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March 8, 2013

Mr. Pete Mizera
State Water Resources Control Board
1001 I Street, 16th Floor
Sacramento, CA 95814
(Sent via E-mail to: DFA-USTClosures@waterboards.ca.gov)

Subject: **Comment Letter - Chevron #9-0329 Case Closure Summary**, Revised Notice of Opportunity for Public Comment; Underground Storage Tank Cleanup Fund Case Closure Recommendation; Claim Number 6001; Fuel Leak Case No. RO0000269; Global ID # T0600101885; Chevron #9-0329, 340 Highland Avenue, Piedmont, CA 94611

Dear Mr. Mizera:

Alameda County Environmental Health (ACEH) staff has received the Underground Storage Tank Cleanup Fund's (USTCF's or Fund's) *Revised Notice of Opportunity for Public Comment* (Revised Notice) dated January 9, 2013, for the subject site. This Notice supersedes two previous notices for public comment sent by the USTCF including the *Notice of Opportunity for Public Comment* dated August 31, 2012, and the *Revised Notice of Opportunity for Public Comment*, dated September 5, 2012. The purpose of the Revised Notice is to inform interested parties of 1) the USTCF's intent to recommend closure of the subject site to the California State Water Resources Control Board's (SWRCBs) Executive Director rather than at a future Board meeting as previously intended, and 2) the sixty day public comment period on the Fund's *UST Case Closure Summary Report* (Case Closure Summary), dated December 18, 2012. According to the Revised Notice, written comments to the SWRCB on the Fund's Case Closure Summary must be received by 12:00 noon on March 11, 2013. This letter herein transmits ACEH's comments.

Requirements for Investigation and Cleanup of Unauthorized Releases from USTs

ACEH reviewed the USTCF's *UST Case Closure Summary*, dated August 31, 2012, signed by Lisa Babcock the Fund Manager, and the *UST Case Closure Review Summary Report*, dated December 18, 2012, prepared by Pat Cullen with the Sullivan International Group (a United States Environmental Protection Agency Contractor), and also signed by Lisa Babcock, (including *Attachment 1: Compliance with State Water Board Policies and State Law* (i.e., the SWRCB's Low-Threat UST Case Closure Policy Paper Check List), and *Attachment 2: Summary of Basic Site Information (Conceptual Site Model)*) in conjunction with the case files for the above-referenced site. A complete record of the case files (i.e., regulatory directives and correspondence, reports, data submitted in electronic deliverable format, etc.) can be obtained through review of both the SWRCB's Geotracker database, and the ACEH website at <http://www.acgov.org/aceh/index.htm>.

ACEH has additionally reviewed the requirements for investigation and cleanup of unauthorized releases from USTs contained in the following resolutions, policies, codes, and regulations:

- SWRCB Resolution 2012-0062, *Directing Additional Actions to Improve the UST Cleanup Program*, adopted by the SWRCB on November 6th, 2012;
- SWRCB *Plan for Implementation of Low-Threat Underground Storage Tank Case Closure Policy and Additional Program Improvements*, adopted by the SWRCB on November 6, 2012;

- SWRCB Resolution 2012-0016, *Approve a Substitute Environmental Document and Adopt a Proposed Water Quality Control Policy for Low-Threat Underground Storage Tank Case Closure*, adopted on May 1, 2012; and effective August 17, 2012;
- California Code of Regulations (CCR) Title 23, Article 5 and Article 11, UST Regulations, as amended and effective July 1, 2011;
- California Health & Safety Code (HS&C) Sections 25280-15299.8, Underground Storage of Hazardous Substances, as amended on January 1, 2011;
- SWRCB Resolution 2009-0081, *Directing Additional Actions to Improve Administration of the UST Cleanup Fund and UST Cleanup Program*, adopted November 17, 2009;
- SWRCB Resolution 2009-0042, *Actions to Improve Administration of the UST Cleanup Fund and UST Cleanup Program*, adopted May 19, 2009;
- SWRCB Resolution 1992-0049, *Policies and Procedures for the Cleanup and Abatement of Discharges under California Water Code Section 13304*, as amended on April 21, 1994 and October 2, 1996.

Application of Case Review Tools

ACEH's case closure evaluation was also guided by the application of the principles and strategies presented in the *Leaking Underground Fuel Tank Guidance Manual* (CA LUFT Manual), dated September 2012, developed by the SWRCB "...[t]o provide guidance for implementing the requirements established by the Case Closure Policy" (Low Threat Closure Policy or LTCP) and associated reference documents including but not limited to:

- *Technical Justification for Vapor Intrusion Media-Specific Criteria*, SWRCB dated March 21, 2012;
- *Technical Justification for Groundwater Media-Specific Criteria*, SWRCB dated April 24, 2012;
- *Technical Justification for Soil Screening Levels for Direct Contact and Outdoor Air Exposure Pathways*, SWRCB dated March 15, 2012;
- *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air, Final DTSC*, dated October, 2011;
- *Evaluating LNAPL Remedial Technologies for Achieving Project Goals, Interstate Technology Regulatory Council*

ACEH also utilized other case review tools developed by the SWRCB to aid in determining compliance of the subject fuel leak site with LTCP criteria, including both the paper *Policy Checklist* (available at www.waterboards.ca.gov/ust/docs/checklist.pdf) and the electronic version of the *Policy Checklist* (available on the SWRCB's GeoTracker website at <http://geotracker.waterboards.ca.gov>). While ACEH embraces the Policy and has found the CA LUFT Manual to be a valuable tool, we are concerned that the brevity of the SWRCB checklists can result in inaccurate conclusions regarding recommendations for case closure and uncertainty regarding the decision making process. Therefore, ACEH staff utilizes an enhanced LTCP checklist entitled *Data Gap Identification Tool* (DGIT) that integrates the requisite level of questioning to enable consistent application of the LTCP, ensure that decisions are founded in appropriate technical basis, identify impediments to closure, improve the efficiency of the UST cleanup program, and document the decision making process as transparently as possible for all interested parties.

Our evaluation of the subject site is presented in the subsequent pages of this document.

Updated Summary of ACEH's Review of the USTCF's UST Case Closure Summary

The results of ACEH's case closure review, indicates the USTCF's closure recommendations under the LTCP to be lacking an appropriate technical basis. ACEH does not agree with the USTCF's technical analysis presented in the *UST Case Closure Summary*, dated August 31, 2012, and the *UST Case Closure Review Summary Report*, dated December 18, 2012. ACEH's review indicates that the

Conceptual Site Model (CSM) is deficient and that the site is uncharacterized in a number of elements. Our concerns include but are not limited to potential impacts to a local creek and public park due to the mismanagement and resultant discharge of highly contaminated groundwater as evidenced by observed sheen or light non-aqueous phase liquid (LNAPL) that has daylighted (or surfaced) at the site; potential and known impacts to existing domestic and irrigation wells downgradient of the site within 1,000 feet of the site; lack of identification of an apparent diesel source; lack of recognition that the diesel contamination trend is currently undergoing an order-of-magnitude increase (even with silica gel cleanup); lack of understanding the implication for naphthalene and polycyclic aromatic hydrocarbons (PAHs) concentrations due to the presence of diesel contamination, and only addressing these contaminant concentrations in gasoline; lack of characterization of secondary sources, and of shallow soil, including analysis for the analytical suite of chemicals associated with unauthorized releases of waste oil and diesel fuel, (including PAHs and naphthalene); the intermittent presence of nuisance conditions as defined by Health and Safety Code section 25296.15 at the site; and the lack of Site Management requirements for potentially existing engineering controls that might manage (the point of discharge is unknown) the nuisance conditions at the site. Details of our analysis are provided in the narrative section below and in the accompanying attachments including the *Low-Threat UST Case Closure Policy Data Gap Identification Tool* (DGIT).

Updated ACEH's Review of the USTCF's Compliance with Public Notification Requirements

While the USTCF has made the above referenced Case Closure Summary reports available for public comment on the SWRCB's website, ACEH is unable to assess the completeness of the public notification list due to the lack of disclosure of the list of recipients. According to the LTCP Notification Requirements "...municipal and county water districts, water replenishment districts, special act districts with groundwater management authority, agencies with authority to issue building permits for land affected by the petroleum release, and owners and occupants of all parcels adjacent to the impacted property shall be notified of the proposed case closure and provided a 60 day period to comment." ACEH requested a copy of the list on February 8, 2013 from the USTCF staff; however, a list has not been provided to ACEH as of the date of this letter. Although the USTCF is recommending case closure, ACEH understands it is still considered the lead agency for the site, and therefore without knowledge of the notification process ACEH is unable to verify that all appropriate members of the public have been notified. This may be of importance based on the previous public notification process for this site as it appears the actual site property owner was not notified nor were all appropriate vicinity well owners or other potentially interested parties, including several downgradient public schools, as required by the LTCP, CCR Chapter 16, and Chapter 6.7 of the H&SC.

Additionally, based on previous experience at this site, the USTCF may not have conducted public notification requirements in accordance with the SWRCB and Regional Water Quality Control Board's April 2005 guidance document entitled *Final Draft Public Participation at Cleanup Sites*. According to this document, "...the level of public participation effort at a particular site should be based on the site's threat (to human health, water quality, and the environment), the degree of public concern or interest in site cleanup, and any environmental justice factors associated with the site. There may be more public concern or interest about a site when: contaminants have migrated or are likely to migrate off-site...."

Updated Case Closure Analysis Using the LTCP General and Media Specific Criteria

ACEH's case closure analysis is provided in the updated narrative section below and in the following attachments, including the updated DGIT checklist (Attachment 8).

General Criteria a: The unauthorized release is located within the service area of a public water system.

The water provider is the East Bay Municipal Utility District; however, the City of Piedmont Park (Piedmont Park), is located immediately across Highland Avenue from the subject site, has a fully functioning irrigation well. The park well is located approximately 580 feet from the subject site's groundwater monitoring well C-2 in a down- to cross-gradient position. At least four groundwater

sampling events of the park well have occurred since 2007. On January 17, 2007 260 micrograms per liter ($\mu\text{g/l}$) of total petroleum hydrocarbons as diesel (TPHd), 0.7 $\mu\text{g/l}$ of toluene, and 0.5 $\mu\text{g/l}$ of total xylenes were detected in groundwater samples collected from the park well. During two subsequent sampling events conducted on March 25, 2011 and May 4, 2011, no contaminants were detected above laboratory reporting limits. However, on May 22, 2012 the well was resampled in connection with the City of Piedmont site (Fuel Leak Case No. RO0003047), and 52 $\mu\text{g/l}$ of total petroleum hydrocarbons as gasoline (TPHg) was detected. The source location of this contamination has not been determined. This well is not screened in a shallow zone, consequently the well documents hydrocarbon impacts at depth.

A recent well survey has not been conducted; however, based on a 1998 well survey a minimum of three additional wells appear to be present downgradient within 1,000 feet of the release, including two classified as domestic. Groundwater from these wells has not been tested to determine if they have been impacted by the petroleum release at the subject site. Additional water supply wells are understood to have been installed since 1998 in the general vicinity, but they have not been considered in an updated CSM to determine if they are located within a 1,000 foot distance as utilized by the LTCP.

General Criteria b: The unauthorized release consists only of petroleum.

The unauthorized release consists of petroleum hydrocarbons originating from gasoline USTs and waste oil USTs. An apparent diesel source remains unidentified at the site. Standard waste oil analytes do not appear to have been conducted at the time of removal of the waste oil UST.

General Criteria c: The unauthorized (“primary”) release from the UST system has been stopped.

The primary source has not been identified; however, three releases have been identified from soil and groundwater analytical concentration trends collected from the site’s groundwater monitoring wells, including:

- A pre-1983 non-oxygenated fuel release (LNAPL discovered in well C-2 during well installation and development);
- Increasing TPHg and benzene trends in well C-2 that peaked in 1993 – 1995; and
- Increasing methyl tertiary butyl ether (MTBE) concentration trends that peaked in 1997.

A fourth release to soil is documented from soil samples collected during the waste oil UST removal conducted in 1999; however, required analysis for waste oil constituents including motor oil and related compounds (chlorinated volatile organic compounds [VOCs], semi-volatile organic compounds [SVOCs], metals, polychlorinated biphenyl [PCB], creosote, etc.) do not appear to have been included in analytical testing.

The source of recently discovered diesel contamination has not been located, investigated, or characterized. Diesel contamination was discovered when ACEH requested diesel to be analyzed for the first time at the site in an attempt to eliminate the site as a source of the diesel contamination in the City of Piedmont well. The concentration trend for diesel is increasing, even with the use of Silica Gel Cleanup (5,700 to 11,000 $\mu\text{g/l}$).

Based on concentrations of contaminants in groundwater, the gasoline release has been stopped. Residual soil contamination appears to be the source of on-going groundwater contamination; however the gasoline soil source has not been characterized.

General Criteria d: Free product has been removed to the maximum extent practicable.

LNAPL was reported at a thickness of $\frac{3}{4}$ -inch (0.06 feet) at the time of development of well C-2. However, as onsite wells appear to be submerged by between 4 to nearly 7 feet (see discussion in General Criteria e), potentially up to 7 feet of product may have been present at that time, and not been detected. Analytical data indicates that contaminant concentrations are on a declining trend at the site; however, technical literature, including that cited in the SWRCB’s CA LUFT Manual, suggest that submerged wells do not produce representative groundwater concentrations or determine the thickness of LNAPL.

The August 2012 *UST Case Closure Summary* notes the November 16, 2006 Cambria CSM update

hypothesizing that the UST tank pit is filled with ponded groundwater as a result of the excavation of the pit into bedrock (i.e., creating a bathtub effect). This interpretation, which is not validated by available soil bore lithologic data, would also indicate that well C-2 is submerged by up to 7 feet. A well in this condition would not be capable of collecting required representative groundwater or LNAPL characterization data. In submerged well conditions LNAPL may be excluded from well entry by the refilling from the most productive (permeable) water zone (see cited technical literature, including that cited in the CA LUFT Manual). The presence of sheen and odor observed in groundwater monitoring wells as recently as the May 2012 groundwater sampling event indicate substantial residual impact to soil. ACEH notes that the shallow source zone remains uncharacterized in multiple source areas zones as required by the policy and therefore does not meet the LTCP requirements.

The August 2012 *Case Closure Summary* also indicates that well C-2 dewateres with purging on a *regular basis*. Data indicates that the well has been dry during that the last three sampling events (September 2011 to March 2012). These conditions represent a change in groundwater conditions not previously captured at the site. This statement has been retracted in the December 2012 *Case Closure Summary Report*; however, these conditions are again not captured in the USTCF CSM. These conditions were again present in the September 2012 sampling event, and indicate that groundwater is not artesian as stated in the most recent USTCF CSM. A complete review of past groundwater monitoring events indicates that the well has now dewatered five times out of the 40 events that have been conducted since January 1995 (The majority of groundwater events conducted prior to the January 1995 date do not provide well purging details).

Please refer to Attachment 1, *Technical References Table* for a list of relevant state-of-the-practice technical references for appropriate well screen selection for LNAPL determination, and the significance of the absence of LNAPL in a well (and other relevant reference topics).

General Criteria e: A conceptual site model has been developed.

While a CSM was produced in 2003 and updated slightly in 2006, the CSM does not identify or address the following inconsistencies or data gaps that have been identified in more recent data as per the guidance presented in the SWRCB CA LUFT Manual:

- Identification of and discussion of well conditions. As discussed above, submerged wells are incapable of collecting representative groundwater or LNAPL thickness measurements. Data documenting submerged conditions in wells at the site did not become available until February 2008, and thus this condition was not evaluated in the 2003 CSM and 2006 CSM update. Available generic (non-specific) well construction details indicate wells C-1 to C-4 were installed to depths of 15 feet below ground surface (bgs), with well screens installed between 5 and 15 feet bgs; however, field well depth measurements indicate these wells were installed to 17 feet bgs, thus the screen may be installed between 7 to 17 feet bgs, (implied by selection of a standard screen section length). Although no well construction details are available for wells C-1, C-2, and C-3. Given that depth to water at the site ranges from 0.25 to 1.4 feet bgs, the site wells may consequently be submerged 6 to 7 feet. The exception to these apparently submerged water-table wells, is well MW-6 which was artesian shortly after installation and was therefore decommissioned; no other site wells have been artesian. The November 16, 2006 Cambria CSM update report states that there appears to be no hydraulic connection between well MW-6 and other site wells. This further suggests that well C-2 acts more as a submerged water-table well. Well C-2 is also currently measured to be 11.12 feet in depth and therefore contains up to approximately 6 feet of sediment. Additionally as the USTCFs analysis of the wells has changed from water-table to artesian in the two above referenced Case Closure Summary reports; it would appear the wells should undergo a determination of the actual well condition. See Attachments 2, 3, and 4 for well construction details.
- Source area characterization. The upper five feet in a source area remains uncharacterized. A review of boring logs reveals inherent inconsistencies between soil bores C-A and C-E, which describe contaminated fill sand with a moderate to strong chemical odor between the depths of 2 and 12 feet and the presence of brick and shell fragments, and the 2012 geophysical survey which did not identify any fill soil or USTs in the same location of the site. Concentrations up to 1,600 milligrams per kilogram (mg/kg) TPHg, and 0.11 mg/kg benzene were detected in soil samples collected from the contaminated fill sand source area at depths of 5.5 feet bgs and

deeper. A concentration of 220 mg/kg TPHg and 0.051 mg/kg benzene were detected in soil samples collected from bore C-E at 11.5 feet bgs. This is a data gap that affects the appropriate categorization of the site within the LTCP.

- Removal and off-site disposal of impacted soil. The August 2012 *UST Case Closure Summary* acknowledged that an unknown number of USTs of unknown size appear to have been removed from the site, based on the July 2012 geophysical survey report. The December 2012 *Case Closure Summary Report* is silent regarding the number of former USTs, simply stating they have been removed in 1989. Regardless, the removal and offsite disposal of soil associated with these USTs is not documented, would not be expected in the pre-environmental era, and the backfilled soil (a source area) is uncharacterized. This is a data gap that affects the appropriate categorization of the site within the LTCP. Both Case Closure Summaries state that impacted soil was removed from the site; this is not documented in the case file, and is contrary to standard practices in the pre-environmental era.
- Diesel source. Diesel has not previously been associated with the site, however, has been detected in well C-2, even with the use of silica gel cleanup, at elevated concentrations. Results of the most recent sampling event in September 2012, indicate diesel is undergoing an order-of-magnitude concentration increase, (from 5,700 to 11,000 µg/l), even with the use of silica gel cleanup. The USTCF has previously misstated that the City of Piedmont site is upgradient of the subject site and is the source of the diesel contamination. The City of Piedmont site is not up-gradient of the site, but is down-gradient to cross-gradient and thus cannot be the source of the diesel contamination. Well C-5 is positioned between the two source areas of the two sites, is not submerged to the extent of well C-2, and is nondetectable for TPHd. The source of the TPHd has not been located, nor has the extent of soil contamination been characterized. The discovery of a debris pit at the upgradient edge of the subject site by the geophysical survey may be a potential source for this contamination and remains uncharacterized. This is a LTCP data gap.
- Waste oil USTs. The presence of analytes known to be associated with waste oil USTs do not appear to have been previously investigated in soil or groundwater. Concentrations up to 1,600 mg/kg of total petroleum hydrocarbons as motor oil (TPHmo), 190 mg/kg TPHd, 4.2 mg/kg TPHg, 4.0 mg/kg MTBE; and non-detect for benzene, toluene, ethylbenzene, and xylenes (BTEX) (collected at unknown depths) have been detected in soil samples; however, chlorinated VOCs, SVOCs, metals, PCB, creosote, etc. have not been included in the analytical suite. This is a LTCP data gap.
- Naphthalene concentrations. The *Risk Criteria* section of both Case Closure Summaries dismiss the lack of naphthalene data as relevant due to the belief that the release is entirely gasoline, and thereby fails to recognize the presence of TPHd and TPHmo detections and the direct effect on naphthalene concentrations. This is a LTCP data gap.
- Disposal of contaminated groundwater. The disposal method associated with the onsite surfacing of potentially significantly contaminated groundwater or disposal of "Grease Interceptor" drain liquids has not been addressed. Discharge to both sanitary sewers and storm drains has been suggested. Disposal of the liquids to the storm drain appears to be present based on photos in Attachments 5 & 6. Discharge to Piedmont Creek directly downgradient at an approximate distance of 336 feet has not been eliminated and would be characterized as either a nuisance or an ecologic concern under the LTCP. ACEH notes the interceptor trench is not called a French Drain, for control of nuisance waters, but rather a Grease Interceptor drain, implying it was installed to capture "Grease" (assumed to be sheen or thick LNAPL, etc.) that was observed in the discharging waters as of late 2006. Based on available data, it is unclear if this is an engineering control as the point of discharge is unknown (storm drain or sanitary sewer?). At a minimum this site will require an institutional control for this condition potentially with periodic regulatory review, if case closure is considered for this site.

General Criteria f: Secondary source removal has been addressed. The secondary source is the petroleum-impacted soil, free product, or groundwater that acts as a long-term source releasing contamination to the surrounding area. Unless site conditions prevent secondary source removal (e.g. physical or infrastructural constraints exist whose removal or relocation would be technically or economically infeasible), petroleum-release sites are required to undergo secondary source

removal to the extent practicable.

Secondary source zone removal has not been conducted nor addressed at the site. The USTCF states in both Case Closure Summaries that impacted soil has been removed from the site. To date the removal of contaminated soil from the site has not been documented. The disposal of soil excavated during the removal of the waste oil UST remains undocumented. The disposal of liquids associated with this action is documented and manifested. Reuse of contaminated soil is presumed without required documentation and is considered a data gap.

In the August 2012 *UST Case Closure Summary* the USTCF acknowledged that an unknown number of USTs of unknown size appear to have been removed from the site, based on the July 2012 geophysical survey report. As noted above in General Criteria e, the December 2012 *UST Case Closure Summary* is silent on this issue. The removal and offsite disposal of soil associated with these USTs is not documented, and would not be expected in the pre-environmental era. The backfilled soil (in a source area) remains uncharacterized. This is a data gap under the LTCP.

General Criteria g: Soil or groundwater has been tested for MTBE and results reported in accordance with Health and Safety Code section 25296.15.

Soil and groundwater has been tested for MTBE.

General Criteria h: Nuisance as defined by Water Code section 13050 does not exist at the site.

Based on surfacing of potentially significantly contaminated groundwater as documented in the attached photographs (previously discussed in General Criteria e, Attachments 5 & 6), public nuisance factors can and appear to still be present at the site. Pavement at this location has been repaired; however, discharge to the storm drain system and the local creek, appear to be present. Without functioning engineering and institutional controls, and based on the definition of nuisance contained in Water Code section 13050, nuisance issues appear to be present at the site. This is a LTCP data gap unrecognized by the USTCF CSM.

Media-Specific Criteria 1. Groundwater: If groundwater with a designated beneficial use is affected by an unauthorized release, to satisfy the media-specific criteria for groundwater, the contaminant plume that exceeds water quality objectives must be stable or decreasing in areal (sic) extent, and meet all of the additional characteristics of one of the five classes of sites listed in the Policy. A plume that is "stable or decreasing" is a contaminant mass that has expanded to its maximum extent: the distance from the release where attenuation exceeds migration.

While gasoline contaminant concentrations in groundwater appear to suggest a declining trend at the site, submerged wells cannot produce representative groundwater concentrations or determine the thickness of LNAPL (See Attachment 1; Technical References Table, and the CA LUFT Manual). Additionally recently discovered and uncharacterized diesel contamination has undergone an order-of-magnitude increase in the most recent sampling event. In the UST Case Closure Summary, the USTCF staff selected Class 5 of the groundwater-specific criteria to demonstrate compliance with the LTCP. This consists of a review of site-specific conditions coupled with a finding that the contaminant plume poses a low threat to human health and safety, and safety to the environment. The USTCF's review and selection of this criteria is based on an incomplete data set (uncharacterized soil in the upper 5 feet as required by the policy), was generated from wells with screens incapable of answering the requisite question (LNAPL or valid groundwater concentrations due to inappropriately screened wells as discussed in multiple technical references, including the CA LUFT Manual), and without the recognition of the potential existence of an existing engineering control to minimize the groundwater plume length. Existing characterization of the site does not support this conclusion.

Media-Specific Criteria 2. Petroleum Vapor Intrusion to Indoor Air: The low-threat vapor-intrusion criteria in the Policy apply to release sites and impacted or potentially impacted adjacent parcels when: (1) existing buildings are occupied or may be reasonably expected to be occupied in the future, or (2) buildings for human occupancy are reasonably expected to be constructed in the near future.

The site is an active gasoline service station, and the groundwater flow path does not suggest impacts to adjacent parcels by vapor concentrations derived from groundwater; however, the presence of onsite free product has not been properly evaluated at the site.

Media-Specific Criteria 3. Direct Contact and Outdoor Air Exposure. Release sites where human exposure may occur satisfy the media-specific criteria for direct contact and outdoor air exposure and shall be considered low-threat if they meet any of the following:

- a. Maximum concentrations of petroleum constituents in soil are less than or equal to those listed in Table 1 for the specified depth below ground surface (bgs). The concentration limits for 0 to 5 feet bgs protect from ingestion of soil, dermal contact with soil, inhalation of volatile soil emissions and inhalation of particulate emissions, and the 5 to 10 feet bgs concentration limits protect from inhalation of volatile soil emissions. Both the 0 to 5 feet bgs concentration limits and the 5 to 10 feet bgs concentration limits for the appropriate site classification (Residential or Commercial/Industrial) shall be satisfied. In addition, if exposure to construction workers or utility trench workers are reasonably anticipated, the concentration limits for Utility Worker shall also be satisfied; or
- b. Maximum concentrations of petroleum constituents in soil are less than levels that a site specific risk assessment demonstrates will have no significant risk of adversely affecting human health; or
- c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, the regulatory agency determines that the concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health.

The lack of source area characterization between 0 to 5 feet in depth in source areas indicates sufficient data does not exist to demonstrate that site characterization, including risk characterization, is complete. The August 2012 *UST Case Closure Review* utilized option 3b above to satisfy the LTCP criteria; comparison of maximum concentrations in soil to a site specific risk assessment. The December 2012 *UST Case Closure Review Report* utilized Criteria 3a, comparison to concentrations contained in Table 1 of the policy (page 8). In regards to the former use of Criteria 3b, the risk assessment does not appear to have utilized maximum concentrations due to insufficient characterization in the shallow soil and therefore a data gap in USTCF's implementation of the LTCP for this site exists. In regards to the current use of Criteria 3a, the lack of characterization in the 0 – 5 foot depth interval would preclude the use of Table 1.

The *Risk Criteria* section of the August 2012 *UST Case Closure Review* indicates that soil vapor has been sampled. This has appropriately been eliminated from the December 2012 *UST Case Closure Review Report*. ACEH is not aware of any soil vapor data for the site, and the data appears to be for another site. Therefore, any previous conclusions in the August 2012 *UST Case Closure Review* about health risks at the site drawn from this data are invalid. Availability of soil vapor data would be insightful in determining the extent of shallow soil impacts at the site and would provide multiple lines of evidence that all technical references indicate are appropriate, including the CA LUFT Manual ("Risk Evaluation and Risk Management" section).

The *Risk Criteria* section of both Case Closure Review Summaries continue to dismiss the lack of naphthalene concentrations as relevant, believing the release to be limited to gasoline, and therefore fundamentally fails to recognize the presence of TPHd and TPHmo detections, the order-of-magnitude increasing diesel concentration trend (with use of silica gel cleanup), and their likely effect on naphthalene concentrations at the site.

Low-Threat Case Closure: If a case has been determined by the regulatory agency to meet the criteria in this policy, the regulatory agency shall notify responsible parties that they are eligible for case closure and that the following items, if applicable, shall be completed prior to the issuance of a uniform closure letter specified in Health and Safety Code section 25296.10:

- a. **Notification Requirements:** Municipal and county water districts, water replenishment districts, special acts districts with groundwater management authority, agencies with authority to issue building permits for land affected by the petroleum release, and the owners and occupants of all parcels adjacent to the impacted property shall be notified of the proposed case closure and provided a 60 day period to comment.
- b. **Monitoring Well Destruction:** All wells and borings installed for the purpose of investigating, remediating, or monitoring the unauthorized release shall be properly destroyed prior to case closure unless a property owner certifies that they will keep and maintain the wells or borings in accordance with applicable local or state requirements.

- c. **Waste Removal:** All waste piles, drums, debris and other investigation or remediation derived materials shall be removed from the site and property managed in accordance with regulatory agency requirements.

While the USTCF has made the above referenced Case Closure Summary reports available for public comment on the SWRCB's website, ACEH is unable to assess the completeness of the public notification list due to the lack of disclosure of the list of recipients. According to the LTCP Notification Requirements "...municipal and county water districts, water replenishment districts, special act districts with groundwater management authority, agencies with authority to issue building permits for land affected by the petroleum release, and owners and occupants of all parcels adjacent to the impacted property shall be notified of the proposed case closure and provided a 60 day period to comment." ACEH requested a copy of the list on February 8, 2013 from the USTCF staff; however, a list has not been provided to ACEH as of the date of this letter. Although the USTCF is recommending case closure, ACEH understands it is still considered the lead agency for the site, and therefore without knowledge of the notification process ACEH is unable to verify that all appropriate members of the public have been notified. This may be of importance based on the previous public notification process for this site as it appears the actual site property owner was not notified nor were all appropriate vicinity well owners or other potentially interested parties, including several downgradient public schools, as required by the LTCP, CCR Chapter 16, and Chapter 6.7 of the H&SC.

Additionally, based on previous experience at this site, the USTCF may not have conducted public notification requirements in accordance with the SWRCB and Regional Water Quality Control Board's April 2005 guidance document entitled *Final Draft Public Participation at Cleanup Sites*. According to this document, "...the level of public participation effort at a particular site should be based on the site's threat (to human health, water quality, and the environment), the degree of public concern or interest in site cleanup, and any environmental justice factors associated with the site. There may be more public concern or interest about a site when: contaminants have migrated or are likely to migrate off-site...."

Path to Closure Plan

ACEH believes that the data gaps identified above and in the attached DGIT can be largely addressed in a single comprehensive effort. ACEH anticipates requisite activities would include a search and submittal of overlooked site records and documents, a multiple pronged targeted site investigation, and a well survey and door-to-door canvas, and water supply well sampling. This data would either support closure of the site under the LTCP or identify additional impediments to closure.

In accordance with the SWRCB's *Plan for Implementation of Low-Threat UST Case Closure Policy and Additional Program Improvements*, ACEH recommends that a Path to Closure Plan be developed to include specific milestones and timelines for resolution of these impediments to closure and a goal date for closure.

Conclusions

The USTCF's evaluations fail to demonstrate that this site meets the criteria for the Low-Threat Closure Policy. As conducted, the USTCF's review conflicts with multiple technical resources, including the SWRCB CA LUFT Manual which has been revised in part to provide support for the LTCP. The site has not been characterized to the extent required by the policy. While ACEH recognizes that the policy allows for exceptions, the preponderance of exceptions required for this site indicates that the review is insufficient. The recommended closure does not protect existing users of groundwater in the vicinity, may not protect a local creek and park, does not require maintenance of potentially existing engineering controls for "Grease".

Additionally, ACEH is concerned that the USTCF may not have notified all appropriate interested parties of potential closure, as required by state regulations, policies, and guidance documents. Consequently ACEH recommends the SWRCB Executive Director not concur with closure at this time, the CSM be updated, that data gaps be addressed as identified in the attached DGIT checklist, a data gap work plan be prepared and submitted to ACEH for review and approval, and the work be conducted in order to move the site towards closure under the LTCP.

Mr. Pete Mizera
RO0000269
March 8, 2013, Page 10

Thank you for providing ACEH with the opportunity to comment on the subject site. 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,

Dilan Roe, P.E.
Supervising Hazardous Materials Specialist

Mark E. Detterman, PG, CEG
Senior Hazardous Materials Specialist

Attachments: Attachment 1 – Technical Reference Table
Attachment 2 – Well Construction Diagram
Attachment 3 – Well Construction Data Table
Attachment 4 – Well Gauging Data Sheet
Attachment 5 – City of Piedmont Site Drainage Photos
Attachment 6 – CRA Site Drainage Repair Photos (2 pages)
Attachment 7 – Public Notification Map and List of Owners and Tenants
Attachment 8 – *ACEH LTCP Data Gap Identification Tool*

cc: Mr. John Randall, Chevron Products Co, 6101 Bollinger Canyon Road, #5244, San Ramon, CA 94583

Ms. Catalina Espino Devine, Chevron Environmental Management Co, 6101 Bollinger Canyon Road, San Ramon, CA; (sent via electronic mail to espino@chevron.com)

Nathan Lee, Conestoga-Rovers & Assoc., 5900 Hollis Street, Suite A, Emeryville, CA 94608 (sent via electronic mail to nlee@croworld.com)

Lisa Babcock, State Water Resources Control Board, Division of Financial Assistance, 1001 I Street, Sacramento, CA 95814; (Sent via E-mail to: LBabcock@waterboards.ca.gov)

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)

Mary Rose Cassa, San Francisco Regional Water Quality Control Board, 1515 Clay Street, Suite 1400, Oakland, CA 94612

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

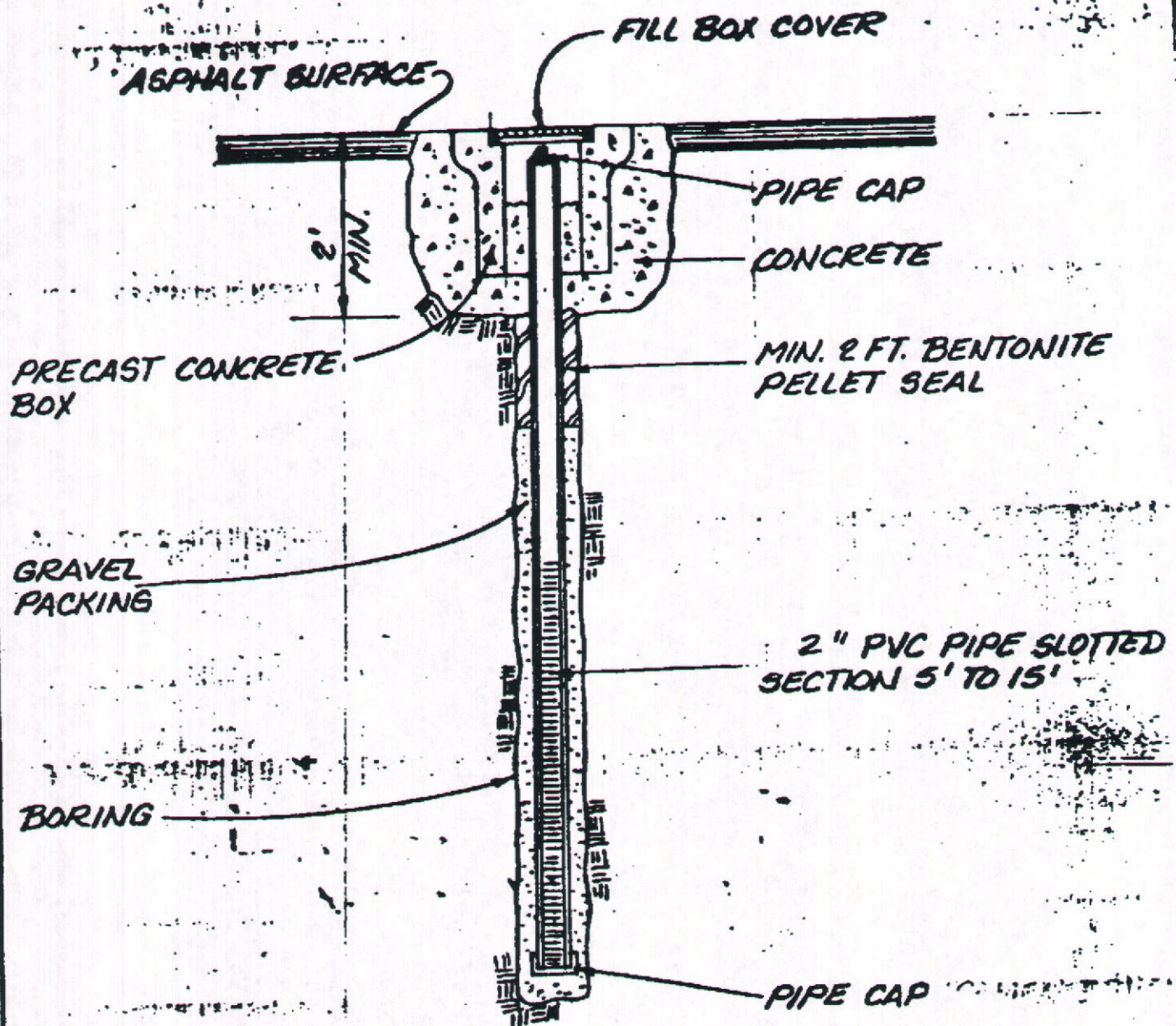
Technical References Table

TOPIC	KEY CONCEPT	QUOTATION	REFERENCE CITATION
Selection of Appropriate Screen Interval for LNAPL Detection	Wells intended to monitor for LNAPL can have long (10 - 15 ft) well screens that MUST extend across the interface; shorter well screens are recommended as appropriate for depth specific sampling (see further below).	For wells installed specifically to monitor the presence of LNAPLs, well screen length must be determined by the degree of water table fluctuation. ...the screen must be long enough to keep the water table within it during extreme highs as well as extreme lows, which means the...historical water-level data for the site or surrounding data [must be considered]. If the water table rises above the top of the screen, or falls below the bottom of the screen, it is not possible to use the well for LNAPL detection. Additionally, if a sediment sump is used on a well in which the bottom of the screen is above the water table, the sump may remain filled with water and the well may provide a false indication of the absence of LNAPL. Therefore, the well screen must be long enough to extend above the historical high (at least 3 feet), and below the historical low (at least 2 feet) and, if a sediment sump is used, it should have a drain hole to allow water to escape in the event the water level drops below the bottom of the screen. ...wells that are used for LNAPL detection, and in which LNAPLs are found, should not be used to collect groundwater samples for determination of dissolved-phase concentrations.	<i>Practical Handbook of Environmental Characterization and Groundwater Monitoring; David Nielson; 2006; 2nd ed.</i>
		(pg 643; paraphrasing) ... well screens that monitor groundwater quality at the top of the water table usually are 10 to 15 ft long, depending on anticipated long-term changes in groundwater elevation, and that some of the screen remains above the water table in the vadose zone. Wells with this design are used to monitor for the presence of LNAPLs (and well yield is sufficient to obtain a reliable water sample – e.g. is not a production well). This same paragraph also states that well screens (non-water table implied) are typically 5 to 10 ft in length because samples should come from specific depths (again because well yield is not the main objective).	<i>Groundwater & Wells; Robert J. Sterrett; 2007; 3rd ed. (The new Johnson Screen Book)</i>
		To avoid dilution, well screens should be kept to the minimum length appropriate for intercepting a contaminant plume, especially in a high-yielding aquifer. The screen length should generally not exceed 10 feet. If construction of a water table well is the objective, either for defining flow gradient or detecting the presence of floating non-aqueous phase liquid (NAPL), then a longer screen spanning the water table is acceptable, to account for NAPL's or seasonal water table fluctuations. The RP should not use screen lengths that create a conduit for contaminant transport across hydraulically separated geologic units.	<i>Monitoring Well Design and Construction for Hydrogeologic Characterization; CalEPA; July 1995</i>
		...the well screen must be designed to prevent clogging and intercept the water table at both high- and low-groundwater conditions....	<i>40 CFR Section 280.43(f) and Preamble</i>
		Section 8.2.7, Screen Length and Setting, pp 385 - 388, it states " To monitor the position of the water table or to detect the presence of LNAPLs, the screen must be set so that it intersects the water table. The screen must be long enough to intersect the water table over the range of annual fluctuation..." See Figure 8.6 for examples of screens set incorrectly and correctly.	<i>Contaminant Hydrogeology, C.W. Fetter; 2008, 2nd ed.</i>
The Absence of LNAPL in a Well	LNAPL Myths (In-Well LNAPL Thickness Dilemmas)	The absence of LNAPL in a monitoring well means that LNAPL is not present at that Location. <i>Not necessarily true</i> : The presence of LNAPL in a well in an LNAPL-affected area is highly dependent on the water table elevation, in relation to the LNAPL impacts, as well as many other factors relating to the characteristics of the LNAPL and soil. In an unconfined setting, in-well LNAPL thicknesses often vary inversely with water table elevation. Hence, an increase in water table elevation typically results in a decrease in in-well LNAPL thickness. Sometimes, during high water tables, the LNAPL becomes entirely submerged, and no LNAPL remains in the well. However, as the water table elevation decreases over time, the LNAPL reappears in the well. In a confined setting, in-well LNAPL thickness varies directly with potentiometric surface elevation. Hence, as the potentiometric surface elevation increases, in-well LNAPL thicknesses also tend to increase.	<i>Evaluating LNAPL Remedial Technologies for Achieving Project Goals; ITRC LNAPLs Team; December 2009; Appendix D</i>
		LNAPL showing up in a well(s) where it hasn't been detected in an extended period of time (months or years) suggests that the plume is migrating or that a new release has occurred. <i>Not necessarily true</i> : Water table elevations/fluctuations may prevent LNAPL from appearing in a given well for months or years. The LNAPL has not necessarily moved away; it may simply be submerged and does not have the ability to displace water and flow into the well screen.	<i>Evaluating LNAPL Remedial Technologies for Achieving Project Goals; ITRC LNAPLs Team; December 2009; Appendix D</i>

ATTACHMENT 1

Technical References Table

Contaminant Dilution	Contaminant dilution is a factor of screen length	<p>If the objective of a monitoring program is to define the true nature and distribution of groundwater contamination and hydraulic heads at a site where complex geologic and hydraulic conditions and contaminant distribution patterns occur...multiple wells with short screens placed at close intervals, or multilevel monitoring systems are needed. Wells screens should generally be between 2 and 5 feet, rarely exceeding 10 feet in length. On the other hand if the objective of the well is to monitor for gross presence of contaminants in an aquifer, a longer screen might be selected. This type of well would provide both an integrated water sample and an integrated hydraulic head measurement, and would thus serve only as a screening tool.</p>	<i>Groundwater & Wells; Robert J. Sterrett; 2007; 3rd ed. (The new Johnson Screen Book)</i>
		<p>...concentration of chemical constituents in samples collected from wells are composited over the length of the screen, typically representing a weighted average of concentrations across the screen. Concentrations are normally skewed toward zones of highest hydraulic conductivity, which will yield more water to the well when it is <u>purged and sampled</u>. Because the highest hydraulic conductivity zones are the most important contaminant transport pathways, it may be rationalized that such samples are acceptable in terms of accurately representing conditions in the formation. However, <u>significant dilution of samples</u>, caused by screens penetrating zones in which contaminants may not be present (e.g., lower hydraulic conductivity zones) and by <u>inappropriate purging and sampling practices</u> (e.g., purging large volume of water prior to sampling) is bound to occur....in fact concentrations in water table wells can vary by several orders of magnitude, depending on well screen placement and length.</p>	<i>Groundwater & Wells; Robert J. Sterrett; 2007; 3rd ed. (The new Johnson Screen Book)</i>
		<p>Seasonal variations in concentrations of dissolved-phase hydrocarbons can be extreme, because the vertical profiles of contamination below the water table essentially remain constant as the water table rises (when concentrations are typically more dilute) and falls (when concentrations are typically higher). Complicating this situation is the fact that in water table wells, samples represent a smaller interval of the saturated zone when the water table is lower, and a larger interval when the water table is higher. This makes accurate interpretation of sampling results, in terms of defining contaminant plumes, very difficult at best.</p>	<i>Groundwater & Wells; Robert J. Sterrett; 2007; 3rd ed. (The new Johnson Screen Book)</i>
		<p>...because of heterogeneities in geologic material that control contaminant transport, contaminant concentrations often vary by one to three orders of magnitude over vertical distances ranging from a few inches to a few feet.</p>	<i>Groundwater & Wells; Robert J. Sterrett; 2007; 3rd ed. (The new Johnson Screen Book)</i>
		<p>The length of the well screens in wells installed to define these conditions [groundwater chemistry, contaminant distribution, and hydraulic head] is the most important element in the success of a contaminant detection and monitoring program.</p>	<i>Groundwater & Wells; Robert J. Sterrett; 2007; 3rd ed. (The new Johnson Screen Book)</i>
Conceptual Site Model	The Official ASTM Definition: A CSM is not scattered	<p>ASTM Method 1689-95 describes development of an CSM. Section 1, Scope, states that this guide is intended to assist in the development of CSMs to be used for <i>integration</i> of technical information from various sources. Section 6.1, Assembling Information, under Procedure, calls for assembling information from numerous types of data. Per a dictionary "assembling" is an antonym for "scatter".</p>	ASTM 1689-95
DTSC Vapor Guidance	The State of the Practice - The collection of valid vapor data	<p>Quoting the DTSC Website: "DTSC's Vapor Intrusion Guidance provides a stepwise and sometimes iterative process for the investigation of vapor intrusion and describes procedures for screening and site-specific evaluation of potential risks associated with this exposure pathway. Indoor air concentrations estimated from soil gas or groundwater concentrations by fate and transport models for vapor intrusion and/or measured indoor air concentrations are used in the assessment. Models for estimating indoor air concentrations include default attenuation factors for vapor migration from soil gas or groundwater to indoor air, and default and site-specific inputs to the U.S. EPA version of the Johnson and Ettinger vapor intrusion model."</p>	<p>Final Guidance for the Evaluation & Mitigation of Subsurface Vapor Intrusion to Indoor Air (October 2011)</p> <p>http://www.dtsc.ca.gov/SiteCleanup/Vapor_Int rusion.cfm</p>



DEPTH OF HOLE: Varies

ATTACHMENT 3

Table 1 Well Construction Data, Former Chevron Station 9-0329, 340 Highland Avenue, Piedmont, California

Well	Top of Casing Elevation (ft msl)	Total Depth (ft)	Diameter (In)	Screen Interval (fbg)	Comments
C-1	Unknown	17.0	2	Unknown	This well was never sampled. It's status is unknown.
C-2	343.39	17.0	2	Unknown	Logs do not indicate screen interval
C-3	347.08	17.0	2	Unknown	Logs do not indicate screen interval
C-4	344.94	13.0	2	Unknown	Logs do not indicate screen interval
C-5	345.14	18.0	2	3-18	
C-6	338.61	17.5	2	2.5-17.5	
MW-6	Not Surveyed	20.0	2	5-20	Well abandoned

ft = feet msl = mean sea level
 fbg = ft below grade in = inches

ATTACHMENT 4

WELL GAUGING DATA

Project # 120309-PCI

Date 3/9/12

Client Chevron

Site 340 Highland Ave, Piedmont

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOG	Notes
C-2	0835	2					0.90	11.12	↓	
C-3	0800	2				1.42	13.30			
C-4	0752	2				2.42	9.72			
C-5	0845	2				2.45	17.00			
C-6	0915	2				0.72	17.31			
A	0808	6				1.37	8.13			
B	0816	6				3.60	9.00			

ATTACHMENT 5

340 Highland Ave.

1. Southern driveway showing continued seepage and pavement distortion.
2. Sewer drain inlet at end of driveway showing continued malfunctioning.
3. Small concrete patch of driveway at location of former barricades.



340 Highland Ave.

11-30-06/CGN

ATTACHMENT 6



**CONESTOGA-ROVERS
& ASSOCIATES**

January 26, 2011

Reference No 311776

- 2 -

Repair of Grease Interceptor/Drain and Asphalt Paving

As shown in the photo below, it appears that the asphalt surrounding the interceptor drain has been repaired. CRA and Chevron have attempted to gather information related to the repair, but no one has replied to our inquiries. Chevron does not own this property or facility and is not able to control the repairs requested by the ACEH.



Utility Map

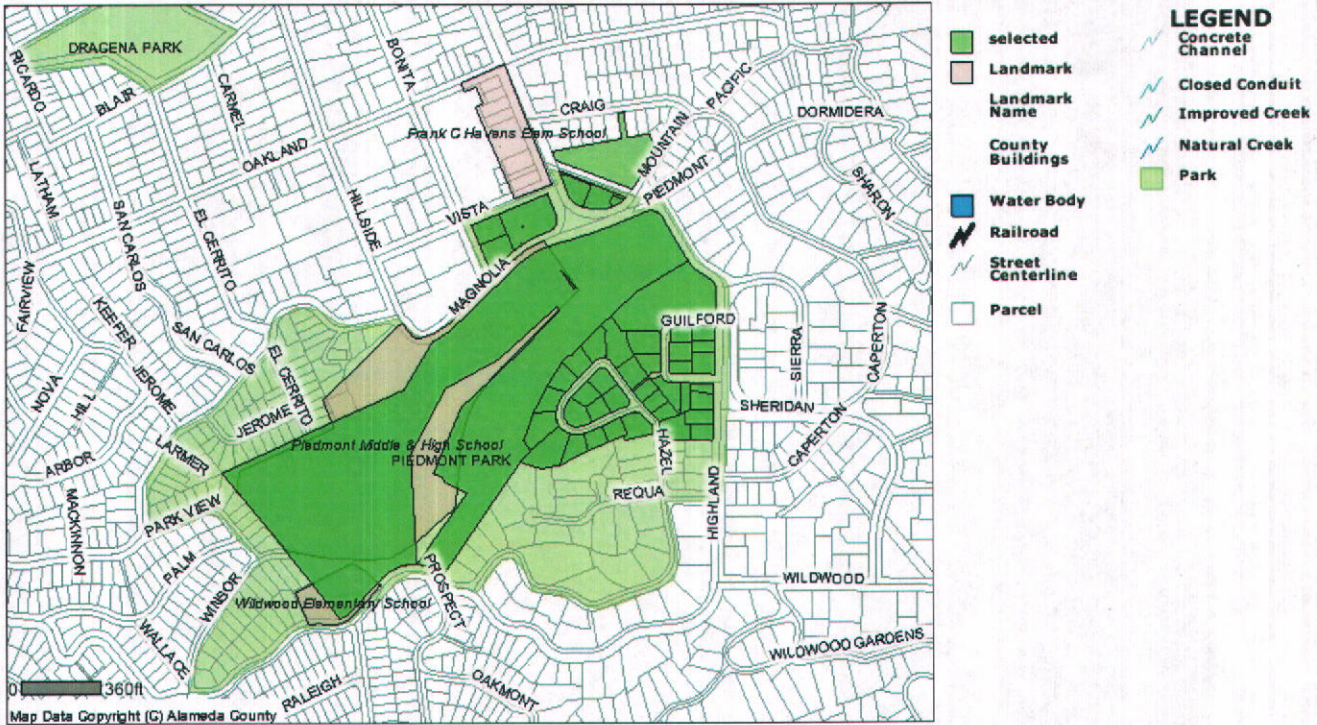
All utility locations and depths and diameters in the vicinity of the site are depicted on Figure 2. Based on CRA's site visit and Pacific Environmental Group's 1998 utility survey, the grease interceptor drain is connected to the sanitary sewer, not the storm water drains.¹ A sanitary

¹ Pacific Environmental Group, Inc., *Workplan for Groundwater Investigation* date September 9, 1998.



ATTACHMENT 7

RO269 Chevron #9-0329 Public Notification Map



Printed: 10/31/2012

Disclaimer: The data, information, and maps provided herein are derived from various sources and are dynamic and in an ongoing state of maintenance, correction and update, and are subject to verification by the user and/or Alameda County. The mapped data depicted herein does not constitute a legal survey. The County of Alameda makes no warranty, representation or guarantee as to the content, accuracy, timeliness or completeness of any of the information implied herein. The County of Alameda explicitly disclaims any representation and warranties, including, without limitation, the implied warranties of merchantability and fitness for a particular purpose.

BAINS TARVINDER TRUST
Parcel #: 50-4623-6-1
6111 TURNBERRY CT
DUBLIN CA 94568

BENSON JOHN E & DIANE C
Parcel #: 51-4676-36
140 HAZEL LN
PIEDMONT CA 94611

BERL STEVEN H & BLOCH
Parcel #: 51-4676-38
132 HAZEL LN
PIEDMONT CA 94611

BERLEKAMP ELWYN &
Parcel #: 51-4676-24-1
120 HAZEL LN
PIEDMONT CA 94611

BURGE R G & TERRI S
Parcel #: 51-4676-45
131 HAZEL LN
PIEDMONT CA 94611

CALVIN & JANE
Parcel #: 51-4676-3-1
777 HIGHLAND AVE
PIEDMONT CA 94611

CASTRO ROBERTO B &
Parcel #: 51-4676-5
137 GUILFORD RD
PIEDMONT CA 94611

CITY OF PIEDMONT
Parcel #: 50-4625-1-3
120 VISTA AVE
PIEDMONT CA 94611

CITY OF PIEDMONT
Parcel #: 51-4680-1-4
760 MAGNOLIA AVE
PIEDMONT CA 94611

CITY OF PIEDMONT
Parcel #: 51-4676-1
120 VISTA AVE
PIEDMONT CA 94611

CITY OF PIEDMONT
Parcel #: 50-4625-3-1
120 VISTA AVE
PIEDMONT CA 94611

CLARK FREDERIC H & NOLAN
Parcel #: 51-4676-25-1
114 HAZEL LN
PIEDMONT CA 94611

COLBY CHRISTOPHER P &
Parcel #: 51-4676-29
104 HAZEL LN
PIEDMONT CA 94611

COMBES GENEVIEVE &
Parcel #: 51-4676-31-3
160 HAZEL LN
PIEDMONT CA 94611

CORNELIUS JODY A TR
Parcel #: 51-4676-44
141 HAZEL LN
PIEDMONT CA 94611

CROWLEY THOMAS B JR &
Parcel #: 51-4676-43
151 HAZEL LN
OAKLAND CA 94611

DEUTSCHE RICHARD A &
Parcel #: 51-4676-41
121 HAZEL LN
PIEDMONT CA 94611

ESCOBOSA PAUL & LAURA
Parcel #: 51-4676-39
128 HAZEL LN
PIEDMONT CA 94611

GOLDMAN JAY M &
Parcel #: 51-4676-7
793 HIGHLAND AVE
PIEDMONT CA 94611

HOEFS WILLIAM F & M K TRS
Parcel #: 51-4676-32
156 HAZEL LN
PIEDMONT CA 94611

HOFFMAN INVESTMENT
Parcel #: 50-4623-6-2
1035 EDWARDS RD
BURLINGAME CA 94010

HOFFMAN INVESTMENT
Parcel #: 50-4623-5
1035 EDWARDS RD
BURLINGAME CA 94010

JEWELL NICHOLAS P &
Parcel #: 51-4676-28
108 HAZEL LN
PIEDMONT CA 94611

JOHN & ELIZABETH D
Parcel #: 51-4676-6
791 HIGHLAND AVE
PIEDMONT CA 94611

JOSEPH CATHERINE & TOM
Parcel #: 51-4676-20
124 GUILFORD RD
PIEDMONT CA 94611

KRUSI GEORGE S & BARBARA
Parcel #: 51-4676-42
111 HAZEL LN
PIEDMONT CA 94611

KWAN SIMON H & CHAN
Parcel #: 51-4676-40-2
124 HAZEL LN
PIEDMONT CA 94611

LEE CHARLES S & KIM YAERI
Parcel #: 50-4625-4
342 BONITA AVE
PIEDMONT CA 94611

MANOLIS PAUL G & ELENE Z
Parcel #: 51-4676-21
100 GUILFORD RD
PIEDMONT CA 94611

MULHOLLAND LESLIE D TR
Parcel #: 51-4676-19
132 GUILFORD RD
PIEDMONT CA 94611

NEWTON PAUL & DEBORAH K
Parcel #: 51-4676-17
131 GUILFORD RD
PIEDMONT CA 94611

NUGENT GEORGE J & DIANA
Parcel #: 51-4676-18
135 GUILFORD RD
PIEDMONT CA 94611

PIEDMONT CHURCH CORP
Parcel #: 50-4623-4
400 HIGHLAND AVE
PIEDMONT CA 94611

RESIDENT
Parcel #: 51-4676-22
129 GUILFORD RD
PIEDMONT CA 94611

RESIDENT
Parcel #: 50-4623-6-2
356 HIGHLAND AVE
PIEDMONT CA 94611

RESIDENT
Parcel #: 51-4680-1-4
MAGNOLIA AVE
PIEDMONT CA 94611

RESIDENT
Parcel #: 51-4676-1
711 HIGHLAND AVE
PIEDMONT CA 94611

RESIDENT
Parcel #: 51-4676-34
HAZEL LN
PIEDMONT CA 94610

RESIDENT
Parcel #: 50-4625-3-1
801 MAGNOLIA AVE
PIEDMONT CA 94611

RESIDENT
Parcel #: 50-4623-6-1
340 HIGHLAND AVE
PIEDMONT CA 94611

RESIDENT
Parcel #: 50-4623-5
HIGHLAND AVE
PIEDMONT CA 94610

SCHMIDT DAVID E & MARION
Parcel #: 51-4676-4-1
781 HIGHLAND AVE
PIEDMONT CA 94611

SEAVEY WILLIAM A & MARY
Parcel #: 51-4676-16
90 HAZEL LN
PIEDMONT CA 94611

SHERRERD SUSAN M
Parcel #: 51-4676-35
144 HAZEL LN
PIEDMONT CA 94611

STOCK JOHN V & PEGGY M
Parcel #: 51-4676-2
50 GUILFORD RD
PIEDMONT CA 94611

STRAUCH ROGER A &
Parcel #: 51-4676-23
125 GUILFORD RD
PIEDMONT CA 94611

SULLIVAN WILLIAM J &
Parcel #: 51-4676-22
1530 LEIMERT BLVD
OAKLAND CA 94602

TAYLOR ROBERT O, ANN R &
Parcel #: 51-4676-33
152 HAZEL LN
PIEDMONT CA 94611

TAYLOR ROBERT O, ANN R &
Parcel #: 51-4676-34
152 HAZEL LN
PIEDMONT CA 94611

THEIS DAVID S & ROYCE
Parcel #: 51-4676-30
100 HAZEL LN
PIEDMONT CA 94611

VANDERBYL MICHAEL
Parcel #: 51-4676-8
795 HIGHLAND AVE
PIEDMONT CA 94611

WIETELMANN ROLF T &
Parcel #: 51-4676-37
136 HAZEL LN
PIEDMONT CA 94611

**ALAMEDA COUNTY ENVIRONMENTAL HEALTH
LOW THREAT UST CASE CLOSURE POLICY
DATA GAP IDENTIFICATION TOOL**

Agency Name : Alameda County Environmental Health	Date:
Case Worker:	Fuel Leak Case No:
Site Name:	GeoTracker Global ID:
Site Address:	USTCF Claim No:

Alameda County Environmental Health (ACEH) has reviewed the above listed site for consideration of case closure using the framework provided by the State Water Resources Control Board (SWRCB) Low-Threat Underground Storage Tank Case Closure Policy (LTCP), adopted on May 1, 2012, and effective August 17, 2012. The results of ACEH's case review indicates that the site PASSES FAILS the LTCP criteria.

Section 25296.10 of the California Health and Safety Code (H&SC) requires that sites be cleaned up to protect human health, safety, and the environment. The current conceptual site model is is not adequate to determine that residual petroleum constituents at the site do not pose a significant risk to human health, safety, or the environment. A complete record of the case files (i.e., regulatory directives and correspondence, reports, data submitted in electronic deliverable format [EDF], etc.) can be obtained through review of both the SWRCB's Geotracker database, and the ACEH website at <http://www.acgov.org/aceh/index.htm>.

Application of Case Review Tools

ACEH's case closure evaluation was guided by the application of the principles and strategies presented in the State Water Quality Control Board (SWQCB) *Leaking Underground Fuel Tank Guidance Manual* (CA LUFT Manual), dated September 2012. This guidance document was developed by the SWRCB "...[t]o provide guidance for implementing the requirements established by the Case Closure Policy" and associated reference documents including but not limited to:

- *Technical Justification for Vapor Intrusion Media-Specific Criteria*, SWRCB dated March 21, 2012;
- *Technical Justification for Groundwater Media-Specific Criteria*, SWRCB dated April 24, 2012;
- *Technical Justification for Soil Screening Levels for Direct Contact and Outdoor Air Exposure Pathways*, SWRCB dated March 15, 2012;
- *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air, Final DTSC*, dated October, 2011.

ACEH also utilizes other case review tools developed by the SWRCB to aid in determining compliance of a fuel leak site with LTCP criteria, including both the paper *Policy Checklist* (available at www.waterboards.ca.gov/ust/docs/checklist.pdf) and the electronic version of the *Policy Checklist* (available on the SWRCB's GeoTracker website at <http://geotracker.waterboards.ca.gov>). While ACEH embraces the Policy and has found the CA LUFT Manual to be a valuable tool, we are concerned that the brevity of the SWRCB checklist can result in inaccurate conclusions regarding recommendations for case closure and uncertainty regarding the decision making process. Therefore, ACEH staff utilizes an enhanced LTCP checklist that integrates the requisite level of questioning to enable consistent application of the LTCP, ensure that decisions are founded in appropriate technical basis, identify impediments to closure, improve the efficiency of the UST cleanup program, and document the decision making process as transparently as possible for all interested parties. This enhanced LTCP checklist entitled *Data Gap Identification Tool* (DGIT), was utilized by ACEH staff during our evaluation of the subject site and is presented in the subsequent pages of this document.

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA A

General Criteria a:	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NE
Is the Unauthorized Release Located within the Service Area of a Public Water System?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>LTCP Statement: “This policy is protective of <u>existing water supply wells</u>. <u>New water supply wells</u> are unlikely to be installed in the shallow groundwater near former UST release sites. However, it is difficult to predict, on a statewide basis, where new wells will be installed, particularly in rural areas that are undergoing new development. This policy is limited to areas with available public water systems to reduce the likelihood that new wells in developing areas will be inadvertently impacted by residual petroleum in groundwater. Case closure outside of areas with a public water system should be evaluated based upon the fundamental principles in this policy and a site specific evaluation of developing water supplies in the area. For purposes of this policy, a <u>public water system</u> is a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.”</p>			
Does the public water system have 15 or more service connection or regularly serves at least 25 individuals daily at least 60 days of the year?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Name of public water system agency?			
East Bay Municipal Utility District	<input type="checkbox"/> Yes		
Zone 7 Water Agency	<input type="checkbox"/> Yes		
City of Hayward Water	<input type="checkbox"/> Yes		
Alameda County Water District	<input type="checkbox"/> Yes		
<p>Has the <u>minimum required information</u> listed below been provided in the CSM for evaluation of case compliance with General Criteria a?</p>			
Has confirmation that the property has a hook-up and uses the public water system been provided?	<input type="checkbox"/> Yes	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Has a well search been conducted to identify wells located within 2,000 feet of the site?	<input type="checkbox"/> Yes	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Are there existing water supply wells or other sources of water in the vicinity of the site?	<input type="checkbox"/> Yes	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Domestic Water Supply Wells	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Irrigation Wells	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Other Capture Systems	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Are existing supply wells or other sources of water used by property owners/tenants in the vicinity of the site?	<input type="checkbox"/> Yes	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Have existing supply wells or other sources of water been sampled for chemicals of concern associated with the release site?	<input type="checkbox"/> Yes	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Have existing supply wells or other sources of water been properly abandoned and well destruction records been provided?	<input type="checkbox"/> Yes	<input type="checkbox"/> NE	<input type="checkbox"/> NA
(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)			

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA A

Case Notes

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*****End of General Criteria a Evaluation*****

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA B

General Criteria b:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the Unauthorized Release Consist only of Petroleum?	YES	NO	NE

LTCP Statement: “For purposes of this policy, petroleum is defined as crude oil, or any fraction thereof, which is liquid at standard conditions and temperature and pressure, which means 60 degrees Fahrenheit and 14.7 pounds per square inch absolute including the following substances: motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents and used oils, including any additives and blending agents such as oxygenates contained in the formulation of the substances.”

Site Contaminants

Petroleum	<input type="checkbox"/> Yes	<input type="checkbox"/> No		<input type="checkbox"/> NE
Motor fuels	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	
TPH middle distillates	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	
Residual fuels	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	
Fuel oxygenates	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	
Lead scavengers	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	
Aromatic compounds	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	
TPH middle distillates	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	

Non Petroleum Contaminants	<input type="checkbox"/> Yes	<input type="checkbox"/> No		<input type="checkbox"/> NE
VOCs	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	
SVOCs	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	
Dioxans & Furans	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	
Other PAHs	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	
PCBs	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	
Phenols	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	
Metals	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	

Has the <u>minimum required information</u> listed below been provided in the CSM for evaluation of case compliance with General Criteria b?	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
Description of the site history?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Types of products or chemicals used at the site?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
History of types of releases other than petroleum?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Presentation of sampling results for all chemicals other than petroleum such as volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), phenol, 1,4-dioxane, dibenzofurans, or dioxins?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA B

Case Notes

The unauthorized release consists of petroleum hydrocarbons originating from gasoline USTs and waste oil USTs. An apparent diesel source remains unidentified at the site. Standard waste oil analytes do not appear to have been conducted at the time of removal of the waste oil UST.

*****End of General Criteria b Evaluation*****

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA C

General Criteria c:				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
Has the Unauthorized (“Primary”) Release from the UST System been Stopped?				YES	NO	NE																
<p>LTCP Statement: “The tank, pipe, or other appurtenant structure that released petroleum into the environment (i.e. the primary source) has been removed, repaired or replaced. It is not the intent of this policy to allow sites with ongoing leaks from the UST system to qualify for low-threat closure.”</p>																						
<p>Have the tank(s), piping, dispenser islands, or other appurtenant structures that released petroleum into the environment been removed, repaired or replaced?</p> <table border="1"> <tr> <td>Tanks?</td> <td><input type="checkbox"/> Yes</td> <td><input type="checkbox"/> No</td> <td><input type="checkbox"/> NE</td> </tr> <tr> <td>Product piping?</td> <td><input type="checkbox"/> Yes</td> <td><input type="checkbox"/> No</td> <td><input type="checkbox"/> NE</td> </tr> <tr> <td>Dispenser islands?</td> <td><input type="checkbox"/> Yes</td> <td><input type="checkbox"/> No</td> <td><input type="checkbox"/> NE</td> </tr> <tr> <td>Other structures?</td> <td><input type="checkbox"/> Yes</td> <td><input type="checkbox"/> No</td> <td><input type="checkbox"/> NE</td> </tr> </table>				Tanks?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	Product piping?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	Dispenser islands?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	Other structures?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> Yes	<input type="checkbox"/> No	NE
Tanks?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																			
Product piping?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																			
Dispenser islands?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																			
Other structures?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																			
<p>Have the tanks, piping, and/or dispenser islands been moved to a different location at the site?</p>				<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																
<p>Were/are the tanks permitted by a local regulatory agency having jurisdiction over USTs?</p> <table border="1"> <tr> <td>Have the operating records been reviewed (i.e., operating permit, types of products dispensed, tanks construction, tank capacity, tank tightness tests, etc)?</td> <td><input type="checkbox"/> Yes</td> <td><input type="checkbox"/> No</td> <td><input type="checkbox"/> NE</td> </tr> <tr> <td>Was a tank removal permit issued by the local regulatory agency?</td> <td><input type="checkbox"/> Yes</td> <td><input type="checkbox"/> No</td> <td><input type="checkbox"/> NE</td> </tr> <tr> <td>Was a tank removal report submitted?</td> <td><input type="checkbox"/> Yes</td> <td><input type="checkbox"/> No</td> <td><input type="checkbox"/> NE</td> </tr> </table>				Have the operating records been reviewed (i.e., operating permit, types of products dispensed, tanks construction, tank capacity, tank tightness tests, etc)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	Was a tank removal permit issued by the local regulatory agency?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	Was a tank removal report submitted?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE				
Have the operating records been reviewed (i.e., operating permit, types of products dispensed, tanks construction, tank capacity, tank tightness tests, etc)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																			
Was a tank removal permit issued by the local regulatory agency?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																			
Was a tank removal report submitted?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																			
<p>Is there indication that new release(s) have occurred subsequent to the initial release?</p> <table border="1"> <tr> <td>Are there spikes or increasing concentration trends in historic data subsequent to the initial release?</td> <td><input type="checkbox"/> Yes</td> <td><input type="checkbox"/> No</td> <td><input type="checkbox"/> NE</td> </tr> <tr> <td>Are there new detections of free product subsequent to the initial release in historic data?</td> <td><input type="checkbox"/> Yes</td> <td><input type="checkbox"/> No</td> <td><input type="checkbox"/> NE</td> </tr> <tr> <td>Have new contaminants been detected in historic data subsequent to the initial release?</td> <td><input type="checkbox"/> Yes</td> <td><input type="checkbox"/> No</td> <td><input type="checkbox"/> NE</td> </tr> </table>				Are there spikes or increasing concentration trends in historic data subsequent to the initial release?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	Are there new detections of free product subsequent to the initial release in historic data?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	Have new contaminants been detected in historic data subsequent to the initial release?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE				
Are there spikes or increasing concentration trends in historic data subsequent to the initial release?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																			
Are there new detections of free product subsequent to the initial release in historic data?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																			
Have new contaminants been detected in historic data subsequent to the initial release?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																			
<p>Have new petroleum hydrocarbons or other hazardous products been dispensed of at the site since the initial release occurred?</p>				<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																
<p>Is there indication of new impacts from offsite sources?</p>				<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA C

CSM Minimum Requirements

Has the <u>minimum required information</u> listed below been provided in the CSM for evaluation of case compliance with General Criteria c?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Description of the history of releases and the actions taken to stop each release?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Evaluation and accounting for changing contaminant concentrations over the full time period of site investigations?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Data from other sites in the vicinity with unauthorized releases of petroleum hydrocarbons or other hazardous materials	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Hazardous Materials Business Plans (historic and current)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
CUPA UST permits and inspection reports	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)

Case Notes:

*****End of General Criteria c Evaluation*****

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA D

General Criteria d:		<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NE	<input type="checkbox"/> NA															
Has Free Product been Removed to the Maximum Extent Practicable?																				
<p>LTCP Statement: "At petroleum unauthorized release sites where investigations indicate the presence of free product, free product shall be removed to the maximum extent practicable. In meeting the requirements of this section:</p> <p>(a) Free product shall be removed in a manner that minimizes the spread of the unauthorized release into previously uncontaminated zones by using recovery and disposal techniques appropriate to the hydrogeologic conditions at the site, and that properly treats, discharges or disposes of recovery byproducts in compliance with applicable laws;</p> <p>(b) Abatement of free product migration shall be used as a minimum objective for the design of any free product removal system; and</p> <p>(c) Flammable products shall be stored for disposal in a safe and competent manner to prevent fires or explosions."</p>																				
Has the <u>minimum required information</u> listed below been provided in the CSM for evaluation of case compliance with General Criteria d?		<input type="checkbox"/> Yes	<input type="checkbox"/> No																	
Has the presence of free product been evaluated?		<input type="checkbox"/> Yes	<input type="checkbox"/> No		<input type="checkbox"/> NA															
Has a description of investigation and monitoring activities that have been undertaken to assess whether free product is present been provided?		<input type="checkbox"/> Yes	<input type="checkbox"/> No		<input type="checkbox"/> NA															
Has a preferential pathway study been conducted to determine the probability of free product encountering geologic and anthropogenic preferential pathways and conduits that can act as contaminant migration pathways to or from the site?		<input type="checkbox"/> Yes	<input type="checkbox"/> No		<input type="checkbox"/> NA															
Has tabulation and an evaluation of historic groundwater levels and flow direction and identification of a smear zone been provided?		<input type="checkbox"/> Yes	<input type="checkbox"/> No		<input type="checkbox"/> NA															
Has data including tables and figures showing any observation and measurements of free product been provided?		<input type="checkbox"/> Yes	<input type="checkbox"/> No		<input type="checkbox"/> NA															
Has an evaluation of the adequacy of the monitoring well network and appropriateness of screen interval to detect free product been conducted?		<input type="checkbox"/> Yes	<input type="checkbox"/> No		<input type="checkbox"/> NA															
Has an evaluation of whether free product removal is practicable, or if not practicable, a description of the conditions that prevent free product removal been conducted?																				
Has free product removal been implemented?																				
<table border="1"> <tr> <td>Absorbent Materials</td> <td><input type="checkbox"/> Yes</td> <td><input type="checkbox"/> No</td> </tr> <tr> <td>Bailing</td> <td><input type="checkbox"/> Yes</td> <td><input type="checkbox"/> No</td> </tr> <tr> <td>Skimmer</td> <td><input type="checkbox"/> Yes</td> <td><input type="checkbox"/> No</td> </tr> <tr> <td>HVDPE</td> <td><input type="checkbox"/> Yes</td> <td><input type="checkbox"/> No</td> </tr> <tr> <td>Other Methods:</td> <td><input type="checkbox"/> Yes</td> <td><input type="checkbox"/> No</td> </tr> </table>		Absorbent Materials	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Bailing	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Skimmer	<input type="checkbox"/> Yes	<input type="checkbox"/> No	HVDPE	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Other Methods:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No		<input type="checkbox"/> NA
Absorbent Materials	<input type="checkbox"/> Yes	<input type="checkbox"/> No																		
Bailing	<input type="checkbox"/> Yes	<input type="checkbox"/> No																		
Skimmer	<input type="checkbox"/> Yes	<input type="checkbox"/> No																		
HVDPE	<input type="checkbox"/> Yes	<input type="checkbox"/> No																		
Other Methods:	<input type="checkbox"/> Yes	<input type="checkbox"/> No																		
Has a description of corrective action(s) that were taken to remove product, dates of removal actions, and volumes removed been provided?		<input type="checkbox"/> Yes	<input type="checkbox"/> No		<input type="checkbox"/> NA															
Is free product removal still being conducted?		<input type="checkbox"/> Yes	<input type="checkbox"/> No		<input type="checkbox"/> NA															
Does data indicate rebound of free product subsequent to product removal?		<input type="checkbox"/> Yes	<input type="checkbox"/> No		<input type="checkbox"/> NA															
(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)																				

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA D

Case Notes

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*****End of General Criteria d Evaluation*****

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA E

General Criteria e:				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has a Conceptual Site Model that <u>Adequately</u> Assesses the Nature, Extent, and Mobility of the Release been Developed?				YES	NO	NE
<p>LTCP Statement: "The Conceptual Site Model (CSM) is a fundamental element of a comprehensive site investigation. The CSM establishes the source and attributes of the unauthorized release, describes all affected media (including soil, groundwater, and soil vapor as appropriate), describes local geology, hydrogeology and other physical site characteristics that affect contaminant environmental transport and fate, and identifies all confirmed and potential contaminant receptors (including water supply wells, surface water bodies, structures and their inhabitants). The CSM is relied upon by practitioners as a guide for investigative design and data collection. Petroleum release sites in California occur in a wide variety of hydrogeologic settings. As a result, contaminant fate and transport and mechanisms by which receptors may be impacted by contaminants vary greatly from location to location. Therefore, the CSM is unique to each individual release site. All relevant site characteristics identified by the CSM shall be assessed and supported by data so that the nature, extent and mobility of the release have been established to determine conformance with applicable criteria in this policy. The supporting data and analysis used to develop the CSM are not required to be contained in a single report and may be contained in multiple reports submitted to the regulatory agency over a period of time."</p>						
Has a CSM that <u>adequately</u> assesses the nature, extent, and mobility of the release in affected media in the vicinity of the site been developed?				<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Groundwater assessment?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA			
Surface water assessment?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA			
Soil assessment?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA			
Soil vapor assessment?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA			
Indoor Air assessment?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA			
Has the CSM been developed in accordance with industry standards?				<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
SWRCB CA LUFT Manual, September 2012	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA			
ITRC Vapor Intrusion Pathway: A Practical Guideline (ITRC 2007)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA			
ASTM Method 1689-95 - Standard Guide for Developing Conceptual Site Models for Contaminated Sites	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA			
ASTM Method 2531-6 - Standard Guide for Development of Conceptual Models for Light Nonaqueous-Phase Liquids Released to the Subsurface	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA			
DTSC Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (October 2011)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA			
Is the CSM presented in one comprehensive document or has a summary document been submitted that identifies the documents where the requisite CSM elements are located?				<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Is the CSM representative of current site conditions?				<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Does the final closure review validate the CSM?				<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA E

Case Notes

Has the <u>minimum required information</u> listed below been provided in the CSM for evaluation of case compliance with General Criteria e?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Site history?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Receptor survey?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Description of releases?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Geologic and hydrogeologic assessment?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Identified stratigraphic and manmade migration pathways?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Identified controls on contaminant migration?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Delineation of the lateral and vertical extent of contamination in all affected media?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Assessment of vapor intrusion pathways?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Groundwater monitoring and evaluation of plume stability?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Description of the type and effectiveness of corrective actions?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Identification of data gaps?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)

Case Notes:

*****End of General Criteria e Evaluation*****

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA F

General Criteria f:				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has Secondary Source been Removed to the Extent Practicable?				YES	NO	NE
<p>LTCP Statement: "Secondary source" is defined as petroleum-impacted soil or groundwater located at or immediately beneath the point of release from the primary source. Unless site attributes prevent secondary source removal (e.g. physical or infrastructural constraints exist whose removal or relocation would be technically or economically infeasible), petroleum-release sites are required to undergo secondary source removal to the extent practicable as described herein. "To the extent practicable" means implementing a cost-effective corrective action which removes or destroys-in-place the most readily recoverable fraction of source-area mass. It is expected that most secondary mass removal efforts will be completed in one year or less. Following removal or destruction of the secondary source, additional removal or active remedial actions shall not be required by regulatory agencies unless (1) necessary to abate a demonstrated threat to human health or (2) the groundwater plume does not meet the definition of low threat as described in this policy."</p>						
Has secondary source been removed to the extent practicable?				<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Petroleum-impacted soil?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE		
Petroleum-impacted groundwater?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE		
Is corrective action currently in progress to remove or destroy-in-place the most readily recoverable fraction of source-area mass?				<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Petroleum-impacted soil remediation?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/>		
Petroleum-impacted groundwater remediation?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/>		
Have the current site remediation efforts been in progress for more than one year?				<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/>
Petroleum-impacted soil?		<input type="checkbox"/> Yes	<input type="checkbox"/> No			
Petroleum-impacted groundwater?		<input type="checkbox"/> Yes	<input type="checkbox"/> No			
Is site remediation cost effective?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE		
Is site remediation progressing adequately?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE		
Are additional removal or active remedial actions necessary to remove or abate a demonstrated threat to human health?				<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Petroleum-impacted soil?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE		
Petroleum-impacted groundwater?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE		
Has the <u>minimum required information</u> listed below been provided in the CSM for evaluation of case compliance with General Criteria f?				<input type="checkbox"/> Yes	<input type="checkbox"/> No	
History of corrective actions for the site including the types of cleanup actions taken, dates of the actions, and mass removed?				<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Figures depicting the location(s) of the removal action?				<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Confirmation sampling results which demonstrate the effectiveness of secondary source removal?				<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Narrative description of the actions and areas of success or infeasibility of actions?				<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
For in-situ corrective actions, presentation of long-term monitoring data that demonstrate that concentration have not rebounded following the cessation of corrective action?				<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)						

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA F

Case Notes

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*****End of General Criteria f Evaluation*****

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA G

General Criteria g:		<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NE
Has Soil or Groundwater been Tested for MTBE and Results Reported in Accordance with Health and Safety Code Section 25296.15?				
<p>LTCP Statement: "Health and Safety Code section 25296.15 prohibits closing a UST case unless the soil, groundwater, or both, as applicable have been tested for MTBE and the results of that testing are known to the Regional Water Board. The exception to this requirement is where a regulatory agency determines that the UST that leaked has only contained diesel or jet fuel. Before closing a UST case pursuant to this policy, the requirements of section 25296.15, if applicable, shall be satisfied."</p>				
Has the <u>minimum required information</u> listed below been provided in the CSM for evaluation of case compliance with General Criteria g?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Presentation of sufficient data to assess whether MTBE is or was present in soil at or in the vicinity of the site?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Presentation of sufficient data to assess whether MTBE is or was present in groundwater at or in the vicinity of the site?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)				
<p>Case Notes:</p>				
End of General Criteria g Evaluation				

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA H

General Criteria h:	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NE																												
Does a Nuisance as Defined by Water Code Section 13050 Exist at the Site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																												
<p>LTCP Statement: "Water Code section 13050 defines "nuisance" as anything which meets <u>all</u> of the following requirements:</p> <p>(1) Is injurious to health, <u>or</u> is indecent or offensive to the senses, <u>or</u> an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.</p> <p>(2) Affects at the same time an entire community or neighborhood, <u>or</u> any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.</p> <p>(3) Occurs during, <u>or</u> as a result of, the treatment <u>or</u> disposal of wastes.</p> <p>For the purpose of this policy, waste means a petroleum release."</p>																															
Does a nuisance condition currently exist (or potentially could exist) as defined by the LTCP above?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Is injurious to health?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Is indecent or offensive to the senses?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Is an obstruction to the free use of property so as to interfere with the comfortable enjoyment of life or property?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Is a result of the treatment or disposal of waste?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Has the <u>minimum required information</u> listed below been provided in the CSM for evaluation of case compliance with General Criteria h?	<input type="checkbox"/> Yes	<input type="checkbox"/> No																													
Description of whether site contamination is present in locations that have the potential to pose nuisance conditions during common or reasonably expected site activities?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA																												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Surface soils?</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> Yes</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> No</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> NE</td> </tr> <tr> <td style="padding: 2px;">Near surface soils?</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> Yes</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> No</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> NE</td> </tr> <tr> <td style="padding: 2px;">Utility corridors?</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> Yes</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> No</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> NE</td> </tr> <tr> <td style="padding: 2px;">Groundwater?</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> Yes</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> No</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> NE</td> </tr> <tr> <td style="padding: 2px;">Surface water?</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> Yes</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> No</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> NE</td> </tr> <tr> <td style="padding: 2px;">Soil gas?</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> Yes</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> No</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> NE</td> </tr> <tr> <td style="padding: 2px;">Basements or other subsurface structures?</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> Yes</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> No</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> NE</td> </tr> </table>	Surface soils?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	Near surface soils?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	Utility corridors?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	Groundwater?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	Surface water?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	Soil gas?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	Basements or other subsurface structures?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surface soils?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Near surface soils?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
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Groundwater?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Surface water?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Soil gas?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Basements or other subsurface structures?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Descriptions of the type and vertical and lateral extent of shallow soil?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Descriptions of the lateral extent of surface soil contamination, and depths to contamination?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Presentation of analytical results for surface soil, shallow soil, soil gas, groundwater, and surface water samples?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Discussion of odors or visual evidence of contamination?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Presentation of preferential pathway and utility conduit surveys?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Evaluation of potential points for exposure such as groundwater or free product seeps into basements or surface water bodies or conveyances?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Description of surface water runoff from the property to storm drains, other sites, or other surface water body receptors?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
Description of the current and expected future use of the site and impacted or potentially impacted property in the site vicinity?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE																												
(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)																															
KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable																															

LOW THREAT CLOSURE POLICY - GENERAL CRITERIA H

Case Notes

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*****End of General Criteria h Evaluation*****

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

**LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA - GROUNDWATER**

Does the site meet the LTCP criteria for groundwater, <u>or</u> does the site qualify for the Soil Only Case exemption?	<input type="checkbox"/> YES	<input type="checkbox"/> NO															
<p>LTCP Statement: “This policy describes criteria on which to base a determination that threats to existing and anticipated beneficial uses of groundwater have been mitigated or are de minimis, including cases that have not affected groundwater.</p> <p>State Water Board Resolution 92-49, <i>Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304</i> is a state policy for water quality control and applies to petroleum UST cases. Resolution 92-49 directs that water affected by an unauthorized release attain either background water quality or the best water quality that is reasonable if background water quality cannot be restored. Any alternative level of water quality less stringent than background must be consistent with the maximum benefit to the people of the state, not unreasonably affect current and anticipated beneficial use of affected water, and not result in water quality less than that prescribed in the water quality control plan for the basin within which the site is located. Resolution No. 92-49 does not require that the requisite level of water quality be met at the time of case closure; it specifies compliance with cleanup goals and objectives within a reasonable time frame.</p> <p>Water quality control plans (Basin Plans) generally establish “background” water quality as a restorative endpoint. This policy recognizes the regulatory authority of the Basin Plans but underscores the flexibility contained in Resolution 92-49.</p> <p>It is a fundamental tenet of this low-threat closure policy that if the closure criteria described in this policy are satisfied at a petroleum unauthorized release site, attaining background water quality is not feasible, establishing an alternate level of water quality not to exceed that prescribed in the applicable Basin Plan is appropriate, and that water quality objectives will be attained through natural attenuation within a reasonable time, prior to the expected need for use of any affected groundwater.</p> <p>If groundwater with a designated beneficial use is affected by an unauthorized release, to satisfy the media-specific criteria for groundwater, the contaminant plume that exceeds water quality objectives must be stable or decreasing in areal extent, and meet all of the additional characteristics of one of the five classes of sites listed below. A plume that is “stable or decreasing” is a contaminant mass that has expanded to its maximum extent: the distance from the release where attenuation exceeds migration.”</p> <p>“Sites with Releases that Have Not Affected Groundwater - Sites with soil that does not contain sufficient mobile constituents [leachate, vapors, or light non-aqueous-phase liquids (LNAPL)] to cause groundwater to exceed the groundwater criteria in this policy shall be considered low-threat sites for the groundwater medium. Provided the general criteria and criteria for other media are also met, those sites are eligible for case closure. For older releases, the absence of current groundwater impact is often a good indication that residual concentrations present in the soil are not a source for groundwater pollution.”</p>																	
Does the site qualify for the Soil Only Case EXEMPTION?	<input type="checkbox"/> Yes	<input type="checkbox"/> No															
If the site <u>does not</u> qualify for the soil only exemption, then, is the contaminant plume stable or decreasing in areal extent?	<input type="checkbox"/> Yes	<input type="checkbox"/> No															
If the contaminant plume is stable or decreasing, then does it meet <u>all of the additional characteristics</u> of one of the five (5) LTCP classes?	<input type="checkbox"/> Yes	<input type="checkbox"/> No															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;">Class 1</td> <td style="width: 20%; text-align: center; padding: 2px;"><input type="checkbox"/> Yes</td> <td style="width: 30%; text-align: center; padding: 2px;"><input type="checkbox"/> No</td> </tr> <tr> <td style="padding: 2px;">Class 2</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> Yes</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> No</td> </tr> <tr> <td style="padding: 2px;">Class 3</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> Yes</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> No</td> </tr> <tr> <td style="padding: 2px;">Class 4</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> Yes</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> No</td> </tr> <tr> <td style="padding: 2px;">Class 5</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> Yes</td> <td style="text-align: center; padding: 2px;"><input type="checkbox"/> No</td> </tr> </table>	Class 1	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Class 2	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Class 3	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Class 4	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Class 5	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
Class 1	<input type="checkbox"/> Yes	<input type="checkbox"/> No															
Class 2	<input type="checkbox"/> Yes	<input type="checkbox"/> No															
Class 3	<input type="checkbox"/> Yes	<input type="checkbox"/> No															
Class 4	<input type="checkbox"/> Yes	<input type="checkbox"/> No															
Class 5	<input type="checkbox"/> Yes	<input type="checkbox"/> No															
<p>(Refer to Next Page for Contaminant Plume Classification Characteristics)</p> <p>(Media Specific Criteria for Groundwater Evaluation Continued on Next Page)</p>																	

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

**LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA - GROUNDWATER**

Groundwater Contaminant Plume Classification Characteristics

If the Contaminant Plume is Stable or Decreasing, then	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Does the contaminant plume meet all of the additional characteristics of one of the five (5) LTCP classes listed below?			
Class 1	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Is < 100 feet in length	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
There is no free product	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
The nearest existing water supply well is > 250 feet from the defined plume boundary	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
The nearest existing surface water body is > 250 feet from the defined plume boundary	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Class 2	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Is < 250 feet in length	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
There is no free product	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
The nearest existing water supply well is > 1,000 feet from the defined plume boundary	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
The nearest existing surface water body is > 1,000 feet from the defined plume boundary	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
The dissolved concentration of benzene is <3,000 µg/L	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
The dissolved concentration of MTBE is <1,000 µg/L	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Class 3	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Is < 250 feet in length	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Free product has been removed to the maximum extent practicable, may still be present below the site where the release originated, but does not extend off-site	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
The plume has been stable or decreasing for a minimum of 5 years	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
The nearest existing water supply well is > 1,000 feet from the defined plume boundary	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
The nearest existing surface water body is > 1,000 feet from the defined plume boundary	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
The property owner is willing to accept a land use restriction if the regulatory agency requires a land use restriction as a condition for closure	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Class 4	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Is < 1,000 feet in length	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
There is no free product	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
The nearest existing water supply well or surface water body is > 1,000 feet from the defined plume boundary	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
The nearest existing surface water body is > 1,000 feet from the defined plume boundary	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
The dissolved concentration of benzene is <1,000 µg/L	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
The dissolved concentration of MTBE is <1,000 µg/L	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Class 5	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Based on an analysis of site specific conditions at the site under current and reasonable anticipated near-term future scenarios, the contaminant plume poses a low threat to human health and safety and to the environment and water quality objectives will be achieved within a reasonable time frame	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE

(Media Specific Criteria for Groundwater Evaluation Continued on Next Page)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

**LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA - GROUNDWATER**

Sites Not Meeting the Characteristics of the Five Groundwater Plume Classes

Indicate those conditions that do not meet the characteristics of one of the five classes of sites listed in the LTCP.

Plume Length (That Exceeds Water Quality Objectives)			
≥ 100 feet and < 250 feet	<input type="checkbox"/>	Yes	
≥ 250 feet and < 1,000 feet	<input type="checkbox"/>	Yes	
≥ 1,000 feet	<input type="checkbox"/>	Yes	
Unknown	<input type="checkbox"/>	Yes	
For Sites with Free Product			
Free product in groundwater	<input type="checkbox"/>	Yes	<input type="checkbox"/> No <input type="checkbox"/> UNK
Free product has been removed to the maximum extent practicable	<input type="checkbox"/>		<input type="checkbox"/> No <input type="checkbox"/> UNK
The plume has been stable or decreasing for 5-Years	<input type="checkbox"/>		<input type="checkbox"/> No <input type="checkbox"/> UNK
The owner is willing to accept a Land Use Restriction (if required)	<input type="checkbox"/>		<input type="checkbox"/> No <input type="checkbox"/> UNK
Free product extends offsite	<input type="checkbox"/>	Yes	<input type="checkbox"/> <input type="checkbox"/> UNK
Benzene Concentration			
≥ 1,000 µg/L and < 3,000 µg/L	<input type="checkbox"/>	Yes	
≥ 3,000 µg/L	<input type="checkbox"/>	Yes	
Unknown	<input type="checkbox"/>	Yes	
MTBE Concentration			
≥ 1,000 µg/L	<input type="checkbox"/>	Yes	
Unknown	<input type="checkbox"/>	Yes	
Nearest Supply Well (From Plume Boundary)			
≤ 250 Feet	<input type="checkbox"/>	Yes	
> 250 Feet and ≤ 1,000 Feet	<input type="checkbox"/>	Yes	
Unknown	<input type="checkbox"/>	Yes	
Nearest Surface Water Body (From Plume Boundary)			
≤ 250 Feet	<input type="checkbox"/>	Yes	
> 250 Feet and ≤ 1,000 Feet	<input type="checkbox"/>	Yes	
Unknown	<input type="checkbox"/>	Yes	

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

**LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA - GROUNDWATER**

CSM Minimum Required Information

Has the <u>minimum required information</u> listed below been provided in the CSM for evaluation of case compliance with Media Specific Criteria for Groundwater?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Sufficient data been presented to demonstrate that site characterization activities have defined the horizontal and vertical extent of the plume?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Demonstration of plume stability using a valid technical analysis that considers the accuracy of data from the wells, well placement within the plume, and changes in horizontal and vertical extent of the plume?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Evaluation of factors such as seasonal variability, water level changes, sampling methods, well construction, and other factors that can affect data quality?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
A recent well survey that uses all available well information from both the Department of Water Resources and local agencies (Zone 7 Water Agency of Alameda County Public Works as appropriate)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
The location of surface water bodies and water supply wells located within 2,000 feet of the site presented on a site figure with benzene and MTBE isoconcentration contours?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
A table identifying each water supply well along with the well construction details?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
A discussion of surface water bodies within 2,000 feet of the site and details on hydraulic connection with the groundwater plume?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
A discussion of current and reasonable anticipated near-term future scenarios at the site and in the vicinity of the site and possible Land Use Restrictions?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

**LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA - GROUNDWATER**

Case Notes

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*****End of Groundwater Criteria Evaluation*****

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

**LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA - VAPOR INTRUSION TO INDOOR AIR**

Does the site meet one of the three petroleum vapor intrusion to indoor air specific criteria (a, b, or c), <u>or</u> qualify for the active commercial fueling facility exemption?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	
<p>LTCP Statement: "Exposure to petroleum vapors migrating from soil or groundwater to indoor air may pose unacceptable human health risks. This policy describes conditions, including bioattenuation zones, which if met will assure that exposure to petroleum vapors in indoor air will not pose unacceptable health risks. In many petroleum release cases, potential human exposures to vapors are mitigated by bioattenuation processes as vapors migrate toward the ground surface. For the purposes of this section, the term "bioattenuation zone" means an area of soil with conditions that support biodegradation of petroleum hydrocarbon vapors.</p> <p>The low-threat vapor-intrusion criteria described below apply to sites where the release originated and impacted or potentially impacted adjacent parcels when:</p> <p>(1) existing buildings are occupied or may be reasonably expected to be occupied in the future, <u>or</u></p> <p>(2) buildings for human occupancy are reasonably expected to be constructed in the future.</p> <p>Appendices 1 through 4 (attached) illustrate four potential exposure scenarios and describe characteristics and criteria associated with each scenario. Petroleum release sites shall satisfy the media-specific criteria for petroleum vapor intrusion to indoor air and be considered low-threat for the vapor-intrusion-to-indoor-air pathway if:</p> <p>a. Site-specific conditions at the release site satisfy all of the characteristics and criteria of scenarios 1 through 3 as applicable, or all of the characteristics and criteria of scenario 4 as applicable; <u>or</u></p> <p>b. A site-specific risk assessment for the vapor intrusion pathway is conducted and demonstrates that human health is protected to the satisfaction of the regulatory agency; <u>or</u></p> <p>c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, the regulatory agency determines that petroleum vapors migrating from soil or groundwater will have no significant risk of adversely affecting human health.</p> <p>Exception: Exposures to petroleum vapors associated with historical fuel system releases are comparatively insignificant relative to exposures from small surface spills and fugitive vapor releases that typically occur at active fueling facilities. Therefore, satisfaction of the media-specific criteria for petroleum vapor intrusion to indoor air is not required at active commercial petroleum fueling facilities, except in cases where release characteristics can be reasonably believed to pose an unacceptable health risk."</p>			
Does the site qualify for an EXEMPTION from the Petroleum Vapor Intrusion to Indoor Air criteria (i.e., the site is an active commercial petroleum fueling facility)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Are release characteristics reasonably believed to pose an unacceptable health risk to facility users or nearby facilities?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
a. Do site-specific conditions at the release site satisfy all of the characteristics and criteria of scenarios 1 through 3 as applicable, <u>or</u> all of the characteristics and criteria of scenario 4?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Scenario 1: Unweathered LNAPL in groundwater	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Scenario 2: Unweathered LNAPL in soil	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Scenario 3: Dissolved benzene concentrations in groundwater (oxygen ≥ 4%)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Scenario 4: Dissolved phase benzene concentrations in groundwater (oxygen < 4%)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
<p align="center">(Refer to Next Page for Scenario 1 through 4 Characteristics)</p>			
b. Has a site-specific risk assessment for the vapor intrusion pathway been conducted and demonstrates that human health is protected to the satisfaction of the regulatory agency?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, has the regulatory agency determined that petroleum vapors migrating from soil or groundwater will have no significant risk of adversely affecting human health?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
<p align="center">(Media Specific Criteria for Vapor Intrusion to Indoor Air Evaluation Continued on Next Page)</p>			

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**LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA - VAPOR INTRUSION TO INDOOR AIR**

Scenarios 1 through 3: Bioattenuation Zone Characteristics

Scenario 1: Unweathered LNAPL in Groundwater				
The bioattenuation zone is a continuous zone provides a separation of at least 30 feet vertically between the LNAPL in groundwater and the foundation of existing or potential buildings; <u>and</u>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Total TPH (TPH-g and TPH-d combined) are less than 100 mg/kg throughout the entire depth of the bioattenuation zone	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA

Scenario 2: Unweathered LNAPL in Soil				
The bioattenuation zone is a continuous zone that provides a separation of at least 30 feet vertically between the LNAPL in soil and the foundation of existing or potential buildings; <u>and</u>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Total TPH (TPH-g and TPH-d combined) are <100 mg/kg throughout the entire lateral and vertical extent of the bioattenuation zone	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA

Scenario 3: Dissolved Phase Benzene Concentrations in Groundwater				
Sites without oxygen data or where oxygen is <4% and benzene concentrations < 100 µg/l (Figure A)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
The bioattenuation zone is a continuous zone that provides a separation of at least 5 feet vertically between the dissolved phase benzene and the foundation of existing or potential buildings; <u>and</u>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Contains total TPH (TPH-g and TPH-d combined) < 100 mg/kg throughout the entire depth of the bioattenuation zone	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Sites without oxygen data or where oxygen is <4% and benzene concentrations ≥ 100 µg/L but < 1,000 µg/L (Figure B)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
The bioattenuation zone is a continuous zone that provides a separation of at least 10 feet vertically between the dissolved phase benzene and the foundation of existing or potential buildings	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Sites with oxygen ≥ 4% and benzene concentrations < 1,000 µg/L (Figure C)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
A continuous zone that provides a separation of at least 10 feet vertically between the dissolved phase benzene and the foundation of existing or potential buildings	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Contains total TPH (TPH-g and TPH-d combined) < 100 mg/kg throughout the entire depth of the bioattenuation zone	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA

(LTCP Media Specific Criteria for Vapor Intrusion to Indoor Air Evaluation Continued on Next Page)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

**LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA - VAPOR INTRUSION TO INDOOR AIR**

**Scenario 4 Characteristics: Direct Measurement of Soil Gas Concentrations
(No Bioattenuation Zone)**

Were soil gas samples obtained from the required locations?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Beneath or adjacent to an existing building: Soil gas samples collected at least 5 feet below the bottom of the building foundation	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Future construction: Soil gas samples from at least five feet below ground surface	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Were soil gas samples collected in accordance with DTSC Advisory with DTSC Advisory – Active Soil Gas Investigations (April 2012)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Are all of the following criteria for a bioattenuation zone satisfied?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
There is a minimum of five vertical feet of soil between the soil vapor measurements and the foundation of an existing building or ground surface of future construction; <u>and</u>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
TPH (TPHg + TPHd) is less than 100 mg/kg (measured in at least two depths within the five-foot zone); <u>and</u>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Oxygen is \geq 4% measured at the bottom of the five-foot zone	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
If the bioattenuation zone criteria are all satisfied, then do soil gas concentrations meet the following criteria?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Residential	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Benzene <85,000 $\mu\text{g}/\text{m}^3$	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Ethylbenzene <1,100,000 $\mu\text{g}/\text{m}^3$	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Napthalene <93,000 $\mu\text{g}/\text{m}^3$	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Commercial	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Benzene <280,000 $\mu\text{g}/\text{m}^3$	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Ethylbenzene <3,600,000 $\mu\text{g}/\text{m}^3$	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Napthalene <310,000 $\mu\text{g}/\text{m}^3$	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
If the bioattenuation zone criteria are not satisfied, then do soil gas concentrations meet the following criteria?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Residential	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Benzene <85 $\mu\text{g}/\text{m}^3$	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Ethylbenzene <1,100 $\mu\text{g}/\text{m}^3$	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Napthalene <93 $\mu\text{g}/\text{m}^3$	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Commercial	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Benzene <280 $\mu\text{g}/\text{m}^3$	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Ethylbenzene <3,600 $\mu\text{g}/\text{m}^3$	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA
Napthalene <310 $\mu\text{g}/\text{m}^3$	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE	<input type="checkbox"/> NA

(LTCP Media Specific Criteria for Vapor Intrusion to Indoor Air Evaluation Continued on Next Page)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

**LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA - VAPOR INTRUSION TO INDOOR AIR**

Additional questions for sites that do not meet the LTCP Criteria (a, b, or c):

Soil Gas Samples	
Insufficient number to be representative	<input type="checkbox"/> Yes
Temporal variability not evaluated	<input type="checkbox"/> Yes
No soil gas samples	<input type="checkbox"/> Yes
Taken incorrectly	<input type="checkbox"/> Yes
Not taken at two depths within 5 foot zone	<input type="checkbox"/> Yes
High spatial or temporal variability	<input type="checkbox"/> Yes
Insufficient analytes	<input type="checkbox"/> Yes
Exposure Type	
Residential	<input type="checkbox"/> Yes
Commercial	<input type="checkbox"/> Yes
Free Product	
In groundwater	<input type="checkbox"/> Yes
In soil	<input type="checkbox"/> Yes
Unknown	<input type="checkbox"/> Yes
TPH in the Bioattenuation Zone	
< 5 feet (No Biozone)	<input type="checkbox"/> Yes
≥ 5 feet and < 10 feet	<input type="checkbox"/> Yes
≥ 10 feet and < 30 feet	<input type="checkbox"/> Yes
≥ 30 Feet	<input type="checkbox"/> Yes
30 Feet BioZone compromised (TPH>100 µg/L)	<input type="checkbox"/> Yes
Unknown	<input type="checkbox"/> Yes
Oxygen Data in Bioattenuation Zone	
No oxygen data	<input type="checkbox"/> Yes
Oxygen < 4%	<input type="checkbox"/> Yes
Oxygen ≥ 4%	<input type="checkbox"/> Yes
Benzene in Groundwater	
≥ 100 µg/L and < 1,000 µg/L	<input type="checkbox"/> Yes
≥ 1,000 µg/L	<input type="checkbox"/> Yes
Unknown	<input type="checkbox"/> Yes
Soil Gas Benzene	
≥ 85 µg/m ³ and < 280 µg/m ³	<input type="checkbox"/> Yes
≥ 280 µg/m ³ and < 85,000 µg/m ³	<input type="checkbox"/> Yes
≥ 85,000 µg/m ³ and < 280,000 µg/m ³	<input type="checkbox"/> Yes
≥ 280,000 µg/m ³	
Unknown	<input type="checkbox"/> Yes
Soil Gas Ethylbenzene	
≥ 1,100 µg/m ³ and < 3,600 µg/m ³	<input type="checkbox"/> Yes
≥ 3,600 µg/m ³ and < 1,100,000 µg/m ³	<input type="checkbox"/> Yes
≥ 1,100,000 µg/m ³ and < 3,600,000	<input type="checkbox"/> Yes
≥ 3,600,000 µg/m ³	<input type="checkbox"/> Yes
Unknown	<input type="checkbox"/> Yes
Soil Gas Napthalene	
≥ 93 µg/m ³ and < 310 µg/m ³	<input type="checkbox"/> Yes
≥ 310 µg/m ³ and < 93,000 µg/m ³	<input type="checkbox"/> Yes
≥ 93,000 µg/m ³ and < 310,000 µg/m ³	<input type="checkbox"/> Yes
≥ 310,000 µg/m ³	<input type="checkbox"/> Yes
Unknown	

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**LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA - VAPOR INTRUSION TO INDOOR AIR**

CSM Minimum Required Information

Has the <u>minimum required information</u> listed below been provided in the CSM for evaluation of case compliance with the Media Specific Criteria for Vapor Intrusion to Indoor Air?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Sufficient data to demonstrate that site characterization is complete and that the data demonstrate that the site-specific conditions satisfy all the assumptions, characteristics, and screening criteria of scenarios 1 through 3, <u>or</u> all the assumptions, characteristics, and screening criteria of scenario 4?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Evidence of unweathered LNAPL in soil or groundwater?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Soil data to demonstrate that total TPH concentrations (TPH-g and TPH-d combined) in soil are < 100 mg/kg throughout the specified bioattenuation zone depth?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Depth of foundation of existing or potential buildings?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Soil gas data to demonstrate that a continuous bioattenuation zone is or is not present?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Concentrations of benzene in groundwater?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Oxygen data in the bioattenuation zone?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Results and evaluation of preferential pathway and utility conduit surveys to determine whether a continuous bioattenuation zone is present?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Evaluation of data representativeness, quality, spatial distribution, and temporal variability relative to current or potential receptors and sources?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Evaluation to assess whether nearby facilities potentially may be impacted by petroleum vapor intrusion?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Sufficient data to demonstrate that through the use of mitigation measures or institutional controls, exposure to petroleum vapors migrating from soil or groundwater will have no significant risk of adversely affecting human health?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA

(Refer to Att. 1 - CSM Checklist for Identification of Data Gaps)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

**LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA - VAPOR INTRUSION TO INDOOR AIR**

Case Notes

A large, empty rectangular box with a thin black border, intended for entering case notes. The box is currently blank.

*****End of Vapor Intrusion to Indoor Air Evaluation*****

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

**LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA - DIRECT CONTACT AND OUTDOOR AIR EXPOSURE**

Does the site satisfy the Media-Specific Criteria for Direct Contact and Outdoor Air Exposure, <u>or</u> does the site qualify for the exemption?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
----------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------	---------------------------------------

LTCP Statement: “This policy describes conditions where direct contact with contaminated soil or inhalation of contaminants volatilized to outdoor air poses a low threat to human health. Release sites where human exposure may occur satisfy the media-specific criteria for direct contact and outdoor air exposure and shall be considered low-threat if they meet any of the following:

- a. Maximum concentrations of petroleum constituents in soil are less than or equal to those listed in Table 1 for the specified depth below ground surface (bgs). The concentration limits for 0 to 5 feet bgs protect from ingestion of soil, dermal contact with soil, and inhalation of volatile soil emissions and inhalation of particulate emissions. The 5 to 10 feet bgs concentration limits protect from inhalation of volatile soil emissions. Both the 0 to 5 feet bgs concentration limits and the 5 to 10 feet bgs concentration limits for the appropriate site classification (Residential or Commercial/Industrial) shall be satisfied. In addition, if exposure to construction workers or utility trench workers is reasonably anticipated, the concentration limits for Utility Worker shall also be satisfied; or
- b. Maximum concentration of petroleum constituents in soil are less than levels that a site specific risk assessment demonstrates will have no significant risk of adversely affecting human health; or
- c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, the regulatory agency determines that the concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health.”

Does the site qualify for an EXEMPTION from Direct Contact and Outdoor Air Exposure Criteria (i.e., is the upper 10 feet of soil free of petroleum contamination)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No									
If the site does not qualify for the exemption, then does the site satisfy the media-specific criteria (a, b, <u>or</u> c) for direct contact and outdoor air exposure?	<input type="checkbox"/> Yes	<input type="checkbox"/> No									
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:60%; padding: 5px;">a. Are maximum concentrations of petroleum constituents in soil less than or equal to those listed in Table 1 for the specified depth bgs? (Refer to Next Page for Concentrations Limits Evaluation)</td> <td style="width:20%; text-align: center; padding: 5px;"><input type="checkbox"/> Yes</td> <td style="width:20%; text-align: center; padding: 5px;"><input type="checkbox"/> No</td> </tr> <tr> <td style="padding: 5px;">b. Are the maximum concentrations of petroleum constituents in soil less than levels that a site specific risk assessment demonstrates will have no significant risk of adversely affecting human health?</td> <td style="text-align: center; padding: 5px;"><input type="checkbox"/> Yes</td> <td style="text-align: center; padding: 5px;"><input type="checkbox"/> No</td> </tr> <tr> <td style="padding: 5px;">c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, has the regulatory agency determined that the concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health?</td> <td style="text-align: center; padding: 5px;"><input type="checkbox"/> Yes</td> <td style="text-align: center; padding: 5px;"><input type="checkbox"/> No</td> </tr> </table>	a. Are maximum concentrations of petroleum constituents in soil less than or equal to those listed in Table 1 for the specified depth bgs? (Refer to Next Page for Concentrations Limits Evaluation)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	b. Are the maximum concentrations of petroleum constituents in soil less than levels that a site specific risk assessment demonstrates will have no significant risk of adversely affecting human health?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, has the regulatory agency determined that the concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health?	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
a. Are maximum concentrations of petroleum constituents in soil less than or equal to those listed in Table 1 for the specified depth bgs? (Refer to Next Page for Concentrations Limits Evaluation)	<input type="checkbox"/> Yes	<input type="checkbox"/> No									
b. Are the maximum concentrations of petroleum constituents in soil less than levels that a site specific risk assessment demonstrates will have no significant risk of adversely affecting human health?	<input type="checkbox"/> Yes	<input type="checkbox"/> No									
c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, has the regulatory agency determined that the concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health?	<input type="checkbox"/> Yes	<input type="checkbox"/> No									

(Media Specific Criteria for Direct Contact and Outdoor Air Exposure Evaluation Continued on Next Page)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

**LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA - DIRECT CONTACT AND OUTDOOR AIR EXPOSURE**

Maximum Concentrations of Petroleum Constituents in Soil (Scenario a)

**Table 1 – Concentrations of Petroleum Constituents in Soil
That will Have No Significant Risk of Adversely Affecting Human Health**

Chemical	Residential		Commercial/Industrial		Utility Worker
	0 to 5 ft bgs (mg/kg)	5 to 10 ft bgs (mg/kg)	0 to 5 ft bgs (mg/kg)	5 to 10 ft bgs (mg/kg)	0 to 10 ft bgs (mg/kg)
Benzene	1.9	2.8	8.2	12	14
<i>Max Soil Conc¹</i>					
Ethylbenzene	21	32	89	134	314
<i>Max Soil Conc¹</i>					
Napthalene	9.7	9.7	45	45	219
<i>Max Soil Conc¹</i>					
PAH	0.063	NA	0.68	NA	4.5
<i>Max Soil Conc¹</i>					

Notes:

1. The maximum concentrations of petroleum constituents in soil should be compared to those listed in Table 1 (Technical Justification for Soil Screening Levels for Direct Contact and Outdoor Air Exposure Pathways, SWRCB)
2. Based on the seven carcinogenic poly-aromatic hydrocarbons (PAHs) as benzo(a)pyrene toxicity equivalent [BaPe]. Sampling and analysis for PAHs is only necessary where soil is affected by either waste oil or Bunker C oil.

Are both the 0 to 5 feet bgs concentration limits 5 to 10 feet bgs concentration limits for the appropriate site classification satisfied?

Yes No NE

Residential: 0 to 5 feet bgs	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Residential: 5 to 10 feet bgs	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Commercial/Industrial: 0 to 5 feet bgs	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Commercial/Industrial: 5 to 10 feet bgs	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE

If exposure to construction or utility trench workers is reasonably anticipated, are the concentration limits for the Utility Worker satisfied?

Yes No NE

Have the requirements for using the screening levels in Table 1 been satisfied (i.e., have the model assumptions presented in the SWRCB document entitled “*Technical Justification for Soil Screening Levels for Direct Contact and Outdoor Air Exposure Pathways*” been met?

Yes No NE

Is the area of impacted soil where a particular exposure occurs ≤ 82 feet by 82 feet?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Is the receptor located at the downgradient edge for inhalation exposure?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Is the wind speed < 2.25 meters per second (7.38 feet per second) on average?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE
Are there different exposure scenarios than residential, commercial/industrial, utility worker) at the site?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NE

(LTCP Media Specific Criteria for Direct Contact and Outdoor Air Exposure Evaluation Continued on Next Page)

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

**LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA - DIRECT CONTACT AND OUTDOOR AIR EXPOSURE**

Additional Questions FOR Sites That Do Not Meet the LTCP Criteria

Indicate only those conditions that do not meet the Direct Contact and Outdoor Air Exposure scenarios:

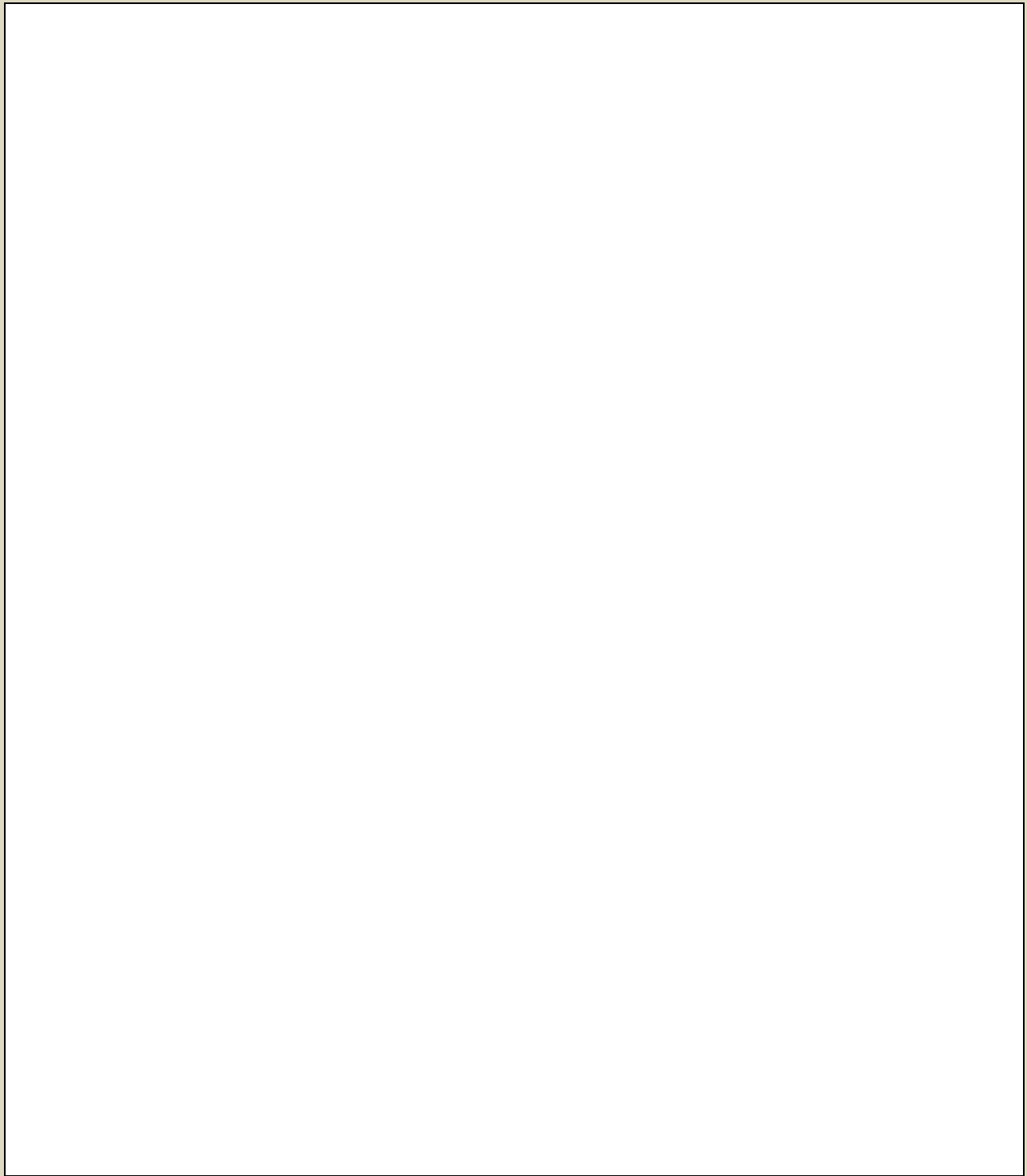
Exposure Type:	
Residential	<input type="checkbox"/> Yes
Commercial	<input type="checkbox"/> Yes
Utility Worker	<input type="checkbox"/> Yes
Petroleum Constituents in Soil:	
≤ 5 feet bgs	<input type="checkbox"/> Yes
> 5 feet bgs and ≤ 10 feet bgs	<input type="checkbox"/> Yes
Unknown	<input type="checkbox"/> Yes
Soil Concentrations of Benzene:	
> 1.9 mg/kg and ≤ 2.8 mg/kg	<input type="checkbox"/> Yes
> 2.8 mg/kg and ≤ 8.2 mg/kg	<input type="checkbox"/> Yes
> 8.2 mg/kg and ≤ 12 mg/kg	<input type="checkbox"/> Yes
> 12 mg/kg and ≤ 14 mg/kg	
> 14 mg/kg	<input type="checkbox"/> Yes
Unknown	<input type="checkbox"/> Yes
Soil Concentrations of Ethylbenzene:	
> 21 mg/kg and ≤ 32 mg/kg	<input type="checkbox"/> Yes
> 32 mg/kg and ≤ 89 mg/kg	<input type="checkbox"/> Yes
> 89 mg/kg and ≤ 134 mg/kg	<input type="checkbox"/> Yes
> 134 mg/kg and ≤ 314 mg/kg	<input type="checkbox"/> Yes
> 314 mg/kg	<input type="checkbox"/> Yes
Unknown	<input type="checkbox"/> Yes
Soil Concentrations of Naphthalene:	
> 9.7 mg/kg and ≤ 45 mg/kg	<input type="checkbox"/> Yes
> 45 mg/kg and ≤ 219 mg/kg	<input type="checkbox"/> Yes
> 219 mg/kg	<input type="checkbox"/> Yes
Unknown	<input type="checkbox"/> Yes
Soil Concentrations of PAH:	
> 0.063 mg/kg and ≤ 0.68 mg/kg	<input type="checkbox"/> Yes
> 0.68 mg/kg and ≤ 4.5 mg/kg	<input type="checkbox"/> Yes
> 4.5 mg/kg	<input type="checkbox"/> Yes
Unknown	
Area of Impacted Soil:	
Area of Impacted Soil > 82 by 82 Feet	<input type="checkbox"/> Yes
Unknown	<input type="checkbox"/> Yes

This case should be closed in spite of <u>not</u> meeting policy criteria:	<input type="checkbox"/> Yes
List Reasons:	

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable

**LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA - DIRECT CONTACT AND OUTDOOR AIR EXPOSURE**

Direct Contact and Outdoor Air Exposure: Case Notes



*****End of Direct Contact and Outdoor Air Exposure Criteria Evaluation*****

KEY: NE = Identified Data Gap - Needs Further Evaluation NA = Not Applicable