

**PROPOSED WATER QUALITY CONTROL  
POLICY FOR LOW-THREAT  
UNDERGROUND STORAGE TANK CASE  
CLOSURE**

**Staff Report**

**State Water Resources Control Board  
California Environmental Protection Agency**

**April 27, 2012**

## **1. INTRODUCTION**

The State Water Resources Control Board (State Water Board) provided direction to improve the administration of the Underground Storage Tank (UST) Cleanup Program and the Cleanup Fund Program through Resolution 2009-0042 and Resolution 2009-0081.

In Resolution 2009-0042, the State Water Board stated that the issues identified in the resolution are of an ongoing nature and the State Water Board will take further appropriate action to improve the UST Cleanup Program and the Cleanup Fund Program. A state policy for water quality control that establishes criteria for closure of UST cases that present a low threat to human health, safety, and the environment are necessary for consistency and will facilitate the appropriate closure of UST cases and improve both the UST Cleanup Program and the Cleanup Fund Program.

On July 19, 2011, the nine-member UST Low-Threat Closure Policy Stakeholder Group (two Regional Water Quality Control Board agencies, a Local Oversight Program agency, a water district, responsible party representatives from the Western States Petroleum Association and California Independent Oil Marketers Association, two participants from Non-Government Organizations, and one UST consultant) presented its recommendations, including a "Draft Low-Threat UST Closure Policy, 7-14-11," to the State Water Board.

The proposed Policy establishes consistent statewide case closure criteria for a subset of low-threat petroleum UST sites and does not describe the conditions at all low-threat sites in the State.

The proposed Policy is intended to provide direction to responsible parties, their service providers, and regulatory agencies. The proposed Policy seeks to increase UST cleanup process efficiency. A benefit of improved efficiency is the preservation of limited resources for mitigation of releases posing a greater threat to human and environmental health.

## **2. NEED FOR THE POLICY**

The Policy seeks to increase statewide consistency and efficiency in the UST cleanup process. The Policy seeks to improve statewide UST cleanup process consistency by providing regulatory agencies and stakeholders with case closure criteria for low-threat petroleum UST sites. The Policy also seeks to improve statewide UST cleanup process efficiency by reducing the time and resources (human and financial) spent on low-threat sites, thereby allowing for resources to be re-directed towards high-risk petroleum UST sites. Benefits of improved consistency and efficiency are the preservation of limited resources for mitigation of releases posing a greater threat to human and environmental health.

## **3. PUBLIC PARTICIPATION**

Major activities conducted in developing the Low-Threat Underground Storage Tank Case Closure Policy are summarized below.

- **Public Outreach Meetings**

Members of the stakeholder group held public outreach meetings to discuss technical and practical aspects of its recommended Policy on 8-31-11 in Oakland, 9-15-11 in Los Angeles and Riverside, 9-16-11 in San Diego, CA and 9-23-11 in Rancho Cordova, CA.

- **Public Scoping Meetings**  
State Water Board staff held California Environmental Quality Act (CEQA) public scoping meetings on 9-28-11 in Riverside, and 9-29-11 in Oakland, CA.
- **Comment Solicitation**  
The State Water Board circulated the Draft Low-Threat UST Closure Policy, 7-14-11, and a Low-Threat UST Closure Policy Scoping Document for public comment on 9-21-11. Written comments on the Draft Low-Threat UST Closure Policy, 7-14-11, and the Low-Threat UST Closure Policy Scoping Document were received. The stakeholder group made revisions to the Draft Low-Threat UST Closure Policy, 7-14-11, and the revised version of the draft policy is dated 11-10-11.
- **California Office of Environmental Health Hazard Assessment (OEHHA) and California Department of Toxic Substances Control (DTSC) Coordination**  
A meeting was held with OEHHA staff on 9-23-11 and with DTSC staff on 12-19-11 to discuss the Draft Policy and Technical Justification Documents. State Water Board staff gained information on how to enhance the Technical Justification Documents and improve the Policy.
- **External Scientific Peer Review**  
The scientific basis for the “Low-Threat UST Closure Policy, 11-10-11” was subjected to an independent, external peer review, pursuant to the requirements of Health and Safety Code section 57004. Responses to Peer Reviews have been prepared and are part of the record. Scientific portions of the policy and technical justification documents have been revised where appropriate and as indicated in the responses. Where there is disagreement with finding of the peer review, the response explains the basis(es) for not incorporating the comment into the applicable document.
- **Draft Policy and Draft Substitute Environmental Document Comment Solicitation**  
The State Water Board circulated a Draft Low-Threat Underground Storage Tank Case Closure Policy, 1-31-12, and Draft Substitute Environmental Document for public comment on 2-3-12. The deadline for the submission of written comments was 3-19-12.
- **Public Hearing for the Receipt of Oral Comments on a Draft Policy and Draft SED**  
The State Water Board conducted a Public Hearing for the receipt of oral comments on a Draft Policy and Draft SED on 4-17-12. No Board action was taken.
- **Regional Boards, Other Public Agencies, and Public Notice of the Public Hearing and Adoption Hearing**  
Regional Boards, other public agencies, and the public were given notice of the Public Hearing and Adoption Hearing.

#### 4. TECHNICAL DOCUMENTS

There are three technical documents that explain the scientific aspects of the Policy:

- Technical Justification for Groundwater Media-Specific Criteria, Final 04-24-2012.
- Technical Justification for Soil Screening Levels for Direct Contact and Outdoor Air Exposure Pathways, Final 03-15-2012.

- Technical Justification for Vapor Intrusion Media-Specific Criteria, Final 03-21-2012.

These documents formed the basis of the scientific aspects of the policy that were peer reviewed. The documents were modified to incorporate suggestions made by the peer reviewers.

## 5. STAFF RESPONSE TO COMMENTS.

1. Assertion that the 30-day notice and comment period is not enough time.

Response: The Policy was changed so that the public are provided a 60-day notice and comment period on proposed UST case closures.

2. Assertion that the Baseline Analysis for the proposed Policy was not modified.

Response: The baseline by which an agency determines whether an impact is significant is generally “the physical environmental conditions in the vicinity of the project, as they exist . . . at the time the environmental analysis is commenced.” (CEQA Guidelines, section 15125. *Communities for a Better Environment v. South Coast Air Quality Mgmt. Dist.* (2010) 48 Cal.4th 310, 320 [106 Cal Rptr. 3d 502]; *Fat v. County of Sacramento* (2002) 97 Cal.App.4th 1270 [119 Cal.Rptr.2d 402].)

When an agency’s approvals will change an existing plan, the agency compares the impacts of the new plan or use with existing environmental conditions, not with the potential impacts of the existing plan. (*Lighthouse Field Beach Rescue v. City of Santa Cruz* (2005) 131 Cal.App.4th 1170, [31 Cal.Rptr.3d 901].)

The appropriate environmental baseline for the proposed Policy is the existing conditions, which is the existing petroleum UST release cases that existed at the time the environmental analysis for the proposed Policy was commenced.

3. Assertion that the Policy did not assess cumulative impacts of low-threat UST case closures or the cost to local water suppliers and that the burden of expenses associated with tracking groundwater plumes should remain with the polluter; closing cases prematurely shifts the costs to local water suppliers.

Response: For purposes of CEQA, a project’s impacts are cumulatively considerable if the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probably future projects. (CEQA Guidelines, § 15064(h)(1).) The commenters incorrectly identify remaining petroleum in the subsurface as project impacts. The existing petroleum is part of the baseline, and only changes over the environmental baseline are project impacts.

UST cases that satisfy the closure criteria in the Policy present a low risk and no further action is required including groundwater monitoring. Cases that meet criteria established in the proposed Policy are considered low threat to public health, safety, and the environment, and are ready for case closure. Natural attenuation processes will degrade the petroleum and restore water quality objectives over time. The Policy does not make the current site conditions worse. The Policy allows monitoring of site

conditions to be stopped at sites that meet Policy criteria, including having a stable plume. The continued tracking of stable plumes is not necessary, so the cost of tracking and containment is not transferred to the local water supply agency.

4. Request an amendment to the General Criteria item "a" to read as follows: "The unauthorized release is located within the service area of a public water system that does not use the local groundwater basin as a supply."

Response: This Policy is protective of existing water supply wells and surface water bodies. 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. That is why this Policy is limited to areas with available public water systems to further reduce the likelihood that new wells in developing areas will be inadvertently impacted by residual petroleum in groundwater. Many UST sites across the State are in basins that serve as a source of public supply, yet very few public supply wells have been impacted by UST releases. Public supply wells are usually constructed with competent sanitary seals and intake screens that are in deeper more protected aquifers. Public supply agencies usually have long term strategic plans about projected water use, artificial recharge areas, potential well locations, and other vulnerable areas in their basins. In the unlikely event that a case proposed for closure under the Policy is located in one of these areas planned for use in the future, a water agency may request that the case remain open due to this unique site specific condition. The Policy requires setback distances from all water supply wells and surface water bodies.

5. Request for a clarification of the term "plume boundary".

Response: The plume boundary is transition point between the petroleum contaminant plume that exceeds water quality objectives and groundwater that does not exceed water quality objectives. The regulatory agency determines what chemicals should be analyzed based upon the type of petroleum released, age of release, and site specific factors.

6. Assertion that the Policy failed to consider the effects of tertiary butyl alcohol (TBA).

Response: All contaminants, including TBA, are evaluated when determining plume stability and measuring the distance between the water supply well or surface water body and the defined plume boundary. Further, all contaminants are considered when determining the length of the groundwater plume that exceeds water quality objectives.

Benzene and MTBE are included in the media-specific criteria for groundwater as an indicator of mass reduction in the source area. At most sites, a significant amount of source removal will need to occur to meet the benzene and MTBE concentration limits for groundwater. TBA is commonly a breakdown product of MTBE and is not a constituent of the petroleum that was released at sites. The concentration of TBA in groundwater is therefore not a good indicator of source reduction.

7. Questioned why the impacted groundwater is unlikely to be used as a public supply.

Response: This Policy is protective of existing water supply wells and surface water bodies. 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. That is why this Policy is limited to areas with available public water systems to further reduce the likelihood that new wells in developing areas will be inadvertently impacted by residual petroleum in groundwater. Many UST sites across the State are in basins that serve as a source of public supply, yet very few public supply wells have been impacted by UST releases. Public supply wells are usually constructed with competent sanitary seals and intake screens that are in deeper more protected aquifers. Public supply agencies usually have long term strategic plans about projected water use, artificial recharge areas, potential well locations, and other vulnerable areas in their basins. In the unlikely event that a case proposed for closure under the Policy is located in one of these areas planned for use in the future, a water agency may request that the case remain open due to this unique site specific condition. The Policy requires setback distances from all water supply wells and surface water bodies.

8. Requested methods or criteria for determining if a plume is stable to decreasing and how to define a plume boundary.

Response: Professional judgment is required to determine if a plume is stable or decreasing and to delineate groundwater plume boundaries. Many guidance documents are available for determining plume stability and identifying the boundary of groundwater plumes. The appropriate method to use is site specific and may vary based upon the length of historic monitoring, impediments to further data collection, hydrogeological setting and other factors.

9. Assertion that errors were made in Table 1. The error was the inclusion of an extra body weight factor in both the cancer and no-cancer for the commercial/industrial and utility worker direct contact and outdoor air exposure equations.

Response: Contaminant screening levels for Residential, Commercial/Industrial, and Utility worker were modified as shown below because the original inhalation equations for commercial/industrial and utility worker contained an extra body weight (BW) term. The current values are based the Inhalation Unit Risk (IUR) which includes a BW term.

Poly-aromatic hydrocarbons (PAH) Screening levels for Volatilization to outdoor air (5 to 10 feet bgs) for Residential, Commercial/Industrial were modified as shown below because this is a volatilization route only and PAHs are unlikely to volatilize at levels to be a concern to outdoor air.

Table 1

Chemical	Residential		Commercial/ Industrial		Utility Worker
	0 to 5 feet bgs mg/kg	Volatilization to outdoor air (5 to 10 feet bgs) mg/kg	0 to 5 feet bgs mg/kg	Volatilization to outdoor air (5 to 10 feet bgs) mg/kg	0 to 10 feet bgs mg/kg
Benzene	1.9	2.8	<del>28</del> <u>8.2</u>	<del>810</del> <u>12</u>	<del>180</del> <u>14</u>
Ethylbenzene	21	32	<del>250</del> <u>89</u>	<del>9,400</del> <u>134</u>	<del>1,800</del> <u>314</u>
Naphthalene	9.7	9.7	<del>3,100</del> <u>45</u>	<del>3,100</del> <u>45</u>	<del>2,100</del> <u>219</u>
PAH <sup>1</sup>	0.063	<del>190</del> <u>NA</u>	0.68	<del>160,000</del> <u>NA</u>	<del>4.6</del> <u>4.5</u>

Notes:

1. Based on the seven carcinogenic poly-aromatic hydrocarbons (PAHs) as benzo(a)pyrene toxicity equivalent [BaPe]. Sampling and analysis for PAH is only necessary where soil is affected by either waste oil or Bunker C fuel.
2. The area of impacted soil where a particular exposure occurs is 25 by 25 meters (approximately 82 by 82 feet) or less.
3. NA = not applicable
4. mg/kg = milligrams per kilogram

## 6. SUMMARY OF SUBSTANTIAL REVISIONS TO DRAFT POLICY DATED JANUARY 31, 2012.

Actual changes made to the 1/31/12 version of the Policy are listed below in redline strikeout:

1. This policy is a state policy for water quality control and applies to all petroleum UST sites subject to ~~Health and Safety Code section 25296.10 Chapter 6.7 of Division 20 of the Health and Safety Code and Chapter 16 of Division 3 of Title 23 of the California Code of Regulations.~~ See: *Preamble*, Page 2.
2. It is important to emphasize that the criteria described in this policy do not attempt to describe the conditions at all low-threat petroleum UST sites in the State. ~~Regulatory agencies should~~The regulatory agency shall issue a closure letter for a case that does not meet these criteria if the regulatory agency determines the site ~~is determined~~ to be low-threat based upon a site specific analysis. See: *Preamble*, Page 2.
  - e. A conceptual site model that assesses the nature, extent, and mobility of the release has been developed;
  - f. Secondary source ~~removal~~ has been addressed removed to the extent practicable;
  - g. Soil or groundwater has been tested for methyl tert-butyl ether (MTBE) and results reported in accordance with Health and Safety Code section 25296.15; and. See: *General Criteria*, Page 3.
3. 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. See: *General Criteria*, Page 3.

4. **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.** See: *General Criteria*, Page 4.
5. **For the purpose of this policy, waste means a petroleum release.**  
See: *General Criteria*, Page 5.
  - (3) e. The property owner is willing to accept a **deed land use** restriction if the regulatory agency requires a **deed land use** restriction as a condition of closure.  
See: **Groundwater-Specific Criteria**, Page 6.
6. (5) a. **An The regulatory agency determines, based on an** analysis of site specific conditions **determines,** that under current and reasonably 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.  
See: **Groundwater-Specific Criteria**, Page 7.
  - 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.**  
See: *Petroleum Vapor Intrusion to Indoor Air*, Page 7.
8. 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, **including the requirement in 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.  
See: *Low-Threat Case Closure*, Page 9.
9. Notification Requirements – Municipal and county water districts water replenishment districts, special act districts with groundwater management authority, agencies with authority to issue building permits **for** land affected by the petroleum release, owners **and occupants** of the property **impacted by the petroleum release**, and the owners and occupants of all **adjacent parcels and all parcels that are impacted by the unauthorized release adjacent to the impacted property** shall be notified of the proposed case closure and provided a **30 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. See: *Low-Threat Case Closure*, Page 9.

10.

Table 1

Chemical	Residential		Commercial/ Industrial		Utility Worker
	0 to 5 feet bgs	Volatilization to outdoor air (5 to 10 feet bgs)	0 to 5 feet bgs	Volatilization to outdoor air (5 to 10 feet bgs)	0 to 10 feet bgs
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
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<b>Naphthalene</b>	9.7	9.7	<b>3,100 45</b>	<b>3,100 45</b>	<b>2,100 219</b>
<b>PAH<sup>1</sup></b>	0.063	<b>190 NA</b>	0.68	<b>160,000 NA</b>	<b>4.6 4.5</b>

Notes:

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6. **The area of impacted soil where a particular exposure occurs is 25 by 25 meters (approximately 82 by 82 feet) or less.**
7. **NA = not applicable**
8. **mg/kg = milligrams per kilogram**

See: *Direct Contact and Outdoor Air Exposure*, Page 8.

## 7. Additional References

California Department of Water Resources, 1991, California Well Standards, Water wells, Monitoring wells, and Cathodic protection wells, Bulletin 74-90.

[http://www.water.ca.gov/pubs/groundwater/water\\_well\\_standards\\_bulletin\\_74-90/\\_ca\\_well\\_standards\\_bulletin74-90\\_1991.pdf](http://www.water.ca.gov/pubs/groundwater/water_well_standards_bulletin_74-90/_ca_well_standards_bulletin74-90_1991.pdf)

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[http://www.waterboards.ca.gov/water\\_issues/programs/ust/luft\\_manual/guidance\\_manual\\_v2.pdf](http://www.waterboards.ca.gov/water_issues/programs/ust/luft_manual/guidance_manual_v2.pdf)

State Water Resources Control Board, 1989, Leaking Underground Fuel Tank Field Manual, Guidelines for Site Assessment, Cleanup, and Underground Storage Tank Closure.

[http://www.waterboards.ca.gov/publications\\_forms/publications/general/docs/luft-manual-1989.pdf](http://www.waterboards.ca.gov/publications_forms/publications/general/docs/luft-manual-1989.pdf)

U.S. EPA, 2012, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2010.

<http://www.epa.gov/climatechange/emissions/usinventoryreport.html>

U.S.EPA, 2010, Green Remediation Best Management Practices: Clean Fuel & Emission Technologies for Site Cleanup, EPA 542-F-10-008, August.

<http://www.epa.gov/tio/download/remed/clean-fuel-emis-gr-fact-sheet.pdf>