State Water Resources Control Board

UST CASE CLOSURE REVIEW SUMMARY REPORT

Agency Information

Agency Name: Los Angeles Regional Water Quality Control Board (Regional Water Board)	Address: 320 West 4th Street, Suite 200, Los Angeles, CA 90013
Agency Caseworker: Ahmad J. Lamma	Case No.: 908050216

Case Information

USTCF Claim No.: 11598	GeoTracker Global ID: T0603701774
Site Name: Mark's Mobil Station	Site Address: 5400 Atlantic Ave., Long Beach, CA 90805
Responsible Party: Mark's Mobil Station	Address: 5400 Atlantic Ave., Long Beach, CA 90805
USTCF Expenditures to Date: $999,938	Number of Years Case Open: 24

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0603701774

Summary

The Low-Threat Underground Storage Tank (USTs) 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:

An unauthorized leak was reported in October 1988. Since then, several phases of environmental investigation have been conducted and more than twelve USTs have been removed. Approximately 307 cubic yards of impacted soils were removed and disposed offsite in 1988, and 70 cubic yards in 1996. Soil vapor extraction and air sparging were conducted between October 2003 and June 2004, reportedly removed approximately 2,217 pounds of total petroleum hydrocarbons as gasoline (TPHg). Approximately 640 pounds of Oxygen Releasing Compounds in 2005 and 6,871 pounds of RegenOx™ in 2007 were injection in the saturated zones. Eleven monitoring wells have been installed since 1988 and monitored regularly. According to groundwater data, water quality objectives have been achieved or nearly achieved for all constituents except benzene and methyl tert-butyl ether (MTBE).

The petroleum release is limited to the shallow soil and groundwater. According to data available in GeoTracker, there are no California Department of Public Health regulated supply wells or surface water bodies within 1,000 feet of the projected plume boundary. No other water supply wells have been identified within 1,000 feet of the projected plume boundary in files reviewed. Water is provided to water users near the Site by the City of Long Beach Water Department.

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, stable and concentrations declining. 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 less than 1,000 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 concentrations of benzene and MTBE are each less than 1,000 µg/L.
- Vapor Intrusion to Indoor Air: The case meets the Policy Exclusion for Active Station. Soil vapor evaluation is not required because the Site is an active commercial petroleum fueling facility.
- Direct Contact and Outdoor Air Exposure: The case meets Policy Criterion 3b. A professional assessment of site-specific risk from exposure shows that maximum concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health. The Site is paved and accidental access to site soils is prevented. As an active gas station, any construction worker working at the Site will be prepared for exposure in their normal daily work.

Objections to Closure and Responses

The Regional Water Board has no objections to case closure according to a telephone conversation with Dr. Yue Rong on March 11, 2013.

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. The City of Long Beach has the regulatory responsibility to supervise the abandonment of monitoring wells.

Lisa Babcock — 5/7/13

Lisa Babcock, P.G. 3939, C.E.G. 1235 — **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
General Criteria 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
Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?	☒ Yes ☐ No

[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 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?	☐Yes ☐ No ☒ NA

If YES, check applicable scenarios: ☐ 1 ☐ 2 ☐ 3 ☐ 4 **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 commercial petroleum fueling facility and is bounded by Atlantic Avenue to the west, businesses to the north and east and East Market Street to the south. The surrounding land use is mixed residential and commercial.
- Site maps showing the location of the USTs, monitoring wells, groundwater level contours, and concentration contours are provided at the end of this closure review summary (Geo-Cal Inc., 2012).
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Source: UST system.
- Date reported: October 1988.
- Status of Release: USTs replaced.
- Free Product: Free product was reported in MW-1 (up to 2.3 feet), MW-4 (up to 0.91 feet) and MW-5 (up to 0.99 feet). No free product has been noted since 2002.

Tank Information

Tank No.	Size in Gallons	Contents	Closed in Place/ Removed/Active	Date
1	4,000	Gasoline	Removed	July 1988
2	3,000	Gasoline	Removed	July 1988
3	7,000	Gasoline	Removed	July 1988
4-12	20,000	Gasoline	Removed	March 1996
13	20,000	Gasoline	Active	Current
14	20,000	Gasoline	Active	Current

Receptors

- GW Basin: Coastal Plain of Los Angeles - Central.
- Beneficial Uses: According to Regional Water Board Basin Plan Lists, Domestic and Municipal Water Supply.
- Land Use Designation: Residential/Commercial.
- Public Water System: Long Beach Water Department.
- Distance to Nearest Supply Well: According to data available in GeoTracker, there are no public supply wells regulated by California Department of Public Health within 1,000 feet of the defined plume. No other water supply wells were identified within 1,000 feet of the defined plume in the files reviewed.
- Distance to Nearest Surface Water: There is no identified surface water within 1,000 feet of the defined plume.

Geology/Hydrogeology

- Stratigraphy: The Site is underlain by interbedded and intermixed sand, silt and clay.
- Maximum Sample Depth: 68 feet below ground surface (bgs).
- Minimum Groundwater Depth: 23.33 feet bgs at monitoring well MW-14.
- Maximum Groundwater Depth: 26.86 feet bgs at monitoring well MW-11.
- Current Average Depth to Groundwater: 26 feet bgs.
- Saturated Zones(s) Studied: Approximately 23 - 70 feet bgs.
- Appropriate Screen Interval: Yes.

- Groundwater Flow Direction: Southwest with an average gradient of approximately 0.002 feet/foot (December 2012).

Monitoring Well Information

Well Designation	Date Installed	Screen Interval (feet bgs)	Depth to Water (feet bgs) (12/21/12)
MW-1	1988	10-50	25.55
MW-2	1989	20-50	26.23
MW-3	1989	Unknown	26.42
MW-4	1990	10-50	26.80
MW-5	1990	10-50	25.71
MW-6	1990	10-50	25.36
MW-7	1992	10-50	25.43
MW-10	1992	15-70	26.19
MW-11	2001	10-50	26.86
MW-13	2001	10-50	25.02
MW-14	2001	10-50	24.79

Remediation Summary

- Free Product: Free product was reported in MW-1 (up to 2.3 feet), MW-4 (up to 0.91 feet) and MW-5 (up to 0.99 feet). No free product noted since 2002.
- Soil Excavation: Approximately 307 cubic yards of impacted soils were removed and disposed offsite in 1988, and 70 cubic yards in 1996. Additional soil excavations have been conducted but details are unknown. Excavated soil was treated and returned to the excavation in 1988.
- In-Situ Soil Remediation: Soil vapor extraction and air sparging were conducted between October 2003 and June 2004, reportedly removed approximately 2,217 pounds of TPHg.
- Groundwater Remediation: Approximately 640 pounds of Oxygen Releasing Compounds in 2005 and 6,871 pounds of RegenOx™ in 2007 were injection in the saturated zones. Air sparge was conducted between October 2003 and December 2005.

Most Recent Concentrations of Petroleum Constituents in Soil

Constituent	Maximum 0-5 feet bgs* [mg/kg and (date)]	Maximum 5-10 feet bgs* [mg/kg and (date)]
Benzene	<0.005 (08/1999)	<0.005 (08/1999)
Ethylbenzene	<0.005 (08/1999)	<0.005 (08/1999)
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
*August 1999 site investigation

Most Recent Concentrations of Petroleum Constituents in Groundwater

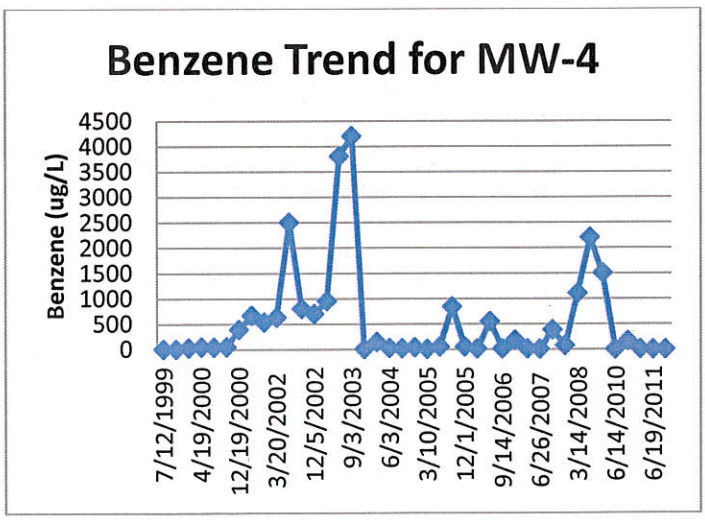
Sample	Sample Date	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)
MW-1	12/21/12	1,800	**240**	1.6	3.3	1.1	**29**	<10
MW-2	12/21/12	1,600	**450**	2.7	5.9	1.8	**56**	<10
MW-3	12/21/12	<50	<0.5	<0.5	<0.5	<1.2	<1	<10
MW-4	12/21/12	670	<0.5	<0.5	<0.5	<1.2	**290**	<10
MW-5	12/21/12	1,100	**2**	<0.5	<0.5	<1.2	47	<10
MW-6	12/21/12	<50	<0.5	<0.5	<0.5	<1.2	<1	<10
MW-7	12/21/12	<50	<0.5	<0.5	<0.5	<1.2	<1	<10
MW-10	12/21/12	<50	<0.5	<0.5	<0.5	<1.2	<1	<10
MW-11	12/21/12	<50	<0.5	<0.5	<0.5	<1.2	<1	<10
MW-13	12/21/12	<50	<0.5	<0.5	<0.5	<1.2	<1	<10
MW-14	12/21/12	<50	<0.5	<0.5	<0.5	<1.2	<1	<10
WQOs	-	--	**1**	**150**	**300**	**1,750**	**5**	**1,200**[a]

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 has no numeric WQO for TPHg
[a]: California Department of Public Health, Response Level

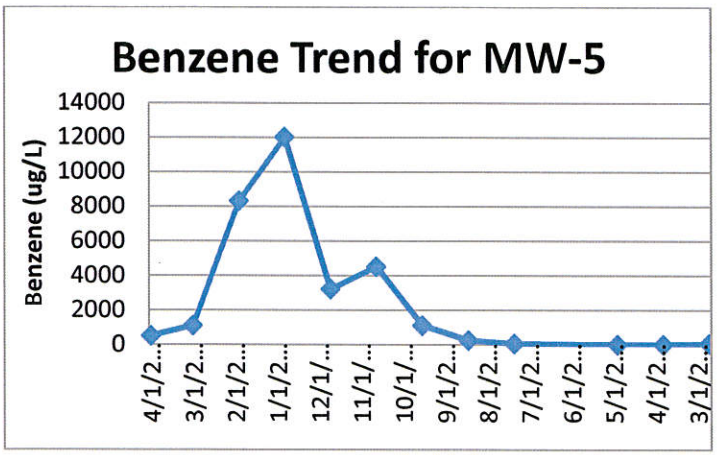
Groundwater Trends

Groundwater has been monitored regularly since 1988. Three monitoring wells (MW-1, MW-2, and MW-4) exceed water quality objectives for MTBE. Three monitoring wells (MW-1, MW-2, and MW-5) exceed water quality objectives for benzene. Groundwater contamination is limited to the source area. Benzene trends are shown below: Source Area (MW-4), Near Downgradient (MW-5) and Far Downgradient (MW-14).

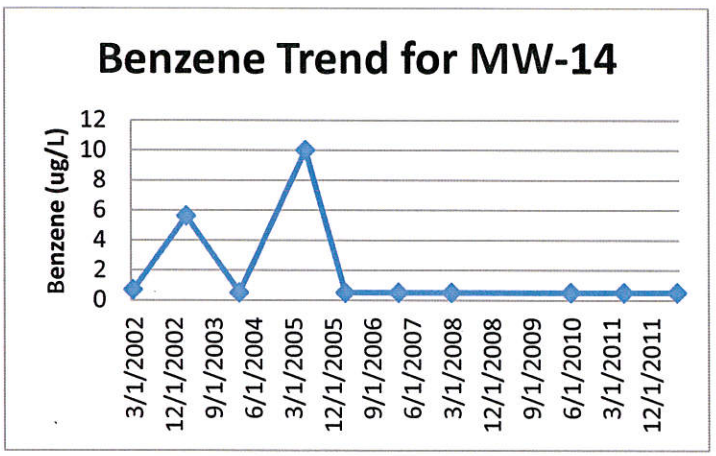
Source Area Well



Near Downgradient Well



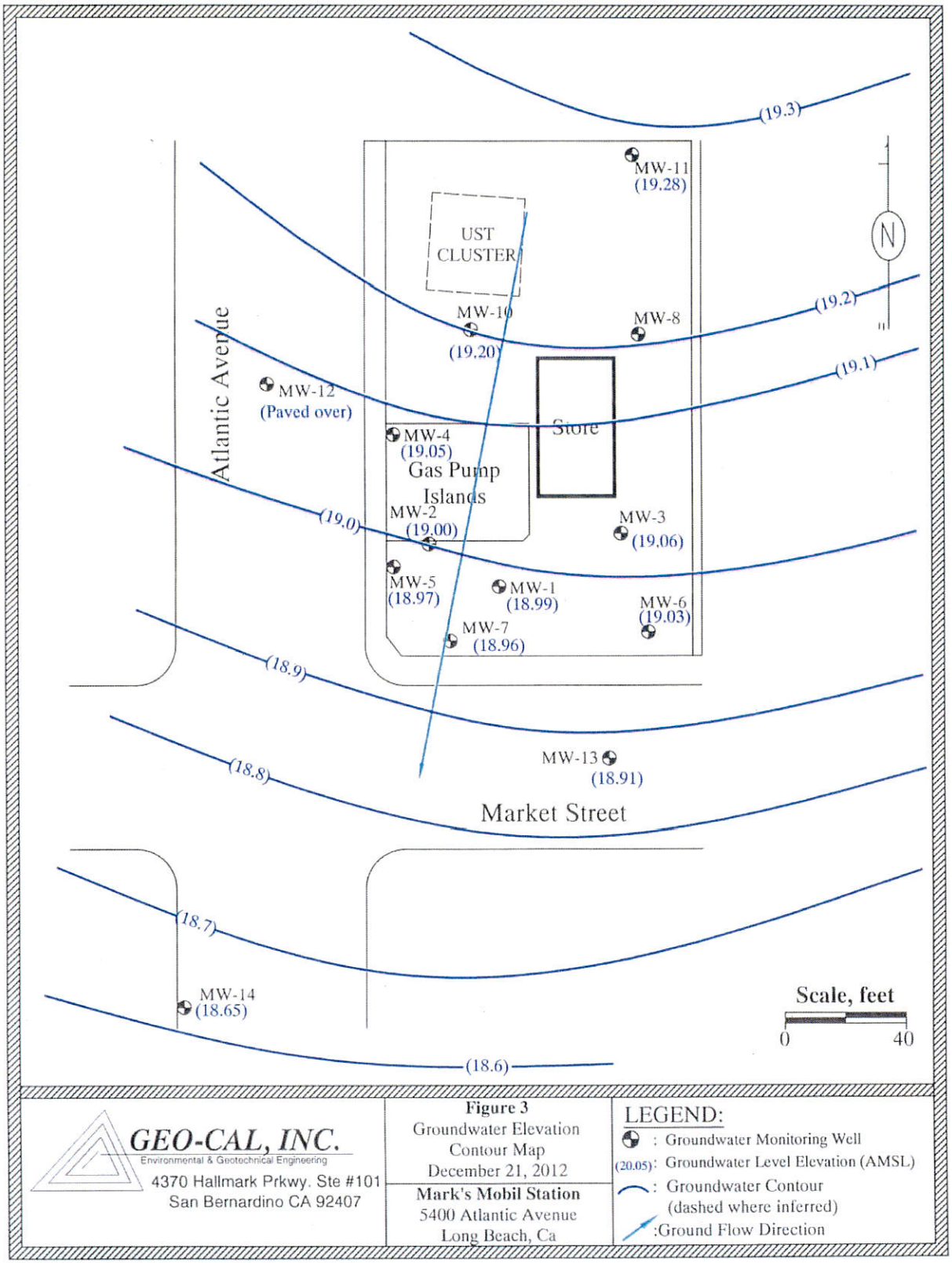
Far Downgradient Well

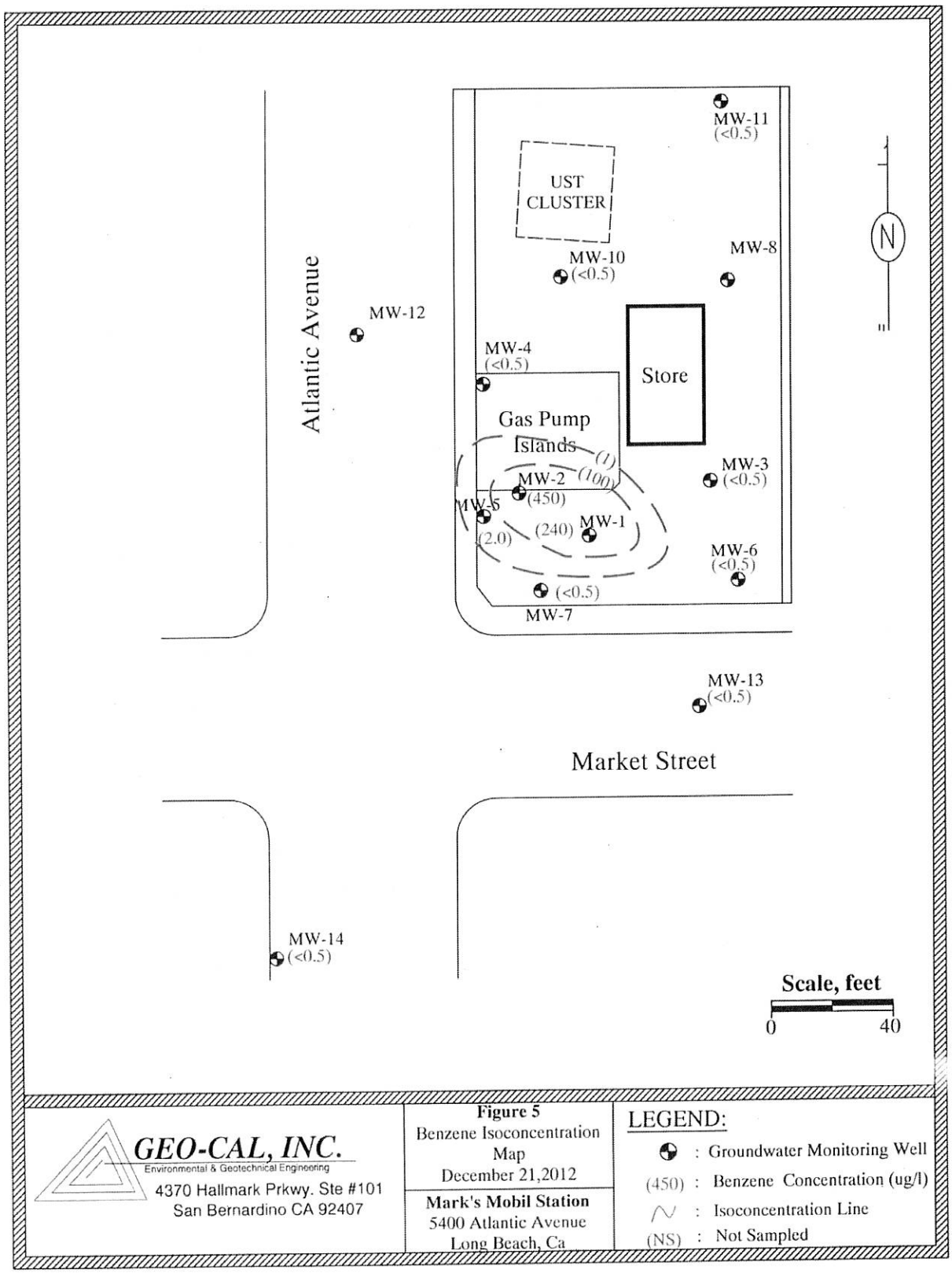


Evaluation of Current Risk

- 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: <1,000 feet long.
- 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 less than 1,000 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 concentrations of benzene and MTBE are each less than 1,000 µg/L.
- Indoor Vapor Risk from Residual Petroleum Hydrocarbons: The case meets the Policy Exclusion for Active Station. Soil vapor evaluation is not required because the Site is an active commercial petroleum fueling facility.
- Direct Contact Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 3b. A professional assessment of site-specific risk from exposure shows that maximum concentrations of petroleum constituents in soil will have no significant risk of adversely

affecting human health. The Site is paved and accidental access to site soils is prevented. As an active gas station, any construction worker working at the Site will be prepared for exposure in their normal daily work.


(19.3)
MW-11
(19.28)
UST
CLUSTER
N
(19.2)
MW-10
(19.20)
MW-8
(19.1)
Atlantic Avenue
MW-12
(Paved over)
Store
MW-4
(19.05)
Gas Pump
Islands
(19.0)
MW-2
(19.00)
MW-3
(19.06)
MW-5
(18.97)
MW-1
(18.99)
MW-6
(19.03)
MW-7
(18.96)
(18.9)
MW-13
(18.91)
(18.8)
Market Street
(18.7)
MW-14
(18.65)
Scale, feet
0
40
(18.6)
GEO-CAL, INC.
Environmental & Geotechnical Engineering
4370 Hallmark Prkwy. Ste #101
San Bernardino CA 92407
Figure 3
Groundwater Elevation
Contour Map
December 21, 2012
Mark's Mobil Station
5400 Atlantic Avenue
Long Beach, Ca
LEGEND:
: Groundwater Monitoring Well
(20.05): Groundwater Level Elevation (AMSL)
: Groundwater Contour
(dashed where inferred)
:Ground Flow Direction


MW-11
(<0.5)
UST
CLUSTER
MW-8
MW-10
(<0.5)
MW-12
Atlantic Avenue
MW-4
(<0.5)
Store
Gas Pump
Islands
(1)
(100)
MW-2
(450)
MW-3
(<0.5)
MW-5
(2.0)
(240)
MW-1
MW-6
(<0.5)
(<0.5)
MW-7
MW-13
(<0.5)
Market Street
MW-14
(<0.5)
N
Scale, feet
0
40
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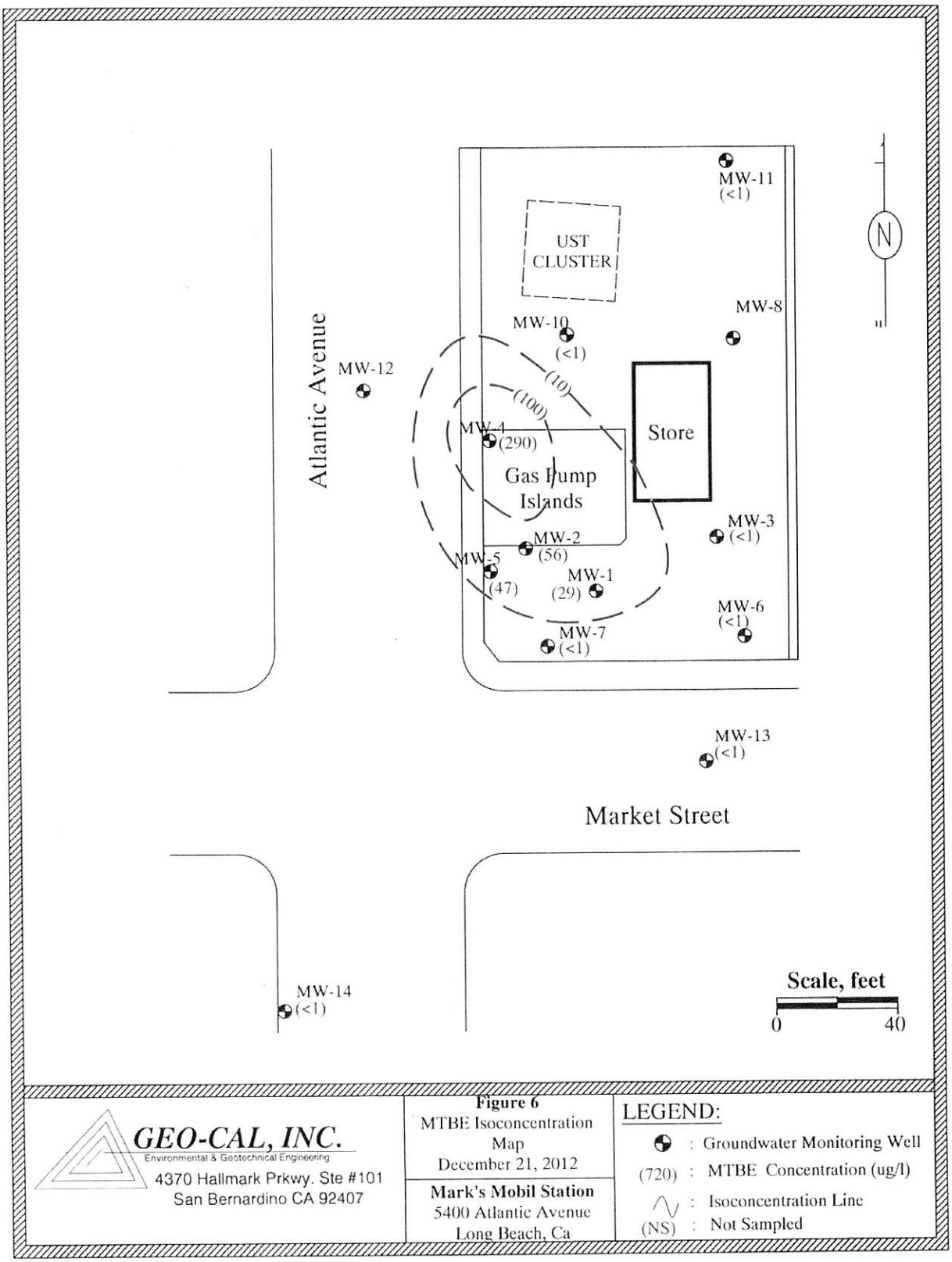
San Bernardino CA 92407
Figure 5
Benzene Isoconcentration Map
December 21,2012
Mark's Mobil Station
5400 Atlantic Avenue
Long Beach, Ca
LEGEND:
: Groundwater Monitoring Well
(450) : Benzene Concentration (ug/l)
: Isoconcentration Line
(NS) : Not Sampled


MW-11
(<1)
UST
CLUSTER
MW-8
MW-10
(<1)
MW-12
Atlantic Avenue
(10)
(100)
MW-4
(290)
Store
Gas Pump
Islands
MW-3
(<1)
MW-2
(56)
MW-5
(47)
MW-1
(29)
MW-6
(<1)
MW-7
(<1)
MW-13
(<1)
Market Street
MW-14
(<1)
N
Scale, feet
0
40
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Environmental & Geotechnical Engineering
4370 Hallmark Prkwy. Ste #101
San Bernardino CA 92407
Figure 6
MTBE Isoconcentration Map
December 21, 2012
Mark's Mobil Station
5400 Atlantic Avenue
Long Beach, Ca
LEGEND:
: Groundwater Monitoring Well
(720) : MTBE Concentration (ug/l)
: Isoconcentration Line
(NS) : Not Sampled