STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER WQ 2014-0088 – UST

In the Matter of Underground Storage Tank Case Closure

Pursuant to Health and Safety Code Section 25299.39.2 and the Low Threat Underground Storage Tank Case Closure Policy

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BY THE EXECUTIVE DIRECTOR[1]:

Pursuant to Health and Safety Code section 25299.39.2, the Manager of the Underground Storage Tank Cleanup Fund (Fund) recommends closure of the underground storage tank (UST) case at the site listed below.[2] The name of the Fund claimant, the Fund claim number, the site name and the applicable site address are as follows:

Patricia Morris Estate
Claim No. 15154
Dale's Shell & Automotive
15021 Lakeshore Drive, Clearlake

Central Valley Regional Water Quality Control Board

I. STATUTORY AND PROCEDURAL BACKGROUND

Section 25299.39.2 directs the Fund manager to review the case history of claims that have been active for five years or more (five-year review), unless there is an objection from the UST owner or operator. This section further authorizes the Fund Manager to make recommendations to the State Water Resources Control Board (State Water Board) for closure of a five-year-review case if the UST owner or operator approves. In response to a recommendation by the Fund Manager, the State Water Board, or in certain cases the State Water Board Executive Director, may close a case or require the closure of a UST case. Closure of a UST case is appropriate where the corrective action ensures the protection of human health, safety, and the environment and where the corrective action is consistent with:

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[1] State Water Board Resolution No. 2012-0061 delegates to the Executive Director the authority to close or require the closure of any UST case if the case meets the criteria found in the State Water Board's Low Threat Underground Storage Tank Case Closure Policy adopted by State Water Board Resolution No. 2012-0016.

[2] Unless otherwise noted, all references are to the Health and Safety Code.

1) Chapter 6.7 of Division 20 of the Health and Safety Code and implementing regulations; 2) Any applicable waste discharge requirements or other orders issued pursuant to Division 7 of the Water Code; 3) All applicable state policies for water quality control; and 4) All applicable water quality control plans.

The Fund Manager has completed a five-year review of the UST case identified above, and recommends that this case be closed. The recommendation is based upon the facts and circumstances of this particular UST case. A UST Case Closure Review Summary Report has been prepared for the case identified above and the bases for determining compliance with the Water Quality Control Policy for Low-Threat Underground Storage Tank Case Closures (Low-Threat Closure Policy or Policy) are explained in the Case Closure Review Summary Report.

A. Low-Threat Closure Policy

In State Water Board Resolution No. 2012-0016, the State Water Board adopted the Low Threat Closure Policy. The Policy became effective on August 17, 2012. The Policy establishes consistent statewide case closure criteria for certain low-threat petroleum UST sites. In the absence of unique attributes or site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents, cases that meet the general and media-specific criteria in the Low-Threat Closure Policy pose a low threat to human health, safety and the environment and are appropriate for closure under Health and Safety Code section 25296.10. The Policy provides that if a regulatory agency determines that a case meets the general and media-specific criteria of the Policy, then the regulatory agency shall notify responsible parties and other specified interested persons that the case is eligible for case closure. Unless the regulatory agency revises its determination based on comments received on the proposed case closure, the Policy provides that the agency shall issue a closure letter as specified in Health and Safety Code section 25296.10. The closure letter may only be issued after the expiration of the 60-day comment period, proper destruction or maintenance of monitoring wells or borings, and removal of waste associated with investigation and remediation of the site.

Health and Safety Code section 25299.57, subdivision (l)(1) provides that claims for reimbursement of corrective action costs that are received by the Fund more than 365 days after the date of a closure letter or a Letter of Commitment, whichever occurs later, shall not be reimbursed unless specified conditions are satisfied. A Letter of Commitment has already been issued on the claim subject to this order and the respective Fund claimant, so the 365-day timeframe for the submittal of claims for corrective action costs will start upon the issuance of the closure letter.

II. FINDINGS

Based upon the UST Case Closure Review Summary Report prepared for the case attached hereto, the State Water Board finds that corrective action taken to address the unauthorized release of petroleum at the UST release site identified as:

Claim No. 15154
Dale's Shell & Automotive

ensures protection of human health, safety and the environment and is consistent with Chapter 6.7 of Division 20 of the Health and Safety Code and implementing regulations, the Low-Threat Closure Policy and other water quality control policies and applicable water quality control plans.

The unauthorized release from the UST consisted only of petroleum. This order directs closure for the petroleum UST case at the site.[3]

Pursuant to the Low-Threat Closure Policy, notification has been provided to all entities that are required to receive notice of the proposed case closure, a 60-day comment period has been provided to notified parties, and any comments received have been considered by the Board in determining that the case should be closed.

Pursuant to section 21080.5 of the Public Resources Code, environmental impacts associated with the adoption of this Order were analyzed in the substitute environmental document (SED) the State Water Board approved on May 1, 2012. The SED concludes that all environmental effects of adopting and implementing the Low threat Closure Policy are less than significant, and environmental impacts as a result of complying with the Policy are no different from the impacts that are reasonably foreseen as a result of the Policy itself. A Notice of Decision was filed August 17, 2012. No new environmental impacts or any additional reasonably foreseeable impacts beyond those that were not addressed in the SED will result from adopting this Order.

The UST case identified above may be the subject of orders issued by the Regional Water Quality Control Board (Regional Water Board) pursuant to Division 7 of the Water Code. Any orders that have been issued by the Regional Water Board pursuant to Division 7 of the Water Code, or directives issued by a Local Oversight Program agency for this case should be rescinded to the extent they are inconsistent with this Order.

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[3] This order addresses only the petroleum UST case for the site. This order does not affect an existing order or directive requiring corrective action for non-petroleum contamination, if non-petroleum contamination is present.

III. ORDER

IT IS THEREFORE ORDERED that:

A. The UST case identified in Section II of this Order, meeting the general and media-specific criteria established in the Low-Threat Closure Policy, be closed in accordance with the following conditions and after the following actions are complete. Prior to the issuance of a closure letter, the Fund claimant is ordered to:

1. Properly destroy monitoring wells and borings unless the owner of real property on which the well or boring is located certifies that the wells or borings will be maintained in accordance with local or state requirements;

2. Properly remove from the site and manage all waste piles, drums, debris, and other investigation and remediation derived materials in accordance with local or state requirements; and

3. Within six months of the date of this Order, submit documentation to the regulatory agency overseeing the UST case identified on page 1 of this Order that the tasks in subparagraphs (1) and (2) have been completed.

B. The tasks in subparagraphs (1) and (2) of paragraph (A) are ordered pursuant to Health and Safety Code section 25296.10 and failure to comply with these requirements may result in the imposition of civil penalties pursuant to Health and Safety Code section 25299, subdivision (d)(1). Penalties may be imposed administratively by the State Water Board or Regional Water Board.

C. Within 30 days of receipt of proper documentation from the Fund claimant that requirements in subparagraphs (1) and (2) of paragraph (A) are complete, the regulatory agency that is responsible for oversight of the UST case identified in Section II of this Order shall notify the State Water Board that the tasks have been satisfactorily completed.

D. Within 30 days of notification from the regulatory agency that the tasks are complete pursuant to paragraph (C), the Deputy Director of the Division of Financial Assistance shall issue a closure letter consistent with Health and Safety Code section 25296.10,

subdivision (g) and upload the closure letter and UST Case Closure Review Summary Report to GeoTracker.

E. As specified in Health and Safety Code section 25299.39.2, subdivision (a) (2), corrective action costs incurred after a recommendation of closure shall be limited to $10,000 per year unless the Board or its delegated representative agrees that corrective action in excess of that amount is necessary to meet closure requirements, or additional corrective actions are necessary pursuant to section 25296.10, subdivisions (a) and (b). Pursuant to section 25299.57, subdivision (l) (1), and except in specified circumstances, all claims for reimbursement of corrective action costs must be received by the Fund within 365 days of issuance of the closure letter in order for the costs to be considered.

F. Any Regional Water Board or Local Oversight Program Agency directive or order that directs corrective action or other action inconsistent with case closure for the UST case identified in Section II is rescinded, but only to the extent the Regional Water Board order or Local Oversight Program Agency directive is inconsistent with this Order.

Executive Director

6/5/14
Date

UST CASE CLOSURE REVIEW SUMMARY REPORT

Agency Information

Agency Name: Central Valley Regional Water Quality Control Board (Regional Water Board)	Address: 11020 Sun Center Drive # 200, Rancho Cordova, CA 95670
Agency Caseworker: Emily Cushman	Case No.: 170058

Case Information

USTCF Claim No.: 15154	GeoTracker Global ID: T0603300038
Site Name: Dale's Shell & Automotive	Site Address: 15021 Lakeshore Drive, Clearlake, CA 95422
Responsible Parties: Patricia Morris Estate, Attn: Billy Morris, Administrator and Brenda Begor c/o Marc Begor	Addresses: Private Addresses
USTCF Expenditures to Date: $974,492	Number of Years Case Open: 20

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0603300038

Summary

The Low-Threat Underground Storage Tank (UST) Case Closure Policy (Policy) contains general and media-specific criteria, and cases that meet those criteria are appropriate for closure pursuant to the Policy. This case meets all of the required criteria of the Policy. A summary evaluation of compliance with the Policy is shown in **Attachment 1: Compliance with State Water Board Policies and State Law**. The Conceptual Site Model upon which the evaluation of the case has been made is described in **Attachment 2: Summary of Basic Case Information (Conceptual Site Model).** Highlights of the case follow:

This case is a former commercial petroleum fueling facility. An unauthorized leak was reported in May 1993. Soil vapor extraction was conducted intermittently between March 2007 and October 2009, which reportedly removed approximately 6,500 pounds of total petroleum hydrocarbons as gasoline (TPHg). Ozone injection was conducted for 60 days in 2008. Fifteen groundwater monitoring wells were installed and monitored irregularly since 2001. According to groundwater data, water quality objectives have been achieved or nearly achieved for all constituents except TPHg, benzene, and methyl tert-butyl ether (MTBE).

According to data available in GeoTracker, there are no supply wells regulated by California Department of Public Health or surface water bodies within 1,000 feet of the defined plume boundary. No other water supply wells have been identified within 1,000 feet of the defined plume boundary in files reviewed. Water is provided to water users near the Site by the Highlands Mutual Water Company. The affected groundwater is not currently being used as a source of drinking water, and it is highly unlikely that the affected groundwater will be used as a source of drinking

water in the foreseeable future. Other designated beneficial uses of impacted groundwater are not threatened and it is highly unlikely that they will be, considering these factors in the context of the site setting. Remaining petroleum hydrocarbon constituents are limited and stable, and concentrations are decreasing. Corrective actions have been implemented and additional corrective actions are not necessary. Any remaining petroleum hydrocarbon constituents do not pose a significant risk to human health, safety or the environment.

Rationale for Closure under the Policy

- General Criteria: The case meets all eight Policy general criteria.
- Groundwater Specific Criteria: The case meets Policy Criterion 1 by Class 4. The contaminant plume that exceeds water quality objectives is projected to be less than 500 feet in length. There is no free product. The nearest water supply well or surface water body is greater than 1,000 feet from the defined plume boundary. The dissolved concentration of benzene is less than 1,000 micrograms per liter (µg/L) and the dissolved concentration of MTBE is less than 1,000 µg/L.
- Vapor Intrusion to Indoor Air: The case meets Policy Criterion 2a by Scenario 4 with no bioattenuation zone. The maximum benzene and ethylbenzene concentrations in soil gas at five feet below ground surface (bgs) are less than 0.280 µg/L (280 micrograms per cubic meter [µg/m^3]) and 3.6 µg/L (3,600 µg/m^3), respectively. These levels meet the Commercial soil gas criteria. Additionally, sub-slab samples have been collected. The sub-slab samples reported maximum concentrations of benzene and ethylbenzene of 0.0077 µg/L (7.7 µg/m^3) and 0.19 µg/L (190 µg/m^3), respectively. These levels are below California Human Health Screening Levels (CHHSLs) for commercial use. The Site and adjacent properties are commercial properties. There are no soil vapor sample results in the case record for naphthalene. However, the relative concentration of naphthalene in soil vapor can be conservatively estimated using the published relative concentrations of naphthalene and benzene in gasoline, especially considering naphthalene's lower volatility. Taken from Potter and Simmons (1998), gasoline mixtures contain approximately 2 percent benzene and 0.25 percent naphthalene. Therefore, benzene can be directly substituted for naphthalene concentrations with a safety factor of at least eight. Benzene concentrations from the Site are below the naphthalene thresholds in the Policy Soil Gas Criteria Table. Therefore, the estimated naphthalene concentrations meet the thresholds in the Policy Soil Gas Criteria Table and the Policy criteria for indoor vapor risk by a factor of at least eight. It is highly unlikely that naphthalene concentrations in the soil vapor, if any, exceed the threshold.
- Direct Contact and Outdoor Air Exposure: The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Policy Table 1 for Commercial/Industrial use, and the concentration limits for a Utility Worker are not exceeded. There are no soil sample results in the case record for naphthalene. However, the relative concentration of naphthalene in soil can be conservatively estimated using the published relative concentrations of naphthalene and benzene in gasoline. Taken from Potter and Simmons (1998), gasoline mixtures contain approximately 2 percent benzene and 0.25 percent naphthalene. Therefore, benzene can be directly substituted for naphthalene concentrations with a safety factor of eight. Benzene concentrations from the Site are below the naphthalene thresholds in Policy Table 1. Therefore, the estimated naphthalene concentrations meet the thresholds in Table 1 and the Policy criteria for direct contact by a factor of eight. It is highly unlikely that naphthalene concentrations in the soil, if any, exceed the threshold.

Objections to Closure and Responses

In an email communication on March 14, 2013 to California State Water Resources Control Board Clean-up Fund staff, the Regional Water Board objects closing the Site because:

- Site soil vapor sample results fail to meet soil vapor intrusion human health risk criteria (as measured by environmental screening levels [ESLs] and residential use CHHSLs).
  RESPONSE: Environmental screening levels (ESLs) are often used as initial screening criteria, but are not statutory cleanup criteria. Based on our review of available data, the maximum vapor concentration for benzene and ethylbenzene detected in samples collected at five feet bgs were reported to be 240 $\mu g/m^3$ and 1,400 $\mu g/m^3$, respectively, which are below the commercial use soil gas concentration criteria set by the Policy of 280 $\mu g/m^3$ benzene and 3,600 $\mu g/m^3$ ethylbenzene. The Case meets Criterion 2a of the Policy by Scenario 4 - Direct Measurement of Soil Gas Concentration with no bioattenuation zone. Additionally, sub-slab samples have been collected. The sub-slab samples reported maximum concentrations of benzene and ethylbenzene of 7.7 $\mu g/m^3$ and 190 $\mu g/m^3$, respectively. These levels are below CHHSLs for benzene (280 $\mu g/m^3$) and ethylbenzene (3,600 $\mu g/m^3$) for commercial use within sub-slab engineered fill. Use of the commercial level sub-slab within engineered fill CHHSLs is appropriate since the Site and adjacent properties are commercial properties and future construction would be atop engineered fill.

Determination

Based on the review performed in accordance with Health & Safety Code Section 25299.39.2 subdivision (a), the Fund Manager has determined that closure of the case is appropriate.

Recommendation for Closure

Based on available information, residual petroleum hydrocarbons at the Site do not pose a significant risk to human health, safety, or the environment, and the case meets the requirements of the Policy. Accordingly, the Fund Manager recommends that the case be closed. The State Water Board is conducting public notification as required by the Policy. Lake County Environmental Health Department has the regulatory responsibility to supervise the abandonment of monitoring wells.

Lisa Babcock

Lisa Babcock, P.G. 3939, C.E.G. 1235

2/20/14

Date

Prepared by: Abdul Karim Yusufzai

ATTACHMENT 1: COMPLIANCE WITH STATE WATER BOARD POLICIES AND STATE LAW

The case complies with the State Water Resources Control Board policies and state law. Section 25296.10 of the Health and Safety Code requires that sites be cleaned up to protect human health, safety, and the environment. Based on available information, any residual petroleum constituents at the Site do not pose significant risk to human health, safety, or the environment.

The case complies with the requirements of the Low-Threat Underground Storage Tank (UST) Case Closure Policy as described below.[1]

Is corrective action consistent with Chapter 6.7 of the Health and Safety Code and implementing regulations? The corrective action provisions contained in Chapter 6.7 of the Health and Safety Code and the implementing regulations govern the entire corrective action process at leaking UST sites. If it is determined, at any stage in the corrective action process, that UST site closure is appropriate, further compliance with corrective action requirements is not necessary. Corrective action at this site has been consistent with Chapter 6.7 of the Health and Safety Code and implementing regulations and, since this case meets applicable case-closure requirements, further corrective action is not necessary, unless the activity is necessary for case closure.	☒ Yes ☐ No
Have waste discharge requirements or any other orders issued pursuant to Division 7 of the Water Code been issued at this case?	☐ Yes ☒ No
If so, was the corrective action performed consistent with any order?	☐ Yes ☐ No ☒ NA
<u>**General Criteria**</u> General criteria that must be satisfied by all candidate sites:	
Is the unauthorized release located within the service area of a public water system?	☒ Yes ☐ No
Does the unauthorized release consist only of petroleum?	☒ Yes ☐ No
Has the unauthorized ("primary") release from the UST system been stopped?	☒ Yes ☐ No
Has free product been removed to the maximum extent practicable?	☒ Yes ☐ No ☐ NA

[1] Refer to the Low-Threat Underground Storage Tank Case Closure Policy for closure criteria for low-threat petroleum UST sites.
http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2012/rs2012_0016atta.pdf

Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?	☒ Yes ☐ No
Has secondary source been removed to the extent practicable?	☒ Yes ☐ No
Has soil or groundwater been tested for MTBE and results reported in accordance with Health and Safety Code Section 25296.15?	☒ Yes ☐ No
Nuisance as defined by Water Code section 13050 does not exist at the Site?	☒ Yes ☐ No
Are there unique site attributes or site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents?	☐ Yes ☒ No
Media-Specific Criteria Candidate sites must satisfy all three of these media-specific criteria: **1. Groundwater:** 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:	
Is the contaminant plume that exceeds water quality objectives stable or decreasing in areal extent?	☒ Yes ☐ No ☐ NA
Does the contaminant plume that exceeds water quality objectives meet all of the additional characteristics of one of the five classes of sites?	☒ Yes ☐ No ☐ NA
If YES, check applicable class: ☐ **1** ☐ **2** ☐ **3** ☒ **4** ☐ **5** **For sites with releases that have not affected groundwater, do mobile constituents (leachate, vapors, or light non-aqueous phase liquids) contain sufficient mobile constituents to cause groundwater to exceed the groundwater criteria?**	☐ Yes ☐ No ☒ NA
2. Petroleum Vapor Intrusion to Indoor Air: The site is considered low-threat for vapor intrusion to indoor air if site-specific conditions satisfy all of the characteristics of one of the three classes of sites (a through c) or if the exception for active commercial fueling facilities applies.	
Is the Site an active commercial petroleum fueling facility? Exception: 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.	☐ Yes ☒ No
a. Do site-specific conditions at the release site satisfy all of the applicable characteristics and criteria of scenarios 1 through 3 or all of the applicable characteristics and criteria of scenario 4? If YES, check applicable scenarios: ☐ **1** ☐ **2** ☐ **3** ☒ **4**	☒Yes ☐ No ☐ NA

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 ☐ 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 petroleum vapors migrating from soil or groundwater will have no significant risk of adversely affecting human health?	☐ Yes ☐ No ☒ NA
3. Direct Contact and Outdoor Air Exposure: The Site is considered low-threat for direct contact and outdoor air exposure if site-specific conditions satisfy one of the three classes of sites (a through c).	
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 ☐ NA
b. Are 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 ☒ 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 no significant risk of adversely affecting human health?	☐ Yes ☐ No ☒ NA

ATTACHMENT 2: SUMMARY OF BASIC CASE INFORMATION (Conceptual Site Model)

Site Location/History

- The Site is a former commercial petroleum fueling facility located on the southeast corner of Lakeshore Drive and Old Highway 53 and is a vacant former gas station building.
- The Site is bounded by an active commercial petroleum fueling facility across Lakeshore Drive to the north, a fast-food restaurant to the east, an empty lot to the south, and retail businesses across Old Highway 53 to the west and northwest across the intersection.
- A soil vapor survey was conducted on 18 October 2012 to determine current concentrations and distribution of hydrocarbons in soil vapor beneath the Site (Figures 2-4).
- Site maps showing the location of the former USTs, monitoring wells, groundwater level contours, and benzene and MTBE concentrations are provided at the end of this closure review (Applied Engineering and Geology, Inc., March 2012).
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Source: UST system.
- Date reported: May 1993.
- Status of Release: USTs removed.

Tank Information

Tank No.	Size in Gallons	Contents	Closed in Place/ Removed/Active	Date
1,2	8,000	Gasoline	Removed	October 1999
3	5,000	Gasoline	Removed	October 1999
4	550	Waste Oil	Removed	October 1999

Receptors

- GW Basin: Clear Lake Cache Formation.
- Beneficial Uses: Regional Water Board Basin Plan lists municipal, domestic, agricultural, and industrial.
- Land Use Designation: Aerial photograph available on GeoTracker indicates that the land use of the Site vicinity is commercial.
- Public Water System: Highlands Mutual Water Company.
- Distance to Nearest Supply Well: According to data available in GeoTracker, there are no public supply wells regulated by the California Department of Public Health within 1,000 feet of the defined plume boundary. No other water supply wells were identified within 1,000 feet of the projected plume boundary in the files reviewed.
- Distance to Nearest Surface Water: There is no identified surface water within 1,000 feet of the projected plume boundary.

Geology/Hydrogeology

- Stratigraphy: These sediments consist of interbedded deposits of clay, silt, sand, and occasional gravel from the surface to the total depth explored. Much of the subsurface sediments and rock is of volcanic origin.
- Maximum Sample Depth: 65 feet below ground surface (bgs).
- Minimum Groundwater Depth: 15.51 feet bgs at monitoring well MW-3.
- Maximum Groundwater Depth: 45.20 feet bgs at monitoring well MW-2.
- Current Average Depth to Groundwater: Approximately 34 feet bgs.

- Saturated Zones(s) Studied: Approximately 15 to 65 feet bgs.
- Appropriate Screen Interval: Yes.
- Groundwater Flow Direction: Historical shallow groundwater flow direction is variable; predominantly reported as "inconclusive". Historical deep groundwater flow direction has been primarily to the southwest (Applied Engineering and Geology, Inc., 2012).

Monitoring Well Information

Well Designation	Date Installed	Screen Interval (feet bgs)	Depth to Water (feet bgs) (12/01/2011)
On-Site Monitoring Wells			
MW1			Destroyed in 2004
MW-2	August 2001	35-50	43.44
MW-3	August 2001	39-54	38.73
MW-4	August 2001	30-45	38.25
MW-5	August 2001	25-40	36.59
MW-6	August 2001	25-40	28.90
Off-Site Monitoring Wells			
MW-7	October 2001	20-35	33.70
MW-8	October 2001	16-31	29.60
MW-9	October 2001	20-35	29.32
MW-10	October 2001	20-35	24.46
MW-11	October 2001	15-25	27.68
Deep On-Site Monitoring Wells			
MW-12	January 2004	55-60	37.18
MW-13	January 2004	54-60	36.52
MW-14	January 2004	55-60	36.35
MW-15	January 2004	60-65	40.98
Vapor Extraction Wells			
VW-1	October 2006	10-40	36.15
VW-2	October 2006	10-40	33.32
VW-3	October 2006	10-40	34.79
VW-4	October 2006	10-40	37.06
VW-5	October 2006	10-40	33.91
VW-6	October 2006	10-40	27.71
VW-7	October 2006	10-40	38.23
VW-8	October 2006	10-40	37.23

Remediation Summary

- Free Product: None reported in GeoTracker.
- Soil Excavation: None reported in GeoTracker.
- In-Situ Soil Remediation: Soil vapor extraction was conducted intermittently between March 2007 and October 2009, which removed approximately 6,500 pounds of TPHg.
- Groundwater Remediation: Ozone injection was conducted for 60 days in 2008.

Most Recent Concentrations of Petroleum Constituents in Soil

Constituent	Maximum 0-5 feet bgs [mg/kg (date sample-depth)]	Maximum 5-10 feet bgs [mg/kg (date sample-depth)]
Benzene	<0.005 (09/24/01)	12 (01/27/03) CH-3-10'
Ethylbenzene	<0.005 (09/24/01)	140 (01/27/03) CH-3-10'
Naphthalene	NA	NA
PAHs	NA	NA

NA: Not Analyzed, Not Applicable or Data Not Available
mg/kg: Milligrams per kilogram, parts per million
<: Not detected at or above stated reporting limit
PAHs: Polycyclic aromatic hydrocarbons

Most Recent Concentrations of Petroleum Constituents in Groundwater

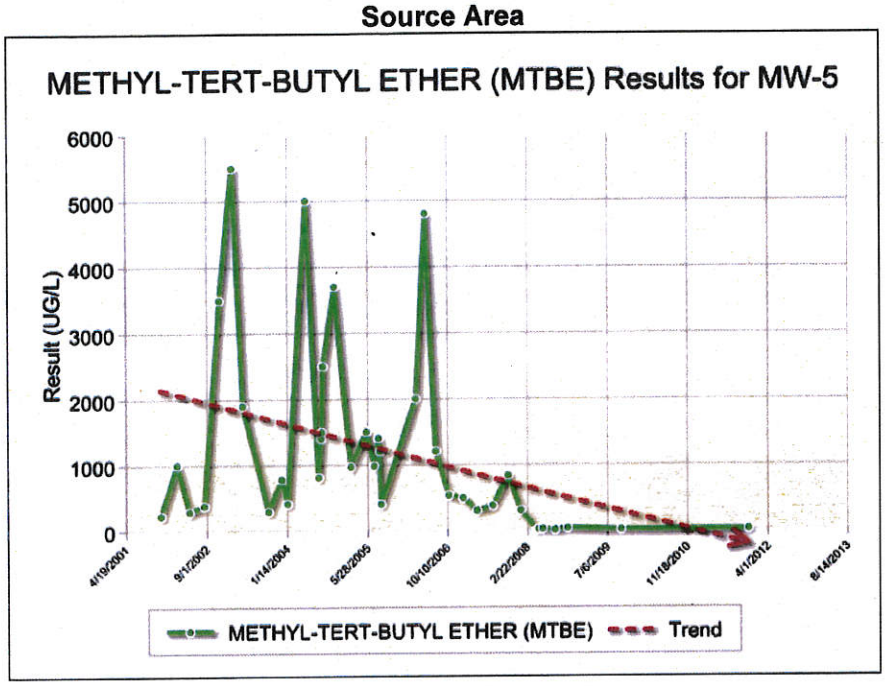
Sample	Sample Date	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)
MW-1	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5
MW-2	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5
MW-3	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5
MW-4	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5
MW-5	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	**12**	<5
MW-6	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	0.73	<5
MW-7	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5
MW-8	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	**60**	<5
MW-9	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5
MW-10	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	**40**	<5
MW-11	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	**22**	<5
MW-12	12/02/11	**51**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5
MW-13	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	0.57	<5
MW-14	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5
MW-15	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5
VW-1	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	0.72	<5
VW-2	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5
VW-3	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5
VW-4	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	1.7	<5
VW-5	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5
VW-6	12/02/11	**1,000**	**21**	2.3	75	8.6	**40**	28
VW-7	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	3.2	<5
VW-8	12/02/11	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5
WQOs	-	**5**	**0.15**	**42**	**29**	**17**	**5[a]**	**1,200[b]**

NA: Not Analyzed, Not Applicable or Data Not Available
µg/L: Micrograms per liter, parts per billion
<: Not detected at or above stated reporting limit
TPHg: Total petroleum hydrocarbons as gasoline
MTBE: Methyl tert-butyl ether
TBA: Tert-butyl alcohol
WQOs: Water Quality Objectives, Regional Water Board Basin Plan
--: Regional Water Board Basin Plan does not have a numeric water quality objective for TPHg
[a]: Secondary maximum contaminant level (MCL)
[b]: California Department of Public Health, Response Level

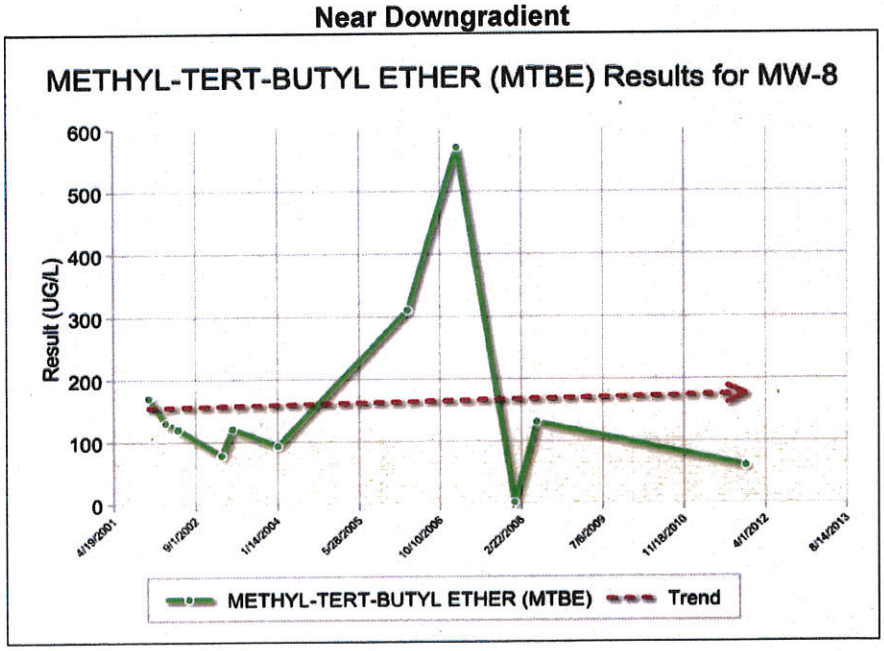
Groundwater Trends

- Fifteen groundwater monitoring wells were installed and monitored intermittently since 2001. MTBE trends are shown below: Source Area (MW-5), Near Downgradient (MW08), and Far Downgradient (MW-10).

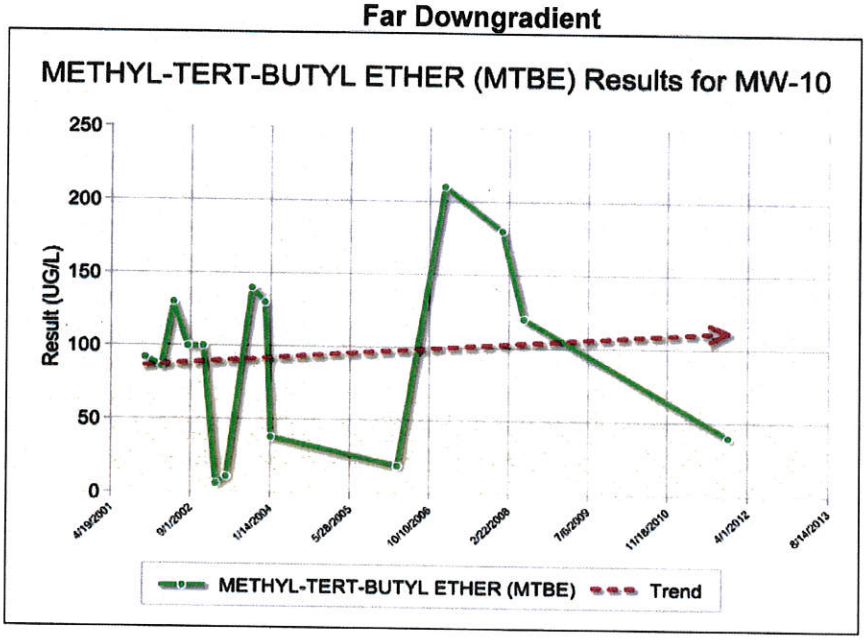
Source Area



Near Downgradient



Far Downgradient

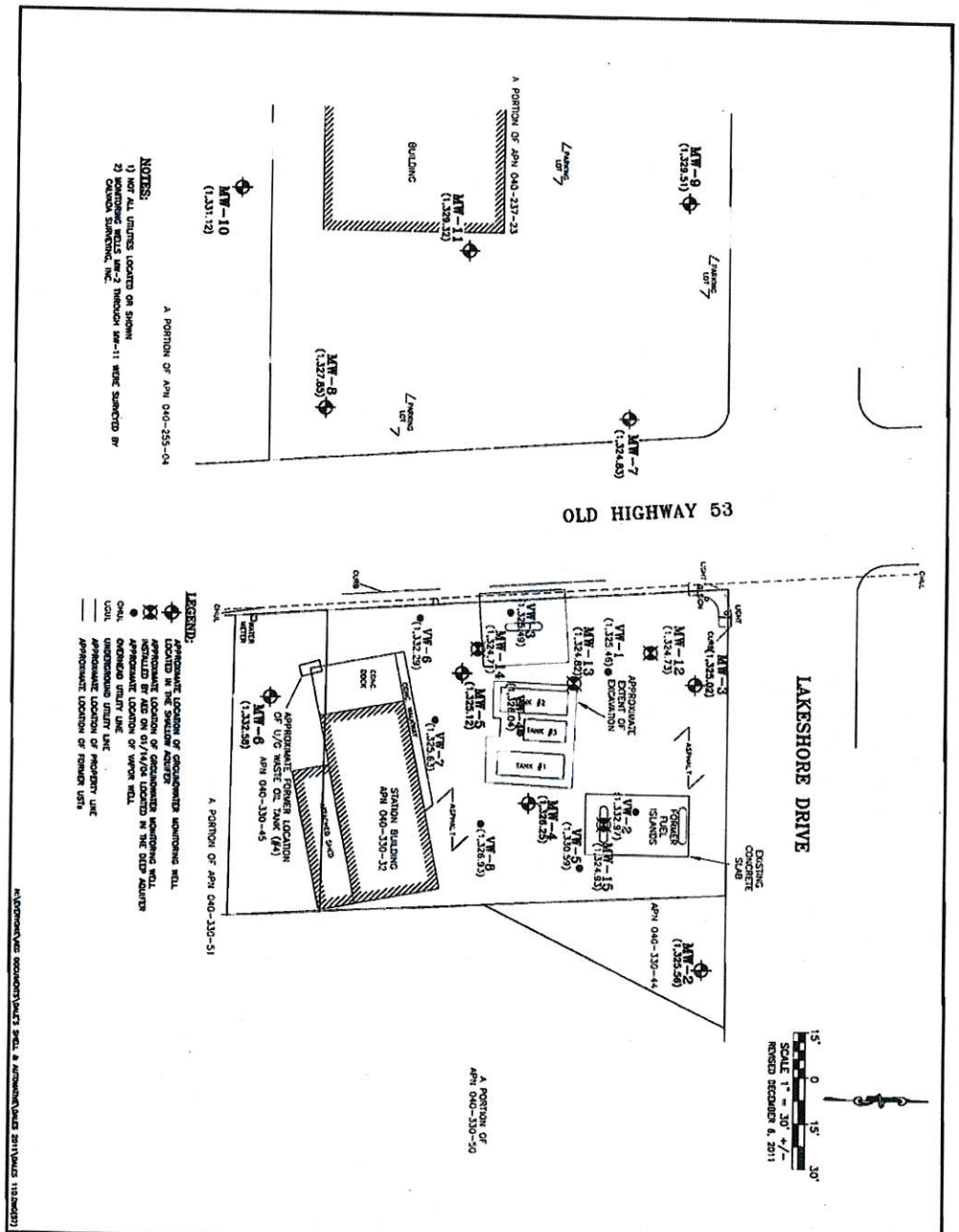


Evaluation of Current Risk

- Estimate of Hydrocarbon Mass in Soil: None reported.
- Soil/Groundwater tested for MTBE: Yes, see table above.
- Oxygen Concentrations in Soil Vapor: None reported.
- Plume Length: Projected to be <500 feet.
- Plume Stable or Decreasing: Yes.
- Contaminated Zone(s) Used for Drinking Water: No.
- Groundwater Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 1 by Class 4. The contaminant plume that exceeds water quality objectives is projected to be less than 500 feet in length. There is no free product. The nearest water supply well or surface water body is greater than 1,000 feet from the defined plume boundary. The dissolved concentration of benzene is less than 1,000 micrograms per liter (µg/L) and the dissolved concentration of MTBE is less than 1,000 µg/L.
- Indoor Vapor Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 2a by Scenario 4 with no bioattenuation zone. The maximum benzene and ethylbenzene concentrations in soil gas at five feet are less than, respectively, 280,000 µg/L (280 µg/m^3) and 3,600,000 µg/L (3,600 µg/m^3), at a depth of five feet. These levels meet the Commercial soil gas criteria. Additionally, sub-slab samples have been collected. The sub-slab samples reported maximum concentrations of benzene and ethylbenzene of 7,700 µg/L (7.7 µg/m^3) and 190,000 µg/L (190 µg/m^3), respectively. These levels are below CHHSLs for commercial use. The Site and adjacent properties are commercial properties. There are no soil vapor sample results in the case record for naphthalene. However, the relative concentration of naphthalene in soil vapor can be conservatively estimated using the published relative concentrations of naphthalene and benzene in gasoline, especially considering naphthalene's lower volatility. Taken from Potter and Simmons (1998), gasoline mixtures contain approximately 2 percent benzene and 0.25 percent naphthalene. Therefore, benzene can be directly substituted for naphthalene concentrations with a safety factor of eight. Benzene concentrations from the Site are below the naphthalene thresholds in the Policy Soil Gas Criteria Table. Therefore, the estimated naphthalene concentrations

meet the thresholds in the Policy Soil Gas Criteria Table and the Policy criteria for indoor vapor risk by a factor of eight. It is highly unlikely that naphthalene concentrations in the soil vapor, if any, exceed the threshold.

- Direct Contact Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Policy Table 1 for Commercial/Industrial use, and the concentration limits for a Utility Worker are not exceeded. There are no soil sample results in the case record for naphthalene. However, the relative concentration of naphthalene in soil can be conservatively estimated using the published relative concentrations of naphthalene and benzene in gasoline. Taken from Potter and Simmons (1998), gasoline mixtures contain approximately 2 percent benzene and 0.25 percent naphthalene. Therefore, benzene can be directly substituted for naphthalene concentrations with a safety factor of eight. Benzene concentrations from the Site are below the naphthalene thresholds in Policy Table 1. Therefore, the estimated naphthalene concentrations meet the thresholds in Table 1 and the Policy criteria for direct contact by a factor of eight. It is highly unlikely that naphthalene concentrations in the soil, if any, exceed the threshold.



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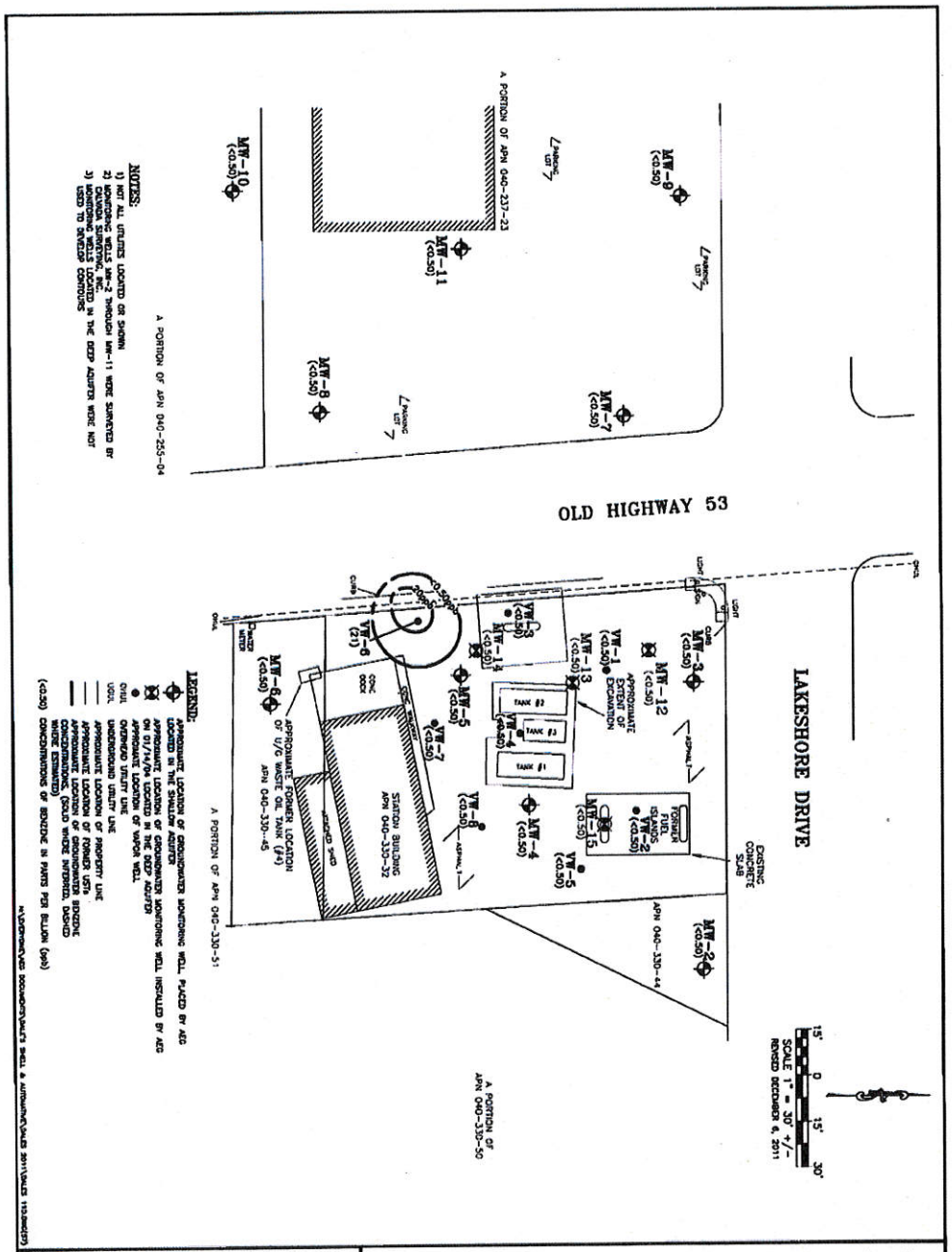
GROUNDWATER ELEVATIONS OF SHALLOW WELLS 12/01/11
FORMER DALE'S SHELL & AUTOMOTIVE
15021 LAKESHORE DRIVE
CLEARLAKE, LAKE COUNTY, CALIFORNIA 95422

APPROVAL	DATE
JS	01/27/12
DS	1/30/12

FIGURE 12



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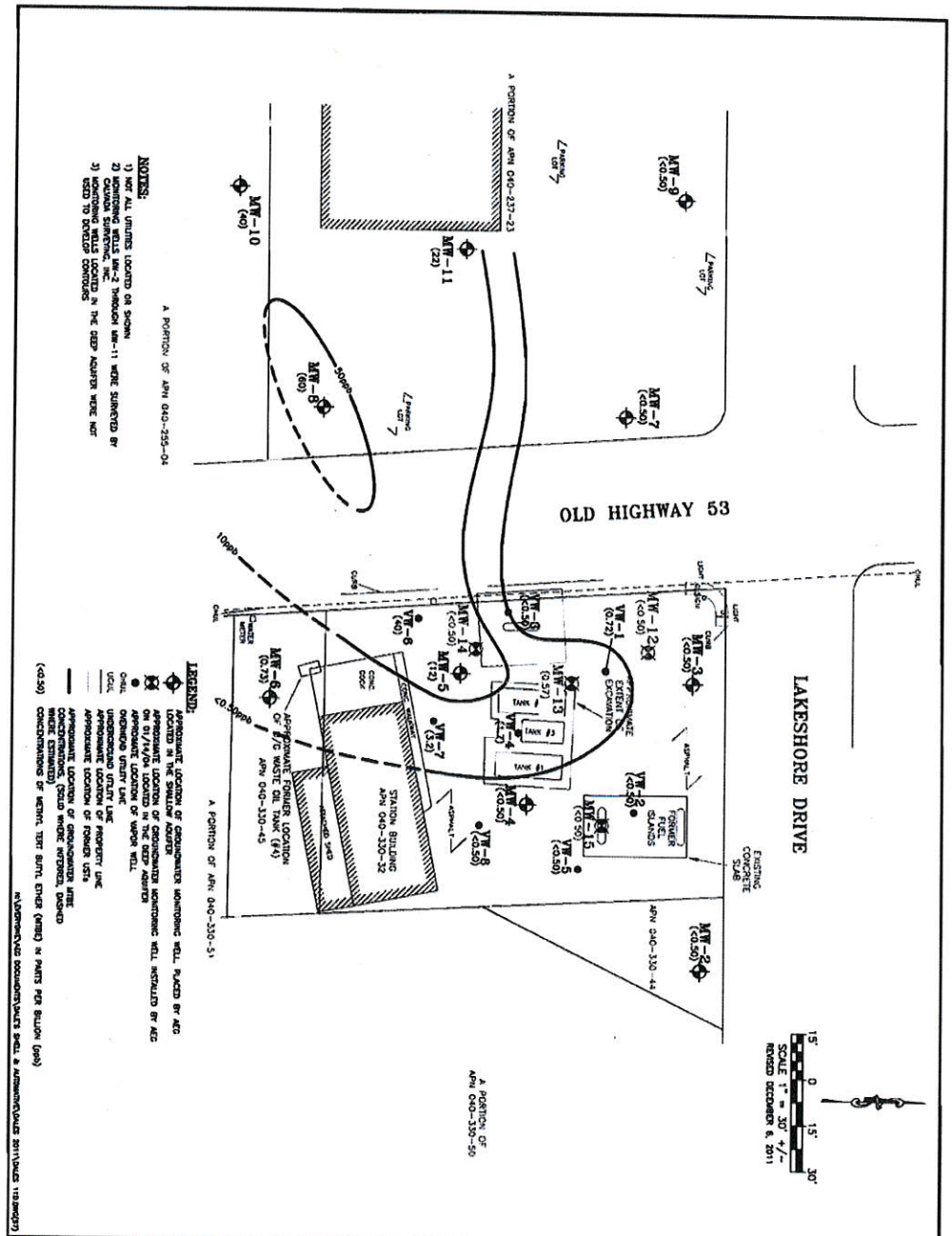
BENZENE ISOCONCENTRATION CONTOURS 12/02/11
FORMER DALE'S SHELL & AUTOMOTIVE
15021 LAKESHORE DRIVE
CLEARLAKE, LAKE COUNTY, CALIFORNIA 95422

APPROVAL	DATE
JS	2/1/12
DS	2/1/12

FIGURE 16



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MTBE ISOCONCENTRATION CONTOURS 12/02/11
FORMER DALE'S SHELL & AUTOMOTIVE
15021 LAKESHORE DRIVE
CLEARLAKE, LAKE COUNTY, CALIFORNIA 95422

APPROVAL	DATE
JE	01/27/12
JS	1/30/12

FIGURE 17