ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

November 28, 2012

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

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

Subject: Low-Threat Closure Policy Review for Fuel Leak Case No. RO0000288 (Geotracker Global ID# T0600101928), Oro Loma Sanitary District, 2600 Grant Avenue, San Lorenzo, CA

Dear Messrs. Cullen and Trommer:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above referenced site with respect to the recently adopted Low-Threat Closure Policy (LTCP). The subject site has received several 5-Year Reviews by the Underground Storage Tank Cleanup Fund (USTCF), and the USTCF recommended site closure as a result of those reviews. ACEH has disagreed with each of these reviews based on a technical review of site specific data and information. ACEH understands that the USTCF intends on reviewing the site under the LTCP. Because all local regulatory agencies have been locked out of the LTCP page of Geotracker for sites with USTCF recommendations for closure, this letter provides and documents the ACEH review of the site under the LTCP.

Online case files are available for review at the following website: http://www.acgov.org/aceh/index.htm.

If you have any questions, please call me at (510) 567-6876 or send me an electronic mail message at mark.detterman@acgov.org.

Sincerely,

Digitally signed by Mark E. Detterman
DN: cn=Mark E. Detterman, o, ou, email, c=US
Date: 2012.11.28 15:43:10 -08'00'

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

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

ALAMEDA COUNTY ENVIRONMENTAL HEALTH
LOW THREAT UST CASE CLOSURE POLICY COMPLIANCE AND
IDENTIFICATION OF IMPEDIMENTS TO CASE CLOSURE CHECKLIST

Agency Name : Alameda County Environmental Health	Date: November 28, 2012
Case Worker: Mark Detterman	Fuel Leak Case No: RO0000288
Site Name: Oro Loma Sanitary District	GeoTracker Global ID: T0600101928
Site Address: 2600 Grant Ave, San Lorenzo, CA 94580	USTCF Claim No: 15864, 8694

☐ PASS ■ FAIL

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
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 (CSM) _____ 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 *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 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 paper and electronic policy checklists. While ACEH has found the CA LUFT Manual to be a valuable tool, we are concerned that the over simplification of the SWRCB checklist can result in erroneous conclusions regarding recommendations for case closure and a lack of transparency regarding the decision making process. Therefore, to attempt to address this issue, ACEH staff have enhanced the LTCP checklist by integrating 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 checklist, entitled the ***Low-Threat UST Case Closure Policy Compliance and Identification of Impediments to Case Closure Checklist,*** was utilized by ACEH staff during our evaluation of this site and is presented in the subsequent pages of this document.

LOW THREAT CLOSURE POLICY
GENERAL CRITERIA COMPLIANCE CHECKLIST

General Criteria a: **Is the Unauthorized Release Located within the Service Area of a Public Water System?**	☑ YES	☐ NO

LTCP Statement: "This policy is protective of existing water supply wells. New water supply wells 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 public water system 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."

Name of public water system:

☑ East Bay Municipal Utility District	☐ Zone 7 Water Agency	☐ City of Hayward Water

Has all pertinent information been provided in the CSM for evaluation of case compliance with General Criteria a? **(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)**	☑ Yes	☐ No

Case Review Narrative Summary:

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

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

LOW THREAT CLOSURE POLICY
GENERAL CRITERIA COMPLIANCE CHECKLIST

General Criteria b: **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."

Has all pertinent information been provided in the CSM for evaluation of case compliance with General Criteria b? **(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)**	☑ Yes	☐ No

Case Review Narrative Summary:

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

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

LOW THREAT CLOSURE POLICY
GENERAL CRITERIA COMPLIANCE CHECKLIST

General Criteria c: **Has the Unauthorized ("Primary") Release from the UST System been Stopped?**	☑ YES	☐ NO	☐ NE

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."

Has all pertinent information been provided in the CSM for evaluation of case compliance with General Criteria c? (Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)	☑ Yes	☐ No

Case Review Narrative Summary:

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

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

LOW THREAT CLOSURE POLICY
GENERAL CRITERIA COMPLIANCE CHECKLIST

General Criteria d: **Has Free Product been Removed to the Maximum Extent Practicable?**	☑ YES	☐ NO	☐ NE	☐ NA

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:

(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;

(b) Abatement of free product migration shall be used as a minimum objective for the design of any free product removal system; and

(c) Flammable products shall be stored for disposal in a safe and competent manner to prevent fires or explosions."

Has all pertinent information been provided in the CSM for evaluation of case compliance with General Criteria d? (Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)	☑ Yes	☐ No

Case Review Narrative Summary:

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

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

LOW THREAT CLOSURE POLICY
GENERAL CRITERIA COMPLIANCE CHECKLIST

General Criteria e: **Has a Conceptual Site Model that Adequately Assesses the Nature, Extent, and Mobility of the Release been Developed?**	☐ YES	☒ NO	☐ NE

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."

Has all pertinent information been provided in the CSM for evaluation of case compliance with General Criteria e? **(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)**	☐ Yes	☒ No

Case Review Narrative Summary:

The lateral extent of groundwater contamination has not been defined to the east beneath the Oro Loma Sanitary Engineering Building footprint. The extent this building is exposed to soil, groundwater, and vapor contamination has not been evaluated. Concentrations of 21 mg/kg benzene are documented in soil between 5 and 7 feet immediately adjacent (west) of this building. Concentrations up to 24,000 ug/l benzene were documented in grab groundwater samples collected immediate adjacent (west) of this building).

Soil vapor remains unevaluated. Because elevated soil contamination remains within the upper 10 feet of soil after the remedial excavation was conducted and because the depth to groundwater ranges between approximately 4 and 6 feet, a significant vapor source is documented to remain beneath the site. Limited degradation / attenuation of petroleum vapor concentrations is a concern at the site. Further details are provided below.

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

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

LOW THREAT CLOSURE POLICY
GENERAL CRITERIA COMPLIANCE CHECKLIST

General Criteria f: **Has Secondary Source been Removed to the Extent Practicable?**	☐ YES	☐ NO	☒ NE

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."

Has all pertinent information been provided in the CSM for evaluation of case compliance with General Criteria f? (Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)	☐ Yes	☒ No

Case Review Narrative Summary:

The secondary source was subject to an overexcavation effort that measured approximately 40 by 45 by 8 feet, and was limited on two sides. Four corner soil samples were collected to characterize contaminant concentrations at the lateral (corner) extents of the excavation. As such the secondary source removal effort is considered to be inadequately characterized by standard industry perimeter soil characterization methods. In these four samples, concentrations up to 3,000 mg/kg TPHg and 15 mg/kg benzene were documented in soil at a depth of 8 feet below grade surface (bgs). Additionally, soil samples collected from well MW-6 installed downgradient of, and in conjunction with, the remedial excavation, yielded a concentration of 34 mg/kg benzene at a depth of 6 feet bgs. This soil was not removed during the excavation and remains at the site.

A significant percentage of the secondary source excavation appears to have been used as backfill as only 383 cubic yards (fluffed) are documented to have been off-hauled for an excavation yardage of approximately 535 cubic yards (non-fluffed). Using a low conservative fluff factor of 1.4 per ton, this suggests approximately 50% of the soil was reused. No soil samples appear to have been collected to document and confirm reuse of petroleum contaminated soil at the site; specific SF RWQCB guidance for this has been available for a number of years.

Two remedial groundwater extraction trenches were installed downgradient and crossgradient (90 and 65 feet in length, respectively) from the excavation, but have not been operated despite several letters requesting this action. Remediation can be characterized as either incorrectly designed, as shut off prematurely (not started), or as following poor O&M. Benzene concentrations in groundwater downgradient of the excavation ranged between 1,300 and 8,500 ug/l (MW-5) during this time period.

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

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

LOW THREAT CLOSURE POLICY
GENERAL CRITERIA COMPLIANCE CHECKLIST

General Criteria g: **Has Soil or Groundwater been Tested for MTBE and Results Reported in Accordance with Health and Safety Code Section 25296.15?**	☑ YES	☐ NO	☐ NE

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."

Has all pertinent information been provided in the CSM for evaluation of case compliance with General Criteria g? **(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)**	☑ Yes	☐ No

Case Review Narrative Summary:

*****End of General Criteria g Evaluation*****

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

LOW THREAT CLOSURE POLICY
GENERAL CRITERIA COMPLIANCE CHECKLIST

General Criteria h: **Does a Nuisance as Defined by Water Code Section 13050 Exist at the Site?**	☐ YES	☒ NO	☐ NE

LTCP Statement: "Water Code section 13050 defines "nuisance" as anything which meets all of the following requirements:

(1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.

(2) 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.

(3) Occurs during, or as a result of, the treatment or disposal of wastes.

For the purpose of this policy, waste means a petroleum release."

Has all pertinent information been provided in the CSM for evaluation of case compliance with General Criteria h? **(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Identification of Data Gaps)**	☒ Yes	☐ No

Case Review Narrative Summary:

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

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA: GROUNDWATER COMPLIANCE CHECKLIST

1. Media Specific Criteria: Groundwater: Does the site meet the LTCP criteria for groundwater?	☐ YES	☒ NO	☐ NE	☐ NA

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.

State Water Board Resolution 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304* 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.

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.

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.

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."

"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."

Does the site qualify for the soil only case exemption?	☐ Yes	☒ No	☐ NE
Is the contaminant plume stable or decreasing in areal extent?	☐ Yes	☐ No	☒ NE
If the contaminant plume is stable or decreasing, then does it meet all of the additional characteristics of one of the five (5) LTCP classes?	☐ Yes	☐ No	☒ NE

Class 1	☐ Yes	☒ No	☐ NE
Class 2	☐ Yes	☐ No	☒ NE
Class 3	☐ Yes	☐ No	☒ NE
Class 4	☐ Yes	☒ No	☐ NE
Class 5	☐ Yes	☒ No	☐ NE

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Classification Criteria)

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

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

LOW THREAT CLOSURE POLICY
MEDIA SPECIFIC CRITERIA: GROUNDWATER COMPLIANCE CHECKLIST

1. Media Specific Criteria: Groundwater (continued)

Has <u>all pertinent information</u> been provided in the CSM for evaluation of case compliance with Media Specific Criteria for Groundwater?	**☐ Yes**	**☒ No**	**☐ NE**
EXEMPTION Criteria?	☐ Yes	☒ No	☐ NE
Groundwater Plume Stability Criteria?	☐ Yes	☐ No	☒ NE
Groundwater Plume Classification Criteria?	☐ Yes	☐ No	☒ NE

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Classification Criteria)

Case Review Narrative Summary:

The lateral extent of groundwater contamination has not been defined to the east beneath the Oro Loma Sanitary Engineering Building footprint. The extent this building is exposed to (soil), groundwater and vapor contamination has not been evaluated. Concentrations of 21 mg/kg benzene were documented in soil in the water-bearing zone between 5 and 7 feet immediately adjacent (west) of this building. Concentrations up to 24,000 ug/l benzene were documented in grab groundwater samples collected immediate adjacent (west) of this building). The site fails to meet this Media Specific Criteria.

The remedial excavation was conducted in May 2008, while post excavation groundwater monitoring occurred until June 2011. Contaminant trends at that time had been fluctuating within previously existing pre-excavation ranges suggesting insufficient secondary source removal; however, longer term contaminant trends are declining (22,000 ug/l [with TPH concentrations indicative of free product], down to 1,300 to 3,400 ug/l benzene [and TPH concentrations slightly below free product concentration ranges]). Because significant soil contamination is documented to remain at the site (up to 34 mg/kg benzene in soil in the water-bearing zone), the extent of, and time frame for, reductions in groundwater contamination at the site remains unknown.

*****End of Media Specific Criteria for Groundwater Evaluation*****

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

LOW THREAT CLOSURE POLICY COMPLIANCE CHECKLIST
MEDIA SPECIFIC CRITERIA: PETROLEUM VAPOR INTRUSION TO INDOOR AIR

2. Media Specific Criteria: Petroleum Vapor Intrusion to Indoor Air **Does the site meet the LTCP criteria for petroleum vapor intrusion to indoor air?**	☐ YES	■ NO	☐ NE	☐ NA

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.

The low-threat vapor-intrusion criteria described below apply to sites where the release originated 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 future.

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:

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; or

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; 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 petroleum vapors migrating from soil or groundwater will have no significant risk of adversely affecting human health.

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."

EXEMPTION: Active Commercial Petroleum Facility: Is the site an active commercial petroleum fueling facility?	☐ Yes	■ No	☐ NE
a. Does the release site meet one of the three petroleum vapor intrusion to indoor air specific criteria listed below (a, b, or c)?	☐ Yes	■ No	☐ NE
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?	☐ Yes	■ No	☐ NE
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?	☐ Yes	■ No	☐ NE

Has all pertinent information been provided in the CSM for evaluation of case compliance with Media Specific Criteria for Vapor Intrusion to Indoor Air?	☐ Yes	■ No
EXEMPTION Criteria?	■ Yes	☐ No
Media Specific Criteria a for Vapor Intrusion to Indoor Air?	☐ Yes	■ No
Media Specific Criteria b for Vapor Intrusion to Indoor Air?	☐ Yes	■ No
Media Specific Criteria c for Vapor Intrusion to Indoor Air?	☐ Yes	■ No

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Classification Criteria)

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

LOW THREAT CLOSURE POLICY COMPLIANCE CHECKLIST
MEDIA SPECIFIC CRITERIA: PETROLEUM VAPOR INTRUSION TO INDOOR AIR

2. Media Specific Criteria: Petroleum Vapor Intrusion to Indoor Air Evaluation (continued)

Case Review Narrative Summary:

The site is not an active service station. Soil gas has not been investigated at the site. Groundwater ranges between 4 and 6 feet bgs. Very limited soil samples have been collected in the upper 5 feet of soil beneath the site; however, soil bore SB-1 contained 14 mg/kg benzene at a depth of 4 feet. This soil bore was installed near the former UST pit, and site maps are not sufficient to determine if this soil sample location was removed at the time of excavation (bore placed approximately 7 to 8 feet from building, whereas the excavation was held 8 feet from the building due to structural concerns); however, immediately adjacent unremoved soil remains suspect. Soil contamination is documented up to 34 mg/kg benzene at 6 feet bgs, and recent groundwater contamination is documented between 1,300 to 3,400 ug/l benzene (with TPH concentrations slightly below free product concentration ranges). The soil gas concentrations of benzene, ethylbenzene, and naphthalene are not known. The site fails to meet this criteria on a number of elements.

The lateral extent of groundwater contamination has not been defined to the east beneath the Oro Loma Sanitary Engineering Building footprint. The extent this building is exposed to soil, groundwater, and vapor contamination has also not been evaluated. Concentrations of 21 mg/kg benzene were documented in soil between 5 and 7 feet immediately adjacent (west) of this building. Concentrations up to 24,000 ug/l benzene were documented in grab groundwater samples collected immediate adjacent (west) of this building).

*****End of Media Specific Criteria for Vapor Intrusion to Indoor Air Evaluation*****

LOW THREAT CLOSURE POLICY COMPLIANCE CHECKLIST
MEDIA SPECIFIC CRITERIA: DIRECT CONTACT AND OUTDOOR AIR EXPOSURE

3. Media-Specific Criteria: Direct Contact and Outdoor Air Exposure **Does the Site Satisfy the Media-Specific Criteria for Direct Contact and Outdoor Air Exposure (a, b, or c)?**	**YES**	**NO**	**NE**
	☐	☒	☐

LTCP Statement: "This policy describes conditions where direct contact with contaminated soil or inhalation of contaminants volatized 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."

EXEMPTION – Is the upper 10 feet of soil free of petroleum contamination?	☐ Yes	☒ No	☐ NE	☐ NA
a. Are maximum concentrations of petroleum constituents in soil less than or equal to those listed in Table 1 for the specified depth below ground surface (bgs)?	☐ Yes	☒ No	☐ NE	☐ NA
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?	☐ Yes	☐ No	☒ NE	☐ NA
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 not significant risk of adversely affecting human health?	☐ Yes	☒ No	☐ NE	☐ NA

Has all pertinent information been provided in the CSM for evaluation of case compliance with following Media Specific Criteria for Direct Contact and Outdoor Air Exposure?	**Yes**	**No**
EXEMPTION Criteria?	☐ Yes	☐ No
Media Specific Criteria a for Direct Contact and Outdoor Exposure Air?	☐ Yes	☐ No
Media Specific Criteria b for Direct Contact and Outdoor Exposure Air?	☐ Yes	☐ No
Media Specific Criteria c for Direct Contact and Outdoor Exposure Air?	☐ Yes	☐ No

(Refer to Att. 1 - CSM Detailed Evaluation Checklist for Classification Criteria)

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

3. Media-Specific Criteria: Direct Contact and Outdoor Air Exposure (continued)

Case Review Narrative Summary:

The site fails to meet this Media Specific Criteria on a number of elements.

***** End of Media Specific Criteria for Direct Contact and Outdoor Air Exposure*****

LOW THREAT CLOSURE POLICY COMPLIANCE CHECKLIST
NOTIFICATION REQUIREMENTS OF PROPOSED CLOSURE

Notification Requirements of Proposed Closure: Has the Regulatory Agency Recommending Closure Complied with the Low Threat Closure Policy Public Notification Requirements?	☐ YES	☐ NO	☒ UNK

LTCP Statement: "Cases that meet the general and media-specific criteria established in this policy pose a low threat to human health, safety and the environment and satisfy the case-closure requirements of Health and Safety Code section 25296.10, and case closure is consistent with State Water Board Resolution 92-49 that requires that cleanup goals and objectives be met within a reasonable time frame. If the 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. After completion of these items, and unless the regulatory agency revises its determination based on comments received on the proposed case closure, the regulatory agency shall issue a uniform closure letter within 30 days from the end of the comment period.

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, owners and occupants of the property impacted 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. The regulatory agency shall consider any comments received when determining if the case should be closed or if site specific conditions warrant otherwise.

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, owners and occupants of the property impacted 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. The regulatory agency shall consider any comments received when determining if the case should be closed or if site specific conditions warrant otherwise."

Name of the Regulatory Agency Making Recommendation for Case Closure:				
Alameda County Environmental Health	☐ Yes	☐ No	☐ NE	☐ NA
Regional Water Quality Control Board	☐ Yes	☐ No	☐ NE	☐ NA
Underground Storage Tank Cleanup Fund	☐ Yes	☐ No	☐ NE	☐ NA
State Water Resources Control Board	☐ Yes	☐ No	☐ NE	☐ NA
Does ACEH Concur with Closure Recommendation?	**☐ Yes**	**☐ No**	**☐ NE**	**☐ NA**

Have the Appropriate Water Districts been Notified of the Proposed Closure?	**☐ Yes**	**☐ No**	**☐ NE**	**☐ NA**
Municipal and County Water Districts	**☐ Yes**	**☐ No**	**☐ NE**	**☐ NA**
East Bay Municipal Utility District	☐ Yes	☐ No	☐ NE	☐ NA
Zone 7 Water District	☐ Yes	☐ No	☐ NE	☐ NA
City of Hayward Water	☐ Yes	☐ No	☐ NE	☐ NA
Water Replenishment Districts				
East Bay Municipal Utility District	☐ Yes	☐ No	☐ NE	☐ NA
Zone 7	☐ Yes	☐ No	☐ NE	☐ NA
City of Hayward	☐ Yes	☐ No	☐ NE	☐ NA

(Proposed Closure Notification Requirements Evaluation Continued on Next Page)

LOW THREAT CLOSURE POLICY COMPLIANCE CHECKLIST
NOTIFICATION REQUIREMENTS OF PROPOSED CLOSURE

Notification Requirements of Proposed Closure (continued)

Have agencies with authority to issue building permits for land affected by the petroleum been notified of the proposed closure?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Counties:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Alameda County Public Works Department	☐ Yes	☐ No	☐ NE	☐ NA
Cities:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Alameda	☐ Yes	☐ No	☐ NE	☐ NA
Albany	☐ Yes	☐ No	☐ NE	☐ NA
Dublin	☐ Yes	☐ No	☐ NE	☐ NA
Emeryville	☐ Yes	☐ No	☐ NE	☐ NA
Hayward	☐ Yes	☐ No	☐ NE	☐ NA
Livermore	☐ Yes	☐ No	☐ NE	☐ NA
Oakland	☐ Yes	☐ No	☐ NE	☐ NA
Piedmont	☐ Yes	☐ No	☐ NE	☐ NA
Pleasanton	☐ Yes	☐ No	☐ NE	☐ NA
San Leandro	☐ Yes	☐ No	☐ NE	☐ NA

Have Owners and Occupants of all Parcels Adjacent to the Impacted Property been Notified?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Owners	☐ Yes	☐ No	☐ NE	☐ NA
Occupants	☐ Yes	☐ No	☐ NE	☐ NA
Has the regulatory agency given public notice <u>to other affected parties</u> <u>or potentially affected parties</u> <u>beside the owners and occupants of adjacent parcels</u> in compliance with the public participation requirements of Chapter 16 of Division 3 of Title 23 of the California Code of Regulations and Chapter 6.7 of Division 20 if the Health and Safety Code?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Owners	☐ Yes	☐ No	☐ NE	☐ NA
Occupants	☐ Yes	☐ No	☐ NE	☐ NA
Have the appropriate parties been provided a 60 day period to comment?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**

(Proposed Closure Notification Requirements Evaluation Continued on Next Page)

LOW THREAT CLOSURE POLICY COMPLIANCE CHECKLIST
NOTIFICATION REQUIREMENTS OF PROPOSED CLOSURE

Notification Requirements of Proposed Closure (continued)

Has the Regulatory Agency Recommending Closure Followed the Public Notification Procedures Contained in the SWRCB and Regional Water Quality Control Boards April 2005 Guidance Document Entitled *Final Draft Public Participation at Cleanup Sites?*	☐ **Yes**	☐ **No**	☐ **UNK**

Guidance Statement: "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, cleanup could generate dust and noise, or cleanup is linked to redevelopment of the property."

Category 1 Public Participation Requirements:

"Category 1 includes most leaking underground fuel tank (LUFT) sites and many small commercial facilities. Category 1 sites are characterized by soil or groundwater contamination that does not pose an immediate human health threat and does not extend off-site onto neighboring properties. Off-site groundwater plumes that extend only into the public right of way are also included in this category."

Category 2 Public Participation Requirements:

"Category 2 includes larger industrial or commercial sites with significant soil and groundwater contamination. At these sites, the groundwater plume extends off-site beyond the public right of way (or is assumed to extend off-site until investigation shows otherwise.) This category includes many solvent sites. A few LUFT sites will fall into this category. This category also includes California Land Reuse and Revitalization Act (CLRRA) sites, where a buyer or landowner has applied for liability relief pursuant to this Brownsfield legislation."

Have Category 1 Public Participation Requirements Been Satisfied?	☐ **Yes**	☐ **No**	☐ **UNK**
Have surrounding property owners and residents within an appropriate distance of the site been notified (e.g., 200 foot radius in an urban setting, 1,000 foot in a rural setting per the April 2005 document)? (The term "site" refers to the full extent of known contamination)	☐ Yes	☐ No	☐ UNK
Have other interested parties or groups, including other public agencies and environmental and community groups been notified?	☐ Yes	☐ No	☐ UNK
Have Category 2 Public Participation Requirements Been Satisfied?	☐ **Yes**	☐ **No**	☐ **UNK**
Have all property owners and residents affected, or potentially affected by offsite migration of the plume been notified?	☐ Yes	☐ No	☐ UNK

(Proposed Closure Notification Requirements Evaluation Continued on Next Page)

LOW THREAT CLOSURE POLICY COMPLIANCE CHECKLIST
NOTIFICATION REQUIREMENTS OF PROPOSED CLOSURE

Notification Requirements of Proposed Closure (continued)

Has <u>all pertinent information</u> been provided by the regulatory agency recommending case closure for evaluation of case compliance with Case Closure Notification Requirements?	☐ **Yes**	☐ **No**

Case Notes:

*****End of Low-Threat Case Closure Notification Requirements Evaluation*****

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

LOW THREAT CASE CLOSURE COMPLIANCE CHECKLIST
MONITORING WELL DESTRUCTION REQUIREMENTS

Case Closure: Monitoring Well Destruction Have all wells and borings installed for the purpose of investigating, remediating, or monitoring the unauthorized release been properly destroyed?	☐ YES	☐ NO	☐ NE

LTCP Statement: "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."

Have all wells and borings been properly destroyed?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
If no, then have the property owner certified that they will keep and maintain the wells or borings in accordance with applicable local or state requirements?	☐ Yes	☐ No	☐ NE	☐ NA

Has <u>all pertinent information</u> been provided for evaluation of case compliance with Case Closure Monitoring Well Destruction Requirements?	☐ **Yes**	☐ **No**

Case Review Narrative Summary:

*****End of Monitoring Well Destruction Requirements Evaluation*****

LOW THREAT CLOSURE POLICY COMPLIANCE CHECKLIST
CASE CLOSURE: WASTE REMOVAL REQUIREMENTS

Case Closure: Waste Removal Requirements Have all waste piles, drums, debris, and other investigation or remediation derived materials been removed from the site and properly managed in accordance with regulatory agency requirements?	☐ YES	☐ NO	☐ NE

Policy Statement: All waste piles, drums, debris and other investigation or remediation derived materials shall be removed from the site and properly managed in accordance with regulatory agency requirements.

Has all pertinent information been provided for evaluation of case compliance with Case Closure Waste Removal Requirements?	☐ Yes	☐ No

Case Notes:

*****End of Waste Removal Requirements Evaluation*****

ATTACHEMENT 1

CSM DETAILED EVALUATION CHECKLIST FOR CLASSIFICATION CRITERIA

CONCEPTUAL SITE MODEL (CSM) EVALAUTION AND DATA GAP IDENTIFICATION CHECKLIST

CSM Objectives

CA LUFT Manual Guidance Statement:

The objectives of a CSM are:

- To convey an understanding of the origin, nature, and lateral and vertical extent of contamination.
- To identify potential contaminant fate-and-transport processes and pathways. See the Fate and Transport chapter for further details.
- To identify potential human and environmental receptors that may be impacted by contamination associated with the site.
- To guide site investigation activities and identify additional data needed (if any) to draw reasonable conclusions regarding the source(s), pathways, and receptors.
- To frame the evaluation of risk to human health, safety, and the environment posed by releases at a LUFT site.

The objectives emphasize the need for an approach where a CSM is developed early and is iteratively refined through the project life cycle. Each piece of data that is collected should serve to refine the CSM. The Interstate Technology & Regulator Council (ITRC) Vapor Intrusion Pathway Guidance document (ITRC 2007) provides additional information on developing a CSM."

The "components of a CSM" include:

- "Hydrogeologic Setting:
- "Source"
- "Contaminant Transport and Exposure Pathways"
- "Receptors"

ITRC Vapor Intrusion Pathway Guidance (http://www.itrcweb.org/Documents/VI-1.pdf)

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

CONCEPTUAL SITE MODEL
AND DATA GAP IDENTIFICATION CHECKLIST

CSM Document Development

Has the CSM been developed in accordance with industry standards?	☐ **Yes**	☑ **No**	☐ **UNK**	☐ **NA**
SWRCB CA LUFT Manual, September 2012	☐ Yes	☑ No	☐ UNK	☐ NA
ITRC Vapor Intrusion Pathway: A Practical Guideline (ITRC 2007)	☐ Yes	☑ No	☐ UNK	☐ NA
ASTM Method 1689-95 - Standard Guide for Developing Conceptual Site Models for Contaminated Sites	☐ Yes	☑ No	☐ UNK	☐ NA
ASTM Method 2531-6 - Standard Guide for Development of Conceptual Models for Light Nonaqueous-Phase Liquids Released to the Subsurface	☐ Yes	☑ No	☐ UNK	☐ NA
DTSC Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (October 2011)	☐ Yes	☑ No	☐ UNK	☐ NA
Is the CSM presented in one comprehensive document? Document Title, Date, Author:	☐ **Yes**	☑ **No**	☐ **UNK**	☐ **NA**
If no, then has a summary document been submitted that identifies the documents where the requisite CSM elements are located? Document Title, Date, Author:	☐ **Yes**	☑ **No**	☐ **UND**	☐ **NA**
Is the CSM representative of current site conditions?	☐ **Yes**	☐ **No**	☑ **UND**	☐ **NA**
Does the final closure review validate the CSM?	☐ **Yes**	☐ **No**	☐ **UND**	☐ **NA**

Case Notes:

*****End of CSM Document Development Evaluation*****

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

CONCEPTUAL SITE MODEL
AND DATA GAP IDENTIFICATION CHECKLIST

Shallow Soil Contamination

Has shallow soil at the site been adequately characterized?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Has sufficient data been presented to demonstrate that site characterization is complete for the prescribed depth ranges of 0 to 5 feet in order to assess protection from ingestion of soil, dermal contact with soil, and inhalation of volatile soil emissions and inhalation of particulate emissions?	☐ Yes	☑ No	☐ NE	☐ NA
Has sufficient data been presented to demonstrate that site characterization is complete for the prescribed depth ranges of 5 to 10 feet in order to assess protection from inhalation of volatile soil emissions?	☐ Yes	☐ No	☑ NE	☐ NA
Has analytical data for all chemicals of concern including total petroleum hydrocarbons been presented in order to assess whether unique conditions not considered in the LTCP may exist at the site?	☐ Yes	☐ No	☐ NE	☐ NA
Have figures and tables showing the soil data for each of the prescribed depth ranges with a comparison to the screening levels for each exposure scenario been presented?	☐ Yes	☑ No	☐ NE	☐ NA
Has data representativeness, quality, and spatial distribution relative to current or potential receptors and sources, and temporal variability been considered in the evaluation?	☐ Yes	☐ No	☐ NE	☐ NA
Has a description of current and expected future land use, redevelopment, or construction for the site been presented?	☐ Yes	☐ No	☐ NE	☐ NA

Case Notes:

*****End of Shallow Soil Contamination Evaluation*****

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
SOURCE EVALAUTION

SOURCE EVALUATION – CA LUFT MANUAL GUIDANCE STATEMENT

Source – "A "source" is/are the environmental medium/media containing elevated contaminant concentrations associated with a release. Some risk-based corrective action (RBCA) programs define the source to be the original cause of the contamination; however, it is possible that, by the time a site becomes a LUFT site, the original source has been eliminated and the current source of contamination is soil and/or groundwater. Items to consider when determining the source are included in the list below. Some of the specifics may be determined based on historical information; others will need to be determined during site assessment.

- The origin(s) of the release (e.g., a leaking UST, dispenser, product piping, and/or surface spill).
- The number of USTs, the capacity of the tanks (e.g., 12,000 gallons), the products stored, the date of installation, and the removal date(s) (if applicable).
- The location of historical and active USTs, dispensers, and product piping.
- Details about the specific release location(s) (e.g., spill locations and time frame/dates if known).
- The type of fuel released and the constituents of concern (COCs) associated with the fuel. The Fate and Transport chapter of this Manual presents guidance on identifying potential COCs associated with fuel.
- The historical use of fuel additives (e.g., methyl tertiary butyl ether [MTBE] or other fuel oxygenates, lead, lead scavengers).
- The media that are impacted (e.g., soil, groundwater).
- Other potential sources such as surface spills, aboveground storage tank (AST) leakage, or pipeline leakage.

The information needed to define the source—to be obtained during the site assessment—includes the following:

- Lateral and vertical extent of:
  - light non-aqueous-phase liquid (LNAPL)
  - COCs in unsaturated-zone soil
  - COCs in saturated-zone soil and the smear zone
  - COCs in groundwater
- The distribution of the COCs in the impacted media.

After evaluating the information obtained during site characterization, the extent and magnitude of the contamination can be defined. This is not an exact science; usually some assumptions will need to be made. In these cases, it is important, from a risk-evaluation perspective, to be conservative."

(Source Evaluation continued on next page)

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
SOURCE EVALAUTION

Soil Contamination – Chemicals of Concern

Have petroleum hydrocarbons been detected in groundwater?	☐ Yes	☐ No	☐ NE	☐ NA
Motor Fuels:	☑ Yes	☐ No	☐ NE	☐ NA
Leaded Gasoline	☑ Yes	☐ No	☐ NE	☐ NA
Unleaded Gasoline	☐ Yes	☐ No	☐ NE	☐ NA
Undifferentiated	☐ Yes	☐ No	☐ NE	☐ NA
TPH Middle Distillates:	☑ Yes	☐ No	☐ NE	☐ NA
Diesel	☑ Yes	☐ No	☐ NE	☐ NA
Stoddard Solvent	☐ Yes	☐ No	☐ NE	☐ NA
Jet Fuel	☐ Yes	☐ No	☐ NE	☐ NA
Kerosene	☐ Yes	☐ No	☐ NE	☐ NA
Home Heating Fuel	☐ Yes	☐ No	☐ NE	☐ NA
Others	☐ Yes	☐ No	☐ NE	☐ NA
Residual Fuels:	☐ Yes	☐ No	☐ NE	☐ NA
Bunker C	☐ Yes	☐ No	☐ NE	☐ NA
Waste Oils	☐ Yes	☐ No	☐ NE	☐ NA
Hydraulic Oil	☐ Yes	☐ No	☐ NE	☐ NA
Lubricating Oil	☐ Yes	☐ No	☐ NE	☐ NA
Oil and Grease	☐ Yes	☐ No	☐ NE	☐ NA
Others	☐ Yes	☐ No	☐ NE	☐ NA
Fuel Oxygenates:	☐ Yes	☐ No	☐ NE	☐ NA
MTBE	☑ Yes	☐ No	☐ NE	☐ NA
ETBE	☐ Yes	☐ No	☑ NE	☐ NA
TAME	☐ Yes	☐ No	☑ NE	☐ NA
TBA	☐ Yes	☐ No	☑ NE	☐ NA
DIPE	☐ Yes	☐ No	☑ NE	☐ NA
Others	☐ Yes	☐ No	☑ NE	☐ NA
Lead Scavengers:	☐ Yes	☐ No	☑ NE	☐ NA
EDB	☐ Yes	☐ No	☑ NE	☐ NA
EDC	☐ Yes	☐ No	☑ NE	☐ NA
Aromatic Compounds:	☑ Yes	☐ No	☐ NE	☐ NA
Benzene	☑ Yes	☐ No	☐ NE	☐ NA
Toluene	☑ Yes	☐ No	☐ NE	☐ NA
Ethylbenzene	☑ Yes	☐ No	☐ NE	☐ NA
Xylenes	☐ Yes	☐ No	☐ NE	☐ NA
Others	☐ Yes	☐ No	☐ NE	☐ NA
Polycyclic Aromatic Hydrocarbons (PAHs):	☐ Yes	☐ No	☑ NE	☐ NA
Naphthalene	☐ Yes	☐ No	☐ NE	☐ NA
Others	☐ Yes	☐ No	☐ NE	☐ NA

(Soil Contamination Evaluation Continued on Next Page)

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
SOURCE EVALAUTION

Soil Contamination – Chemicals of Concern (continued)

Have other contaminants been detected in groundwater?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
VOCs:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
PCE	☐ Yes	☐ No	☐ NE	☐ NA
TCE	☐ Yes	☐ No	☐ NE	☐ NA
VC	☐ Yes	☐ No	☐ NE	☐ NA
Chloroform	☐ Yes	☐ No	☐ NE	☐ NA
Chlorobenzene	☐ Yes	☐ No	☐ NE	☐ NA
Others	☐ Yes	☐ No	☐ NE	☐ NA
SVOCs:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
	☐ Yes	☐ No	☐ NE	☐ NA
	☐ Yes	☐ No	☐ NE	☐ NA
Dioxans & Furans:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
	☐ Yes	☐ No	☐ NE	☐ NA
	☐ Yes	☐ No	☐ NE	☐ NA
Other PAHs:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Creosote	☐ Yes	☐ No	☐ NE	☐ NA
PNAs	☐ Yes	☐ No	☐ NE	☐ NA
Others	☐ Yes	☐ No	☐ NE	☐ NA
PCBs:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
	☐ Yes	☐ No	☐ NE	☐ NA
	☐ Yes	☐ No	☐ NE	☐ NA
Phenols:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
	☐ Yes	☐ No	☐ NE	☐ NA
	☐ Yes	☐ No	☐ NE	☐ NA
Metals:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Lead	☐ Yes	☐ No	☐ NE	☐ NA
Cadmium	☐ Yes	☐ No	☐ NE	☐ NA
Chromium	☐ Yes	☐ No	☐ NE	☐ NA
Zinc	☐ Yes	☐ No	☐ NE	☐ NA
Nickel	☐ Yes	☐ No	☐ NE	☐ NA
Other	☐ Yes	☐ No	☐ NE	☐ NA

Case Notes:

*****End of Soil Contamination – Chemicals of Concern Evaluation*****

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
SOURCE EVALAUTION

Tank Removal

Have the tank(s), piping, dispenser islands, or other appurtenant structures that released petroleum into the environment been removed, repaired or replaced?	☑ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Tanks	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Removed	☑ Yes	☐ No	☐ NE	☐ NA
Repaired	☐ Yes	☐ No	☐ NE	☐ NA
Replaced	☑ Yes	☐ No	☐ NE	☐ NA
Piping	☐ **Yes**	☐ **No**	☑ **NE**	☐ **NA**
Removed	☐ Yes	☐ No	☐ NE	☐ NA
Repaired	☐ Yes	☐ No	☐ NE	☐ NA
Replaced	☐ Yes	☐ No	☐ NE	☐ NA
Dispenser Islands	☐ **Yes**	☑ **No**	☑ **NE**	☐ **NA**
Removed	☐ Yes	☐ No	☐ NE	☐ NA
Repaired	☐ Yes	☐ No	☐ NE	☐ NA
Replaced	☐ Yes	☐ No	☐ NE	☐ NA
Other Structures - List:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Removed	☐ Yes	☐ No	☐ NE	☐ NA
Repaired	☐ Yes	☐ No	☐ NE	☐ NA
Replaced	☐ Yes	☐ No	☐ NE	☐ NA
Were/are the tanks permitted by a local regulatory agency having jurisdiction over USTs?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Have the operating records been reviewed (i.e., operating permit, types of products dispensed, tanks construction, tank capacity, tank tightness tests, etc)?	☐ Yes	☐ No	☐ NE	☐ NA
Have the USTs been properly decommissioned?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Was a tank removal permit issued by the local regulatory agency?	☐ Yes	☐ No	☐ NE	☐ NA
Was a tank removal report submitted and reviewed?	☐ Yes	☐ No	☐ NE	☐ NA

Case Notes:

(Tank Removal Evaluation Continued on Next Page)

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
SOURCE EVALAUTION

Tank Removal (continued)

Were confirmation soil samples collected to confirm the presence or absence of an unauthorized release?	☑ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Were confirmation soil samples collected from the tank pit?	☑ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Were confirmation soil samples collected from beneath the tank piping?	☑ Yes	☐ No	☐ NE	☐ NA
Were confirmation soil samples collected from beneath the dispensers?	☑ Yes	☐ No	☐ NE	☐ NA
Were the confirmation soil samples collected in accordance with the recommendations presented in the CA LUFT Manual?	☐ Yes	☐ No	☐ NE	☐ NA

Case Review Notes:

(Tank Removal Evaluation Continued on Next Page)

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
SOURCE EVALAUTION

Tank Removal (continued)

Were confirmation soil samples collected to confirm the presence or absence of an unauthorized release?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Was the tank pit purged and allowed to refill before sampling?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Was impacted groundwater extracted from the pit?	☐ Yes	☐ No	☐ NE	☐ NA
Were groundwater samples collected in accordance with the recommendations presented in the CA LUFT Manual?	☐ Yes	☐ No	☐ NE	☐ NA
Were the results evaluated for potentially negative bias in detected COCs due to aeration during excavation activities, or positive bias in detected COCs due to turbidity, sheen and product globules?	☐ Yes	☐ No	☐ NE	☐ NA

Case Review Notes:

(Tank Removal Evaluation Continued on Next Page)

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
SOURCE EVALAUTION

Tank Removal (continued)

Was stockpiled soil characterized and disposed of properly?	☐ **Yes**	☐ **No**	☑ **NE**	☐ **NA**
Were confirmation samples collected in accordance with the CA LUFT Manual? (i.e., one sample per 100 cubic yards of soil linearly and between 2 and 4 feet below the surface of the stockpile)?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Was the stockpiled soil disposed of at an off-site permitted disposal site?	☐ Yes	☐ No	☑ NE	☐ NA
Was the stockpiled soil used as backfill in the tank pit?	☐ Yes	☐ No	☑ NE	☐ NA
Was the stockpiled soil treated on-site?	☐ Yes	☐ No	☑ NE	☐ NA
Was the stockpiled soil characterized and reused on site in accordance with the technical reference document entitled Characterization and Reuse of Petroleum Hydrocarbon Impacted Soil and Inert Waste (RWQCB, October 2006)?	☐ Yes	☐ No	☑ NE	☐ NA
Was the tank pit and piping trench excavations backfilled with imported material?	☐ **Yes**	☐ **No**	☑ **NE**	☐ **NA**
Was the former tank pit backfilled with clean material with physical properties similar to the native material?	☐ Yes	☐ No	☐ NE	☐ NA
Was the former tank pit backfilled with clean material in accordance with the DTSC Information Advisory for Clean Imported Fill Material?	☐ Yes	☐ No	☐ NE	☐ NA
Is their evidence that a "bathtub" effect has been created in the former tank pit (i.e., groundwater mounding and dispersion)?	☐ Yes	☐ No	☐ NE	☐ NA

Case Review Notes:

*****End of Tank Removal Evaluation*****

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
SOURCE EVALAUTION

Source Cleanup – Unsaturated Zone

Has remediation of the unsaturated zone been conducted at the site?	**☐ Yes**	**☐ No**	**☐ NE**	**☐ NA**
Soil Excavation	☑ Yes	☐ No	☐ NE	☐ NA
Soil-Vapor Extraction (SVE)	☐ Yes	☐ No	☐ NE	☐ NA
Bioventing	☐ Yes	☐ No	☐ NE	☐ NA
Dual-Phase Extraction	☐ Yes	☐ No	☐ NE	☐ NA
Natural Attenuation	☐ Yes	☐ No	☐ NE	☐ NA
Solidification/stabilization	☐ Yes	☐ No	☐ NE	☐ NA
Other:	☐ Yes	☐ No	☐ NE	☐ NA
Is remediation of the unsaturated zone planned or currently in progress?	**☐ Yes**	**☑ No**	**☐ NE**	**☐ NA**
Soil Excavation	☐ Yes	☐ No	☐ NE	☐ NA
Soil-Vapor Extraction (SVE)	☐ Yes	☐ No	☐ NE	☐ NA
Bioventing	☐ Yes	☐ No	☐ NE	☐ NA
Dual-Phase Extraction	☐ Yes	☐ No	☐ NE	☐ NA
Natural Attenuation	☐ Yes	☐ No	☐ NE	☐ NA
Other:	☐ Yes	☐ No	☐ NE	☐ NA
Is remediation progressing adequately?	**☐ Yes**	**☐ No**	**☑ NE**	**☐ NA**
Has the time frame to complete remediation been estimated?	**☐ Yes**	**☑ No**	**☐ NE**	**☐ NA**
≤ 6 months	☐ Yes			
> 6 months and ≤ 1 year	☐ Yes			
> 1 year and ≤ 2 years	☐ Yes			
> 2 years and ≤ 5 years	☐ Yes			
> 5 years	☐ Yes			
Unknown	☐ Yes			
Have impediments to remediating the unsaturated zone been identified?	**☐ Yes**	**☑ No**	**☐ NE**	**☐ NA**
Was remediation designed incorrectly?	☑ Yes	☐ No	☐ NE	☐ NA
Was remediation shut off prematurely?	☑ Yes	☐ No	☐ NE	☐ NA
Have site conditions preventing secondary source removal been identified (e.g., existence of physical or infrastructural constraints whose removal or relocation would be technically or economically infeasible)?	☑ Yes	☐ No	☐ NE	☐ NA
Is remediation system O&M inadequate?	☐ Yes	☑ No	☐ NE	☐ NA
Other:	☐ Yes	☐ No	☐ NE	☐ NA
Are additional removal or active remedial actions necessary to abate a demonstrated threat to human health?	**☐ Yes**	**☐ No**	**☐ NE**	**☐ NA**

Case Review Notes:

***** End of Source Cleanup – Unsaturated Zone Evaluation*****

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
SOURCE EVALAUTION

Unauthorized Releases

Has a description of the release history been provided	☑ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Has a discussion of potential primary leak source(s) been provided (e.g., tanks, sumps, pipelines, etc.)	☐ Yes	☐ No	☐ NE	☐ NA
Have potential COCs associated with each potential release been identified?	☐ Yes	☐ No	☐ NE	☐ NA
Have primary release locations been confirmed?				
Have secondary sources (e.g., high-concentration contaminants in low-permeability lithologic soil units that sustain groundwater or vapor plumes) been delineated?				
Local and regional plan view maps that illustrate the location of sources (former facilities, piping, tanks, etc.)	☐ Yes	☐ No	☐ NE	☐ NA
Is there indication that a new release(s) have occurred subsequent to the initial release?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Soil	☐ Yes	☐ No	☐ NE	☐ NA
Groundwater	☐ Yes	☐ No	☐ NE	☐ NA
Soil Vapor	☐ Yes	☐ No	☐ NE	☐ NA
Surface Water	☐ Yes	☐ No	☐ NE	☐ NA
Is the site currently an active commercial fueling station?	☐ Yes	☐ No	☐ NE	☐ NA
Have the tanks, piping, and/or dispenser islands moved to a different location at the site?	☐ Yes	☐ No	☐ NE	☐ NA
Are there spikes or increasing concentration trends in historic data subsequent to the initial release?	☐ Yes	☐ No	☐ NE	☐ NA
Are there new detections of free product subsequent to the initial release in historic data?	☐ Yes	☐ No	☐ NE	☐ NA
Have new contaminants been detected in historic data subsequent to the initial release?	☐ Yes	☐ No	☐ NE	☐ NA
Have new petroleum hydrocarbon or other hazardous products been dispensed of at the site since the initial release occurred?	☐ Yes	☐ No	☐ NE	☐ NA
For active commercial fueling facilities, have the tanks failed tank tightness tests?	☐ Yes	☐ No	☐ NE	☐ NA
Is there indication of new impacts from offsite sources?	☐ Yes	☐ No	☐ NE	☐ NA

Case Review Notes:

*****End of Unauthorized Releases Evaluation*****

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
SOURCE EVALAUTION

Plume Delineation (continued)

Has sufficient data been presented to demonstrate that site characterization activities have defined the horizontal and vertical extent of the plume?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Has plume stability been demonstrated using a valid technical analysis?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Is the data collected from the wells accurate?	☐ Yes	☐ No	☐ NE	☐ NA
Is the placement of wells within the plume adequate?	☐ Yes	☐ No	☐ NE	☐ NA
Do the wells define changes in the vertical extent of the plume?				
Do the wells define changes in the areal extent of the plume?	☐ Yes	☐ No	☐ NE	☐ NA
Are the concentration trends within the plume valid?	☐ Yes	☐ No	☐ NE	☐ NA
Does the evaluation of concentration trends in wells support plume stability?	☐ Yes	☐ No	☐ NE	☐ NA
Has seasonal variability been adequately evaluated?	☐ Yes	☐ No	☐ NE	☐ NA
Have changes in water level been adequately evaluated?	☐ Yes	☐ No	☐ NE	☐ NA
Have sampling methods been appropriate?	☐ Yes	☐ No	☐ NE	☐ NA
Is well construction appropriate?	☐ Yes	☐ No	☐ NE	☐ NA
Are there other factors that affect the validity of the data?	☐ Yes	☐ No	☐ NE	☐ NA

Case Review Notes:

See Comments in Groundwater Media Specific Criteria Section

(Source Evaluation Continued on Next Page)

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CONCEPTUAL SITE MODEL
AND DATA GAP IDENTIFICATION CHECKLIST

Land Uses and Exposure Scenarios

Has an adequate evaluation of land uses and exposure scenarios on the facility and adjacent properties been conducted?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Have wells and natural resources in the vicinity of the site been identified?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Have the locations of water supply wells been identified?	☐ Yes	☑ No	☐ NE	☐ NA
Have the location of wetlands been identified?	☐ Yes	☑ No	☐ NE	☐ NA
Have the locations of surface water bodies been identified?	☐ Yes	☑ No	☐ NE	☐ NA
Subpopulation types and locations (e.g., schools, hospitals, day care centers, etc.)?	☐ Yes	☐ No	☐ NE	☐ NA
Have beneficial and natural resources been impacted by site contamination?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Have the beneficial uses of groundwater been identified?	☐ Yes	☐ No	☐ NE	☐ NA
Are wetlands in the vicinity of the site impacted by site contamination?	☐ Yes	☐ No	☑ NE	☐ NA
Are surface water bodies in the vicinity of the site impacted by site contamination?	☐ Yes	☐ No	☑ NE	☐ NA
Have exposure scenarios been identified?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Residential	☐ Yes	☐ No	☐ NE	☐ NA
Industrial	☐ Yes	☐ No	☐ NE	☐ NA
Recreational	☐ Yes	☐ No	☐ NE	☐ NA
Farming	☐ Yes	☐ No	☐ NE	☐ NA
Have exposure pathways and potential threats to sensitive receptors been adequately evaluated?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Has an analysis of the contaminant volatilization from the subsurface to indoor/outdoor air exposure route (i.e., vapor pathway) been adequately evaluated?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Have Sanborn maps been provided?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Have historic aerial photographs been assessed?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Have site development plans been provided?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**

Case Notes:

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CONCEPTUAL SITE MODEL
AND DATA GAP IDENTIFICATION CHECKLIST

Media Specific Criteria for Groundwater - Contaminant Plume Classification Characteristics

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 listed below?	☐ **Yes**	☑ **No**	☐ **NE**
Class 1	☐ **Yes**	☑ **No**	☐ **NE**
Is < 100 feet in length	☐ Yes	☑ No	☐ NE
There is no free product	☐ Yes	☐ No	☐ NE
The nearest existing water supply well is > 250 feet from the defined plume boundary	☐ Yes	☐ No	☐ NE
The nearest existing surface water body is > 250 feet from the defined plume boundary	☐ Yes	☑ No	☐ NE
Class 2	☐ **Yes**	☐ **No**	☐ **NE**
Is < 250 feet in length	☑ Yes	☐ No	☐ NE
There is no free product	☐ Yes	☐ No	☐ NE
The nearest existing water supply well is > 1,000 feet from the defined plume boundary	☐ Yes	☐ No	☐ NE
The nearest existing surface water body is > 1,000 feet from the defined plume boundary	☐ Yes	☑ No	☐ NE
The dissolved concentration of benzene is <3,000 µg/L	☐ Yes	☑ No	☐ NE
The dissolved concentration of MTBE is <1,000 µg/L	☑ Yes	☐ No	☐ NE
Class 3	☐ **Yes**	☐ **No**	☐ **NE**
Is < 250 feet in length	☑ Yes	☐ No	☐ 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	☑ Yes	☐ No	☐ NE
The plume has been stable or decreasing for a minimum of 5 years	☑ Yes	☐ No	☐ NE
The nearest existing water supply well is > 1,000 feet from the defined plume boundary	☐ Yes	☐ No	☑ NE
The nearest existing surface water body is > 1,000 feet from the defined plume boundary	☐ Yes	☑ No	☐ 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	☐ Yes	☐ No	☑ NE
Class 4	☐ **Yes**	☐ **No**	☐ **NE**
Is < 1,000 feet in length	☐ Yes	☐ No	☐ NE
There is no free product	☐ Yes	☐ No	☐ NE
The nearest existing water supply well or surface water body is > 1,000 feet from the defined plume boundary	☐ Yes	☑ No	☐ NE
The nearest existing surface water body is > 1,000 feet from the defined plume boundary	☐ Yes	☐ No	☐ NE
The dissolved concentration of benzene is <1,000 µg/L	☐ Yes	☑ No	☐ NE
The dissolved concentration of MTBE is <1,000 µg/L	☐ Yes	☐ No	☐ NE
Class 5	☐ **Yes**	☐ **No**	☐ **NE**
The regulatory agency determines, based on an analysis of site specific conditions, that 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	☐ Yes	☑ No	☐ NE

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CONCEPTUAL SITE MODEL
AND DATA GAP IDENTIFICATION CHECKLIST

Media Specific Criteria for Groundwater - Additional Information

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	☑ Yes	☐ No	☐ NE
≥ 250 feet and < 1,000 feet	☐ Yes	☐ No	☐ NE
≥ 1,000 feet	☐ Yes	☐ No	☐ NE
Unknown	☐ Yes	☐ No	☐ NE
Free Product in Groundwater	☐ Yes	☐ No	☐ NE
Free Product Has Been Removed to the Maximum Extent Practicable	☐ Yes	☐ No	☐ NE
For Sites with Free Product, the Plume has Been Stable or Decreasing for 5-Years	☐ Yes	☐ No	☐ NE
For Sites with Free Product, owner Willing to Accept a Land Use Restriction (if Required)	☐ Yes	☐ No	☐ NE
Free Product Extends Offsite	☐ Yes	☐ No	☐ NE
Free Product Extends Offsite	☐ Yes	☐ No	☐ NE
Benzene Concentration			
≥ 1,000 µg/L and < 3,000 µg/L	☑ Yes	☐ No	☐ NE
	☐ Yes	☐ No	☐ NE
Unknown	☐ Yes	☐ No	☐ NE
MTBE Concentration			
≥ 1,000 µg/L	☐ Yes	☐ No	☐ NE
Unknown	☐ Yes	☐ No	☐ NE
Nearest Supply Well (From Plume Boundary)			
≤ 250 Feet	☐ Yes	☐ No	☐ NE
> 250 Feet and ≤ 1,000 Feet	☐ Yes	☐ No	☐ NE
Unknown	☐ Yes	☐ No	☑ NE
Nearest Surface Water Body (From Plume Boundary)			
≤ 250 Feet	☐ Yes	☐ No	☐ NE
> 250 Feet and ≤ 1,000 Feet	☑ Yes	☐ No	☐ NE
Unknown	☐ Yes	☐ No	☐ NE

Case Notes:

Length of plume is controlled by offsite sewer main utility lines.

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE MECHANISMS

Vapor Intrusion to Indoor Air Evaluation – CA LUFT Manual Guidance Statement

Guidance Statement: Analyte List. Indoor air should be analyzed for all known and potential subsurface contaminants so that contaminants in the subsurface and indoor air can be correlated in the evaluation of vapor intrusion and the cumulative health risks associated with vapor intrusion can be characterized. Limiting the indoor air testing to a few target analytes is not recommended, particularly for initial sampling events. Subsequent to the initial sampling event, limiting target analytes might be justified on a case-by-case basis for sites that are fully characterized and all contaminants are known with certainty. Analyzing air samples for a large suite of analytes may detect vapor intrusion-derived contaminants not previously detected in the subsurface. Contaminants may not have been detected in the subsurface for various reasons, including but not limited to, a) elevated detection limits resulting from high concentrations of co-contaminants, b) sampling and analytical errors, c) temporal and spatial variation, d) inappropriate sampling locations and depths, and e) generation of unanticipated degradation and transformation products. Multiple lines of evidence should be used to determine vapor intrusion-derived contaminants. Data for indoor sources may indicate a potential background risk that should be communicated to occupants and considered in risk management decisions concerning the subsurface contamination. It is generally desirable to conduct concurrent sampling of other media, such as sub-slab soil gas, and/or groundwater, when sampling indoor air. Sampling all media concurrently will give a more accurate representation of contaminant migration and reduce the uncertainty associated with the temporal variability in contaminant concentration data."

"The chemicals in Table 1 [see next page] are volatile and toxic enough to pose an indoor air risk. If a site contains any of the chemical listed in Table 1, the site should be evaluated for vapor intrusion."

(DTSC, October 2011)

(Vapor Intrusion to Indoor Air Evaluation continued next page)

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CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE MECHANISMS

Soil Gas Characterization

Has soil gas contamination been adequately characterized?	☐ Yes	☑ No	☐ NE	☐ NA

Have petroleum hydrocarbons been detected in soil gas?	☐ Yes	☐ No	☑ NE	☐ NA
Motor Fuels:	☐ Yes	☐ No	☐ NE	☐ NA
Leaded Gasoline	☐ Yes	☐ No	☐ NE	☐ NA
Unleaded Gasoline	☐ Yes	☐ No	☐ NE	☐ NA
Undifferentiated	☐ Yes	☐ No	☐ NE	☐ NA
TPH Middle Distillates:	☐ Yes	☐ No	☐ NE	☐ NA
Diesel	☐ Yes	☐ No	☐ NE	☐ NA
Stoddard Solvent	☐ Yes	☐ No	☐ NE	☐ NA
Jet Fuel	☐ Yes	☐ No	☐ NE	☐ NA
Kerosene	☐ Yes	☐ No	☐ NE	☐ NA
Home Heating Fuel	☐ Yes	☐ No	☐ NE	☐ NA
Others	☐ Yes	☐ No	☐ NE	☐ NA
Residual Fuels:	☐ Yes	☐ No	☐ NE	☐ NA
Bunker C	☐ Yes	☐ No	☐ NE	☐ NA
Waste Oils	☐ Yes	☐ No	☐ NE	☐ NA
Hydraulic Oil	☐ Yes	☐ No	☐ NE	☐ NA
Lubricating Oil	☐ Yes	☐ No	☐ NE	☐ NA
Oil and Grease	☐ Yes	☐ No	☐ NE	☐ NA
Others	☐ Yes	☐ No	☐ NE	☐ NA
Fuel Oxygenates:	☐ Yes	☐ No	☐ NE	☐ NA
MTBE	☐ Yes	☐ No	☐ NE	☐ NA
ETBE	☐ Yes	☐ No	☐ NE	☐ NA
TAME	☐ Yes	☐ No	☐ NE	☐ NA
TBA	☐ Yes	☐ No	☐ NE	☐ NA
DIPE	☐ Yes	☐ No	☐ NE	☐ NA
Others	☐ Yes	☐ No	☐ NE	☐ NA
Lead Scavengers:	☐ Yes	☐ No	☐ NE	☐ NA
EDB	☐ Yes	☐ No	☐ NE	☐ NA
EDC	☐ Yes	☐ No	☐ NE	☐ NA
Aromatic Compounds:	☐ Yes	☐ No	☐ NE	☐ NA
Benzene	☐ Yes	☐ No	☐ NE	☐ NA
Toluene	☐ Yes	☐ No	☐ NE	☐ NA
Ethylbenzene	☐ Yes	☐ No	☐ NE	☐ NA
Xylenes	☐ Yes	☐ No	☐ NE	☐ NA
Others	☐ Yes	☐ No	☐ NE	☐ NA
Polycyclic Aromatic Hydrocarbons (PAHs):	☐ Yes	☐ No	☐ NE	☐ NA
Naphthalene	☐ Yes	☐ No	☐ NE	☐ NA
Others	☐ Yes	☐ No	☐ NE	☐ NA

(Soil Gas Characterization continued on next page)

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE MECHANISMS

Soil Gas Characterization (continued)

Have other contaminants been detected in soil gas?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
VOCs:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
PCE	☐ Yes	☐ No	☐ NE	☐ NA
TCE	☐ Yes	☐ No	☐ NE	☐ NA
VC	☐ Yes	☐ No	☐ NE	☐ NA
Chloroform	☐ Yes	☐ No	☐ NE	☐ NA
Chlorobenzene	☐ Yes	☐ No	☐ NE	☐ NA
Others	☐ Yes	☐ No	☐ NE	☐ NA
SVOCs:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
	☐ Yes	☐ No	☐ NE	☐ NA
	☐ Yes	☐ No	☐ NE	☐ NA
Dioxans & Furans:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
	☐ Yes	☐ No	☐ NE	☐ NA
	☐ Yes	☐ No	☐ NE	☐ NA
Other PAHs:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Creosote	☐ Yes	☐ No	☐ NE	☐ NA
PNAs	☐ Yes	☐ No	☐ NE	☐ NA
Others	☐ Yes	☐ No	☐ NE	☐ NA
PCBs:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
	☐ Yes	☐ No	☐ NE	☐ NA
	☐ Yes	☐ No	☐ NE	☐ NA
Phenols:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
	☐ Yes	☐ No	☐ NE	☐ NA
	☐ Yes	☐ No	☐ NE	☐ NA
Metals:	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Lead	☐ Yes	☐ No	☐ NE	☐ NA
Cadmium	☐ Yes	☐ No	☐ NE	☐ NA
Chromium	☐ Yes	☐ No	☐ NE	☐ NA
Zinc	☐ Yes	☐ No	☐ NE	☐ NA
Nickel	☐ Yes	☐ No	☐ NE	☐ NA
Other	☐ Yes	☐ No	☐ NE	☐ NA

Case Review Notes:

*****End of Soil Gas Characterization*****

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE MECHANISMS

Vapor Intrusion to Indoor Air Evaluation – Potential Contaminants of Concern

Has the site been adequately evaluated for vapor intrusion to indoor air?	☐ Yes	☑ No	☐ NE	☐ NA
Does the site contain any of the chemicals listed in Table 1?	☑ Yes	☐ No	☐ NE	☐ NA
If yes, has an evaluation of vapor intrusion to indoor air of buildings potentially impacted by vapor intrusion been conducted?	☐ Yes	☐ No	☐ NE	☐ NA

Table 1 – List of Chemicals to be Considered for the Vapor Intrusion Pathway (DTSC, Vapor Intrusion Guidance Manual)

Chemical	Chemical	Chemical
☐ 1,1,1,2-Tetrachloroethane	☐ Benzylchloride	☐ Hexachlorobenzene
☐ 1,1,1-Trichloroethane	☐ beta-Chloronaphthalene	☐ Hexachlorocyclopentadiene
☐ 1,1,2,2-Tetrachloroethane	☐ Biphenyl	☐ Hexachloroethane
☐ 1,1,2-Trichloro-1,2,2-trifluoroethane	☐ Bis(2-chloroethyl)ether	☐ Hexane
☐ 1,1,2-Trichloroethane	☐ Bis(2-chloroisopropyl)ether	☐ Hydrogen cyanide
☐ 1,1-Dichloroethane	☐ Bis(chloromethyl)ether	☐ Isobutanol
☐ 1,1-Dichloroethylene	☐ Bromodichloromethane	☐ Mercury (elemental)
☐ 1,2,3-Trichloropropane	☐ Bromoform	☐ Methacrylonitrile
☐ 1,2,4-Trichlorobenzene	☐ Carbon disulfide	☐ Methoxychlor
☐ 1,2,4-Trimethylbenzene	☐ Carbon tetrachloride	☐ Methyl acetate
☐ 1,2-Dibromo-3-chloropropane	☐ Chlordane	☐ Methyl acrylate
☐ 1,2-Dibromoethane	☐ Chlorobenzene	☐ Methyl bromide (bromomethane)
☐ 1,2-Dichlorobenzene	☐ Chlorodibromomethane	☐ Methyl chloride (chloromethane)
☐ 1,2-Dichloroethane	☐ Chlorodifluoromethane	☑ Methyl tert-butyl ether (MTBE)
☐ 1,2-Dichloropropane	☐ Chloroethane (ethyl chloride)	☐ Methylcyclohexane
☐ 1,3,5-Trimethylbenzene	☐ Chloroform	☐ Methylene bromide
☐ 1,3-Butadiene	☐ Chrysene	☐ Methylene chloride
☐ 1,3-Dichlorobenzene	☐ cis-1,2-Dichloroethylene	☐ Methylethylketone (2-butanone)
☐ 1,3-Dichloropropene	☐ Crotonaldehyde (2-butenal)	☐ Methylisobutylketone
☐ 1,4-Dichlorobenzene	☐ Cumene (isopropylbenzene)	☐ Methylmethacrylate
☐ 1,4-Dioxane	☐ DDE	☐ Monochlorobiphenyl (PCB)
☐ 1-Chlorobutane	☐ Dibenzofuran	☐ m-Xylene
☐ 2-Chloro-1,3-butadiene (chloroprene)	☐ Dichlorobiphenyl (PCB)	☐ Naphthalene
☐ 2-Chlorophenol	☐ Dichlorodifluoromethane	☐ n-Butylbenzene
☐ 2-Chloropropane	☐ Dieldrin	☐ Nitrobenzene
☐ 2-Methylnaphthalene	☐ Diisopropyl ether (DIPE)	☐ N-Nitroso-di-n-butylamine
☐ 2-Nitropropane	☐ Endosulfan	☐ n-Propylbenzene
☐ Acenaphthene	☐ Epichlorohydrin	☐ o-Nitrotoluene
☐ Acetaldehyde	☐ Ethyl ether	☑ o-Xylene
☐ Acetone	☐ Ethyl tert-butyl ether (ETBE)	☑ p-Xylene
☐ Acetonitrile	☐ Ethylacetate	☐ Pyrene
☐ Acetophenone	☑ Ethylbenzene	☐ sec-Butylbenzene
☐ Acrolein (propenal)	☐ Ethylene oxide	☐ Styrene
☐ Acrylonitrile	☐ Ethylmethacrylate	☐ Tert-amyl methyl ether (TAME)
☐ Aldrin	☐ Fluorene	☐ Tert-butyl alcohol (TBA)
☐ alpha-HCH (alpha-BHC)	☐ Furan	☐ tert-Butylbenzene
☐ Benzaldehyde	☐ gamma-HCH (lindane)	☐ Tetrachloroethylene
☑ Benzene	☐ Heptachlor	☑ Toluene
☐ Benzo(b)fluoranthene	☐ Hexachloro-1,3-butadiene	☐ trans-1,2-Dichloroethylene

(Vapor Intrusion to Indoor Air Evaluation continued next page)

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CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE MECHANISMS

Vapor Intrusion to Indoor Air - Mitigation Measures and Engineering Controls

As a result of controlling exposure through the use of mitigation measures and/or engineering controls, has it been determined that the concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Are there existing mitigation measures and engineering controls at the site?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Vapor Intrusion Barriers	☐ Yes	☐ No	☐ NE	☐ NA
Subslab Ventilation	☐ Yes	☐ No	☐ NE	☐ NA
Interceptor Trench	☐ Yes	☐ No	☐ NE	☐ NA
Cap	☐ Yes	☐ No	☐ NE	☐ NA
Permeable Reactive Barrier	☐ Yes	☐ No	☐ NE	☐ NA
Other	☐ Yes	☐ No	☐ NE	☐ NA
Are there proposed mitigation measures and engineering controls at the site?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Vapor Intrusion Barriers	☐ Yes	☐ No	☐ NE	☐ NA
Subslab Ventilation	☐ Yes	☐ No	☐ NE	☐ NA
Interceptor Trench	☐ Yes	☐ No	☐ NE	☐ NA
Cap	☐ Yes	☐ No	☐ NE	☐ NA
Permeable Reactive Barrier	☐ Yes	☐ No	☐ NE	☐ NA
Other	☐ Yes	☐ No	☐ NE	☐ NA
Are Financial Assurance Mechanisms required and in place?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Is a Soil Management Plan required and has it been provided?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Has adequate mitigation or engineering control system documentation been provided?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Design documents	☐ Yes	☐ No	☐ NE	☐ NA
Construction documents	☐ Yes	☐ No	☐ NE	☐ NA
As-built Documentation	☐ Yes	☐ No	☐ NE	☐ NA
Operations & Maintenance Plans	☐ Yes	☐ No	☐ NE	☐ NA
Monitoring and Reporting Plan	☐ Yes	☐ No	☐ NE	☐ NA
Contingency Plans	☐ Yes	☐ No	☐ NE	☐ NA

Case Review Notes:

(Vapor Intrusion to Indoor Air Characterization Continued on Next Page)

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown

CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE MECHANISMS

Vapor Intrusion to Indoor Air – Institutional Controls

As a result of controlling exposure through the use of institutional controls (existing or proposed), has it been determined that the concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Are proprietary controls in place or proposed?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Easements	☐ Yes	☐ No	☐ NE	☐ NA
Covenants	☐ Yes	☐ No	☐ NE	☐ NA
Others	☐ Yes	☐ No	☐ NE	☐ NA
Are governmental controls in place or proposed?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Zoning Ordinances	☐ Yes	☐ No	☐ NE	☐ NA
Building Modification Restrictions	☐ Yes	☐ No	☐ NE	☐ NA
Groundwater Use Restrictions	☐ Yes	☐ No	☐ NE	☐ NA
Air Permits	☐ Yes	☐ No	☐ NE	☐ NA
Excavation Restrictions	☐ Yes	☐ No	☐ NE	☐ NA
Waste Discharge Requirements	☐ Yes	☐ No	☐ NE	☐ NA
Financial Assurance Mechanisms	☐ Yes	☐ No	☐ NE	☐ NA
Enforcement Mechanisms	☐ Yes	☐ No	☐ NE	☐ NA
Other	☐ Yes	☐ No	☐ NE	☐ NA
Are informational devices in place or proposed?	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Health Advisories	☐ Yes	☐ No	☐ NE	☐ NA
Deed Notices	☐ Yes	☐ No	☐ NE	☐ NA
SWRCB GeoTracker Website	☐ Yes	☐ No	☐ NE	☐ NA
Other State Registries or Tracking Systems	☐ Yes	☐ No	☐ NE	☐ NA

Case Review Notes:

(Vapor Intrusion to Indoor Air Characterization continued next page)

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CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE MECHANISMS

Vapor Intrusion to Indoor Air – Soil Gas Plume Migration

Has the subsurface contamination reached steady state conditions (i.e., have the subsurface soil gas and groundwater plumes reached the maximum migration potential)?	☐ **Yes**	☐ **No**	☑ **NE**	☐ **NA**
Has data been collected over a sufficient period of time to determine contaminant trends of groundwater monitoring plumes?	☐ Yes	☐ No	☐ NE	☐ NA
Do temporal contaminant trends of data collected from routine sampling of groundwater monitoring wells indicate stable or decreasing treads?	☐ Yes	☐ No	☐ NE	☐ NA
Has data been collected over a sufficient period of time to determine contaminant trends of soil gas plumes?	☐ Yes	☐ No	☐ NE	☐ NA
Do temporal contaminant trends of data collected from routine sampling of permanent or temporary soil gas sampling points indicate stable or decreasing treads?	☐ Yes	☐ No	☐ NE	☐ NA
If there is minimal temporal soil gas data, has the length of time to reach steady-state conditions been estimated from the date that the chemical releases ceased at the site using the methods in Johnson and others (1999)?	☐ Yes	☐ No	☐ NE	☐ NA

Case Review Notes:

Groundwater migration appears controlled by sanitary sewer conduits and Thus has reached The maximum extent. Soil gas has NOT been evaluated.

(Vapor Intrusion to Indoor Air Characterization continued next page)

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CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE MECHANISMS

Vapor Intrusion to Indoor Air – Contaminant Concentrations in Existing Buildings

Are indoor air concentrations in existing buildings acceptable?	☐ **Yes**	☐ **No**	☑ **NE**	☐ **NA**
Is the site a candidate for vapor intrusion?	☑ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Has a site-specific evaluation of vapor intrusion been conducted in accordance with the USEPA Vapor Intrusion model?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Have the geotechnical parameters in the model been adequately determined to reduce uncertainty concerning human health exposure (i.e., have physical properties (i.e., bulk density, grain size distribution, total porosity, moisture content, fraction of organic carbon) of the vadose zone been determined)?	☐ Yes	☐ No	☐ NE	☐ NA
Has the average soil and groundwater temperature been used to correct Henry's law constant for the chemical of concern?	☐ Yes	☐ No	☐ NE	☐ NA
Is there an imminent hazard in existing buildings?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Has an emergency remedial action been conducted?	☐ Yes	☐ No	☐ NE	☐ NA
Does the site pass a screening evaluation?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Has a Building Survey been conducted?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Have indoor air samples been collected and data evaluated?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**

Case Review Notes:

(Vapor Intrusion to Indoor Air Characterization Continued on Next Page)

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CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE MECHANISMS

Vapor Intrusion to Indoor Air – Building Evaluation

Have Existing and Future Buildings been Evaluated?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Have existing buildings within 100 feet of soil gas or groundwater plumes been evaluated for vapor intrusion?	☐ Yes	☑ No	☐ NE	☐ NA
Have existing buildings greater than 100 feet from a plume boundary, with a preferential pathway(either natural or anthropogenic) that link the buildings with the contaminant plume been evaluated for vapor intrusion been evaluated for vapor intrusion?	☐ Yes	☐ No	☐ NE	☐ NA
For future buildings, do development activities include new utility corridors or covering of large areas of the site with pavement that may significantly alter vapor migration and concentrations?	☐ Yes	☐ No	☐ NE	☐ NA
At sites where unacceptable contaminant levels are left in the subsurface, are engineering controls proposed for future buildings within 100 feet from contamination?	☐ Yes	☑ No	☐ NE	☐ NA
Does a continuous low permeability surface (such as pavement or surface clay layers) cover the ground between the contamination and the building?	☐ Yes	☑ No	☐ NE	☐ NA
Does the vadose zone have very high gas permeability due to fracturing?	☐ Yes	☐ No	☑ NE	☐ NA

Case Review Notes:

(Vapor Intrusion to Indoor Air Characterization Continued on Next Page)

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CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE MECHANISMS

Vapor Intrusion to Indoor Air – Risk Assessment

Has a site specific risk assessment been conducted in accordance the risk assessment guidance documents referenced in the SWRCB Technical Justification for Soil Screening Levels for Direct Contact and Outdoor Air Exposure Pathways (SWRCB, 2012)?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
USEPA "Risk Assessment Guide for Superfund (RAGS) Volume I Human Health Evaluation Manual (Part A)", EPA/540/1/89/002, December 1989	☐ Yes	☑ No	☐ NE	☐ NA
ASTM "Standard Guide to Risk-Based Corrective Action Applied at Petroleum Release Sites", E1739-95,1995	☐ Yes	☑ No	☐ NE	☐ NA
DTSC Office of Human and Ecological Risk (HERO) "Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Hazardous Waste Sites and Permitted Facilities", May 2011	☐ Yes	☑ No	☐ NE	☐ NA
USEPA "Integrated Risk Information System (on-line database of toxicity parameters (May 2011)	☐ Yes	☑ No	☐ NE	☐ NA

Case Review Notes:

(Vapor Intrusion to Indoor Air Characterization Continued on Next Page)

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CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE MECHANISMS

Vapor Intrusion to Indoor Air – Risk Assessment

Was the risk assessment conducted in accordance with the DTSC Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (October 2011)?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Were the following DTSC Guidance recommendations followed?	☐ Yes	☐ No	☐ NE	☐ NA
Use of multiple lines of evidence (i.e., soil gas, soil matrix, and groundwater data) to reasonably estimate the level of risk posed by vapor intrusion?	☐ Yes	☐ No	☐ NE	☐ NA
Use of maximum contaminant concentrations (i.e., data collected above the source)?	☐ Yes	☐ No	☐ NE	☐ NA
Use of reasonable site-specific input parameters in the California version of the USEPA's Vapor Intrusion Model by Johnson and Ettinger, created by the DTSC to include California-specific chemical toxicity factors?	☐ Yes	☐ No	☐ NE	☐ NA
Calculation of cumulative health effects conducted?	☐ Yes	☐ No	☐ NE	☐ NA
Use of data representing seasonable variability before making a final risk determination as short term measurements rarely represent long-term conditions?	☐ Yes	☐ No	☐ NE	☐ NA
No preferential pathways exist at the site?	☐ Yes	☐ No	☐ NE	☐ NA
Knowledge of adjacent building construction (e.g., slab-on-grade, crawl spaces, etc.)?	☐ Yes	☐ No	☐ NE	☐ NA

Case Notes:

(Vapor Intrusion to Indoor Air Characterization Continued on Next Page)

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CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE MECHANISMS

Media Specific Criteria: Petroleum Vapor Intrusion to Indoor Air

Are release characteristics reasonably believed to pose an unacceptable health risk to facility users or nearby facilities?	☑ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
On-site Users or Workers	☑ Yes	☐ No	☐ NE	☐ NA
Residences	☐ Yes	☐ No	☐ NE	☐ NA
Day Care Facilities	☐ Yes	☐ No	☐ NE	☐ NA
Schools	☐ Yes	☐ No	☐ NE	☐ NA
Mixed-Use Developments	☐ Yes	☐ No	☐ NE	☐ NA
Hospitals	☐ Yes	☐ No	☐ NE	☐ NA
Senior Facilities	☐ Yes	☐ No	☐ NE	☐ NA
Commercial Sites	☐ Yes	☐ No	☐ NE	☐ NA

Case Review Notes:

(Vapor Intrusion to Indoor Air Characterization Continued on Next Page)

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CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE MECHANISMS

LTCP Media Specific Criteria: Petroleum Vapor Intrusion to Indoor Air (Scenarios 1 through 3)

Scenario 1: Unweathered LNAP in Groundwater				
Do site-specific conditions at the release site satisfy all of the applicable characteristics and criteria of Scenario 1?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
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; and	☐ Yes	☐ No	☐ NE	☐ NA
Total TPH (TPH-g and TPH-d combined) are less than 100 mg/kg throughout the entire depth of the bioattenuation zone	☐ Yes	☐ No	☐ NE	☐ NA

Scenario 2: Unweathered LNAPL in Soil?				
Do site-specific conditions at the release site satisfy all of the applicable characteristics and criteria of Scenario 2?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
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; and	☐ Yes	☐ No	☐ NE	☐ NA
Total TPH (TPH-g and TPH-d combined) are <100 mg/kg throughout the entire lateral and vertical extent of the bioattenuation zone	☐ Yes	☐ No	☐ NE	☐ NA

Scenario 3: Dissolved Phase Benzene Concentrations in Groundwater				
Do site-specific conditions at the release site satisfy all of the applicable characteristics and criteria of Scenario 3?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Defining the Bioattenuation Zone For Sites without Oxygen Data or Where Oxygen is <4%	☐ Yes	☑ No	☐ NE	☐ NA
Benzene concentrations < 100 µg/l (Figure A)	☐ **Yes**	☑ **No**	☐ **NE**	☐ **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; and	☐ Yes	☑ No	☐ NE	☐ NA
Contains total TPH (TPH-g and TPH-d combined) < 100 mg/kg throughout the entire depth of the bioattenuation zone	☐ Yes	☑ No	☐ NE	☐ NA
Benzene concentrations ≥ 100 µg/L but < 1,000 µg/L (Figure B)	☐ **Yes**	☑ **No**	☐ **NE**	☐ **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	☐ Yes	☑ No	☐ NE	☐ NA
Defining the Bioattenuation Zone For Sites with Oxygen ≥ 4%	☐ Yes	☑ No	☐ NE	☐ NA
Benzene concentrations < 1,000 µg/L (Figure C)	☐ **Yes**	☑ **No**	☐ **NE**	☐ **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	☐ Yes	☑ No	☐ NE	☐ NA
Contains total TPH (TPH-g and TPH-d combined) < 100 mg/kg throughout the entire depth of the bioattenuation zone	☐ Yes	☑ No	☐ NE	☐ NA

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

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CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE MECHANISMS

LTCP Media Specific Criteria: Petroleum Vapor Intrusion to Indoor Air (Scenario 4)

Do site-specific conditions at the release site satisfy all of the applicable characteristics and criteria of Scenario 4: Direct Measurement of Soil Gas Concentrations?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**

Were soil gas samples obtained from the following locations?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**
Beneath or adjacent to an existing building: Soil gas samples collected at least 5 feet below the bottom of the building foundation	☐ Yes	☑ No	☐ NE	☐ NA
Future construction: Soil gas samples from at least five feet below ground surface	☐ Yes	☐ No	☐ NE	☐ NA
Were soil gas samples collected in accordance with DTSC Advisory with DTSC Advisory – Active Soil Gas Investigations (April 2012)?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **NA**

Are all of the following criteria for a bioattenuation zone satisfied?	☐ **Yes**	☑ **No**	☐ **NE**	☐ **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; and	☐ Yes	☑ No	☐ NE	☐ NA
TPH (TPHg + TPHd) is less than 100 mg/kg (measured in at least two depths within the five-foot zone; and	☐ Yes	☐ No	☑ NE	☐ NA
Oxygen is ≥ 4% measured at the bottom of the five-foot zone	☐ Yes	☐ No	☑ NE	☐ NA

If the bioattenuation zone criteria are all satisfied, then do soil gas concentrations meet the following criteria?	☐ **Yes**	☐ **No**	☑ **NE**	☐ **NA**
Residential	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Benzene <85,000 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
Ethylbenzene <1,100,000 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
Napthalene <93,000 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
Commercial	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Benzene <280,000 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
Ethylbenzene <3,600,000 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
Napthalene <310,000 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA

If the bioattenuation zone criteria are not satisfied, then do soil gas concentrations meet the following criteria?	☐ **Yes**	☐ **No**	☑ **NE**	☐ **NA**
Residential	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Benzene <85 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
Ethylbenzene <1,100 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
Napthalene <93 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
Commercial	☐ **Yes**	☐ **No**	☐ **NE**	☐ **NA**
Benzene <280 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
Ethylbenzene <3,600 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
Napthalene <310 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA

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CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE MECHANISMS

LTCP Media Specific Criteria: Petroleum 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	☐ Yes	☐ No	☐ NE	☐ NA
Temporal variability not evaluated	☐ Yes	☐ No	☐ NE	☐ NA
No soil gas samples	☑ Yes	☐ No	☐ NE	☐ NA
Taken incorrectly	☐ Yes	☐ No	☐ NE	☐ NA
Not taken at two depths within 5 foot zone	☐ Yes	☐ No	☐ NE	☐ NA
High spatial or temporal variability	☐ Yes	☐ No	☐ NE	☐ NA
Insufficient analytes	☐ Yes	☐ No	☐ NE	☐ NA
Exposure Type				
Residential	☐ Yes	☐ No	☐ NE	☐ NA
Commercial	☐ Yes	☐ No	☐ NE	☐ NA
Free Product				
In Groundwater	☐ Yes	☐ No	☐ NE	☐ NA
In Soil	☐ Yes	☐ No	☐ NE	☐ NA
Unknown	☐ Yes	☐ No	☐ NE	☐ NA
TPH in the Bioattenuation Zone				
< 5 feet (No Biozone)	☑ Yes	☐ No	☐ NE	☐ NA
≥5 feet and < 10 feet	☐ Yes	☐ No	☐ NE	☐ NA
≥10 feet and < 30 feet	☐ Yes	☐ No	☐ NE	☐ NA
≥30 Feet	☐ Yes	☐ No	☐ NE	☐ NA
30 Feet BioZone compromised	☐ Yes	☐ No	☐ NE	☐ NA
Unknown	☐ Yes	☐ No	☐ NE	☐ NA
Oxygen Data in Bioattenuation Zone				
No Oxygen Data	☑ Yes	☐ No	☐ NE	☐ NA
Oxygen < 4%	☐ Yes	☐ No	☐ NE	☐ NA
Oxygen ≥ 4%	☐ Yes	☐ No	☐ NE	☐ NA
Benzene in Groundwater				
≥ 100 µg/L and < 1,000 µg/L	☐ Yes	☐ No	☐ NE	☐ NA
≥ 1,000 µg/L	☑ Yes	☐ No	☐ NE	☐ NA
☐ ≥ 280,000 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
Unknown	☐ Yes	☐ No	☐ NE	☐ NA
Soil Gas Benzene				
≥ 85 µg/m^3 and < 280 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
≥ 280 µg/m^3 and < 85,000 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
≥ 85,000 µg/m^3 and < 280,000 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
Unknown	☐ Yes	☐ No	☐ NE	☐ NA
Soil Gas Ethylbenzene				
≥ 1,100 µg/m^3 and < 3,600 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
≥ 3,600 µg/m^3 and < 1,100,000 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
≥ 1,100,000 µg/m^3 and < 3,600,000	☐ Yes	☐ No	☐ NE	☐ NA
≥ 3,600,000 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
Unknown	☐ Yes	☐ No	☐ NE	☐ NA
Soil Gas Napthalene				
≥ 93 µg/m^3 and < 310 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
≥ 310 µg/m^3 and < 93,000 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
≥ 93,000 µg/m^3 and < 310,000 µg/m^3	☐ Yes	☐ No	☐ NE	☐ NA
Unknown	☐ Yes	☐ No	☐ NE	☐ NA

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

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CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE PATHWAYS

LTCP Media-Specific Criteria: Direct Contact and Outdoor Air Exposure

CA LUFT Manual Guidance Statement:

"If a site does not meet the media-specific criteria for direct contact and outdoor air exposure, then a medium-specific analysis may need to be performed to demonstrate that the medium and its associated exposure pathways are low-threat. For an evaluation of direct contact and volatilization to outdoor air, calculate a more reasonable exposure concentration by averaging the measured concentration over an appropriate (conservative) exposure area. The Case Closure Policy indicates that the maximum concentrations should be used in this analysis, so be sure to include the maximum values when calculating the average. For a residential exposure, a reasonable exposure area may correspond to the size of a small backyard."

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

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CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE PATHWAYS

LTCP Media-Specific Criteria: Direct Contact and Outdoor Air Exposure (continued)

Does the site meet satisfy the media-specific criteria for direct contact and outdoor air exposure (a, b, or c)listed below?	☐ Yes	☑ No	☐ NE

Scenario a

Are maximum concentrations of petroleum constituents in soil less than or equal to those listed in Table 1 for the specified depth below ground surface (bgs)?	☐ Yes	☑ No	☐ NE

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

	Residential		Commercial/Industrial		Utility Worker
Chemical	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
Max Soil Conc[1]	*Insert*	*Insert*	*Insert*	*Insert*	*Insert*
Ethylbenzene	21	32	89	134	314
Max Soil Conc[1]	*Insert*	*Insert*	*Insert*	*Insert*	*Insert*
Napthalene	9.7	9.7	45	45	219
Max Soil Conc[1]	*Insert*	*Insert*	*Insert*	*Insert*	*Insert*
PAH	0.063	NA	0.68	NA	4.5
Max Soil Conc[1]	*Insert*	*Insert*	*Insert*	*Insert*	*Insert*

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	☐ NA
Residential	☐ Yes	☐ No	☐ NE	☐ NA
Commercial/Industrial	☐ Yes	☑ No	☐ NE	☐ NA
If exposure to construction or utility trench workers is reasonably anticipated, are the concentration limits for the Utility Worker satisfied?	☐ Yes	☑ No	☐ NE	☐ NA
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	☐ NA
Is the area of impacted soil where a particular exposure occurs ≤ 82 feet by 82 feet?	☐ Yes	☐ No	☑ NE	☐ NA
Is the receptor located at the downgradient edge for inhalation exposure?	☐ Yes	☐ No	☐ NE	☐ NA
Is the wind speed < 2.25 meters per second (7.38 feet per second) on average?	☐ Yes	☐ No	☐ NE	☐ NA
Are there different exposure scenarios than residential, commercial/industrial, utility worker) at the site?	☐ Yes	☐ No	☐ NE	☐ NA

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

CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE PATHWAYS

LTCP Media-Specific Criteria: Direct Contact and Outdoor Air Exposure (continued)

Does the site meet satisfy the media-specific criteria for direct contact and outdoor air exposure (a, b, or c) listed below? (continued)

Scenario b				
Are maximum concentrations of petroleum constituents in soil les than levels that a site specific risk assessment demonstrates will have no significant risk of adversely affecting human health?	☐ Yes	☐ No	☑ NE	☐ NA

Case Review Notes:

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

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CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE PATHWAYS

LTCP Media-Specific Criteria: Direct Contact and Outdoor Air Exposure (continued)

Does the site meet satisfy the media-specific criteria for direct contact and outdoor air exposure (a, b, or c) listed below? (continued)

Scenario 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?	☐ Yes	☑ No	☐ NE	☐ NA

Guidance Document: Institutional Controls A Guide to Planning Implementing Maintaining and Enforcing Institutional Controls at Contaminated Sites, Interim Final. USEPA Nov 2010 540-R-09-001

EPA defines institutional controls as non-engineered instruments, such as administrative and legal controls, that help to minimize the potential for human health exposure to contamination and/or protect the integrity of a response action. ICs are typically designed to work by limiting land or resource use or by providing information that helps modify or guide human behavior at a site.

Case Review Notes:

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

CONCEPTUAL SITE MODEL AND DATA GAP IDENTIFICATION CHECKLIST
CONTAMINANT TRANSPORT AND EXPOSURE PATHWAYS

LTCP Media-Specific Criteria: Direct Contact and Outdoor Air Exposure – Additional Questions

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

Exposure Type:				
Residential	☐ Yes	☐ No	☐ NE	☐ NA
Commercial	☑ Yes	☐ No	☐ NE	☐ NA
Utility Worker	☑ Yes	☐ No	☐ NE	☐ NA
Petroleum Constituents in Soil:				
≤ 5 feet bgs	☑ Yes	☐ No	☐ NE	☐ NA
> 5 feet bgs and ≤ 10 feet bgs	☑ Yes	☐ No	☐ NE	☐ NA
	☐ Yes	☐ No	☐ NE	☐ NA
> 12 mg/kg and ≤ 14 mg/kg	☐ Yes	☐ No	☐ NE	☐ NA
Unknown	☐ Yes	☐ No	☐ NE	☐ NA
Soil Concentrations of Benzene:				
> 1.9 mg/kg and ≤ 2.8 mg/kg	☐ Yes	☐ No	☐ NE	☐ NA
> 2.8 mg/kg and ≤ 8.2 mg/kg	☐ Yes	☐ No	☐ NE	☐ NA
> 8.2 mg/kg and ≤ 12 mg/kg	☐ Yes	☐ No	☐ NE	☐ NA
> 14 mg/kg	☑ Yes	☐ No	☐ NE	☐ NA
Unknown	☐ Yes	☐ No	☐ NE	☐ NA
Soil Concentrations of Ethylbenzene:				
> 21 mg/kg and ≤ 32 mg/kg	☐ Yes	☐ No	☐ NE	☐ NA
> 32 mg/kg and ≤ 89 mg/kg	☐ Yes	☐ No	☐ NE	☐ NA
> 89 mg/kg and ≤ 134 mg/kg	☐ Yes	☐ No	☐ NE	☐ NA
> 134 mg/kg and ≤ 314 mg/kg	☐ Yes	☐ No	☐ NE	☐ NA
> 314 mg/kg	☐ Yes	☐ No	☐ NE	☐ NA
Unknown	☑ Yes	☐ No	☐ NE	☐ NA
Soil Concentrations of Naphthalene:				
> 9.7 mg/kg and ≤ 45 mg/kg	☐ Yes	☐ No	☐ NE	☐ NA
> 45 mg/kg and ≤ 219 mg/kg	☐ Yes	☐ No	☐ NE	☐ NA
> 219 mg/kg	☐ Yes	☐ No	☐ NE	☐ NA
Unknown	☑ Yes	☐ No	☐ NE	☐ NA
Soil Concentrations of PAH:				
> 0.063 mg/kg and ≤ 0,68 mg/kg	☐ Yes	☐ No	☐ NE	☐ NA
> 0.68 mg/kg and ≤ 4.5 mg/kg	☐ Yes	☐ No	☐ NE	☐ NA
> 4.5 mg/kg	☐ Yes	☐ No	☐ NE	☐ NA
Unknown	☑			
Area of Impacted Soil:				
Area of Impacted Soil > 82 by 82 Feet	☐ Yes	☐ No	☑ NE	☐ NA
Unknown	☐ Yes	☐ No	☐ NE	☐ NA

This case should be closed in spite of <u>not</u> meeting policy criteria	☐ Yes	☑ No	☐ NE	☐ NA
List Reasons:				

****End of Media Specific Criteria: Direct Contact and Outdoor Air Exposure Evaluation*****

Key: ■ NE = Identified Data Gap - Needs Further Evaluation ■ NA = Not Applicable ■ UNK = Unknown