/1993	Findings:	2.600 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	05/28/1993	Findings:	16.100 UG/L
Chemical:	TOTAL TRIHALOMETHANES		

Sample Collected:	06/09/1993	Findings:	1.500 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	06/09/1993	Findings:	1.300 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	06/09/1993	Findings:	1.400 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	06/09/1993	Findings:	2.300 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/09/1993	Findings:	4.700 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	07/12/1993	Findings:	1.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/23/1993	Findings:	.800 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	08/23/1993	Findings:	2.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/23/1993	Findings:	.800 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	09/15/1993	Findings:	8.300 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	09/15/1993	Findings:	1.500 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/15/1993	Findings:	8.300 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	11/29/1993	Findings:	10.500 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	11/29/1993	Findings:	3.900 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	11/29/1993	Findings:	10.200 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	11/29/1993	Findings:	5.800 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	11/29/1993	Findings:	30.400 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	12/09/1993	Findings:	3.000 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	12/09/1993	Findings:	.700 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	12/09/1993	Findings:	3.300 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	12/09/1993	Findings:	1.600 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	12/09/1993	Findings:	3.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	12/09/1993	Findings:	8.600 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	01/26/1994	Findings:	4.100 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	01/26/1994	Findings:	3.000 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		

Sample Collected:	01/26/1994	Findings:	2.700 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	01/26/1994	Findings:	9.800 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	02/07/1994	Findings:	5.900 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	02/07/1994	Findings:	2.600 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	02/07/1994	Findings:	4.500 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	02/07/1994	Findings:	4.300 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	02/07/1994	Findings:	17.300 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	03/01/1994	Findings:	9.800 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	03/01/1994	Findings:	4.700 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	03/01/1994	Findings:	5.600 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	03/01/1994	Findings:	5.800 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	03/01/1994	Findings:	1.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/01/1994	Findings:	25.900 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	04/12/1994	Findings:	3.500 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	04/12/1994	Findings:	2.400 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	04/12/1994	Findings:	3.500 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	04/12/1994	Findings:	2.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	04/12/1994	Findings:	9.400 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	05/09/1994	Findings:	16.300 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	05/09/1994	Findings:	4.800 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	05/09/1994	Findings:	2.400 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	05/09/1994	Findings:	21.100 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	06/02/1994	Findings:	17.500 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	06/02/1994	Findings:	.700 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	06/02/1994	Findings:	3.800 UG/L
Chemical:	TETRACHLOROETHYLENE		

Sample Collected:	06/02/1994	Findings:	18.200 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	07/20/1994	Findings:	2.400 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	07/20/1994	Findings:	.600 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	07/20/1994	Findings:	2.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	07/20/1994	Findings:	3.000 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	08/10/1994	Findings:	30.200 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	08/10/1994	Findings:	1.200 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	08/10/1994	Findings:	2.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	08/10/1994	Findings:	31.400 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	09/16/1994	Findings:	2.000 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	09/16/1994	Findings:	15.900 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	09/16/1994	Findings:	5.800 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	09/16/1994	Findings:	.600 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	09/16/1994	Findings:	2.300 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/16/1994	Findings:	24.300 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	10/18/1994	Findings:	3.500 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	10/18/1994	Findings:	4.200 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	10/18/1994	Findings:	6.500 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	10/18/1994	Findings:	.900 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	10/18/1994	Findings:	3.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	10/18/1994	Findings:	15.100 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	11/09/1994	Findings:	.600 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	11/09/1994	Findings:	3.300 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	11/09/1994	Findings:	1.200 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	11/09/1994	Findings:	3.600 UG/L
Chemical:	TETRACHLOROETHYLENE		

Sample Collected:	11/09/1994	Findings:	5.100 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	12/05/1994	Findings:	8.700 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	12/05/1994	Findings:	.600 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	12/05/1994	Findings:	3.100 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	12/05/1994	Findings:	9.300 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	07/22/1996	Findings:	2.800 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	07/22/1996	Findings:	1.100 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	07/22/1996	Findings:	7.300 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	07/22/1996	Findings:	2.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	07/22/1996	Findings:	11.200 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	09/05/1996	Findings:	6.200 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	09/05/1996	Findings:	1.500 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	09/05/1996	Findings:	3.700 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	09/05/1996	Findings:	7.100 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	09/05/1996	Findings:	2.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/05/1996	Findings:	18.500 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	11/04/1996	Findings:	7.800 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	11/04/1996	Findings:	4.200 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	11/04/1996	Findings:	8.200 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	11/04/1996	Findings:	4.800 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	11/04/1996	Findings:	.800 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	11/04/1996	Findings:	25.000 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	11/04/1996	Findings:	1.000 UG/L
Chemical:	2-CHLOROTOLUENE		
Sample Collected:	01/14/1997	Findings:	7.000 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	01/14/1997	Findings:	2.900 UG/L
Chemical:	BROMOFORM (THM)		

Sample Collected:	01/14/1997	Findings:	4.300 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	01/14/1997	Findings:	7.400 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	02/12/1997	Findings:	8.600 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	02/12/1997	Findings:	2.300 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	02/12/1997	Findings:	1.900 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	03/13/1997	Findings:	9.800 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	03/13/1997	Findings:	2.100 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	03/13/1997	Findings:	2.300 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	04/15/1997	Findings:	6.900 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	04/15/1997	Findings:	1.600 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	04/15/1997	Findings:	2.000 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	05/12/1997	Findings:	7.500 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	05/12/1997	Findings:	.900 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	05/12/1997	Findings:	1.700 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	06/05/1997	Findings:	3.000 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	06/05/1997	Findings:	3.100 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	06/05/1997	Findings:	2.900 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	06/05/1997	Findings:	2.600 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	06/05/1997	Findings:	3.200 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	07/08/1997	Findings:	10.200 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	07/08/1997	Findings:	1.700 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	07/08/1997	Findings:	4.000 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	07/08/1997	Findings:	10.400 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	08/06/1997	Findings:	1.600 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	08/06/1997	Findings:	3.200 UG/L
Chemical:	BROMOFORM (THM)		

Sample Collected:	08/06/1997	Findings:	1.700 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	08/06/1997	Findings:	1.400 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	08/06/1997	Findings:	2.200 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	09/04/1997	Findings:	7.000 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	09/04/1997	Findings:	2.000 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	09/04/1997	Findings:	4.600 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	09/04/1997	Findings:	5.400 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	09/04/1997	Findings:	2.700 UG/L
Chemical:	TETRACHLOROETHYLENE		
Sample Collected:	10/15/1997	Findings:	8.400 UG/L
Chemical:	BROMODICHLORMETHANE (THM)		
Sample Collected:	10/15/1997	Findings:	7.200 UG/L
Chemical:	BROMOFORM (THM)		
Sample Collected:	10/15/1997	Findings:	10.600 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	10/15/1997	Findings:	4.300 UG/L
Chemical:	CHLOROFORM (THM)		
Sample Collected:	10/15/1997	Findings:	2.200 UG/L
Chemical:	TETRACHLOROETHYLENE		

54
WSW
1/2 - 1 Mile
Lower

FED USGS **USGS3223218**

Agency cd:	USGS	Site no:	374038121465801
Site name:	003S002E17D001M		
Latitude:	374038		
Longitude:	1214658	Dec lat:	37.67715251
Dec lon:	-121.78384268	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	S17 T3S R2E M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	457.00	Altitude method:	M
Altitude accuracy:	5	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19611020
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	379	Hole depth:	380
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

55
East
1/2 - 1 Mile
Higher

FED USGS **USGS3223243**

Agency cd:	USGS	Site no:	374048121452101
Site name:	003S002E09Q001M		
Latitude:	374048		
Longitude:	1214521	Dec lat:	37.6799301
Dec lon:	-121.75689738	Coor meth:	M
Coor accr:	F	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	S9 T3S R2E M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	515.50	Altitude method:	L
Altitude accuracy:	.1	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19520218
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	502	Hole depth:	576
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1953-01-00	Ground water data end date:	1981-12-00
Ground water data count:	87		

Ground-water levels, Number of Measurements: 87

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1981-12	96		1981-11	104	
1981-10-05	119		1981-10	119	
1981-09	144		1981-05	104	
1981-04	88		1981-03	91	
1981-02	92		1981-01	93	
1980-12	103		1980-11	115	
1980-10-15	121.6		1980-10	124	
1980-09	126		1980-07	111	
1980-06	99		1980-05	78	
1980-04-04	72.7		1980-03	80	
1980-02	89		1980-01	101	
1979-10-04	132.7		1979-04-20	72.8	
1979-04	74		1978-09-18	119.7	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel
1978-09	128	
1978-03-15	83.5	
1977-08	110	
1977-03-11	82.5	
1976-07	164	
1976-03	84	
1975-09	152	
1975-03	80	
1974-09-13	103.7	
1974-03-18	70.7	
1973-09	108	
1973-03-13	105.0	
1972-08	132	
1972-03	100	
1971-08	134	
1970-08	176	
1969-04	101	
1968-05	110	
1967-05	102	
1966-02	134	
1965-03	140	
1964-03	140	
1963-05	134	
1962-04	130	
1961-04	140	
1960-03	122	
1958-09	140	
1957-09	172	
1956-03	146	
1955-03	100	
1953-01	106	
1978-05	76	
1977-10-11	122.2	
1977-05	82	
1976-10-04	118.0	
1976-03-05	82.7	
1975-09-18	191.8	
1975-03-18	70.5	
1974-10	110	
1974-05	70	
1973-09-18	130.0	
1973-04	82	
1972-09-25	165.2	
1972-03-09	142.9	
1971-09-10	125.6	
1971-03	94	
1970-03	108	
1968-09	144	
1967-09	142	
1966-07	154	
1965-10	160	
1964-10	188	
1963-09	182	
1962-07	196	
1961-08	210	
1960-09	212	
1959-03	104	
1958-05	96	
1957-04	160	
1955-11	172	
1954-08	166	

56
NNW
1/2 - 1 Mile
Lower

Site ID:	Not Reported
Groundwater Flow:	N
Shallow Water Depth:	42
Deep Water Depth:	45
Average Water Depth:	Not Reported
Date:	08/1990

AQUIFLOW **52316**

K57
NW
1/2 - 1 Mile
Lower

Site ID:	Not Reported
Groundwater Flow:	N
Shallow Water Depth:	Not Reported
Deep Water Depth:	Not Reported
Average Water Depth:	26.0
Date:	07/14/1999

AQUIFLOW **53570**

58
NW
1/2 - 1 Mile
Lower

FED USGS **USGS3223152**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Agency cd:	USGS	Site no:	374122121465301
Site name:	003S002E08F001M		
Latitude:	374122		
Longitude:	1214653	Dec lat:	37.68937436
Dec lon:	-121.78245375	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	NWSENWS8 T 3S R 2E M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	453.60	Altitude method:	L
Altitude accuracy:	.1	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19570104
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	576	Hole depth:	Not Reported
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1978-03-13
Water quality data end date:	2001-05-03	Water quality data count:	6
Ground water data begin date:	1977-08-09	Ground water data end date:	1981-12-00
Ground water data count:	54		

Ground-water levels, Number of Measurements: 54

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1981-12	70		1981-11	52	
1981-09	54		1981-05	64	
1981-04	49		1981-03	51	
1981-02	50		1981-01	50	
1980-12	50		1980-11	46	
1980-09	49		1980-07	44	
1980-05	41		1980-04-04	33.6	
1980-04	34		1980-03	36	
1980-02	39		1980-01	49	
1979-10-04	38.8		1979-08	56	
1979-06-18	51.6		1979-06-04	114.9	
1979-05-21	105.9		1979-05-07	49.9	
1979-04-02	33.6		1979-04	34	
1979-03-27	53.7		1979-02-27	36.3	
1979-02-20	37.1		1979-02-14	48.0	
1979-02-13	37.7		1979-02-06	38.5	
1979-01-30	39.1		1979-01-23	40.2	
1979-01-18	41.0		1979-01-15	41.1	
1979-01-09	42.8		1979-01-02	44.2	
1978-12-20	47.0		1978-12-12	49.4	
1978-12-07	51.3		1978-11-16	103.3	
1978-11-07	103.9		1978-11-06	102.3	
1978-10-18	108.6		1978-09-21	102.2	
1978-08-23	90.0		1978-06-09	44.9	
1978-05-11	35.0		1978-04-13	53.2	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1978-03-13	38.2		1978-02-17	41.4	
1977-10-03	60.5		1977-08-09	58.0	

K59
NW
1/2 - 1 Mile
Lower

FED USGS **USGS3223149**

Agency cd:	USGS	Site no:	374119121465701
Site name:	003S002E08E001M		
Latitude:	374119		
Longitude:	1214657	Dec lat:	37.68854105
Dec lon:	-121.7835649	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	S8 T3S R2E M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	450.00	Altitude method:	M
Altitude accuracy:	5	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19630705
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	300	Hole depth:	300
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1980-06-02	Ground water data end date:	1981-10-16
Ground water data count:	24		

Ground-water levels, Number of Measurements: 24

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1981-10-16	42.2		1981-08-31	42.9	
1981-08-03	46.3		1981-06-29	46.0	
1981-06-01	39.5		1981-05-20	40.3	
1981-04-22	44.5		1981-03-25	37.7	
1981-02-26	40.0		1981-01-28	40.8	
1980-12-30	41.3		1980-12-03	40.8	
1980-11-12	37.6		1980-10-24	40.1	
1980-10-14	41.7		1980-09-29	45.8	
1980-09-15	40.3		1980-09-02	40.4	
1980-08-18	41.6		1980-08-06	40.4	
1980-07-21	38.1		1980-07-02	38.9	
1980-06-16	39.3		1980-06-02	38.2	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

			Database	EDR ID Number
L60 **NNW** **1/2 - 1 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	3609 W Not Reported Not Reported 29.5 10/05/1989	**AQUIFLOW**	**52437**
L61 **NNW** **1/2 - 1 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	Not Reported W Not Reported Not Reported 29.5 10/05/1989	**AQUIFLOW**	**52438**
M62 **WSW** **1/2 - 1 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	Not Reported Varies 10.97 22.40 Not Reported 08/22/1996	**AQUIFLOW**	**53565**
M63 **WSW** **1/2 - 1 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	Not Reported Varies 10.97 27.83 Not Reported 03/17/1999	**AQUIFLOW**	**53567**

64
East
1/2 - 1 Mile
Higher

FED USGS **USGS3223229**

Agency cd:	USGS	Site no:	374043121451001
Site name:	003S002E16A003M		
Latitude:	374043		
Longitude:	1214510	Dec lat:	37.67854124
Dec lon:	-121.75384173	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	001
Country:	US	Land net:	NENENES16 T 36 R2S M
Location map:	LIVERMORE	Map scale:	24000
Altitude:	524.40	Altitude method:	L
Altitude accuracy:	.1	Altitude datum:	NGVD29
Hydrologic:	San Francisco Bay. California. Area = 1200 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19720501
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	ALLUVIUM (QUATERNARY)		
Well depth:	240	Hole depth:	240
Source of depth data:	Not Reported	Project number:	CA-9-358M
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Peak flow data count: 0
Water quality data end date: 1983-06-01
Ground water data begin date: 1977-10-11
Ground water data count: 29

Water quality data begin date: 1978-06-16
Water quality data count: 19
Ground water data end date: 1981-12-01

Ground-water levels, Number of Measurements: 29

Date	Feet below Surface	Feet to Sealevel
1981-12-01	46.3	
1981-03-25	41.8	
1980-10-27	72.5	
1980-09-11	40.0	
1980-07-29	39.8	
1980-06-18	37.0	
1980-05-05	34.4	
1980-03-21	33.1	
1980-01-22	41.2	
1979-11-27	48.8	
1979-10-05	48.3	
1979-06-26	59.9	
1979-04-20	39.3	
1979-01-18	43.2	
1977-10-11	61.3	
1981-08-28	44.8	
1980-12-04	44.7	
1980-10-01	42.7	
1980-08-28	40.2	
1980-06-26	38.8	
1980-05-28	35.3	
1980-03-27	34.1	
1980-02-26	35.8	
1979-12-20	49.5	
1979-10-23	48.6	
1979-07-18	44.5	
1979-05-31	40.6	
1979-02-20	42.2	
1978-11-27	46.3	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zip	Total Sites	> 4 Pci/L	Pct. > 4 Pci/L
94550	18	3	16.67

Federal EPA Radon Zone for ALAMEDA County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 94550

Number of sites tested: 6

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.567 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)

Source: United States Geologic Survey

EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System

Source: EDR proprietary database of groundwater flow information

EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit

Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database

Source: Department of Agriculture, Natural Resources Conservation Services

The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database

Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)

Telephone: 800-672-5559

SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations for District 2, 3, 5 and 6
Source: Department of Conservation
Telephone: 916-323-1779

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

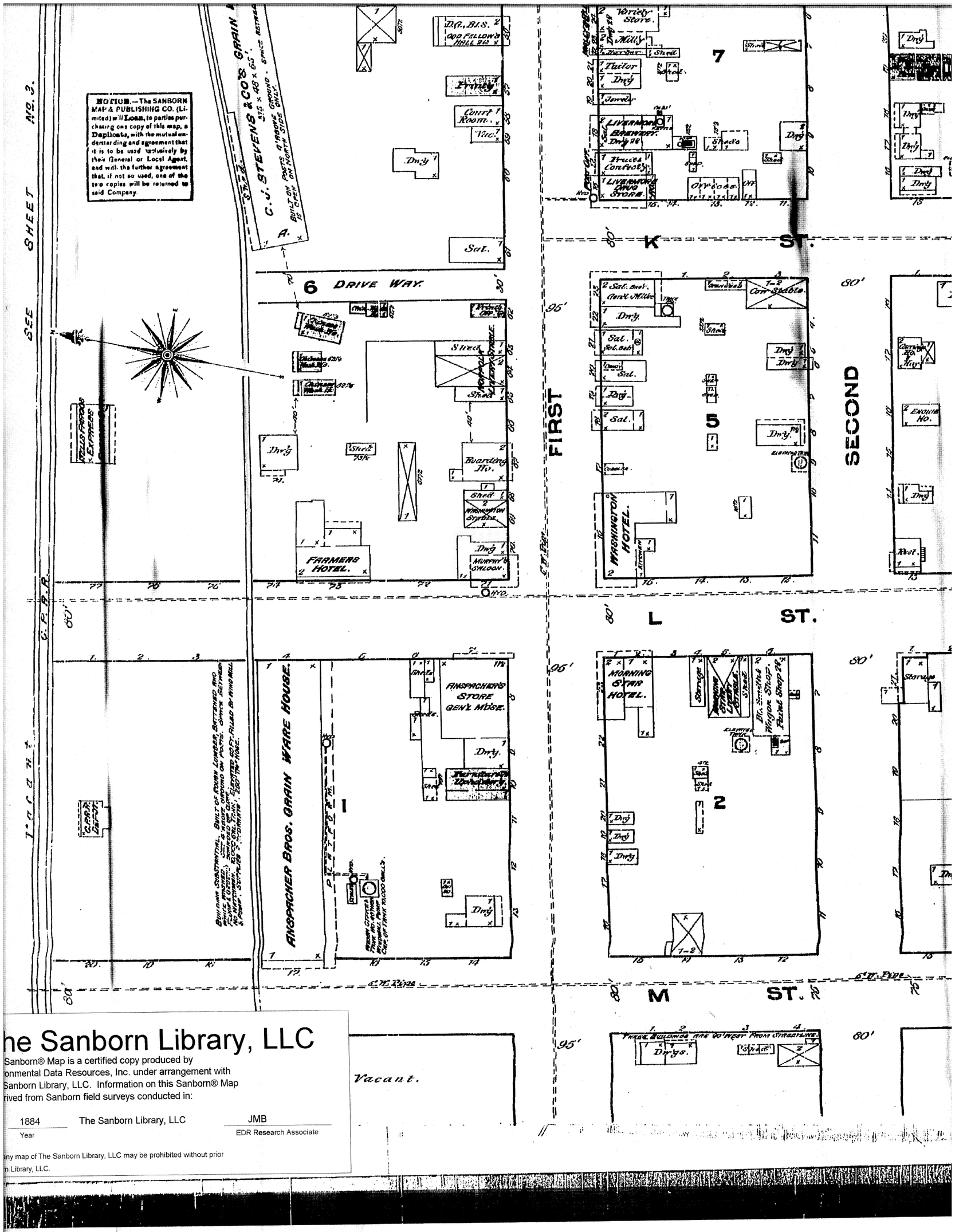
STREET AND ADDRESS INFORMATION

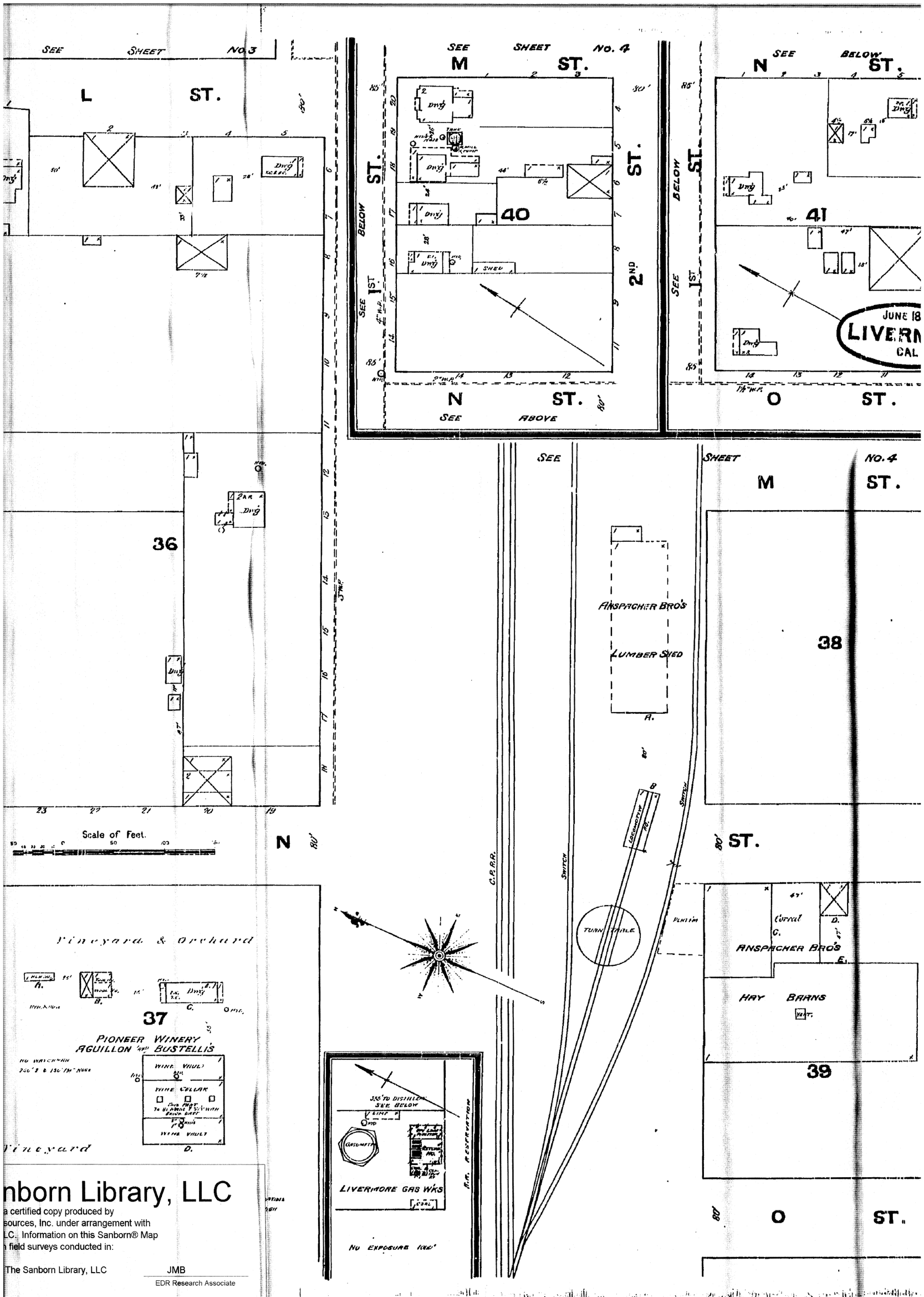
ATTACHMENT D

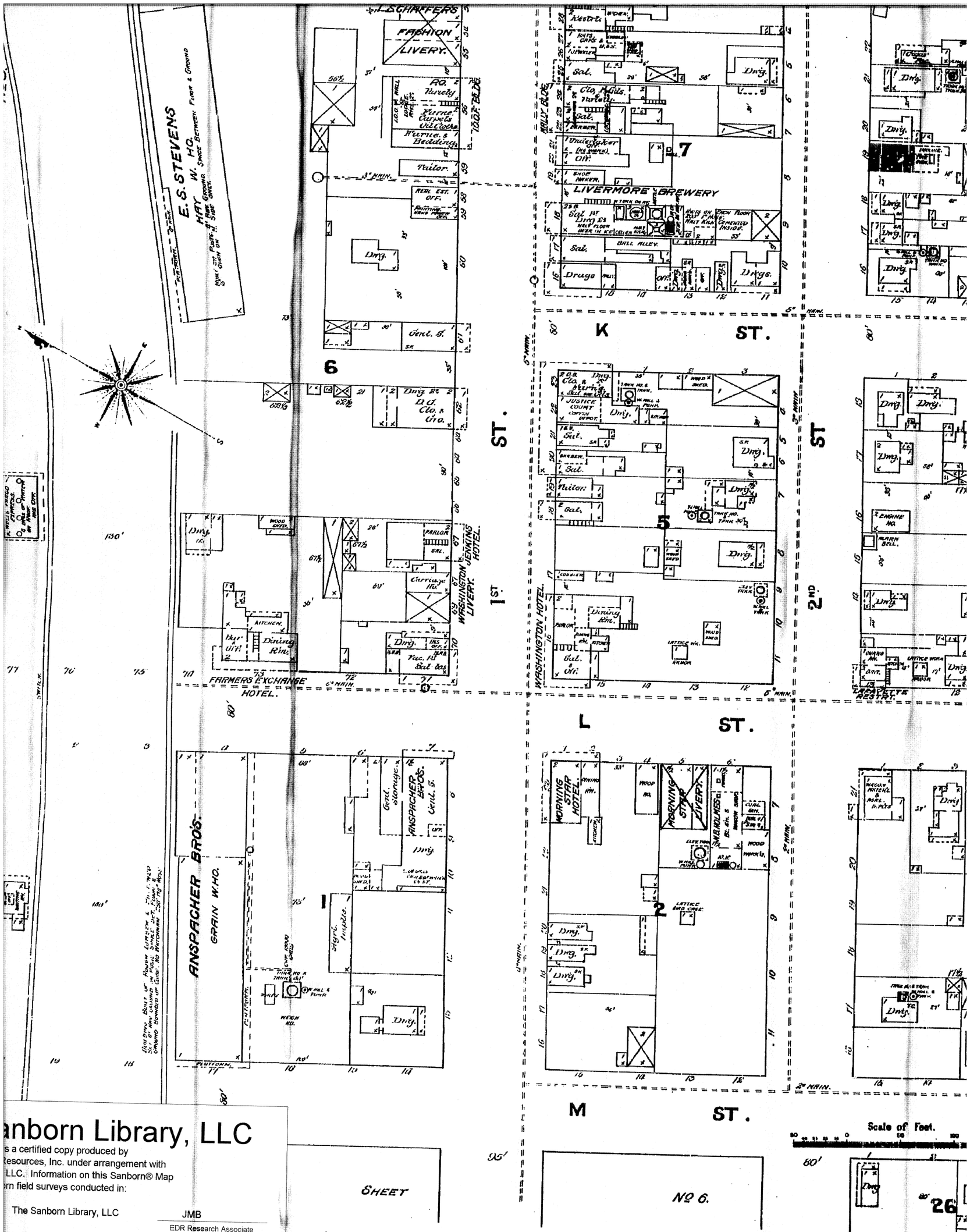
Sanborn Maps

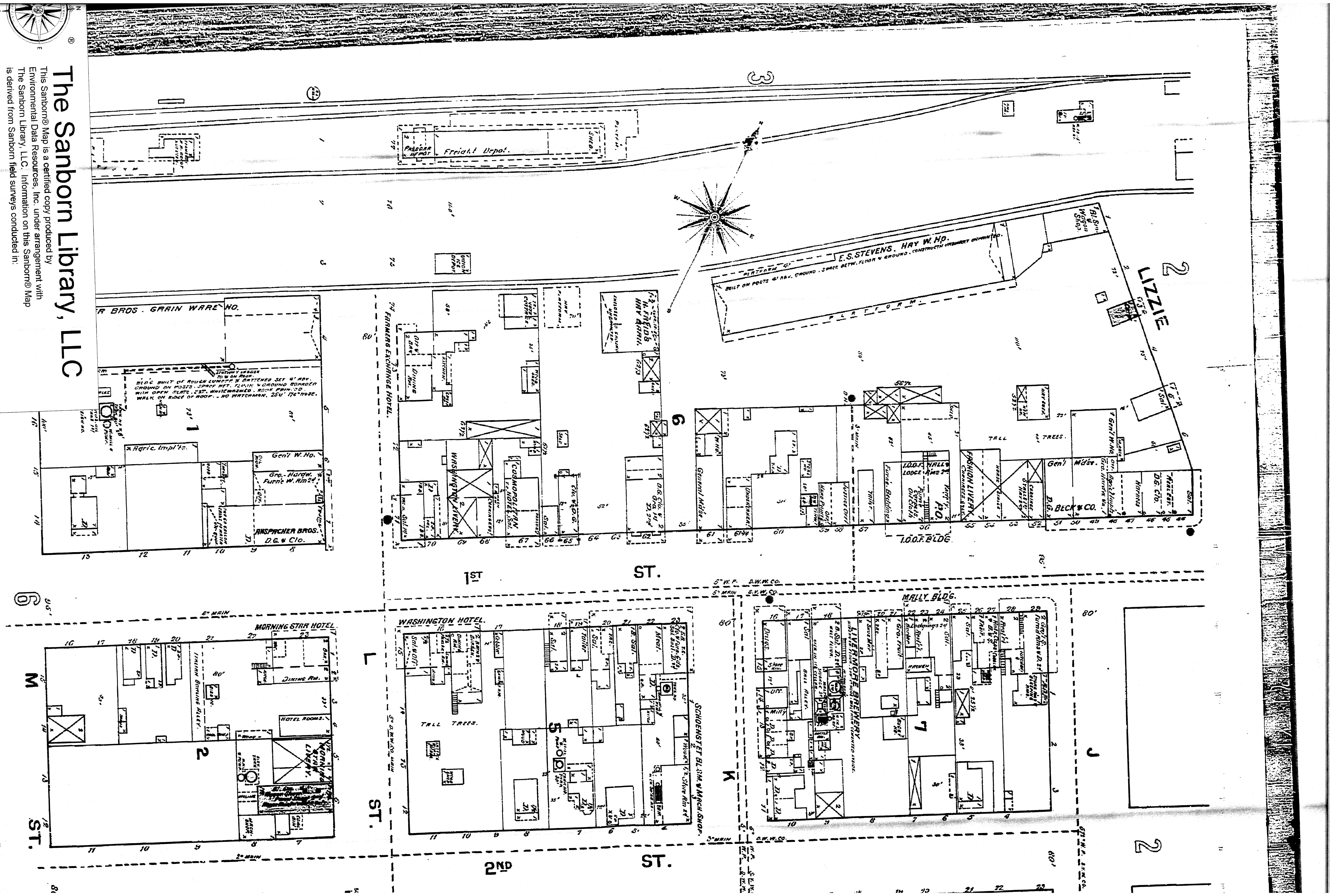
Sanborn Maps

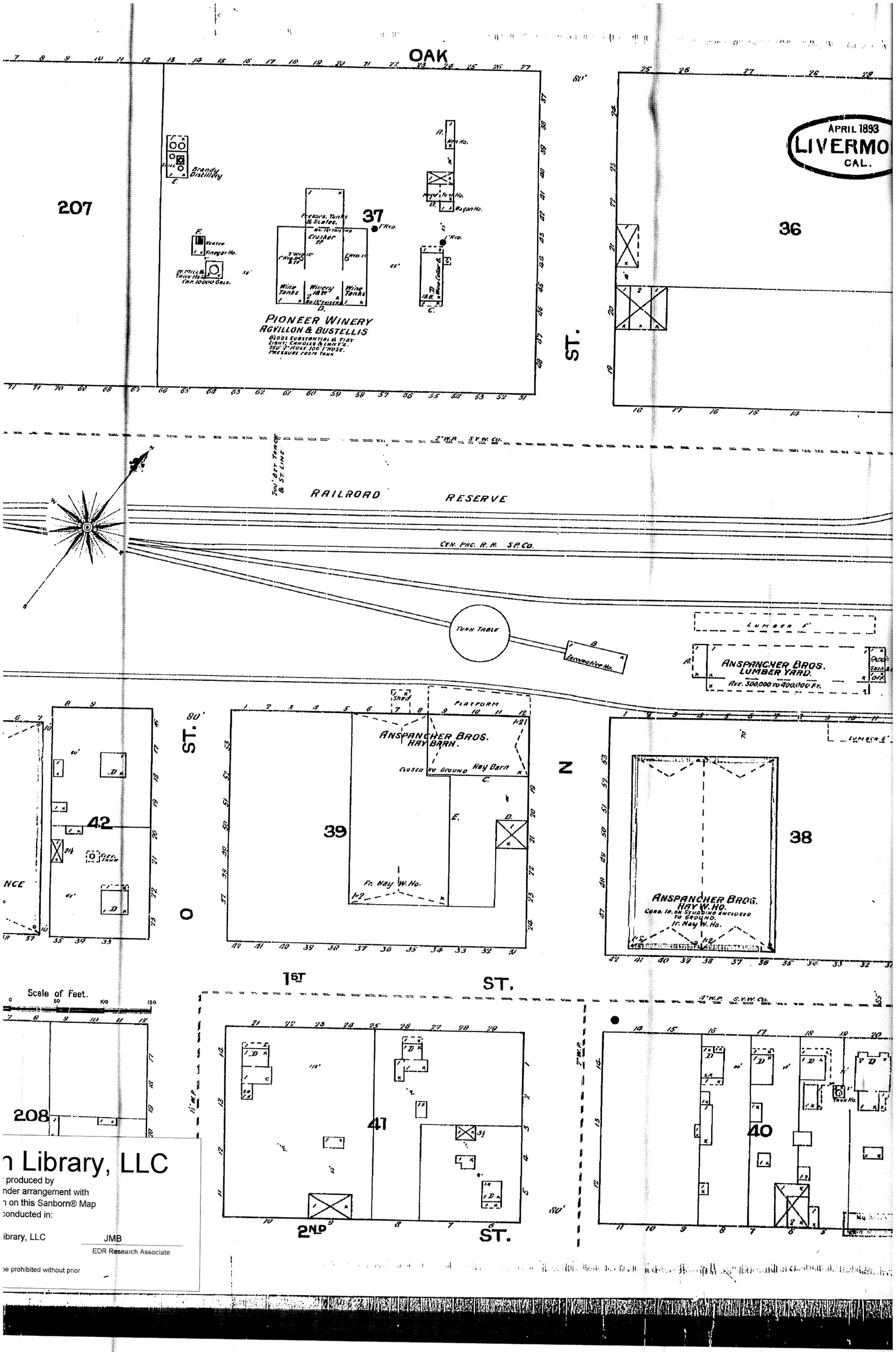
1884
1888 (2 pages)
1893 (2 pages)
1907
1917
1929
1944
1959

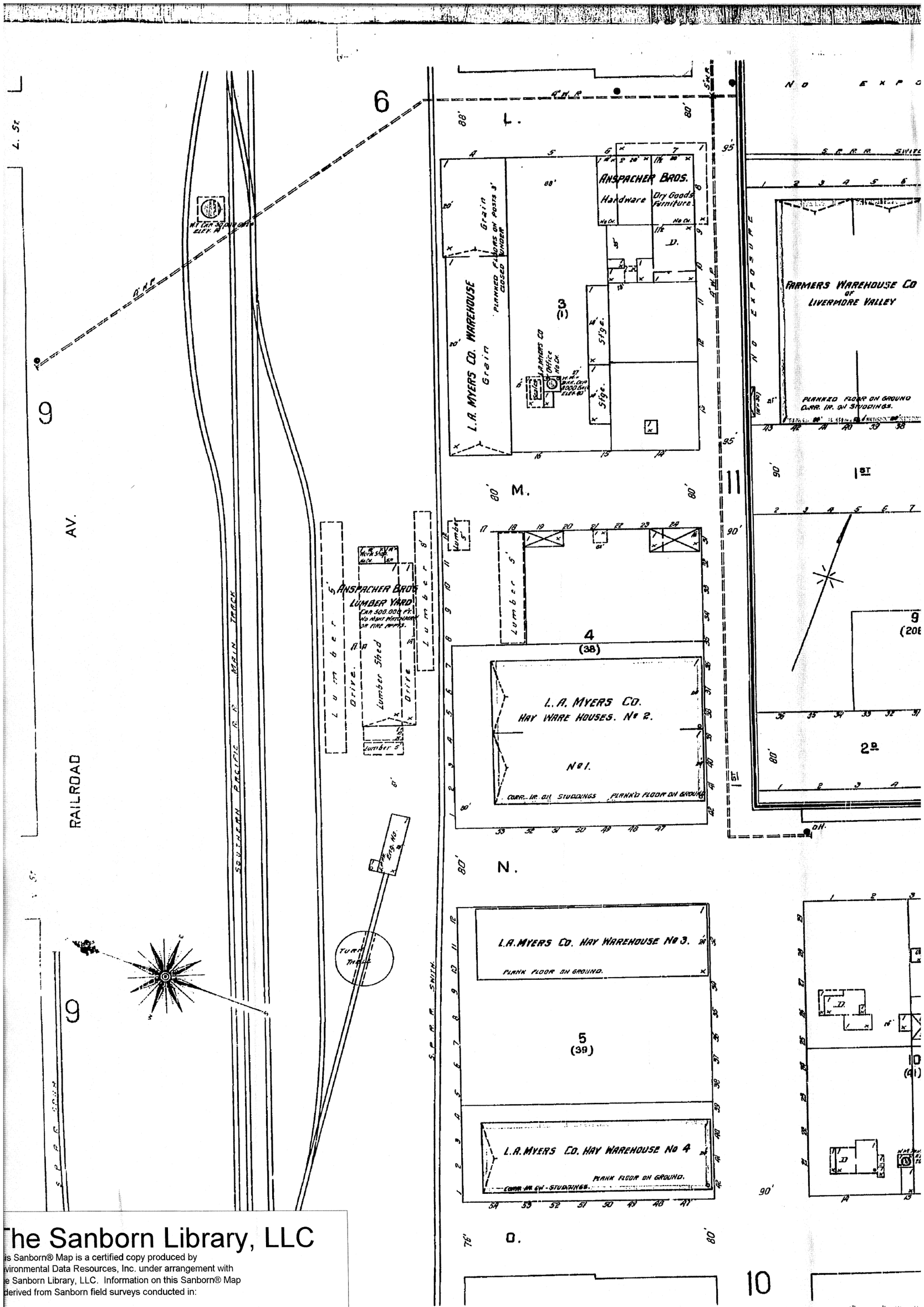


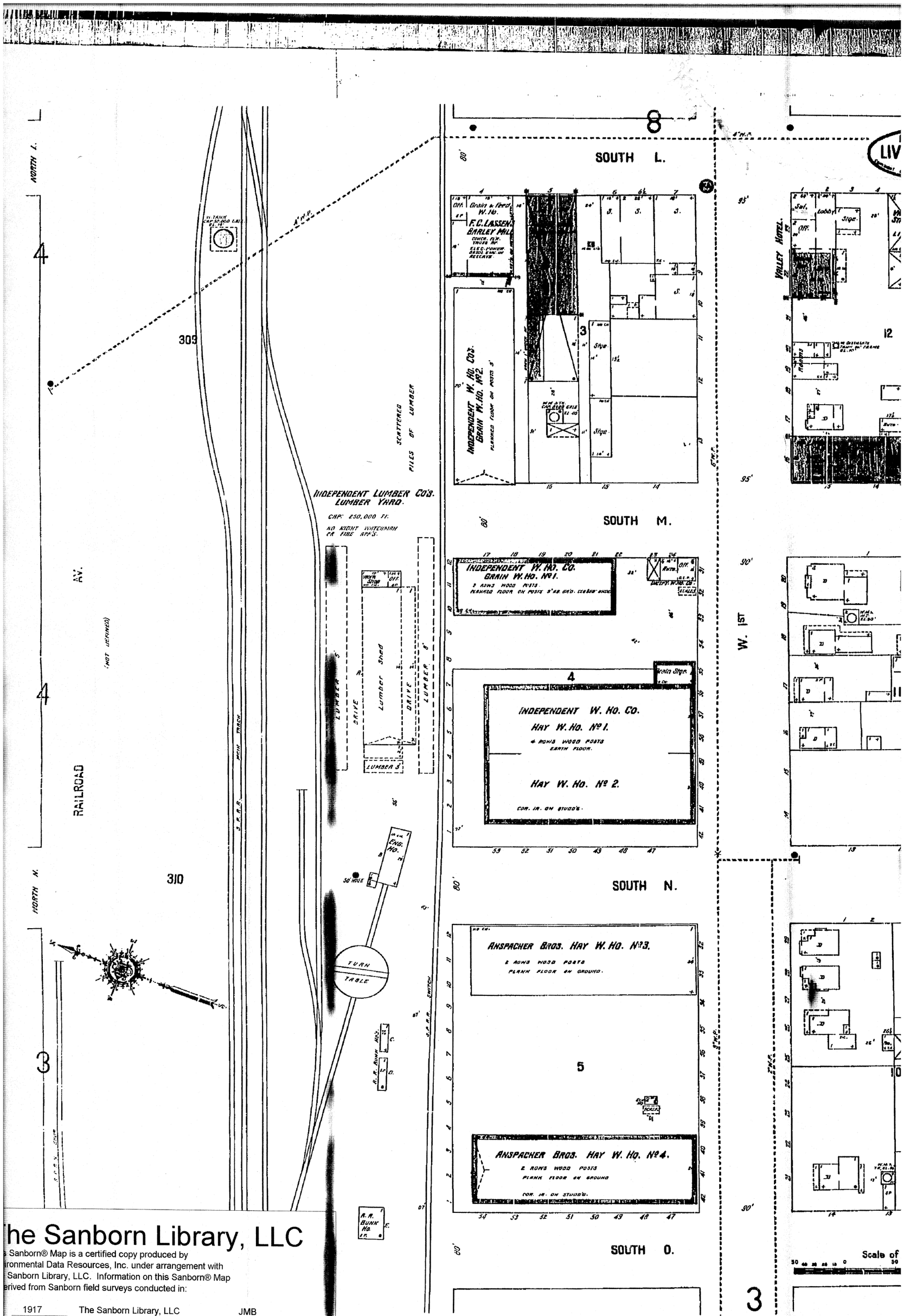


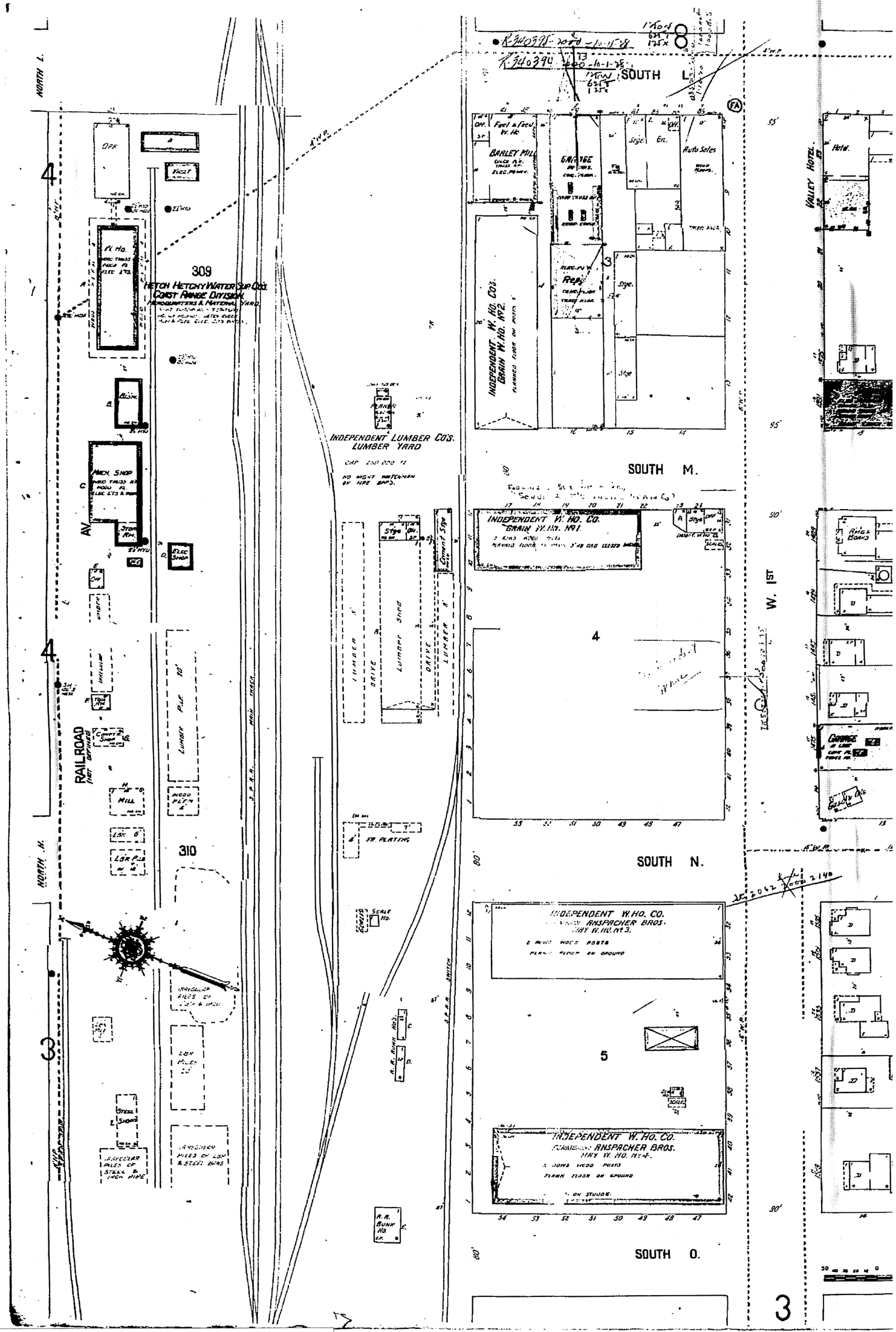


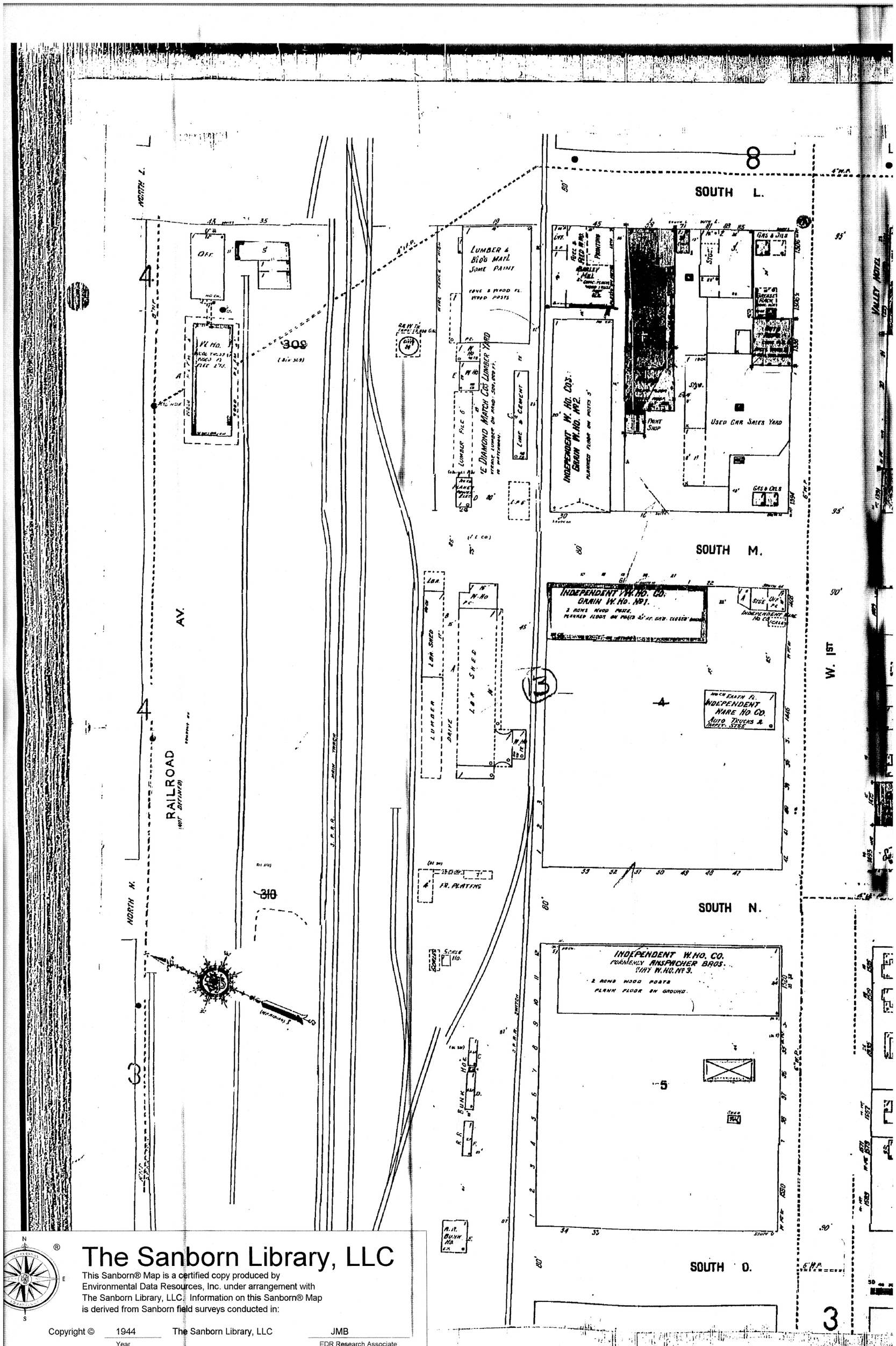






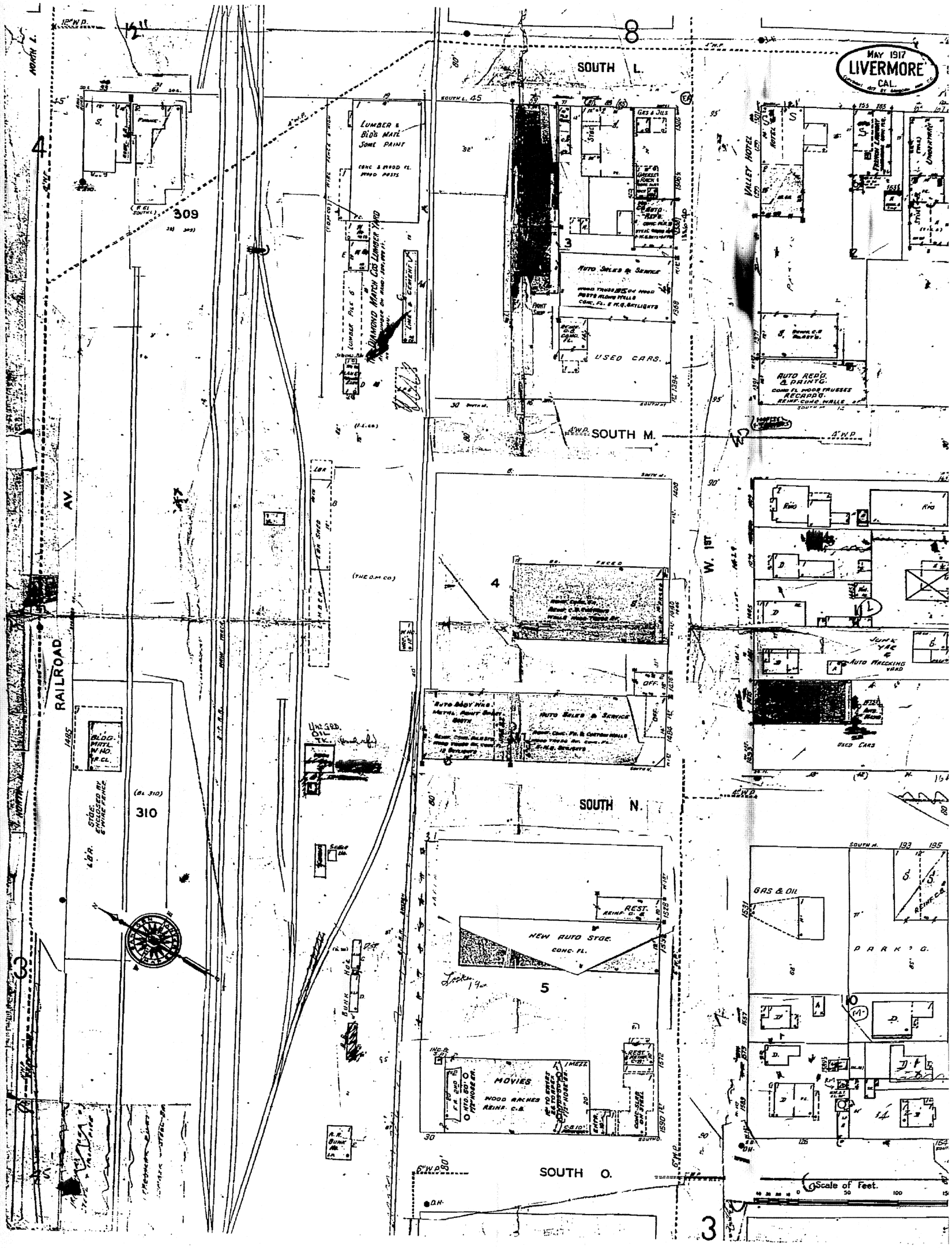






The Sanborn Library, LLC

This Sanborn® Map is a certified copy produced by Environmental Data Resources, Inc. under arrangement with The Sanborn Library, LLC. Information on this Sanborn® Map is derived from Sanborn field surveys conducted in:

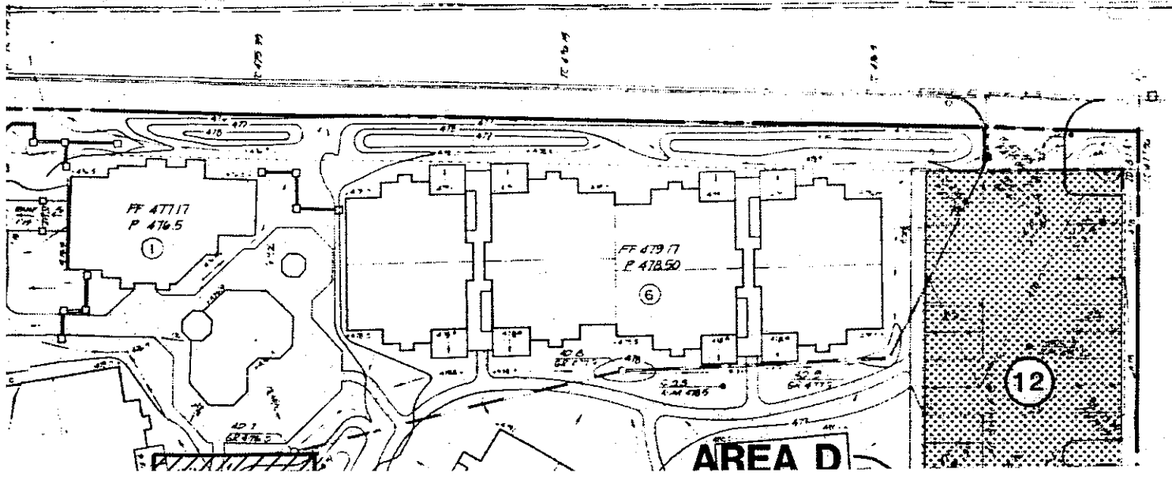


ATTACHMENT E

Map of Removed Oil Lines (Aqua Resources September 12, 1988)

RAILROAD AVENUE

IMPROVEMENTS SHOWN WITHIN RAILROAD AVE ROW
TO BE INSTALLED PER P.M. 5360 IMPROVEMENT PLANS BY OTHERS



RAILROAD AVENUE

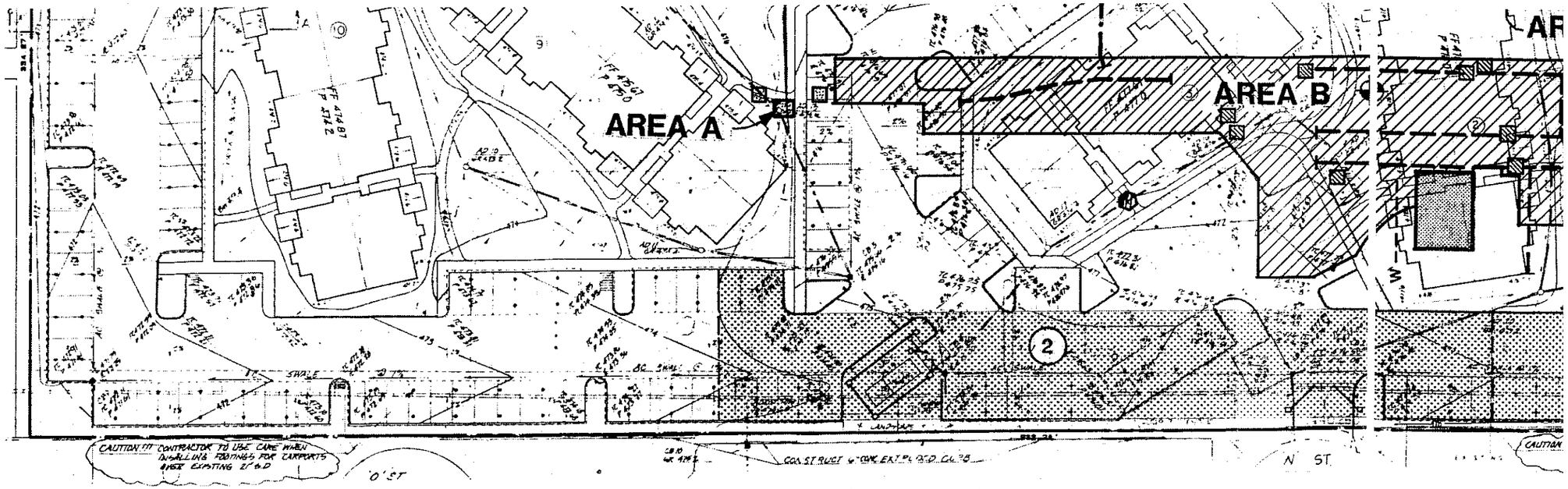
(IMPROVEMENTS SHOWN WITHIN RAILROAD AVE R.O.W.
TO BE INSTALLED PER P.M. 5300 IMPROVEMENT PLANS, BY OTHERS)

175.84'

787.80'

FF 474.17
P 473.5

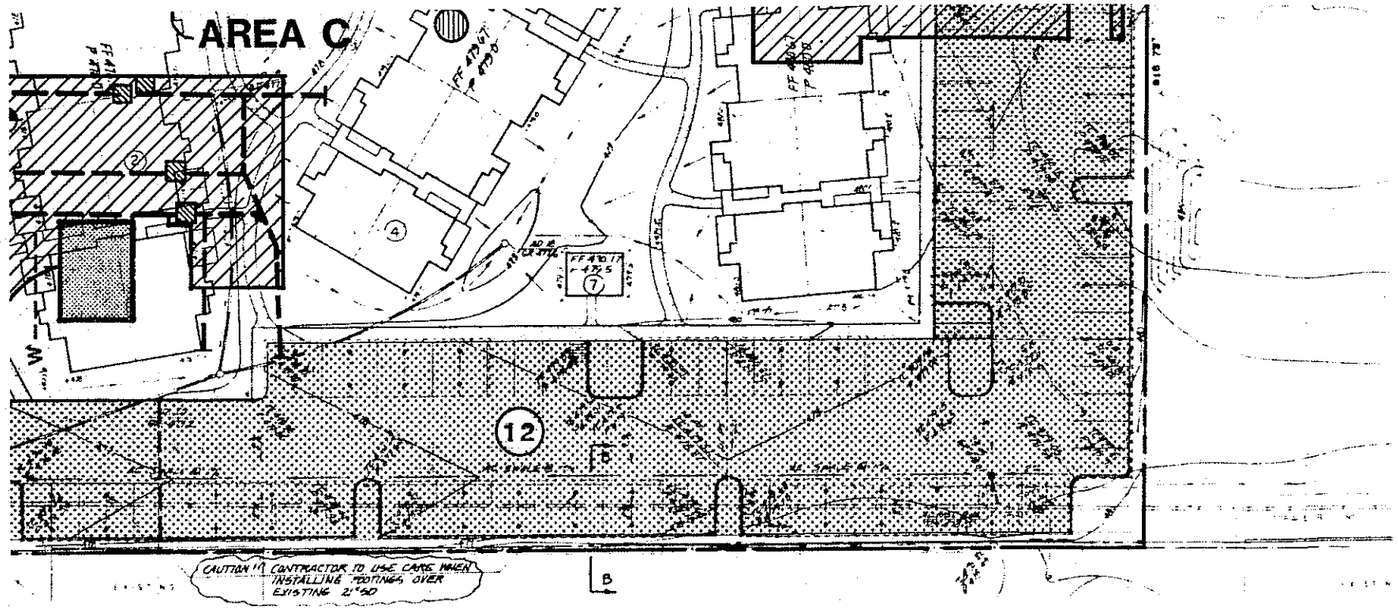
FF 477.17
P 476.50



0 50 100 150

scale feet

OR BARNETT RANGE, BY BABBITT CIVIL ENGINEERING, INC.,
1988, AT A SCALE OF 1"=50'



LEGEND

150
feet

Property Line

Phase I Excavation Limits (approximate)

Location of Monitoring Well (Proposed)

Phase II Removal of Oil Contaminated Soil

Location of Oil Contaminated Soil Reused as Subbase in Pavement Area. Number in Circle Indicates Thickness of Subbase Placed, in Inches

Limits for Soil Contaminated with Lead Removed to Class I Landfill

Fuel Oil Line (removed)

Drain Line

Existing Water Line

Concrete Structure (removed)

Tank No. 1

Tanks No. 2, 3 & 4

AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA

MILL SPRINGS PARK APARTMENTS
Livermore Superblock

FINAL EXCAVATION LOCATION PLAN

JOB NO.	SHEET NO. 1 OF 1
87157.5	DATE February 1989

PLATE 2

ATTACHMENT F

City of Livermore Utility Map

GENERAL NOTES:

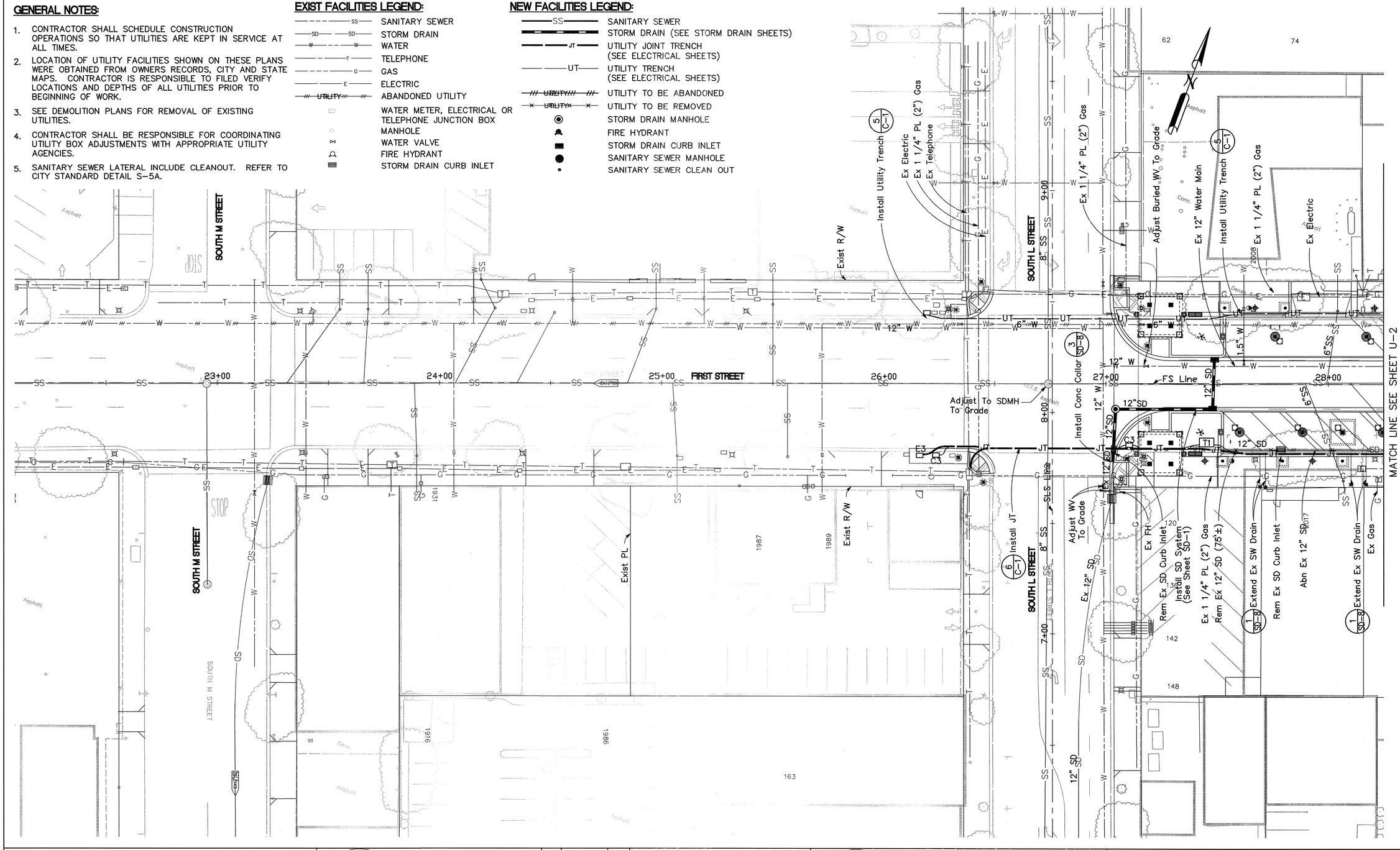
1. CONTRACTOR SHALL SCHEDULE CONSTRUCTION OPERATIONS SO THAT UTILITIES ARE KEPT IN SERVICE AT ALL TIMES.
2. LOCATION OF UTILITY FACILITIES SHOWN ON THESE PLANS WERE OBTAINED FROM OWNERS RECORDS, CITY AND STATE MAPS. CONTRACTOR IS RESPONSIBLE TO FILED VERIFY LOCATIONS AND DEPTHS OF ALL UTILITIES PRIOR TO BEGINNING OF WORK.
3. SEE DEMOLITION PLANS FOR REMOVAL OF EXISTING UTILITIES.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING UTILITY BOX ADJUSTMENTS WITH APPROPRIATE UTILITY AGENCIES.
5. SANITARY SEWER LATERAL INCLUDE CLEANOUT. REFER TO CITY STANDARD DETAIL S-5A.

EXIST FACILITIES LEGEND:

- SS — SANITARY SEWER
- SD — STORM DRAIN
- W — WATER
- T — TELEPHONE
- G — GAS
- E — ELECTRIC
- UTILITY — ABANDONED UTILITY
- WATER METER, ELECTRICAL OR TELEPHONE JUNCTION BOX
- MANHOLE
- WATER VALVE
- FIRE HYDRANT
- STORM DRAIN CURB INLET

NEW FACILITIES LEGEND:

- SS — SANITARY SEWER
- STORM DRAIN (SEE STORM DRAIN SHEETS)
- JT — UTILITY JOINT TRENCH (SEE ELECTRICAL SHEETS)
- UT — UTILITY TRENCH (SEE ELECTRICAL SHEETS)
- UTILITY — UTILITY TO BE ABANDONED
- UTILITY — UTILITY TO BE REMOVED
- STORM DRAIN MANHOLE
- FIRE HYDRANT
- STORM DRAIN CURB INLET
- SANITARY SEWER MANHOLE
- SANITARY SEWER CLEAN OUT



REGISTERED PROFESSIONAL ENGINEER ROBERTO J. ESCOBAR No. C58461 Exp. 12-31-06 CIVIL STATE OF CALIFORNIA

Roberto Escobar 2/9/05
APPROVED BY DATE

DESIGNED BY: RE/TW/PB
DRAWN BY: RE/FY
CHECKED BY: RE/TW/PB

NO.	DATE	BY	REVISIONS
1			

CITY OF LIVERMORE, CALIFORNIA, INCORPORATED 1876, COUNTY OF ALAMEDA

CITY OF LIVERMORE
COMMUNITY DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION
City Project No. 200321

FIRST STREET STREETSCAPE IMPROVEMENTS
Phase I - L Street to Maple Street

UTILITY

U-1
Sheet 26
Of 106
Scale: 1"=20'

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 1 2 3