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HEALTH CARE SERVICES
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November 23, 2011

Pat Cullen
State Water Resources Control Board
Division of Financial Assistance
1001 I Street
Sacramento, CA 95814
(*Sent via E-mail to:*
PCullen@waterboards.ca.gov)

Robert Trommer
State Water Resources Control Board
Division of Financial Assistance
1001 I Street
Sacramento, CA 95814
(*Sent via E-mail to:*
RTrommer@waterboards.ca.gov)

Subject: Response to UST Cleanup Fund Second Five Year Review for Fuel Leak Case No. 374 and GeoTracker Global ID T06000101374, Chevron #21-1285 / Cal Gas, 15595 Washington Avenue, San Lorenzo, CA 94580

Mr. Cullen and Mr. Trommer:

ACEH has received the second 5-Year Review Summary Report dated October 6, 2011 from the Underground Storage Tank Cleanup Fund (USTCF) for the site listed below. The Summary Report represents the second five year review of this site managed by the ACEH Local Oversight Program by the Fund. The Fund correspondence requests that ACEH respond to the Fund correspondence within 45 days of the date of the letters (November 20th). We have reviewed the contents of the correspondence in the context of the appropriateness of recommendations. However, we have not reviewed the reports for accuracy of all information presented.

ACEH Case: RO0000374
USTCF Claim: 12999
Global ID: T0600101374
Site Name: Chevron #21-1285 / Cal Gas
Site Address: 15595 Washington Avenue, San Lorenzo, CA

USTCF Recommendations from October 6, 2011 Review Summary:

- Monitoring well MW-5 is screened near the source area and has consistently had elevated concentrations of residual hydrocarbons in the groundwater but declining (as presented in the graph above). After 15 years of monitoring, the groundwater plume is limited to the source area. Analytical data suggest that WQOs have been achieved in down gradient wells. Groundwater in the source area will likely remain above WQOs for years. The Fund recommends that the LOP review this Site for closure.

ACEH Response: ACEH is not in agreement with this recommendation. A copy of last year's response has previously been sent. In short ACEH requests revision of the recommendations similar to those provided in the previous 5-year review: "The UST Fund Staff recommend the LOP either proceed with the requested actions."

The USTCF has recommended closure of the site based on review of groundwater concentrations remaining in groundwater in the site vicinity, and has not considered residual contamination in soil or soil vapor. While ACEH notes that groundwater concentrations at the site and vicinity have declined with time, based on the groundwater gradient maps generated for the site vicinity since the installation of wells

STMW-6 to STMW-10 (April 2007) a groundwater low or valley appears to extend across the site towards the southwest and the intersection of Via Enrico and Lorenzo Avenue. Releases to groundwater at either UST complex would generally be expected to follow this flowpath. This suggests that wells STMW-6 to STMW-10 are monitoring the lateral extent of a groundwater plume, rather than the downgradient direction of the plume as suggested in the creative contaminant contour maps. In essence the downgradient extent of this plume has not been defined. If groundwater concentrations to the southwest are low or declining, this argument would be moot, and only residual soil contamination and soil vapor would be of concern at the site or at the apartment buildings immediately downgradient.

Critically, this area of San Lorenzo is known to contain an above average number of "backyard" residential or irrigation wells that are both registered and unregistered, and would be unknown if unregistered. The USTCF has made the assumption that because domestic water is available in the area, these wells are not used for water supply of some sort. This assumption is an unverified assumption that would not be acceptable without verification. The USTCF's recommendation is not protective of groundwater or groundwater rights that may be currently in-use at these locations. The USTCFs recommendation is also in conflict with the Basin Plan.

ACEH notes that another LOP site in the San Lorenzo area, and located approximately ½ mile from the subject site, had recently conducted a vicinity well survey and did not find wells of concern within the ¼-mile radius. Shortly thereafter a resident mentioned two unregistered "backyard" residential irrigation wells at 100 and 175 feet directly downgradient of that site. Those wells are reportedly now decommissioned; however, this is presently uncertain and is being further investigated.

At present, the closest known residential well is located across Via Enrico at a distance of approximately 185 feet from an onsite release point. The owner has discontinued use of the well, in part due to an ACEH request, but may want to resume use in the future. There are also several larger residential parcels in the local vicinity that may represent older ranch homes that predate suburbanization of the vicinity, and may contain older unaccounted irrigation wells. Additionally groundwater flow is to the southwest, directly toward Arroyo High School. While not known at this school, San Lorenzo schools are known to have made use of groundwater and have currently existing wells.

To the best knowledge of ACEH the site also has an open petition case. Attached please find a copy of the SWRCB *Request for Comments on Petition,* dated October 27, 2003, and two ACEH responses dated December 1, 2003 and August 6, 2004.

To resolve these concerns and rapidly access this downgradient area, ACEH will be requesting a soil bore transect with soil and grab groundwater sample collection, with, if appropriate, the subsequent installation of several wells to allow quick evaluation of verifiable groundwater contaminant concentrations. A vapor survey of the residential apartment buildings overlying this area may be appropriate, but will not be requested until groundwater data is available. A survey of public databases of registered wells has already been conducted and except for the well across Via Enrico, wells of concern have not been found. A door-to-door well survey will also be requested to seek unregistered wells in the downgradient site vicinity.

In summary ACEH requests revision of the recommendations similar to the previous 5-year review: "The UST Fund Staff recommend the LOP either proceed with requested actions."

Thank you for providing ACEH with the opportunity to comment on the subject sites. Should you have any questions regarding the responses above, please contact me at (510) 567-6876 or send me an electronic mail message at mark.detterman@acgov.org.

Sincerely,

Digitally signed by Mark E. Detterman
DN: cn=Mark E. Detterman, o, ou, email, c=US
Date: 2011.11.28 09:50:51 -08'00'

Mark E. Detterman, P.G., C.E.G.
Senior Hazardous Materials Specialist

Attachments: SWRCB *Request for Comments on Petition,* dated October 27, 2003

ACEH response *Naming of Responsible Parties,* dated December 1, 2003

ACEH response *Petition Responses to Naming of Responsible Parties,* August 6, 2004.

cc: Donna Drogos (sent via electronic mail to donna.drogos@acgov.org)
Mark Detterman (sent via electronic mail to mark.detterman@acgov.org)
Electronic File, GeoTracker

State Water Resources Control Board

Division of Water Quality
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Winston H. Hickox
Secretary for Environmental Protection

Gray Davi
Governor

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at http://www.swrcb.ca.gov.

OCT 27 2003

Alameda County

OCT 30 2003

Environmental Health

Ms. Mary S. Taylor
Law Office of Mary S. Taylor
77 Solano Square #330
Benicia, CA 94510-0633

Dear Ms. Taylor:

UNDERGROUND STORAGE TANK PROGRAM, LOCAL OVERSIGHT PROGRAM (LOP), SITE NUMBER RO000374, CAL GAS, 15595 WASHINGTON AVENUE, SAN LORENZO, CALIFORNIA, ALAMEDA COUNTY: REQUEST FOR COMMENTS ON PETITION

This will acknowledge receipt of your October 4, 2003 petition, submitted on behalf of Mrs. Jessen A. Calleri. You have asked that the State Water Resources Control Board (SWRCB) review Alameda County Health Care Services Agency's decision to name Agnes Calleri as a secondary responsible party.

By copy of this letter, I am requesting responses to the petition from the following: Alameda County Health Care Services Agency, San Francisco Bay Regional Water Quality Control Board, Ms. Marjorie Kanyer, Mr. Mehdi Mohammadian, Mr. Ernest J. Panosian, and Mr. Jeffrey L. Podawiltz, and Ms. Karen Streich. In accordance with State Board Resolution No. 88-23, responses shall be submitted to the SWRCB within 20 days from the date of this letter. A copy of the responses shall also be provided to the Petitioner and to the Alameda County Health Care Services Agency. The SWRCB will make arrangements for copy of the site file.

If you have any questions, please contact me at (916) 341-5645 or via email at brazellt@swrcb.ca.gov.

Sincerely,

Terry Brazell
Underground Storage Tank Program

cc: Ariu Levi
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

cc: Mr. Mehdi Mohammadian
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San Lorenzo, CA 94580

Ms. Karen Streich
ChevronTexaco
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PO Box 6012
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Ms. Marjorie Kayner
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Mr. David Boyers
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Mr. Barney Chan
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Mr. Jeffery L. Podawiltz
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ALAMEDA COUNTY
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DAVID J. KEARS, Agency Director

12-2-03

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December 1, 2003

Ms. Terry Brazell
State Water Resources Control Board
Underground Storage Tank Program
1001 I Street, Sacramento, CA 95814

Dear Ms. Brazell:

Subject: Naming of Responsible Parties, ROOOOO374, Cal Gas, 15595 Washington Avenue, San Lorenzo, CA 94580

This letter responds to the petitions of Mr. Jeffrey Podawiltz representing ChevronTexaco and the naming of ChevronTexaco as a secondary responsible party for the referenced site; of Ms. Mary Taylor representing Ms. Agnes Calleri and the naming of Ms. Calleri as a secondary responsible party for the referenced site; and it supplements our office's November 3, 2003 response to the petition of Ms. Marjorie Kanyer and the Kubo Trust.

RESPONSIBLE PARTY IDENTIFICATION

Alameda County Environmental Health (ACEH) named the Kubo Trust, ChevronTexaco, Mr. and Mrs. Calleri, and Mr. Mohammadian responsible parties, as defined under California Code of Regulations, Title 23, Division 3, Chapter 16 (California Underground Storage Tank Regulations), Article 11, Section 2720. Section 2720 defines a responsible party (RP) as any one of four ways.

- "Any person who owns or operates an underground storage tank used for the storage of any hazardous substance" or
- "In the case of any underground storage tank no longer in use, any person who owned or operated the underground storage tank immediately before the discontinuation of its use" or
- "Any owner of property of property where an unauthorized release of a hazardous substance from an underground storage tank has occurred" or
- "Any person who had or has control over an underground storage tank at the time of or following an unauthorized release of a hazardous substance."

Based on these definitions, ACEH identified responsible parties for this site as follows:

Mr. and Mrs. Calleri owned the property from August 1974 to June 1983. The Calleris were the last owners and operators of the 2nd generation USTs which remained in place at the site through 1986 and from which an unauthorized release was documented in August 1986. Thus the Calleris meet the second definition of an RP.

ChevronTexaco owned the property from June 1983 to December 1986. The 2nd generation of USTs remained in place at the site at this time, however ChevronTexaco reportedly did not store nor dispense fuel at the site during their ownership. ChevronTexaco removed the second generation USTs in 1986. A petroleum release was confirmed in August 1986 when monitoring

wells were installed and soil and groundwater contamination was detected. Thus ChevronTexaco meets the third and fourth definitions.

Mr. Bertram Kubo owned the property from December 1986 to June 1990. Mr. Kubo installed (February 1987), owned, and operated the3rd generation USTs at the site. Thus Mr. Kubo/Kubo Trust meets the third and fourth definitions.

Mr. Mohammadian has owned the property from June 1990 to date. Mr. Mohammadian owned and operated the 3rd generation USTs. In 1998, a significant release(s) of MTBE to groundwater was reported indicating a new unauthorized release occurred at the site. Thus Mr. Mohammadian meets the first, third, and fourth definitions.

Therefore, the County determines that the four responsible parties identified above have been properly named.

Additionally, Cambria and attorneys for Chevron assert that ACEH refused to consider and discuss re-designation of RPs at this site with Chevron. ACEH notes that it had multiple phone conversations with Ms. Karen Streich of Chevron both before and after re-designation of the RPs for this site. Discussions included how RPs were identified for this site as well as the technical merits of Cambria's June 16, 2003 assessment of site conditions.

The SWRCB issued order WOO 2002-0021, which responded to the petition of Mr. Mohammadian for review of Alameda County's Notice of Revision to Responsible Party Designation (to remove Texaco and the Calleris from the list of responsible parties). Item 2 of the order's conclusion states, "It is not appropriate for an LOP agency to remove a person who has been properly named as a responsible party for cleanup of an unauthorized release at a site unless it finds, by a preponderance of the evidence, that constituents from that party's release, when taken in conjunction with commingled constituents from another release(s) that have similar effects on beneficial uses, do not contribute to the need for cleanup at the site." Further, Page 11 of the order states "What the County did not consider, and what must be determined by the County on remand is whether the constituents attributable to the release that occurred during or prior to the Calleri's ownership and which persisted at the site while Texaco owned the property, taken in conjunction with the other constituents at the site having similar effects on beneficial uses, are contributing to the current need for corrective action."

TECHNICAL COMMENTS

ACEH staff has reviewed the historical data from the 1986 subsurface investigation for the site and Cambria's June 16, 2003, assessment of site conditions and has determined the following regarding the environmental conditions at the site in 1986:

1) **Groundwater Analytical Data** - Limited groundwater analysis was performed at this site during the initial investigation. A review of data for the site indicates the following:

   - Up to 220 ppb Benzene, 390 ppb Toluene, and 680 ppb Xylene were detected in water samples collected from the site.
   - Water samples were not analyzed for TPHG.
   - Monitoring well were not installed in the area of or immediately downgradient of the location of the highest groundwater contamination detected, north/northwest of the pump islands.
   - Cambria states that hydrocarbons were not detected in groundwater from SB3. ACEH notes that soil and water samples were not collected nor analyzed from SB3,

located downgradient of the USTs. Therefore it cannot be determined whether or not groundwater was contaminated at that location.

2) **Lack of Depth-Discrete Soil Analytical Results** - Although strong petroleum odors were noted in almost all of the boring logs of the wells and borings installed around the 2nd generation USTs and the dispenser islands, no discrete soil samples were collected for chemical analysis. Soil samples collected were composited along the borehole for analysis as a single sample and were ND for total fuel hydrocarbons and BTX. These results cannot reliably represent soil contamination that may have been present at discrete depths.

3) **Soil and Groundwater Investigations Have Been Limited in Depth** - Soil borings were terminated at 15' bgs regardless of whether areas of obvious contamination were observed at the bottom of the borings. The boring logs indicated that obvious contamination was observed at completion depth thereby leaving the vertical extent of contamination undefined. Further, boring logs from subsequent investigations at the site, also of limited depth, indicate the presence of root holes, and increasing sand and gravel content at depths below 16' bgs, suggesting that a more permeable geology may underlie areas where contamination was observed. Thus, the site consultants' investigations may not have been conducted to sufficient depths to determine whether or not underlying more permeable strata may have been impacted. These strata could be preferred pathways for off site migration of dissolved contaminants.

A review of geologic logs from fuel leak sites in the vicinity of the subject site suggest that permeable units are present in the shallow aquifer beneath the subject site. Data from the Shell site at 15275 Washington Avenue document the presence of silty sand and sand at depths of 23' - 25' bgs to boring completion depths of 40' bgs. The likelihood of coarse-grained sediments occurring beneath the shallow fine-grained sediments at the subject site should come as no surprise and should have been anticipated by Cambria and other consultants working at the site; the existence of extensive coarse-grained sediments at depths below 20'-25' bgs throughout the East Bay Plain is well documented in the technical literature[1] resulting from coarse-grained alluvial deposition during the end of the Wisconsin ice age.

The shallow investigative work performed to date, along with the lack of a regional geologic evaluation in Cambria's assessment of site conditions, neglected to consider readily-available regional geologic data. This has resulted in a failure to investigate the uppermost preferential pathway for contaminant migration.

Cambria suggests that the low hydraulic conductivity of the clay and silty clay horizons of the shallow water bearing zone (limited to 20' bgs) will impede groundwater flow and reduce downgradient migration of petroleum hydrocarbons. Again, work performed at this site failed to investigate the uppermost preferential pathway for contaminant migration and there is not sufficient site data to support Cambria's argument.

Additionally, in support of their low hydraulic conductivity argument, Cambia suggests that downgradient migration of MTBE from the subject site is limited and the plume is defined based upon data from the "Preliminary Off-Site Soil and Groundwater Assessment," dated May 15, 2000, prepared by Enviro Soil Tech Consultants (ESTC). Not only was this work limited to shallow depths, a review of ACEH's case file for the subject site indicates that ACEH rejected the 2000 ESTC report for irregularities and non-

[1] Atwater, B.F., C.W. Hedel, E.J.Helley, 1977. Late Quaternary Depositional History, Holocene Sea-Level Changes, and Vertical Crustal Movement, Southern San Francisco Bay, California. U.S. Geological Survey Professional Paper 1014.

standard industry practices during performance of their field work. Hence the data collected from this report are not valid.

To date, vertical definition of source area(s) contamination and the possibility of off-site migration of dissolved contaminants in coarse-grained permeable strata remains undefined.

4) **Vapor Migration Pathway Not Adequately Assessed** - The SWRCB Order WQO 2002-0021 discusses the need to evaluate whether the effects of contaminants from the 2nd generation USTs in conjunction with commingled constituents from another release (i.e., from the 3rd generation USTs) will have similar effects on beneficial uses and are contributing to the current need for corrective action and/or cleanup at the site.

Typically, beneficial use refers to water sources and in the context of the SWRCB's order appear to reference dissolved phase contaminants in groundwater, and in particular MTBE. An additional risk element that was not considered by Cambria (and other consultants who performed work at the site) and the SWRCB (in their order) was migration of contamination via pathways other than the dissolved phase. Therefore, in addition to offsite migration of dissolved contaminants in more permeable strata underlying the shallow clay sediments (affecting beneficial uses); a second migration pathway, vapor migration (affecting human health & safety), must be investigated and evaluated at this site.

ACEH notes that residual NAPL or other high-concentration zones of contamination from the 2nd generation UST system could easily be present at the site within shallow, fine-grained sediments. Resultant migration of vapors, in particular the more toxic constituents of gasoline, emanating from residual contamination at the site could pose an inhalation risk at and/or in the vicinity of the site. Releases from the 2nd generation USTs may not have contained MTBE. But, if vapor migration of other constituents is significant, then the earlier release cannot be ignored since residual and possibly free-phase LNAPL from the earliest releases may still exist in fine-grained strata beneath the site. Data from the 1986 release (and data collected to date) are insufficient to evaluate whether the vapor migration pathway poses a potential threat at this site.

5) **Potential Impacts to Nearby Water Supply Wells Not Adequately Assessed** - Cambria states that groundwater flows westerly at the site and that they have identified no potential receptors downgradient of the site. ACEH notes that the groundwater flow direction has varied from northwest to southwest at the subject site and that there is an active irrigation well 330' southwest (downgradient) of the subject site (reference Chevron petition, Exhibit D, Cambria report dated October 1, 2003). It does not appear that this well has been tested for petroleum hydrocarbons.

As the uppermost preferential pathway for contaminant migration has not been investigated nor sampled at this site, and considering the very close proximity (330' downgradient) of a water supply well, the threat posed by this site from its history of unauthorized releases is unknown.

6) **Cambria's Attenuation Assessment is Unpersuasive** - ACEH has reviewed Cambria's "attenuation assessment" which calculated attenuation rates for TPHG and MTBE for releases from the 3rd generation USTs to estimate attenuation rates for Benzene and Toluene from the 2nd generation USTs. We have significant concerns regarding the scientific rationale Cambria used in their evaluation.

Cambria utilized a graphical method to calculate 1st order decay rates from recent concentration vs. time plots for TPHG and MTBE data from groundwater monitoring

wells. They use the resulting "attenuation rate" to estimate present day concentrations of Benzene and Toluene from an older (2nd generation UST) release and argue that this analysis shows that groundwater contamination resulting from the earlier release would have biodegraded to below MCLs by now. The logic of this approach and the interpretation of data appears flawed for the following reasons:

a) **Causes of Attenuation** - Cambia fails to present a thorough discussion of other possible causes for their apparent "attenuation rate" such as:

- **Source Depletion** - The decrease in contamination concentration could be due to source depletion where the source and the dissolved contaminant is simultaneously decreasing. This is especially relevant in a multi-component NAPL such as gasoline where the individual compounds are depleted according to their effective solubilities. As the mole fraction of the more soluble compound decreases, its effective solubility decreases resulting in declining source concentrations over time. In a downgradient monitoring well, this would be reflected in a plot as declining concentrations of the compound being present in samples from the well over time.

- **Lateral and/or Vertical Plume Migration** - The decrease in contamination concentration could be due to migration of the plume away from the monitoring wells. Dissolved plumes can move laterally and vertically away from a monitoring well with changes in groundwater flow direction. Concentration vs. time plots would show declining concentrations of the compound being present in samples from the well over time. The subject site does not have monitoring wells appropriately located and constructed to evaluate the effects of changing groundwater flow directions on concentrations of contaminants detected in samples collected from monitoring wells over time.

- **Biodegradation** – Declining concentrations could be due to biodegradation. However, biodegradation rates must be increasing over time (or the source depleting) at the monitoring locations to yield plots of decreasing concentrations in samples collected over time. Otherwise, if biodegradation is occurring at a constant rate, the concentrations of the compound in samples from the well would be constant over time (contaminant concentrations equal what is flowing into the monitoring point minus what is being degraded. Additionally, biodegradation would need to be demonstrated by several lines of evidence, such as measurement of by-products, consumption of electron acceptors, concentration versus distance plots using appropriately located and constructed monitoring wells.

b) **Applicability of Cambria's Attenuation Rates** - Cambria's application of their attenuation rates bears some additional considerations.

- **Rates for Apparent MTBE Attenuation** - If the decreases in MTBE concentration over time are due to preferential dissolution of MTBE from the residual NAPL (i.e., source depletion), then the calculated "rates" have nothing to do with biodegradation (as implied in Cambria's arguments). Therefore, it is inappropriate for Cambria to assume that they would be "conservative" in applying the "rates" to the other BTEX compounds. Further, MTBE dissolution rates can be quite rapid at some sites depending on the initial mole fraction and depletion mechanisms (e.g., the rate of groundwater flow through the residual source, whether or not SVE was occurring, ongoing releases, etc.).

The calculation of an attenuation rate for MTBE biodegradation is not as easily determined as has been done in the report. Very little data exists on this rate in regards to MTBE. 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. There is very little agreement in the literature about possible rates of MTBE transformation under anaerobic conditions. Rates for MTBE biodegradation would be site specific and must be actually measured using field tests and measured data.

- **Applying Rates from New Releases to Old Releases** - Cambria's application of "attenuation rates" from a later release to infer attenuation rates of an earlier release seems flawed. Biodegradation rates at a site can vary. Early releases can be slow to biodegrade simply because the community of hydrocarbon-degrading bacteria is small and not yet acclimated to degrading the contamination. Older sites with a history of releases could have microbial populations sufficient to allow biodegradation to occur more rapidly. Therefore, Cambria cannot assume that the reaction rates from the initial release would be as fast as the reaction rates that they calculated based on recent monitoring data.

- **Assumption that Attenuation Rates Would be Similar at Low Concentrations** - We note that the range of concentrations used by Cambria in their concentration vs. time plots are in the tens of thousands to hundreds of thousands of ppm range. Cambria assumes that their calculated 1st order decay rate is applicable at lower concentrations. However, rates of microbial reactions often decrease at lower concentrations following zero-order kinetic models. This is because the growth and activity of the hydrocarbon-degrading microbial communities decline as the substrate (i.e., the hydrocarbons) becomes limited. Therefore, it is inappropriate for Cambria to extrapolate a "rate" calculated at high concentrations to conditions where concentrations are much lower (i.e., near the MCL), where the low concentrations of the hydrocarbons may be rate limiting.

CONCLUSIONS

In considering the above discussion, in 1986 and now, there is not sufficient information to close the 1986 fuel leak case. RPs would be asked to perform additional soil and groundwater sampling and analysis, particularly in source areas, in order for ACEH to evaluate the site. The lack of sufficient technical information regarding the 1986 investigation prevents the case from meeting current case closure standards.

The gasoline release(s) from the 3rd generation UST system have commingled with the release(s) from the 2nd generation UST system. Residual NAPL or high levels of hydrocarbons from the 2nd generation UST system could be present at the site, stored in the shallow, fine-grained sediments. Consequently the RPs for the 2nd generation UST may have some responsibility for remedial activities currently needed at the site. How much of a contribution release(s) from the 2nd generation USTs make to the site in terms of corrective action and costs is uncertain. However, source area pollution from the 2nd generation UST system could contribute some component of cost to the current corrective actions, including remediation of the source area(s).

ACEH has designated Mr. Mohammadian as the primary responsible party for the subject site. Data from the site indicates that an unauthorized release(s) occurred during Mr. Mohammadian's ownership and operation of the USTs. Up to 340,000 ppb MTBE was detected in groundwater samples from the site in 1998. Currently, the lateral and vertical extent of MTBE and petroleum hydrocarbon contamination remains undefined. The elevated levels of MTBE require immediate investigation and remediation of the site, by the primary RP Mr. Mohammadian. Additional investigations should evaluate (1) the vapor pathway and (2) potential off-site migration in permeable strata that most likely underlie the site at relatively shallow depths. Therefore, ACEH considers Mr. Mohammadian as the primary RP who needs to perform the additional work at the site.

You may contact Mr. Barney Chan at (510) 567-6765 if you have any questions.

Sincerely,

Donna L. Drogos, P.E.
LOP Program Manager

cc: A. Levi, D. Drogos, B. Chan
Mr. Stephen Morse, SFRWQCB, 1515 Clay St., Ste. 1400, Oakland, CA 94502-6577
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Mr. M. Mohammadian, Cal Gas, 15595 Washington Ave., San Lorenzo, CA 94580
Mrs. Agnes Calleri, 10901 Cliffland Ave., Oakland, CA 94605
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8/9/04

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August 6, 2004

Ms. Terry Brazell
State Water Resources Control Board
PO Box 944212
Sacramento, CA 95814

Dear Ms. Brazell:

Subject: Petition Responses to Naming of Responsible Parties, RO0000374, Chevron #21-1285 / Cal Gas, 15595 Washington Avenue, San Lorenzo, CA 94580

This letter responds to the January 21, 2004, document of Jeffrey L. Podawiltz, Esq. representing ChevronTexaco regarding ChevronTexaco's response to ACEH's response to petition and to the January 20, 2004, Cambria Environmental Technology, Inc. (Cambria) letter. Alameda County Environmental Health (ACEH) has reviewed the above referenced documents and provides the following response.

ACEH has performed a through review of the technical data at this site. Our technical comments on Cambria's January 20, 2004, letter and the Jeffrey L. Podawiltz, Esq., January 21, 2004 document are presented below. In summary, we are not concluding that the site was or was not a problem in 1986, but that the information presented would have been inadequate to close the site both then and now. Rather, the data presented would have resulted in ACEH requesting additional investigation to characterize the nature and extent of contamination.

A number of significant anomalies and data gaps exist. These include:

- Lack of a site conceptual model (SCM) that summarizes what is known about the site, identifies data gaps, and proposes additional work to fill the data gaps,
- Reliance on soil samples from a "screening level" assessment that were known to be negatively biased,
- Insufficient high quality soil and groundwater samples and analyses,
- Lack of vertical definition of source area contamination,
- Insufficient areal extent and density of monitoring points,
- Failure to investigate the uppermost preferential pathway for contaminant migration resulting in shallow investigative work,
- Failure to investigate the risk to receptors from liquid, residual, dissolved, and vapor phase contamination associated with the site.

Whether or not historic releases at the site contribute to the current need for cleanup requires additional study, including forensic techniques to estimate the contribution of older releases to the current contamination problem at the site. Actual data from a soil and groundwater investigation that is overseen by ACEH is needed to determine the contributions to contamination (or lack thereof) by each of the responsible parties at this site.

COMMENTS TO CAMBRIA LETTER

1) 1986 Data Objectives and Quality and Appropriateness for Regulatory Decision Making

Cambria states in their January 20, 2004 comment letter that the 1986 work was performed as a "baseline assessment in 1986 to determine site conditions and identify potential environmental liabilities prior to selling the property" and "that the investigation objectives were to screen the site for potential liabilities to support a property transaction and not for a regulated environmental investigation." As this work was done for a purpose other than regulatory decision-making, lower standards were apparently applied to the investigation technique resulting in the collection of inferior, poor quality data (reference composite soil samples).

Cambria acknowledges the 1986 work was of a lower standard for a property screening assessment and not for a regulated environmental investigation. Yet all of Cambria's technical arguments are based upon this inferior data that they readily acknowledge was never collected in a manner sufficient for regulatory decision-making. The 1986 data is insufficient to make decisions regarding the nature of contamination, the lateral and vertical extent of contamination from the release, site closure (then or now), or to make any regulatory judgments regarding the need for remediation for the contaminants of concern (COCs) at this site.

2) Groundwater Analytical Data

ACEH maintains that only a limited screening investigation of groundwater was performed at the site in 1986. Monitoring wells were not installed in the area of or immediately downgradient of the location of the highest groundwater contamination. This screening investigation was limited in depth and areal extent, with an insufficient density of monitoring points. Also, analysis for all COCs was not performed. Regulatory decisions cannot be made on limited data from a screening investigation.

3) Lack of Depth-Discrete Soil Analytical Results and Observations of Strong Petroleum Odors

Strong petroleum odors were noted by the geologist during soil sample collection. Three depth-discrete samples were composited into one sample for analysis. Subsequent analyses detected what Cambria describes as only low levels of contamination. The strong odors observed during sample collection and resulting concentrations in composited samples that are inconsistent with field observations of contamination are indicative of the samples becoming negatively biased, i.e., volatilization of the target compounds from the samples. The fact that the geologist collecting the samples noted the negative bias by documenting strong odors supports the fact that there was a significant loss of the volatile components during sample collection. Then the analysis for target compounds was performed after additional volatilization during the compositing process causing further loss of target compounds.

Regulatory agencies look at all the data when evaluating a site. That is why we take into account field observations during drilling in combination with analytical measurements. How much of a loss was caused by negative bias in these samples we do not know, as the data is not consistent with field observations. Also, this initial data from the screening level investigation cannot be exclusively relied upon for regulatory decision-making.

4) Soil and Groundwater Investigations Have Been Limited in Depth

Cambria states that it is unclear as to the role that permeable zones, at depths the consultants failed to anticipate and subsequently investigate, play in migration of hydrocarbon contamination. ACEH's December 1, 2003, letter provided a detailed but basic explanation (Technical Comment 3) of geologic and hydrogeologic considerations for contaminant transport at this site along with an appropriate technical reference.

The presence of permeable zones provide pathways for migration of contaminants from a site. Factors such as water level fluctuations (particularly during times of drought in California such as experienced in the 1980s), gradient changes, local hydrogeology, groundwater extraction, groundwater recharge activities (natural and artificial), and the presence of conduits, can significantly alter groundwater flow conditions and allow migration of contamination to permeable zones. The shallow investigations performed to date at the site have failed to investigate the uppermost preferential pathway (regionally documented as a permeable zone) for contaminant migration. The failure to investigate to adequate depths has left the vertical definition of source area(s) contamination and the possibility of off-site migration of dissolved contaminants in coarse-grained permeable strata undefined.

5) Vapor Migration Pathway Not Adequately Assessed

Cambria uses data from the initial screening assessment to evaluate the vapor migration pathway. They also use only the groundwater data for their evaluation and for an assumed depth to water of 10' bgs.

Any comparison to ESLs would need to be performed using reliable data collected appropriately from an investigation designed to define the extent of contamination at the site. The data used in Cambria's assessment is not appropriate for regulatory decision-making since there is no assurance that monitoring wells were installed within the contaminant plume; the screening investigation was limited in depth and areal extent, with an insufficient density of monitoring points; analysis for all COCs was not performed, and the investigation was merely a screening level assessment.

Additionally, there is a higher risk when depth to water is shallower than 10' bgs. Depth to water has been as shallow as 4.5' bgs site leaving this risk unevaluated at the site.

Further, to be a complete evaluation of the vapor pathway, appropriately collected soil data from an investigation that defines the lateral and vertical extent of contamination would need to be used. But soil data from this site is suspect as discussed previously (screening level assessment, with samples composited and negatively biased due to volatilization in samples).

6) Potential Impacts to Water Supply Wells Not Adequately Assessed

A water supply well is present 330' downgradient of the site. Cambria states "this well is not at risk from the low hydrocarbon concentration in groundwater in 1986 prior to Texaco's tenure at the site." ACEH

notes that this well has not been sampled for the COCs at the site and that Cambria has no data to substantiate their conclusion.

Water supply wells of this size are especially vulnerable to impacts from nearby contamination sites due to the low volume of water they pump and the subsequent limited dilution of contamination in the pumped water (as opposed to a municipal supply well pumping 1000s of gpm). There are numerous documented cases of petroleum hydrocarbon contamination, including benzene, in small water supply wells. This well's very close proximity to the gas station makes it vulnerable to contamination from the subject site.

The 1986 screening level investigation consisted of an insufficient density of monitoring points, which were limited in depth and areal extent, and produced low quality data unsuitable for regulatory decision-making. The insufficiencies of this investigation along with the lack of analytical testing results from the water supply well have left the assessment of the potential risk to the downgradient receptor unknown.

7) Cambria's Attenuation Assessment is Unpersuasive

ACEH had significant technical concerns regarding the approach Cambria used in their attenuation assessment and ACEH does not consider Cambria's approach to be conservative at all. Cambria deems their approach conservative by assuming attenuation rates for BTX would be no faster than for current TPHG and MTBE concentrations because BTX attenuation rates "far higher" than MTBE attenuation rates.

However, the attenuation rate for BTX could have been slower. Biodegradation rates at a site can vary and early releases can be slow to biodegrade because the community of hydrocarbon-degrading bacteria is small and not yet acclimated to degrading the contamination. Older sites with a history of releases could have microbial populations sufficient to allow biodegradation to occur more rapidly. Therefore, Cambria cannot assume that the reaction rates from the initial release would be as fast as the reaction rates that they calculated based on recent monitoring data. Further, recent releases of MTBE could exhibit a fast apparent "rate" due to preferential dissolution from the source.

ACEH's December 1, 2003, letter also discussed the difficulties of calculating an MTBE attenuation rate, referencing studies published in the literature that show very little agreement regarding said rates under aerobic and anaerobic conditions at research sites in California. Rates for MTBE biodegradation would be site specific and need to be measured using field tests and measured data. Cambria ignores the technical literature on this subject and uses inappropriately based assumptions and gross oversimplifications in their attenuation assessment.

Lastly, Cambria states that current hydrocarbon concentrations are attenuating but have no data to demonstrate whether the plume is shrinking or not. Stabilization or reduction in plume length, rather than mere attenuation by dilution and continued plume migration, has not been demonstrated for this site.

8) NAPL

Cambria states that there was no evidence of NAPL in the 1986 screening investigation and appears to suggest that NAPL from a 1986 or earlier release at the site was not and is not present at the site. ACEH again notes that the 1986 screening investigation was performed to limited depths and areal extent, with an insufficient density of monitoring points. Data from this investigation was not sufficient to identify source areas, determine the extent of contamination, nor identify the presence or absence of NAPL. The

1986 investigation failed to gather this data because its objectives were for screening the site for a property transaction, not for a regulated environmental investigation, thus lower standards were applied to the investigation technique resulting in the collection of inferior, poor quality screening data.

COMMENTS TO JEFFERY L. PODAWILTZ ESQ. LETTER

The conclusions of the Podawiltz document are that there is overwhelming evidence from a 1986 screening investigation to 1) close the 1986 fuel leak case; and 2) determine how much of a contribution releases from the 2nd generation USTs make to the site in terms of corrective action and costs.

ACEH maintains that there is insufficient data from the 1986 work to make regulatory decisions regarding immediate case closure or amounts of corrective actions including cleanup. ACEH notes that the 1986 work was performed as a "baseline assessment in 1986 to determine site conditions and identify potential environmental liabilities prior to selling the property" and "that the investigation objectives were to screen the site for potential liabilities to support a property transaction and not for a regulated environmental investigation" (reference Cambria January 20, 2004 letter).

Podawiltz identifies the following issues as overwhelming evidence:

- No hydrocarbon contamination was detected in soil samples taken in 1986

ACEH notes that the "screening level assessment" resulted in the collection of low quality, inferior screening level data with soil samples composited along the entire length of boreholes. Also soil samples exhibited a negative bias with volatilization of target compounds. The analytical results for soil samples biased in multiple ways yielded results inconsistent with field observations. Basing regulatory decision-making on incomplete and suspect data is not appropriate at contamination sites.

- Two groundwater samples showed low level contamination, and that level of contamination, almost 18 years later, would not contribute to the need to remediate the site.

ACEH notes that other grab groundwater samples (SB-1) showed higher concentrations of contamination, suggesting that either the permanent wells were installed in the wrong location to detect groundwater contamination, or samples from the wells were negatively biased by dilution in long screen wells. Groundwater samples were not collected downgradient of the areas noted to be contaminated. Also, the investigation performed was too shallow to adequately investigate the uppermost preferential pathway for contaminant migration identified in ACEH's review of the regional geologic and hydrogeologic data. The shallow investigations left a primary pathway of potential contaminant migration unassessed.

- The low level of hydrocarbon concentrations from the pre-1986 release would not have posed a danger in 1986 and using a conservative approach to attenuation levels, would be virtually undetectable today.

ACEH notes that the screening level assessment performed in 1986 did in no way determine the concentration and lateral and vertical extent of contamination at the site nor generate data sufficient to evaluate the risk posed by the site. Further, "a conservative approach to attenuation levels" was, in our opinion, not performed. As discussed in our December 1, 2003 letter, the attenuation assessment

performed by Cambria could have easily over estimated the attenuation rate of compounds released prior to 1986.

- The sole cause of remediation work at the site is the post-1986 release of MTBE and other contaminants.

ACEH notes that sufficient investigation to determine the nature and extent of contamination from source areas at this site was not performed. Residual pollution including NAPL from earlier releases could be present at the site particularly if historic water levels were lower at the site during its use as a gasoline station (such as in periods of drought during the 1980s) resulting in submerged source areas. Investigations performed to date have not considered nor determined the vertical extent of contamination in the source areas.

Data sufficient to evaluate potential vapor phase risks posed by the releases at the site were not collected during the 1986 screening investigation therefore this risk remains unevaluated.

Lastly, MTBE was used in U.S. gasoline supplies as early as 1973. Therefore, broad assumptions regarding the release date of MTBE at this site by ChevronTexaco's attorney should not be made.

If you have any questions please contact Mr. Barney Chan at (510) 567-6765.

Sincerely,

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