ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
REBECCA GEBHART, Interim Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-657

August 3, 2016

Mr. Daniel Bo
Harvest Investments
3942 Valley Avenue, Suite H
Pleasanton, CA 94566
(Sent via email to: *danielsbo@gmail.com*)

Subject: Site Cleanup Program (SCP) Case No. RO0003150, Shell Station Redevelopment, 27501 Loyola Avenue, Hayward, CA 94545

Dear Mr. Bo:

Alameda County Department of Environmental Health (ACDEH) staff has reviewed the *Subsurface Investigation Work Plan* (Work Plan) dated March 24, 2016, prepared by AEI Consulting, Inc. (AEI) for the subject site. Thank you for submitting the Work Plan.

A Shell Gasoline Service Station occupied this property from 1956 to 1978, was not operated as a service station from 1979 to 1983, and by 1984 the service station was demolished leaving the property vacant land since 1984. The San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) issued a Closure Letter for the site on July 16, 2001. The case was closed to existing commercial use as a gasoline service station, and the Site Management Requirements Section of the Closure Letter states "Should property use intensify, a separate assessment shall be conducted and clearance obtained from the SFBRWQCB for proposed more intensive use". ACDEH now assists in providing oversight for environmental cases in the City of Hayward and a Site Cleanup Program (SCP) case was opened to accomplish the assessment. ACDEH understands that it is your intent to intensify the land use from commercial to residential. The ultimate goal of assessing the site is to determine if additional investigation and cleanup is needed prior to a land use change from lower risk commercial standards to higher risk residential standards.

Based on ACDEH staff review of the case file, we request that you address the following technical comments and send us the requested report described below. ACDEH requests preparation of a Data Gap Work Plan Addendum and Site Conceptual Model that is supported by a SCM to define and address the data gaps.

TECHNICAL COMMENTS

1. **Establish Current Environmental Site Conditions and Preparation of a SCM:** The first step in the assessment process is to establish the current environmental site conditions and provide an SCM. The Work Plan included four appendices containing the SFBRWQCB July 16, 2001 *Closure Letter*, the July 31, 2000 *Site Closure Request* by Cambria Environmental (Cambria), a May 10, 2001 *Human Health Risk Assessment* (HHRA) by Cambria, and a June 13, 2001 *Review of Human Health Risk Assessment* by the SFBRWQCB, obtained from the Hayward Fire Department. Data in these reports was generated by Shell Oil in the 1990's and describes extensive investigation and remedial efforts. It is stated in the Work Plan that a report review was performed; however, a comprehensive review was not included with the Work Plan and consequently, it is unclear to ACDEH the rationale for the selection of the three soil gas sample locations. ACDEH requests presentation of a thorough and comprehensive review of the historical reports by synthesizing and compiling the available data in new tables and figures to establish the current environmental conditions. It should be noted that

ACDEH acknowledges the completion of a 2001 HHRA, however, due to the passage of 15 years, substantial changes in our understanding of health risks, and a land use change from commercial to residential use, a HHRA using recent guidance would need to be submitted if existing site conditions warrant a risk assessment.

ACDEH also requests completion of a SCM. The SCM is a fundamental element of a comprehensive site investigation and is relied upon by practitioners as a guide for investigative design and data collection. The SCM establishes the source and attributes of the unauthorized release, the contaminants of concern (COC's), describes all affected media (including soil, groundwater, and soil vapor), 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, buildings and structures and their inhabitants). All relevant site characteristics identified by the SCM shall be assessed and supported by data so that the nature, extent and mobility of the release have been established to determine conformance with current applicable cleanup standards. Please be aware that additional soil and/or groundwater sampling may be necessary to establish current contaminant concentrations at the site.

Please submit the requested documentation by the date identified below.

a. Presentation of Soil Analytical Data Summary Tables: Please prepare analytical summary tables consolidating *all* historical soil and groundwater data collected during removal of the USTs, excavations, and all subsequent investigations including sample dates, depths, and the laboratory detection limits (i.e., < x.x milligrams per kilogram) for all Non-Detect (ND) results. Please prepare figures indicating locations and sample depths of soil samples including confirmation samples taken after completion of remedial actions (use text shade or strikeout to indicate removed soil as shown in Figure 9 and Table 3 in Attachment 2**,** *Sample Figures and Tables Showing Proposed Construction on Existing Site Conditions*.

b. Presentation of Groundwater Analytical Data Summary Tables: Please prepare analytical summary tables consolidating *all* historical grab groundwater and groundwater monitoring well analytical results including a column indicating the presence and thickness of free product, a table of groundwater monitoring well construction details, and a rose diagram indicating all historic groundwater gradient direction. Please note that when preparing summary tables of groundwater analytical results, please report the actual detection limits (i.e., < x.x micrograms per liter) for all Non-Detected (ND) results. Please prepare figures indicating monitoring well, grab groundwater sample locations, groundwater gradient, and isoconcentration contours as shown in Figure 5 and Table 2, Attachment 2. Please include a rose diagram with all groundwater isoconcentration figures.

c. Site Conceptual Model in Tabular Format: ACDEH requests presentation of the SCM in a tabular format that highlights the major SCM elements and associated data gaps, which need to be addressed to progress the site to case closure. Please see Attachment 3, *Site Conceptual Model Requisite Elements in Tabular Form and Preferential Pathway and Sensitive Receptor Study*.

As a part of the SCM, please perform a Sensitive Receptor Study to determine if sensitive receptors are present within a radius of 1,500 feet of the site. ACDEH also requests review of both Alameda County Public Works Agency (ACPWA) and Department of Water Resources (DWR) well data sources for a complete inventory of vicinity water supply wells. ACDEH requests the identification and location on a site vicinity figure all active, inactive, standby, decommissioned (sealed with concrete), unrecorded, and abandoned (improperly decommissioned or lost) wells including irrigation, water supply, industrial, dewatering, and cathodic protection wells within a 1,500-foot radius of the site. Please be aware that well

locations are not confidential, however well construction details are and must not be included with the requested report. Additionally, please identify on the same figure beneficial resources and other sensitive receptors including, but not limited to, groundwater classification, wetlands, surface water bodies, natural resources, schools, hospitals, day care centers, elder care facilities, etc. Please plot the numbered well locations on an aerial photography-based figure and provide a table listing the same numbered well locations and information similar to the example provided in Attachment 4, *Sample Well Survey Table and Sensitive Receptor Survey***.**

d. Current Status of Groundwater Monitoring Wells: The June 29, 2001 *Site Closure Summary* prepared by the SFRWQCB staff indicates that 35 groundwater monitoring wells were installed, six wells were decommissioned, and 33 wells were retained. Please determine the status of the monitoring wells and provide documentation whether or not they were decommissioned or if 33 monitoring wells remain both on-and off-site. If the monitoring wells still exist, ACDEH may request redevelopment and sampling of selected wells to be determined at a later date.

2. Comparison of the Current Environmental Site Conditions and SCM to the Configuration of the Proposed Construction: Figure 2 in the Work Plan indicates the locations of the former USTs , a Recovery System, soil boring, monitoring wells, and recovery well locations, but does not include the locations to scale of the proposed construction. Consequently, it is not clear to ACDEH the relationship between the known source areas, the proposed soils gas sample locations, and the footprint of the proposed building foundation. The second step in the assessment process is to provide through the preparation of detailed plan view and cross section figures, the relationship of the current environmental site conditions and SCM to the proposed redevelopment. ACDEH requests preparation of a series of figures displaying known soil and groundwater data by COC, depth, and collection date as demonstrated in Attachment 2, Figure 9. Of special interest are remaining volatile organic compounds (VOS) and semi- volatile organic compounds (SVOC) including, but not limited to benzene, methyl tert-butyl ether (MTBE), naphthalene, and polyaromatic hydrocarbon (PAH) soil concentrations between 0 to 10 feet in depth below the *bottom* the proposed building foundation.

a. Current Development Plan Set: Please submit a current planning set for the proposed development as a stand alone electronic document or as an appendix to the Data Gap Work Plan Addendum and SCM by the date requested below.

b. Plan Views of Former Gasoline Service Station and Proposed Redevelopment: To determine the location of residual contamination from the previous site use as a gasoline service station, ACDEH requests preparation of a new series of site figures to scale which include the proposed redevelopment, and all former site buildings, on- and off-site borings, groundwater monitoring and recovery wells, and other data points and historic infrastructure related to known source areas, excavation extents, contamination, and groundwater isoconcentration as shown in Attachment 2, Figures 2 - 9. This should include the location of previous buildings, location of the former fuel and waste oil USTs, pump islands, all UST system appurtenances, extent of any previous excavations, parking areas, storm drain catch basins, or other known historic features or structures. This effort is intended to help identify any data gaps in site investigations to date, and to eventually support case closure. Please include the analytical results beneath the foundation with the presumption that contamination will be removed above the foundation.

c. Cross Sections Through Former Gasoline Service Station and Proposed Redevelopment: Development Cross Sections and Residual Contamination – In order to clearly depict the status of residual contamination proposed to remain at the site with property redevelopment, ACDEH requests at a minimum two cross sections through the

entire site, at 90 degrees to each other, depicting the specific proposed structure foundation elevations, stripped of geologic content, with soil, groundwater, and soil vapor sample analytical data, depth controlled and located to scale.

3. **Request for Data Gap Work Plan Addendum:** Since a comprehensive review of the current environmental site conditions Technical Comments 1 (the known soil and groundwater data for the gasoline service station and SCM) and the scaled location of the proposed construction Technical Comment 2 (the proposed building foundation) was not included in the Work Plan, it is unclear to ACDEH the rationale for the selection of the three soil gas sample locations and any data gaps associated with the land use change. A Data Gap Work Plan Addendum will provide an approach to fill the identified data gaps to accomplish the stated goal of determining if additional investigation and cleanup is needed prior to a land use change from lower risk commercial standards to higher risk residential standards. ACDEH requests the identification of proposed clean up levels to determine if the level of residual contamination is acceptable to leave in place with the proposed redevelopment in addition to a construction site management plan. The proposed environmental screening levels can either be chosen from current guidance documents such as the SFBRWQCB's *Environmental Screening Levels* (ESLs) Version 3 February 2016 or by calculating site specific cleanup levels in a current risk assessment.

4. **Request for information -** The ACDEH case file for the subject site contains only the electronic files listed on our web site at http://www.acgov.org/aceh/lop/ust.htm. You are requested to submit electronic copies of all other reports including Phase I Reports, data, correspondence, etc. related to environmental investigations for this property not currently contained in our case file by the date specified in the Technical Report Request Section below. ACDEH requests e-mail notification of, and a list of the documents uploaded to Geotracker by the date listed below.

5. **Electronic Submittal of Information (ESI) Compliance** - Site data and documents are maintained in two separate electronic databases – ACDEH's ftp site and the SWRCB's GeoTracker database. Both databases act as repositories for regulatory directives and reports; however, only GeoTracker has the functionality to store electronic compliance data including analytical laboratory data for soil, vapor and water samples, monitoring well depth-to-water measurements, and surveyed location and elevation data for permanent sampling locations. Although the SWRCB is responsible for the overall operation and maintenance of the GeoTracker System, ACDEH, as lead regulatory agency, is responsible to ensure the GeoTracker database is complete and accurate for sites regulated under ACDEH's Environmental Cleanup Oversight Programs (SWRCB March 2011 document entitled *Electronic Reporting Roles and Responsibilities*).

   A review of the case file and the State's GeoTracker database indicates that the site is not in compliance with California Code of Regulations, Title 23, Division 3, Chapter 16, Article 12, Sections 2729 and 2729.1, stating that beginning September 1, 2001, all analytical data, including monitoring well samples, submitted in a report to a regulatory agency as part of the UST or LUST program, must be transmitted electronically to the SWRCB GeoTracker system via the internet. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs, including the Site Cleanup Program (SCP) now known as Voluntary Remedial Action Program (VRAP) cases. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites was required in GeoTracker. At present missing data and documents include, but may not be limited to, EDF submittals, depth to groundwater data (GEO_WELL files), well data (GEO_XY, and GEO_Z files), work plans, and older reports (GEO_REPORT files).

   Please upload requisite documents to GeoTracker. See Attachment 1 and the State's GeoTracker website for further details. ACDEH requests e-mail notification of, and a list of, the documents uploaded to Geotracker. Please upload all submittals to GeoTracker and to ACDEH's ftp website by the date specified below.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACDEH ftp site (Attention: Karel Detterman), and to the State Water Resources Control Board's Geotracker website, in accordance with the following specified file naming convention and schedule:

- **September 6, 2016 – ACDEH ftp site and GeoTracker electronic submittal date**

- **October 2, 2016 – Data Gap Work Plan Addendum and Site Conceptual Model**
  File to be named: RO3150_WP_SCM_ADEND_R_yyyy-mm-dd

Thank you for your cooperation. Should you have any questions or concerns regarding this correspondence or your case, please send me an e-mail message at karel.detterman@acgov.org or call me at (510) 567-6708.

Digitally signed by Karel Detterman
DN: cn=Karel Detterman, o, ou, email=karel.detterman@acgov.org, c=US
Date: 2016.08.03 14:54:17 -07'00'

Karel Detterman, PG
Hazardous Materials Specialist

Enclosures: Attachment 1 – *Responsible Party (ies) Legal Requirements / Obligations and Electronic Report Upload (ftp) Instructions*

Attachment 2, *Sample Figures and Tables Showing Proposed Construction on Existing Site Conditions*

Attachment 3, *Site Conceptual Model Requisite Elements in Tabular Form and Preferential Pathway and Sensitive Receptor Study*

Attachment 4, *Sample Well Survey Table and Sensitive Receptor Survey*

cc: Adrian Angel, AEI Consultants (Sent via E-mail to: aangel@aeiconsultants.com)
Jeremy Smith, AEI Consultants (Sent via E-mail to: jsmith@aeiconsultants.com)
Hugh Murphy, Hayward Fire Department (Sent via E-mail to: hugh.murphy@hayward-ca.gov)
Dilan Roe, ACDEH (Sent via E-mail to: dilan.roe@acgov.org)
Karel Detterman, ACDEH (Sent via E-mail to: karel.detterman@acgov.org)
Electronic File, GeoTracker

Attachment 1

Responsible Party(ies) Legal Requirements / Obligations

REPORT REQUESTS

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/).

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC)	**REVISION DATE:** May 15, 2014
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010, July 25, 2010
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- **Please do not submit reports as attachments to electronic mail.**
- Entire report including cover letter must be submitted to the ftp site as **a single portable document format (PDF) with no password protection**.
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- **Signature pages and perjury statements must be included and have either original or electronic signature.**
- **Do not password protect the document**. Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted**.
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:

  RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Submission Instructions

1) Obtain User Name and Password
   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
      i) Send an e-mail to deh.loptoxic@acgov.org
   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses**, and the **Case Numbers (RO# available in Geotracker) you will be posting for**.

2) Upload Files to the ftp Site
   a) Using Internet Explorer (IE4+), go to ftp://alcoftp1.acgov.org
      (i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
   b) Click on Page located on the Command bar on upper right side of window, and then scroll down to Open FTP Site in Windows Explorer.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
   d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to deh.loptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
   d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

ATTACHMENT 2

COMMERCIAL/RESIDENTIAL

COMMERCIAL/RESIDENTIAL

8"ø PLASTIC

3"ø PLASTIC

6"ø

4"ø

M.H.

6"ø

56'

CENTRAL AVENUE

8"ø

M.H.

4"ø PLASTIC

2"ø PLASTIC (4"ø CAST ENCASED)

SUSPECT FORMER UST

RW-1

SIDEWALK

EXPLANATION

MW-1 GROUNDWATER MONITORING WELL LOCATION

P-1 EXPLORATORY SOIL BORING/GRAB GROUNDWATER SAMPLE LOCATION, (1997)

EB-1 EXPLORATORY SOIL BORING/GRAB GROUNDWATER SAMPLE LOCATION, (1994)

RW-1 RECOVERY WELL LOCATION

DESTROYED WELL

UTILITY – PG&E (GAS)

UTILITY – WATER

UTILITY – STORM DRAIN

UTILITY – SANITARY SEWER

M.H. MANHOLE

MW-4

8"ø

EB-1

MW-1R

P-3

P-2

P-1

MW-2

FENCE/PROPERTY BOUNDARY

BRICK WALL

MW-1

P-4

FORMER CANOPY

PATIO

EB-2

MW-5

NINTH STREET

SIDEWALK

APARTMENT BUILDING

RESIDENTIAL

MOVIE THEATER (FORMER CHURCH)

P-5

MW-3

MW-6

EB-3

FORMER STATION/GARAGE

36'

P-6

P-7

P-8

RESIDENTIAL

1 1/4"ø PLASTIC

N

SCALE IN FEET

0 20

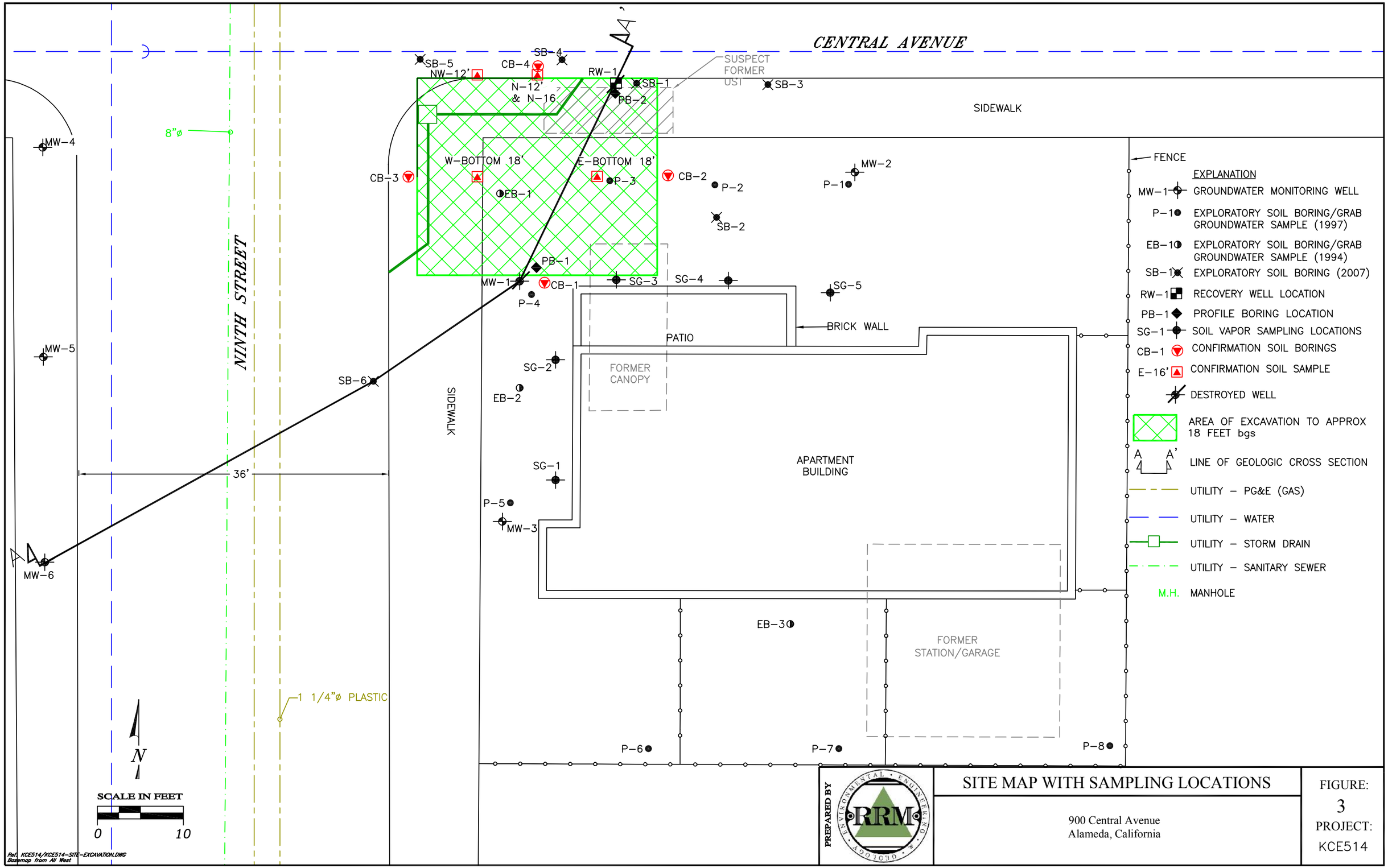
Ref. KCE514/KCE514-EXTENDED.DWG
Basemap from All West

PREPARED BY RRM ENVIRONMENTAL • ENGINEERING • GEOLOGY

EXTENDED SITE MAP

900 Central Avenue
Alameda, California

FIGURE:
2
PROJECT:
KCE514



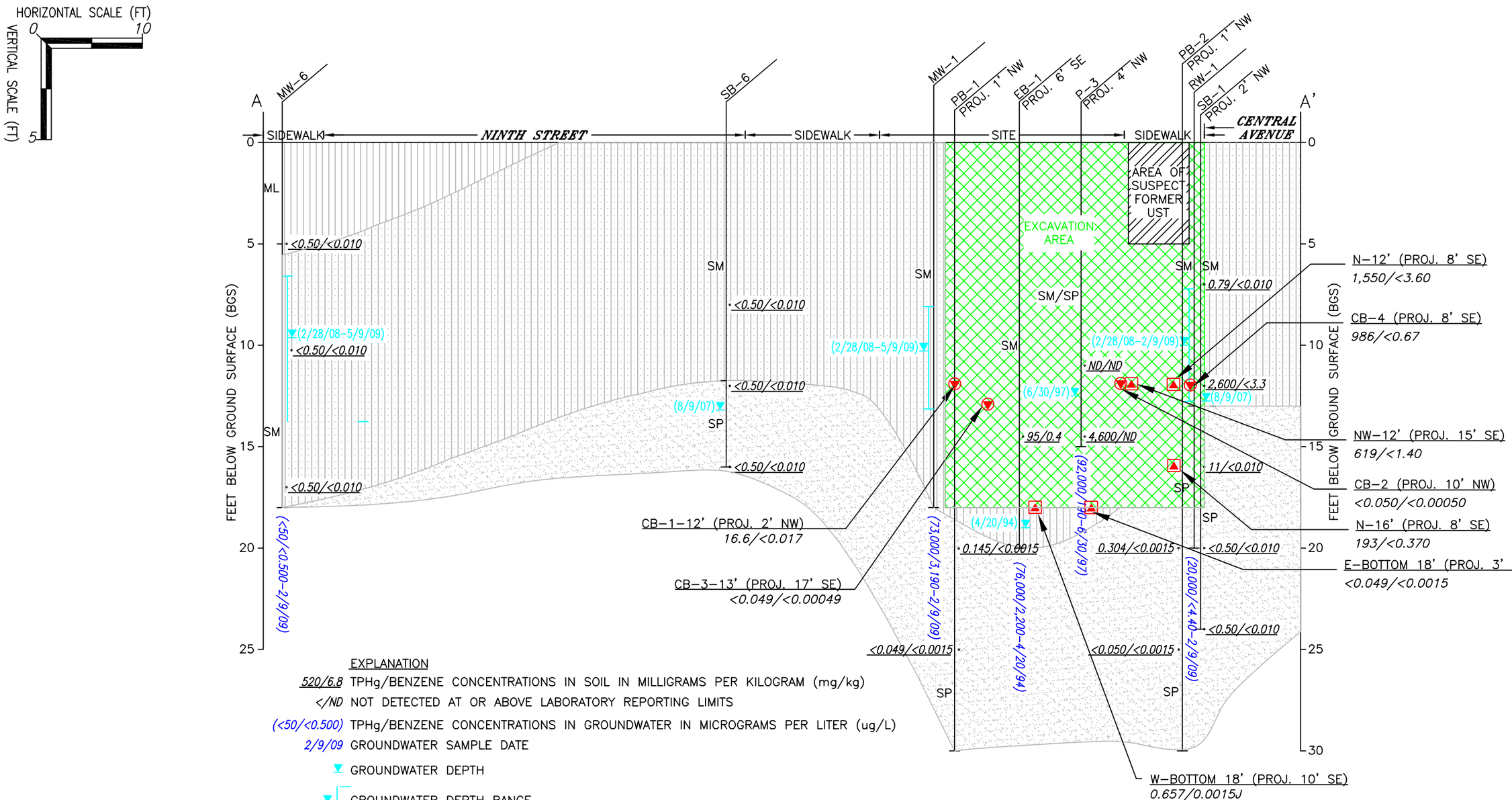
PREPARED BY RRM ENVIRONMENTAL • ENGINEERING • GEOLOGY

SITE MAP WITH SAMPLING LOCATIONS

900 Central Avenue
Alameda, California

FIGURE: 3

PROJECT: KCE514



PREPARED BY

RRM ENVIRONMENTAL ENGINEERING & GEOLOGY

GEOLOGIC CROSS SECTION A-A'

900 Central Avenue
Alameda, California

FIGURE: 4

PROJECT: KCE514

Ref. KCE514/KCE514_X-SEC_A-A.DWG

COMMERCIAL/RESIDENTIAL

COMMERCIAL/RESIDENTIAL

8"ø PLASTIC
3"ø PLASTIC
6"ø
4"ø
M.H.
6"ø
CENTRAL AVENUE
56'
8"ø
M.H.
4"ø PLASTIC
2"ø PLASTIC (4"ø CAST ENCASED)
SUSPECT FORMER UST
RW-1
SIDEWALK
FENCE/PROPERTY BOUNDARY
MW-4 (17.85)
17.90
8"ø
18.00
18.10
18.20
EB-1
MW-1R (NM)
P-3
P-2
P-1
MW-2 (NM)
BRICK WALL
MW-1
P-4
FORMER CANOPY
PATIO
MW-5 (17.87)
EB-2
18.30
SIDEWALK
NINTH STREET
0.009
18.40
APARTMENT BUILDING
RESIDENTIAL
P-5
MW-3 (18.40)
MW-6 (17.89)
EB-3
FORMER STATION/GARAGE
36'
P-6
P-7
P-8
RESIDENTIAL
1 1/4"ø PLASTIC

MOVIE THEATER (FORMER CHURCH)

EXPLANATION

- MW-1 — GROUNDWATER MONITORING WELL LOCATION
- P-1 — EXPLORATORY SOIL BORING/GRAB GROUNDWATER SAMPLE LOCATION, (1997)
- EB-1 — EXPLORATORY SOIL BORING/GRAB GROUNDWATER SAMPLE LOCATION, (1994)
- RW-1 — RECOVERY WELL LOCATION
- DESTROYED WELL
- UTILITY – PG&E (GAS)
- UTILITY – WATER
- UTILITY – STORM DRAIN
- UTILITY – SANITARY SEWER
- M.H. — MANHOLE
- (17.89) — GROUNDWATER ELEVATION, FT/MSL
- 17.90 — GROUNDWATER ELEVATION CONTOUR, FT/MSL
- 0.009 — APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.009 FT/FT
- NM — NOT MEASURED

N

SCALE IN FEET
0 20

Ref. KCE514/KCE514-EXTENDED.DWG
Basemap from All West

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GROUNDWATER ELEVATION CONTOUR MAP, DECEMBER 19, 2012

900 Central Avenue
Alameda, California

FIGURE:
5
PROJECT:
KCE514

COMMERCIAL/RESIDENTIAL

COMMERCIAL/RESIDENTIAL

8"ø PLASTIC
3"ø PLASTIC
6"ø
4"ø
M.H.
6"ø
56'
CENTRAL AVENUE
8"ø
M.H.
4"ø PLASTIC
2"ø PLASTIC (4"ø CAST ENCASED)
SUSPECT FORMER UST
RW-1 43,000
SIDEWALK
MW-4 <50
8"ø
MW-5 <50
MW-6 <50
NINTH STREET
EB-1
MW-1R
P-3
P-2
MW-2
P-1 <50
FENCE/PROPERTY BOUNDARY
10,000
1,000
100
62,000
MW-1
P-4
BRICK WALL
FORMER CANOPY
PATIO
EB-2
SIDEWALK
APARTMENT BUILDING
RESIDENTIAL
P-5
MW-3 <50
EB-3
FORMER STATION/GARAGE
36'
P-6
P-7
P-8
RESIDENTIAL
1 1/4"ø PLASTIC
MOVIE THEATER (FORMER CHURCH)

EXPLANATION

MW-1 GROUNDWATER MONITORING WELL LOCATION
P-1 EXPLORATORY SOIL BORING/GRAB GROUNDWATER SAMPLE LOCATION, (1997)
EB-1 EXPLORATORY SOIL BORING/GRAB GROUNDWATER SAMPLE LOCATION, (1994)
RW-1 RECOVERY WELL LOCATION
DESTROYED WELL
UTILITY – PG&E (GAS)
UTILITY – WATER
UTILITY – STORM DRAIN
UTILITY – SANITARY SEWER
M.H. MANHOLE
43,000 TPHg CONCENTRATIONS IN GROUNDWATER IN MICROGRAMS PER LITER (ug/L)
10,000 TPHg ISOCONCENTRATION CONTOUR (DASHED WHERE INFERRED)
< NOT DETECTED AT OR ABOVE VALUE SHOWN
TPHg GASOLINE RANGE TOTAL PETROLEUM HYDROCARBONS

N

SCALE IN FEET
0 20

Ref. KCE514/KCE514-EXTENDED.DWG
Basemap from All West

PREPARED BY

RRM ENVIRONMENTAL ENGINEERING GEOLOGY

TPHg GROUNDWATER ISOCONCENTRATION MAP, MAY 7, 2009

900 Central Avenue
Alameda, California

FIGURE:
6
PROJECT:
KCE514

COMMERCIAL/RESIDENTIAL

COMMERCIAL/RESIDENTIAL

8"ø PLASTIC
3"ø PLASTIC
6"ø
4"ø
M.H.
6"ø
CENTRAL AVENUE
56'
8"ø
M.H.
4"ø PLASTIC
2"ø PLASTIC (4"ø CAST ENCASED)
<11
RW-1
SUSPECT FORMER UST
SIDEWALK
MW-4 <0.50
8"ø
EB-1
MW-1R
P-3
P-2
P-1
MW-2 <0.50
FENCE/PROPERTY BOUNDARY
100
1,000
2,900
MW-1
P-4
BRICK WALL
FORMER CANOPY
PATIO
MW-5 <0.50
NINTH STREET
EB-2
SIDEWALK
RESIDENTIAL
APARTMENT BUILDING
P-5
MW-3 <0.50
MW-6 <0.50
EB-3
FORMER STATION/GARAGE
36'
P-6
P-7
P-8
RESIDENTIAL
1 1/4"ø PLASTIC
MOVIE THEATER (FORMER CHURCH)

EXPLANATION

- MW-1 — GROUNDWATER MONITORING WELL LOCATION
- P-1 — EXPLORATORY SOIL BORING/GRAB GROUNDWATER SAMPLE LOCATION, (1997)
- EB-1 — EXPLORATORY SOIL BORING/GRAB GROUNDWATER SAMPLE LOCATION, (1994)
- RW-1 — RECOVERY WELL LOCATION
- DESTROYED WELL
- UTILITY – PG&E (GAS)
- UTILITY – WATER
- UTILITY – STORM DRAIN
- UTILITY – SANITARY SEWER
- M.H. — MANHOLE
- <11 — BENZENE CONCENTRATIONS IN GROUNDWATER IN MICROGRAMS PER LITER (ug/L)
- 100 — BENZENE ISOCONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- < — NOT DETECTED AT OR ABOVE VALUE SHOWN

N

SCALE IN FEET
0 20

Ref. KCE514/KCE514-EXTENDED.DWG
Basemap from All West

PREPARED BY RRM ENVIRONMENTAL • ENGINEERING • GEOLOGY

BENZENE GROUNDWATER ISOCONCENTRATION MAP, MAY 7, 2009

900 Central Avenue
Alameda, California

FIGURE:
7
PROJECT:
KCE514

COMMERCIAL/RESIDENTIAL

COMMERCIAL/RESIDENTIAL

8"ø PLASTIC
3"ø PLASTIC

6"ø
4"ø

M.H.

6"ø

56'

CENTRAL AVENUE

8"ø

M.H.

2"ø PLASTIC (4"ø CAST ENCASED)

4"ø PLASTIC

SUSPECT
FORMER UST

RW-1

SIDEWALK

<25/<0.20/<0.20

MW-1R

EB-1

P-3

P-2

P-1

MW-2
NS

FENCE/PROPERTY
BOUNDARY

MW-4
<25/<0.20/<0.20

8"ø

BRICK WALL

MW-1

P-4

FORMER
CANOPY

PATIO

<25/<0.20/<0.20
MW-5

EB-2

SIDEWALK

NINTH STREET

APARTMENT
BUILDING

RESIDENTIAL

P-5

MW-3

<25/<0.20/<0.20

MW-6
<25/<0.20/<0.20

EB-3

FORMER
STATION/GARAGE

MOVIE THEATER
(FORMER CHURCH)

36'

P-6

P-7

P-8

RESIDENTIAL

1 1/4"ø PLASTIC

N

SCALE IN FEET

0 20

EXPLANATION

MW-1	GROUNDWATER MONITORING WELL LOCATION
P-1	EXPLORATORY SOIL BORING/GRAB GROUNDWATER SAMPLE LOCATION, (1997)
EB-1	EXPLORATORY SOIL BORING/GRAB GROUNDWATER SAMPLE LOCATION, (1994)
RW-1	RECOVERY WELL LOCATION
	DESTROYED WELL
	UTILITY – PG&E (GAS)
	UTILITY – WATER
	UTILITY – STORM DRAIN
	UTILITY – SANITARY SEWER
M.H.	MANHOLE
<25/<0.20/<0.20	TPHg/BENZENE/MtBE CONCENTRATIONS IN GROUNDWATER IN MICROGRAMS PER LITER (ug/L)
<	NOT DETECTED AT OR ABOVE VALUE SHOWN
NS	NOT ANALYZED
TPHg	GASOLINE RANGE TOTAL PETROLEUM HYDROCARBONS
MtBE	METHYL TERTIARY BUTYL ETHER

Ref. KCE514/KCE514-EXTENDED.DWG
Basemap from All West

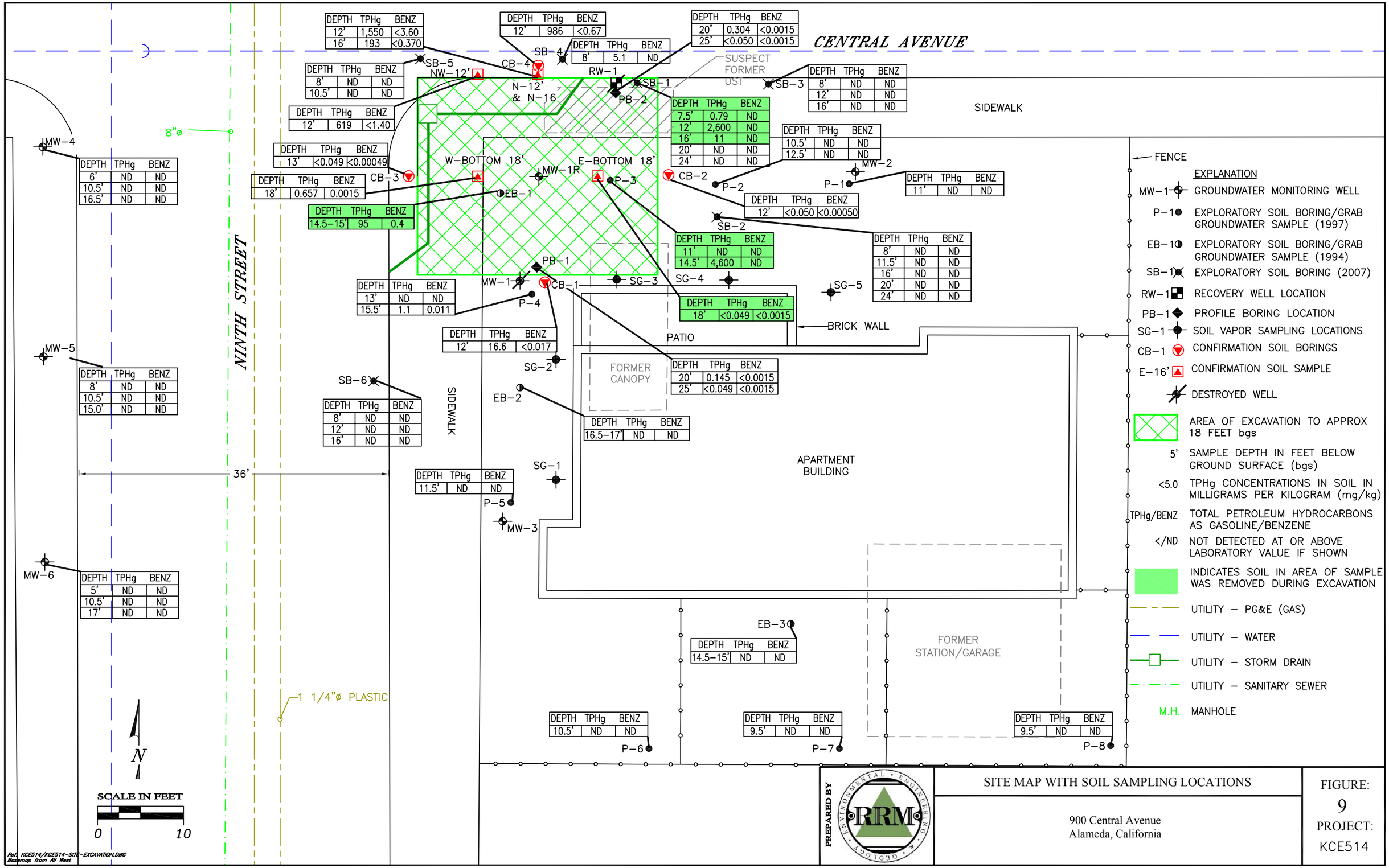
PREPARED BY

RRM ENVIRONMENTAL • ENGINEERING • GEOLOGY

TPHg/BENZENE/MtBE GROUNDWATER CONCENTRATION MAP, DECEMBER 19, 2012

900 Central Avenue
Alameda, California

FIGURE:
8
PROJECT:
KCE514



PREPARED BY RRM ENVIRONMENTAL ENGINEERING & GEOLOGY

SITE MAP WITH SOIL SAMPLING LOCATIONS

900 Central Avenue
Alameda, California

FIGURE: 9

PROJECT: KCE514

Table 1
Well Specifications

900 Central Avenue
Alameda, California

Well	Total Depth (feet, bgs)	Casing Diameter (inch)	Screened Interval (feet, bgs)	Screen Length (feet)	Status
MW-1	18	2	6 - 18	12	Destroyed 7/13/11
MW-2	19.5	2	6 - 19.5	13.5	
MW-3	18	2	6 - 18	12	
MW-4	18	2	6 - 18	12	
MW-5	18	2	6 - 18	12	
MW-6	18	2	6 - 18	12	
RW-1	20	4	5 - 20	15	Destroyed 7/13/11
MW-1R	20	4	5 - 20	15	

Notes:

bgs = below ground surface

Table 2
Groundwater Elevation and Analytical Data

900 Central Avenue
Alameda, California

Sample ID	Date Gauged & Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	MtBE (ppb)	TPHd (ppb)	TPHmo (ppb)	Notes
Monitoring Wells													
MW-1	11/27/98	25.17	11.77	13.40	360	5.8	5.5	9.2	40	<5.0	<50	<500	
	03/12/99		6.59	18.58	<50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<500	
	06/01/99		8.71	16.46	930	<0.50	19	52	230	<5.0	540	<500	
	09/03/99		11.79	13.38	14,000	300	1,900	890	5,600	<5.0	2,100	<500	
	03/29/02		8.32	16.85	<50	<0.50	<0.50	<0.50	<0.50	<0.50	61	<610	
	07/15/02		11.39	13.78	39,000	1,700	2,900	1,800	7,800	<10	4,200	<5000	
	10/03/02		12.88	12.29	42,000	2,600	3,300	1,800	10,000	<500	8,400	<2500	
	02/05/07		10.40	14.77	26,000	2,550	2,010	1,140	4,870	<0.5	NA	NA	1
	05/04/07		9.77	15.40	28,000	2,080	1,820	739	5,500	NA	NA	NA	1
	08/23/07	28.27	12.23	16.04	56,700	2,570	2,370	1,120	9,560	<11	NA	NA	1,3
	11/28/07		12.94	15.33	51,700	3,160	3,270	1,050	9,250	<11.0	NA	NA	1,3
	02/28/08		8.10	20.17	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	4
	06/03/08		11.40	16.87	11,000	1,060	2,080	784	4,370	NA	NA	NA	1,5
	09/04/08		13.23	15.04	66,000	4,000	5,410	62.0	11,700	NA	NA	NA	1
	11/06/08		13.76	14.51	100,000	2,870	5,160	1,720	13,800	NA	NA	NA	
	02/09/09		13.76	14.51	73,000	3,190	4,250	2,410	16,800	NA	NA	NA	7
	05/07/09		10.40	17.87	62,000	2,900	6,300	2,700	16,000	NA	NA	NA	
							Well Destroyed 7/13/11						
MW-1R	06/27/12	NM	9.85	NM	331	24.1	1.1	31.4	3.7	<0.20	NA	NA	
	12/19/12	**NM**	**9.32**	**NM**	**<25**	**<0.20**	**<0.20**	**<0.20**	**<0.46**	**<0.20**	**NA**	**NA**	**8**
MW-2	11/27/98	25.12	11.76	13.41	<50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<500	
	03/12/99		6.53	18.64	<50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<500	
	06/01/99		8.56	16.61	<50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<500	
	09/03/99		11.60	13.57	<50	<0.50	<0.50	<0.50	1.8	<5.0	<50	<500	
	03/29/02		8.10	17.07	<50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<500	
	07/15/02		10.92	14.25	<50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<500	
	10/03/02		DRY	--	NS	NS	NS	NS	NS	NS	NS	NS	
	02/05/07		10.15	15.02	89	<0.5	<0.5	<0.5	<1.50	<0.5	NA	NA	1,2
	05/04/07		9.43	15.74	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	1
	08/23/07	28.31	11.94	16.37	<50	<0.500	<0.500	<0.500	<1.50	<0.500	NA	NA	1
	11/28/07		12.67	15.64	<50	<0.500	<0.500	<0.500	<1.50	<0.500	NA	NA	1
	02/28/08		7.89	20.42	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	4

Table 2
Groundwater Elevation and Analytical Data

900 Central Avenue
Alameda, California

Sample ID	Date Gauged & Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	MtBE (ppb)	TPHd (ppb)	TPHmo (ppb)	Notes
MW-2	06/03/08		11.07	17.24	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	1
(cont.)	09/04/08		12.95	15.36	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	1
	11/06/08		13.52	14.79	52	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	3
	02/09/09		13.50	14.81	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	7
	05/07/09		10.08	18.23	<50	<0.50	<0.50	<0.50	<1.5	NA	NA	NA	
	06/27/12		NM	NM				Unable to Locate Well					
	12/19/12		**NM**	**NM**				**Well Uncovered/Blocked**					
MW-3	11/27/98	24.58	11.41	13.76	<50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<500	
	03/12/99		6.01	19.16	<50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<500	
	06/01/99		8.16	17.01	<50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<500	
	09/03/99		11.27	13.90	<50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<500	
	03/29/02		7.78	17.39	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<50	<500	
	07/15/02		10.82	14.35	<50	<0.50	<0.50	<0.50	<0.50	<0.50	110	<500	
	10/03/02		12.28	12.89	<50	<0.50	<0.50	<0.50	<0.50	<5.0	<50	<500	
	02/05/07		9.85	15.32	<50	<0.5	<0.5	<0.5	<1.50	<0.5	NA	NA	1
	05/04/07		9.19	15.98	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	1
	08/23/07	27.69	11.63	16.06	<50	<0.500	<0.500	<0.500	<1.50	<0.500	NA	NA	1
	11/28/07		12.31	15.38	<50	<0.500	<0.500	<0.500	<1.50	<0.500	NA	NA	1
	02/28/08		7.46	20.23	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	4
	06/03/08		10.82	16.87	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	1
	09/04/08		12.62	15.07	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	1
	11/06/08		13.20	14.49	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	
	02/09/09		13.21	14.48	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	7
	05/07/09		9.83	17.86	<50	<0.50	<0.50	<0.50	<1.5	NA	NA	NA	
	06/27/12		9.90	17.79	<25	<0.20	<0.20	<0.20	<0.46	<0.20	NA	NA	
	12/19/12		**9.29**	**18.40**	**<25**	**<0.20**	**<0.20**	**<0.20**	**<0.46**	**<0.20**	**NA**	**NA**	**8**
MW-4	08/23/07	27.37	11.73	15.64	<50	<0.500	<0.500	<0.500	<1.50	<0.500	NA	NA	1
	11/28/07		12.43	14.94	<50	<0.500	<0.500	<0.500	<1.50	<0.500	NA	NA	1
	02/28/08		7.81	19.56	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	4
	06/03/08		10.99	16.38	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	1
	09/04/08		12.68	14.69	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	1
	11/06/08		13.25	14.12	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	
	02/09/09		13.30	14.07	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	7

Table 2
Groundwater Elevation and Analytical Data

900 Central Avenue
Alameda, California

Sample ID	Date Gauged & Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	MtBE (ppb)	TPHd (ppb)	TPHmo (ppb)	Notes
MW-4	05/07/09		10.04	17.33	<50	<0.50	<0.50	<0.50	<1.5	NA	NA	NA	
(cont.)	06/27/12		10.05	17.32	<25	<0.20	<0.20	<0.20	<0.46	<0.20	NA	NA	
	12/19/12		**9.52**	**17.85**	**<25**	**<0.20**	**<0.20**	**<0.20**	**<0.46**	**<0.20**	**NA**	**NA**	**8**
MW-5	08/23/07	27.25	11.56	15.69	<50	<0.500	<0.500	<0.500	<1.50	<0.500	NA	NA	1
	11/28/07		12.29	14.96	<50	<0.500	<0.500	<0.500	<1.50	<0.500	NA	NA	1
	02/28/08		7.55	19.70	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	4
	06/03/08		10.84	16.41	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	1
	09/04/08		12.53	14.72	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	1
	11/06/08		13.12	14.13	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	
	02/09/09		13.16	14.09	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	7
	05/07/09		9.89	17.36	<50	<0.50	<0.50	<0.50	<1.5	NA	NA	NA	
	06/27/12		9.92	17.33	<25	<0.20	<0.20	<0.20	<0.46	<0.20	NA	NA	
	12/19/12		**9.38**	**17.87**	**<25**	**<0.20**	**<0.20**	**<0.20**	**<0.46**	**<0.20**	**NA**	**NA**	**8**
MW-6	08/23/07	27.24	11.52	15.72	<50	<0.500	<0.500	<0.500	<1.50	<0.500	NA	NA	1
	11/28/07		12.24	15.00	<50	<0.500	<0.500	<0.500	<1.50	<0.500	NA	NA	1
	02/28/08		7.43	19.81	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	4
	06/03/08		10.81	16.43	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	1
	09/04/08		12.51	14.73	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	1
	11/06/08		13.10	14.14	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	
	02/09/09		13.14	14.10	<50	<0.500	<0.500	<0.500	<1.50	NA	NA	NA	7
	05/07/09		9.84	17.40	<50	<0.50	<0.50	<0.50	<1.5	NA	NA	NA	
	06/27/12		9.92	17.32	<25	<0.20	<0.20	<0.20	<0.46	<0.20	NA	NA	
	12/19/12		**9.35**	**17.89**	**<25**	**<0.20**	**<0.20**	**<0.20**	**<0.46**	**<0.20**	**NA**	**NA**	**8**
RW-1	08/23/07	27.43	11.23	16.20	16,000	<4.40	38.9	571	2,660	<4.40	NA	NA	1,3
	11/28/07		11.97	15.46	24,400	4.75	110	915	3,980	<4.40	NA	NA	1,3
	02/28/08		7.22	20.21	10,100	<4.40	40.3	256	1,430	NA	NA	NA	1,3
	06/03/08		10.41	17.02	40,000	<4.40	120	1,100	8,810	NA	NA	NA	1, 5
	09/04/08		12.25	15.18	17,000	<4.40	41.1	640	3,290	NA	NA	NA	1, 5
	11/06/08		12.75	14.68	19,000	<4.40	28.1	369	2,340	NA	NA	NA	6
	02/09/09		12.77	14.66	20,000	<4.40	51.9	738	4,410	NA	NA	NA	7
	05/07/09		9.34	18.09	43,000	<11	200	2,100	10,000	NA	NA	NA	6
							Well Destroyed 7/13/11						

Table 2
Groundwater Elevation and Analytical Data

900 Central Avenue
Alameda, California

Sample ID	Date Gauged & Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	MtBE (ppb)	TPHd (ppb)	TPHmo (ppb)	Notes
Grab Groundwater Samples													
EB-1	04/20/94	NA	NA	NA	76,000	2,200	8,800	2,500	1,600	NA	16,000*	<1,000	
EB-2	04/20/94	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	NA	<50	720	
EB-3	04/20/94	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	NA	<50	820	
P-1-W	06/30/97	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	
P-2-W	06/30/97	NA	NA	NA	290	2.4	2.1	1.4	3.1	NA	<100	<1,000	
P-3-W	06/30/97	NA	NA	NA	92,000	190	5,000	4,600	24,000	NA	<100	<1,000	
P-4-W	06/30/97	NA	NA	NA	17,000	610	720	940	3,800	NA	<100	<1,000	
P-5-W	06/30/97	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	
P-6-W	06/30/97	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	
P-7-W	06/30/97	NA	NA	NA	66	2.3	6.5	0.8	4.7	NA	NA	NA	
P-8-W	06/30/97	NA	NA	NA	51	1.7	5.1	0.55	2.4	NA	NA	NA	

Notes:

MSL = relative to mean sea level
TOC = top of casing
TPHg = gasoline range total petroleum hydrocarbons
TPHd = diesel range total petroleum hydrocarbons
TPHmo = motor oil range total petroleum hydrocarbons
TBA = tert-Butanol
MtBE = Methyl tert-Butyl Ether
ppb = parts per billion (micrograms per liter)
< = none detected at or above reported detection limit
NS = not sampled
NA = not analyzed

1 = also sampled for the fuel oxygenates ethyl tert-butyl ether (ETBE), isopropyl ether (DIPE), t-butyl alcohol (t-butanol) (TBA), and tert-amyl methyl ether (TAME); none of these compounds detected above the laboratory limit.

2 = the laboratory reported value due to discrete peaks present within the TPH as gasoline quantitation range (heavy end); not typical gasoline.

3 = the laboratory reported results are elevated due to non-target compounds within the gasoline range

4 = also sampled for the fuel oxygenates ethyl tert-butyl ether (ETBE), t-butyl alcohol (t-butanol) (TBA), and tert-amyl methyl ether (TAME); none of these compounds detected above the laboratory limit.

5 = laboratory noted that although TPH as gasoline constituents are present, TPH value includes a significant portion of non-target hydrocarbons present within gasoline range.

6 = Although TPH as Gasoline compounds are present, result includes heavy end hydrocarbons within the C5 - C12 quantitation range (possibly aged gasoline).

7 = Sample also analyzed for 1,2-dibromoethane and 1,2-dichloroethane; neither was detected.

8 = Sample also analyzed for napthalene; compound was not detected unless noted.

Table 3
Soil Analytical Data
900 Central Avenue
Alameda, California

Sample ID	Date	Depth (feet, bgs)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MtBE (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	TPHss (mg/kg)	TPHk (mg/kg)	VOCs (mg/kg)	Notes:
Excavation Sidewall Confirmation Borings														
CB-1-12'	03/01/12	12	16.6	<0.017	<0.017	0.0754J	0.244J	NA	NA	NA	NA	NA	NA	
CB-2-12'	03/01/12	12	<0.050	<0.00050	<0.00050	<0.00050	<0.0010	NA	NA	NA	NA	NA	NA	
CB-3-13'	03/01/12	13	<0.049	<0.00049	<0.00049	<0.00049	<0.00097	NA	NA	NA	NA	NA	NA	
CB-4-12'	03/01/12	12	**986**	<0.67	5.77	**17**	**114**	NA	NA	NA	NA	NA	NA	
Excavation Confirmation Samples														
NW-12'	08/16/11	12	**619**	<1.40	<1.40	4.33J	4.34J	NA	NA	NA	NA	NA	NA	
N-12'	08/16/11	12	**1,550**	<3.60	<3.60	**9.59J**	**19.2J**	NA	NA	NA	NA	NA	NA	
W-Bottom 18'	08/17/11	18	0.657	0.0015J	0.0041J	0.0133	0.0923	NA	NA	NA	NA	NA	NA	
N-16'	08/17/11	16	**193**	<0.370	<0.370	2.52	**13.9**	NA	NA	NA	NA	NA	NA	
E-Bottom 18'	08/17/11	18	<0.049	<0.0015	<0.0015	<0.0015	0.0066J	NA	NA	NA	NA	NA	NA	
Soil Disposal Profile and Vertical Delineation Borings														
PB-1-20	09/08/10	20	0.145	<0.0015	<0.0015	<0.0015	<0.0040	<0.00099	NA	NA	NA	NA	NA	
PB-1-25	09/08/10	25	<0.049	<0.0015	<0.0015	<0.0015	<0.0039	<0.00098	NA	NA	NA	NA	NA	
PB-2-20	09/08/10	20	0.304	<0.0015	<0.0015	0.0015J	0.0058J	<0.00099	NA	NA	NA	NA	NA	
PB-2-25	09/08/10	25	<0.050	<0.0015	<0.0015	0.0017J	0.0060J	<0.0010	NA	NA	NA	NA	NA	
PB-Comp-1	09/08/10	NA	36.9	<0.094	<0.094	0.427	3.36	<0.063	NA	NA	NA	NA	NA	c,d
PB-Comp-2	09/08/10	NA	<2.5	<0.075	<0.075	<0.075	<0.20	<0.050	NA	NA	NA	NA	NA	e,f
Soil Borings- RRM														
SB-1-7.5	08/09/07	7.5	0.79	<0.010	<0.010	<0.010	0.034	NA	NA	NA	NA	NA	NA	
SB-1-12	08/09/07	12	**2,600**	<3.3	<3.3	**31**	**200**	NA	NA	NA	NA	NA	NA	
SB-1-16	08/09/07	16	11	<0.010	<0.010	0.31	1.7	NA	NA	NA	NA	NA	NA	
SB-1-20	08/09/07	20	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
SB-1-24	08/09/07	24	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
SB-2-8	08/09/07	8	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
SB-2-11.5	08/09/07	11.5	<0.50	<0.010	<0.010	<0.010	<0.010	NA	<5.0	<10	<5.0	<5.0	NA	
SB-2-16	08/09/07	16	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
SB-2-20	08/09/07	20	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
SB-2-24	08/09/07	24	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
Soil Cleanup Goals (mg/kg) [g]			***180***	***2***	***9.3***	***4.7***	***11***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	

Table 3
Soil Analytical Data
900 Central Avenue
Alameda, California

Sample ID	Date	Depth (feet, bgs)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MtBE (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	TPHss (mg/kg)	TPHk (mg/kg)	VOCs (mg/kg)	Notes:
Soil Borings- RRM (cont.)														
SB-3-8	08/09/07	8	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
SB-3-12	08/09/07	12	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
SB-3-16	08/09/07	16	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
SB-4-8	08/09/07	8	5.1	<0.050	<0.050	<0.050	<0.100	<0.050	<5.0	<10	<5.0	<5.0	ND	
SB-5-8	08/09/07	8	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA				
SB-5-10.5	08/09/07	10.5	<0.10	<0.005	<0.005	<0.005	<0.010	<0.0050	<5.0	<10	<5.0	<5.0	ND	
SB-6-8	08/09/07	8	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
SB-6-12	08/09/07	12	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
SB-6-16	08/09/07	16	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
Monitoring Wells - RRM														
MW-4-6	06/22/07	6	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
MW-4-10.5	06/22/07	10.5	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
MW-4-16.5	06/22/07	16.5	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
MW-5-7.5	06/22/07	8	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
MW-5-10.5	06/22/07	10.5	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
MW-5-15	06/22/07	15.0	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
MW-6-5	06/22/07	5	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
MW-6-10.5	06/22/07	10.5	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
MW-6-17	06/22/07	17	<0.50	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	
Soil Borings - Allwest														
P-1-11[b]	06/97	11	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	
P-2-10.5[b]	06/97	10.5	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	
P-2-12.5[b]	06/97	12.5	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	
P-3-11[b]	06/97	11	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	
P-3-14.5[b]	06/97	14.5	**4,600**	ND	**15**	**110**	**590**	NA	NA	NA	NA	NA	NA	
P-4-13[b]	06/97	13	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	
P-4-15.5[b]	06/97	15.5	1.1	0.011	0.0092	0.03	0.066	NA	NA	NA	NA	NA	NA	
P-5-11.5[b]	06/97	11.5	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	
P-6-10.5[b]	06/97	10.5	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	
Soil Cleanup Goals (mg/kg)[g]			***180***	***2***	***9.3***	***4.7***	***11***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	

Table 3
Soil Analytical Data
900 Central Avenue
Alameda, California

Sample ID	Date	Depth (feet, bgs)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MtBE (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	TPHss (mg/kg)	TPHk (mg/kg)	VOCs (mg/kg)	Notes:
Soil Borings - Allwest (cont.)														
P-7-9.5[b]	06/97	9.5	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	
P-8-9.5[b]	06/97	9.5	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	
Soil Borings - Lowney														
EB-1[a]	04/20/94	14.5	95	0.4	0.5	0.9	5.2	NA	39	<10	NA	NA	NA	
EB-2[a]	04/20/94	16.5	<1.0	<0.005	<0.005	<0.005	<0.005	NA	<5	<10	NA	NA	NA	
EB-3[a]	04/20/94	14.5	<1.0	<0.005	<0.005	<0.005	<0.005	NA	<5	<10	NA	NA	ND	
Soil Cleanup Goals (mg/kg)[g]			***180***	***2***	***9.3***	***4.7***	***11***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	

Notes:

TPHg = gasoline range total petroleum hydrocarbons
TPHd = diesel range total petroleum hydrocarbons
TPHmo = motor oil range total petroleum hydrocarbons
TPHss = Stoddard range total petroleum hydrocarbons
TPHk = kerosene total petroleum hydrocarbons
MtBE = Methyl tert-Butyl Ether
mg/kg = milligrams per kilogram
bgs = below ground surface
< = none detected at or above reported detection limit
ND = not detected
NA = not analyzed or not applicable
J = Estimated concentration; compound detected below lab reporting limit but above method detection limit
= soil in area of sample removed during remedial excavation in August 2011
BOLD = concentrations in **BOLD** indicate value exceeds proposed cleanup goal

a = Work performed by Lowney Associates on April 4, 1994.
b = Work performed by Allwest in 1997.
c = Lead reported at 10.1 mg/kg
d = 4 part composite of samples from PB-1 & PB-2 at 5- and 10-foot depths
e = Lead reported at 3.3 mg/kg
f = 4 part composite of samples from PB-1 & PB-2 at 15- and 20-foot depths
g = soil cleanup goals proposed in RRM's August 27, 2010 *Corrective Action Plan (FINAL)*

ATTACHMENT 3

Site Conceptual Model Requisite Elements

The site conceptual model (SCM) is an essential decision-making and communication tool for all interested parties during the site characterization, remediation planning and implementation, and closure process. A SCM is a set of working hypotheses pertaining to all aspects of the contaminant release, including site geology, hydrogeology, release history, residual and dissolved contamination, attenuation mechanisms, pathways to nearby receptors, and likely magnitude of potential impacts to receptors.

The SCM is initially used to characterize the site and identify data gaps. As the investigation proceeds and the data gaps are filled, the working hypotheses are modified, and the overall SCM is refined and strengthened until it is said to be "validated". At this point, the focus of the SCM shifts from site characterization towards remedial technology evaluation and selection, and later remedy optimization, and forms the foundation for developing the most cost-effective corrective action plan to protect existing and potential receptors.

For ease of review, Alameda County Environmental Health (ACEH) requests utilization of tabular formats to (1) highlight the major SCM elements and their associated data gaps which need to be addressed to progress the site to case closure (see Table 4-1 of attached example), and (2) highlight the identified data gaps and proposed investigation activities (see Table 5-1 of the attached example). ACEH requests that the tables presenting the SCM elements, data gaps, and proposed investigation activities be updated as appropriate at each stage of the project and submitted with work plans, feasibility studies, corrective action plans, and requests for closures to support proposed work, conclusions, and/or recommendations.

The SCM should incorporate, but is not limited to, the topics listed below. Please support the SCM with the use of large-scaled maps and graphics, tables, and conceptual diagrams to illustrate key points. Please include an extended site map(s) utilizing an aerial photographic base map with sufficient resolution to show the facility, delineation of streets and property boundaries within the adjacent neighborhood, downgradient irrigation wells, and proposed locations of transects, monitoring wells, and soil vapor probes.

a. Regional and local (on-site and off-site) geology and hydrogeology. Include a discussion of the surface geology (e.g., soil types, soil parameters, outcrops, faulting), subsurface geology (e.g., stratigraphy, continuity, and connectivity), and hydrogeology (e.g., water-bearing zones, hydrologic parameters, impermeable strata). Please include a structural contour map (top of unit) and isopach map for the aquitard that is presumed to separate your release from the deeper aquifer(s), cross sections, soil boring and monitoring well logs and locations, and copies of regional geologic maps.

b. Analysis of the hydraulic flow system in the vicinity of the site. Include rose diagrams for depicting groundwater gradients. The rose diagram shall be plotted on groundwater elevation contour maps and updated in all future reports submitted for your site. Please address changes due to seasonal precipitation and groundwater pumping, and evaluate the potential interconnection between shallow and deep aquifers. Please include an analysis of vertical hydraulic gradients, and effects of pumping rates on hydraulic head from nearby water supply wells, if appropriate. Include hydraulic head in the different water bearing zones and hydrographs of all monitoring wells.

c. Release history, including potential source(s) of releases, potential contaminants of concern (COC) associated with each potential release, confirmed source locations, confirmed release locations, and existing delineation of release areas. Address primary leak source(s) (e.g., a tank, sump, pipeline, etc.) and secondary sources (e.g., high-

Site Conceptual Model Requisite Elements (continued)

concentration contaminants in low-permeability lithologic soil units that sustain groundwater or vapor plumes). Include local and regional plan view maps that illustrate the location of sources (former facilities, piping, tanks, etc.).

d. Plume (soil gas and groundwater) development and dynamics including aging of source(s), phase distribution (NAPL, dissolved, vapor, residual), diving plumes, attenuation mechanisms, migration routes, preferential pathways (geologic and anthropogenic), magnitude of chemicals of concern and spatial and temporal changes in concentrations, and contaminant fate and transport. Please refer to the *Preferential Pathway and Sensitive Preceptor Study* description on the next page. Please include three-dimensional plume maps for groundwater and two-dimensional soil vapor plume plan view maps to provide an accurate depiction of the contaminant distribution of each COC.

e. Summary tables of chemical concentrations in different media (i.e., soil, groundwater, and soil vapor). Please include applicable environmental screening levels on all tables. Include graphs of contaminant concentrations versus time.

f. Current and historic facility structures (e.g., buildings, drain systems, sewer systems, underground utilities, etc.) and physical features including topographical features (e.g., hills, gradients, surface vegetation, or pavement) and surface water features (e.g. routes of drainage ditches, links to water bodies). Please include current and historic site maps.

g. Current and historic site operations/processes (e.g., parts cleaning, chemical storage areas, manufacturing, etc.).

h. Other contaminant release sites in the vicinity of the site. Hydrogeologic and contaminant data from those sites may prove helpful in testing certain hypotheses for the SCM. Include a summary of work and technical findings from nearby release sites, including the two adjacent closed LUFT sites, (i.e., Montgomery Ward site and the Quest Laboratory site).

i. Land uses and exposure scenarios on the facility and adjacent properties. Include beneficial resources (e.g., groundwater classification, wetlands, natural resources, etc.), resource use locations (e.g., water supply wells, surface water intakes), subpopulation types and locations (e.g., schools, hospitals, day care centers, etc.), exposure scenarios (e.g. residential, industrial, recreational, farming), and exposure pathways, and potential threat to sensitive receptors. Include an analysis of the contaminant volatilization from the subsurface to indoor/outdoor air exposure route (i.e., vapor pathway). Please include copies of Sanborn maps and aerial photographs, as appropriate. Please refer to the *Preferential Pathway and Sensitive Preceptor Study* description on the next page.

j. Identification and listing of specific data gaps that require further investigation during subsequent phases of work. Proposed activities to investigate and fill data gaps identified.

Preferential Pathway and Sensitive Receptor Study

Please conduct a study as a part of the SCM requested in order to (1) locate potential anthropogenic migration pathways on and in the vicinity of the site that could spread contamination through vertical and lateral migration, and (2) identify exposure scenarios and sensitive receptors that are linked to site contamination through these preferential pathways. The results of your study shall contain all information required by California Code of Regulations, Title 23, Division 3, Chapter 16, §2654(b) including but not limited to the following components, as applicable to the site:

a. **Utility Survey** - An evaluation of all existing subsurface utility lines, laterals, and trenches including sewers, electrical, fiber optic cable, cable, water, storm drains, trench backfill, etc. within and near the site and plume area(s). Please include an evaluation of shallow utilities associated with current and historical site operations/processes including UST systems, remediation systems, parts cleaning, sumps, etc.

b. **Updated Well Survey** – ACEH requests that well data sources (Alameda County Public Works Agency [ACPWA] and Department of Water Resources [DWR]) be reviewed for more recently installed vicinity water supply wells. ACEH requests the identification of all active, inactive, standby, decommissioned (sealed with concrete), unrecorded, and abandoned (improperly decommissioned or lost) wells including monitoring, remediation, irrigation, water supply, industrial, livestock, dewatering, and cathodic protection wells within a ¼-mile radius of the subject site. Please inspect all available Well Completion Reports filed with the DWR and ACPWA in your survey, and perform a background study of the historical land uses of the site and properties in the vicinity of the site. Use the results of your background study to determine the existence of unrecorded/unknown (abandoned) wells, which can act as contaminant migration pathways at or from your site.

c. **Land Uses and Exposure Scenarios on the Facility and Adjacent Properties** – The surrounding land use appears to be predominately agricultural; however, redevelopment of the site as a service station has been planned. Consequently, the identification of existing and future land use on and in the vicinity of the site is requested, including:

- Beneficial resources (e.g., groundwater classification, wetlands, surface water bodies, natural resources, etc.)
- Subpopulation types and locations (e.g., schools, hospitals, day care centers, elder care facilities, etc.)
- Exposure scenarios (e.g. residential, industrial, recreational, farming) and exposure pathways including those identified in the Low Threat Underground Storage Tank Case Closure Policy General Criteria h – Nuisance Conditions, and Media-Specific Criteria for Groundwater, Vapor Intrusion to Indoor Air, and Direct Contact and Outdoor Air Exposure

d. **Planned Development** – Future development activities are planned in the vicinity of the site. Please include an analysis of new utility corridors, building foundations, wells, and/or development activities that could significantly alter contaminant migration (i.e., covering of large areas of the site with pavement, etc.).

Please synthesize this information and discuss your analysis and interpretation of the results of the preferential pathway and sensitive receptor study and incorporate into the requested SCM. Please provide the following supporting documentation and data as applicable:

- Copies of current and historical maps, such as site maps, Sanborn maps, aerial photographs, etc., used when conducting the background study.
- DWR well logs, marked as confidential, uploaded to Alameda County Environmental Health's ftp site. For confidentiality purposes do not upload the DWR well logs to Geotracker. The well logs will be placed in our confidential file and will be available only to internal staff for review.
- Table with details of the well search findings including Map ID corresponding to well location on map, State Well ID, Well Owner ID, approximate distance from the site, direction from the site, use, installation date, depth (feet below ground surface [bgs]), screened interval (feet bgs), sealed interval (feet bgs), diameter (inches), and well location address.
- Maps and geologic cross-sections illustrating historical groundwater elevations and flow directions (rose diagram) at the site. Synthesize the data requested above and include the location and depth of all utility lines, trenches, UST pits and piping trenches, wells, surface water bodies, foundational elements, surface covering types (pavement, landscaped, etc.) within and near the site and plume area(s), and the location of potential receptors.

Table 4-1
Site Conceptual Model

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
Geology and Hydrogeology	Regional	As described by URS (2004), the lithology encountered in the subsurface beneath the Site during drilling activities consisted predominantly of a brown to greenish-gray silty clay with sand and gravel. The primary stratigraphic units at the Site are listed below, with the approximate ranges of depth (bgs) each unit was encountered across the Site: • 0 to 5 feet bgs: The surface soil typically consisted of very dark-brown clay to dark-gray gravel fill, depending on whether the boring was in the vacant vegetated parcel (dark-brown clay), at 3860 MLK Jr. Way; or beneath the asphalt and concrete surfaces at the Lucky's Auto Body parcel at 3884 MLK Jr. Way (gravel fill). • 5 to 20 feet bgs: very dark-brown silty clay grades to a greenish-gray silty clay and brown silty clay and gravelly clay. Groundwater was encountered in direct-push boreholes at an average depth of 17.2 feet bgs, with depths ranging from 16.2 to 19.6 feet bgs. This groundwater depth is not considered a stabilized groundwater depth, because it was not measured from appropriately constructed monitoring wells.	None	NA

Table 4-1
Site Conceptual Model (Continued)

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
Geology and Hydrogeology	Site	Regional groundwater in the Oakland area generally follows topography, from areas of higher elevation in the east toward lower elevation in the west and southwest. The groundwater flow direction in the vicinity of the Site is to the west towards San Francisco Bay (Arcadis, 2012). URS reviewed groundwater investigation reports from the ARCO #4931 station at 731 West MacArthur Boulevard, approximately 1,000 feet southwest of the Site (Arcadis, 2012). The depth to water in the groundwater monitoring wells at the ARCO site ranged from approximately 3.2 to 10.8 feet bgs (approximately 52.2 to 43 feet elevation).	1.There are no monitoring wells on site so that the local groundwater flow direction and gradient is not known.	Five groundwater wells are to be installed at the site.
Surface Water Bodies		The closest surface water body is the San Francisco Bay, which is 1.5 miles west of the site.		
Nearby Wells		The State Water Resource Quality Control Board (RWQCB) Geotracker GAMA website provides the locations of water supply wells proximal to the site. The nearest supply well is located approximately 2 miles southwest of the site. There are multiple monitoring wells in the vicinity of the site including those at the Arco services station at 781 West MacArthur Blvd., and Dollar Cleaners, 4860 – 4868 Telegraph Avenue, Oakland.	2.	NA
Release Source and Volume		The three prior gasoline USTs (two 650-gallon and one 500-gallon) are considered the main source of the release of fuel hydrocarbons that have been detected in soil and groundwater beneath the Site. Tanks #1 and #2 were both observed to have one or more holes from corrosion at the time of removal. Although no holes were observed in Tank #3 during removal, the integrity of the tank was questionable as it split into two pieces along the weld during removal. Soil surrounding the tanks was stained green and was noted to have strong petroleum hydrocarbon odors. The release from the Tanks at the Site was discovered on January 5, 1995 during tank removal activities. The volume of the release is not known.	5. & 6. Additional soil and groundwater data is required in the source areas.	See data gaps table. Additional soil borings will be advanced in the source areas. Groundwater monitoring wells will be installed.

Table 4-1
Site Conceptual Model (Continued)

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
		The area around the ramps and pit in the southern area of the site is considered a potential source area.		
LNAPL		There are currently no groundwater monitoring wells located at the Site. Although light non-aqueous phase liquids were not observed during grab groundwater sampling activities, concentrations of TPH-g in sample G2 (22,000 µg/L), located near former Tank #3, and sample GP3 (79,800 µg/L), located adjacent to former Tank #1 may indicate the potential for the presence of light non-aqueous phase liquid (LNAPL) to be present.	1. Need monitoring wells at the site.	Monitoring wells (5) to be installed.
Source Removal Activities		Soil that was excavated from the UST pits during tank removal activities was returned to the excavation after the collection of soil samples for chemical analysis. There is no information regarding the quality of the soil that was placed back in the UST excavations. As such, with the exception of the removal of the USTs themselves, there have been no other source removal activities conducted at the Site.	2., 5.,6. Soil contamination at depth (12-foot bgs and deeper) is not well characterized. Since the site is to be excavated to approximately 12 feet bgs for the construction of a parking garage, additional shallow soil sampling is not required.	Ten soil borings are proposed, as discussed in the data gaps table.
Contaminants of Concern		Based on the historical investigations conducted at the Site, BTEX, cis-1,2-dichloroethene (cis-1,2-DCE), 1,2-dichloroethane (1,2-DCA) and TPH-g are present in groundwater above their respective MCLs and/or ESLs. However, based on correspondence from the ACEHSD, the contaminants of concern (COCs) for the site are BTEX, and TPH-g. These COCs are present above the screening levels primarily in the northern corner of the Site, near the location of the former USTs. Benzene and TPH-g are also present in groundwater above their MCLs and ESLs in the southern portion of the Site in the vicinity of the truck ramp and pit adjacent to the	4.	

Table 4-1
Site Conceptual Model (Continued)

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
		former shop building, and in the northwestern area of the Site.		
Petroleum Hydrocarbons in Soil		Of the 58 samples analyzed from the two investigations, eight samples from seven borings exceeded their respective screening criteria. These samples were typically the deepest sample from the boring, ranging from 8.0 to 14.0 feet bgs. This is consistent with releases from a UST as opposed to a surface spill or release. Based on the historical investigation data, BTEX and TPH-g are the contaminants present in soil at concentrations exceeding their respective screening criteria. The contaminants are present mainly in soil at the location of former Tanks #1 through #3, and to a lesser extent, near the former fuel pump island in the northern corner of the Site. The lateral extent of contamination exceeding the screening criteria appears to be limited to the area around the former USTs. Soil concentration in all the samples from boring GP3 and S10, located in the sidewalk by Martin Luther King Jr. Way near former Tank #1 and Tank #2 are below their respective screening criteria. There is no additional data from around former Tank #3. Given the nature of the petroleum hydrocarbon (mainly light fraction gasoline), the vertical extent of contamination beneath and in close proximity to the former tanks is likely limited to the lowest level of groundwater fluctuation.	4. & 7. Additional soil sampling is required to better define the vertical extent of contamination. Redevelopment will include excavation of the entire site to a depth of 12 feet bgs for the construction of an underground parking garage.	Additional soil borings to be advanced, as described in the data gaps table.
Petroleum Hydrocarbons in Groundwater		During the two subsurface investigations conducted at the Site, a total of 15 grab groundwater samples were collected and analyzed for TPH-g and BTEX. The results of the analyses are summarized in Table 2-2. Concentration of TPH-g and/or BTEX exceeded their respective screening criteria in ten of the 15 samples analyzed. Similar to the soil sampling results, the highest concentrations were detected beneath or in close proximity to the former USTs. However, TPH-g and benzene were detected in one Site boring (G7) exceeding their respective screening criteria near the southern corner of the Site. There are no permanent monitoring wells located at the Site. As such, the groundwater flow direction across	8. There are no monitoring wells on site.	Five monitoring wells will be installed, as described in the data gaps table and in the work plan.

Table 4-1
Site Conceptual Model (Continued)

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
		the Site cannot be evaluated. This has been defined as a significant data gap. The scope of work presented in this work plan includes the installation of four groundwater monitoring wells at the Site.		
Risk Evaluation		The Site is a former auto body and car wash facility. The Site is currently vacant, and with the exception of a billboard located in the northwest corner of the Site, has no structures and is covered with either asphalt or concrete foundations from former buildings located at the Site. The Site is zoned for residential and current plans are to redevelop the Site for residential use. However, there may be some commercial use on the ground level. This preliminary CSM assumes that development would consist of an underground parking garage; store fronts and residential units at ground level; and second story residential units. The CSM identifies the primary source; impacted media; release mechanism(s); secondary source(s); exposure route; potential receptors (residential, commercial/industrial worker, and construction worker), and an assessment of whether the exposure route/pathway is potentially complete, incomplete, or insignificant. Potential exposure routes that have been evaluated include incidental ingestion, dermal contact, dust inhalation, and vapor inhalation. For direct contact with contaminated soil, the exposure route for incidental ingestion, dermal contact, and dust inhalation for a residential and commercial/industrial worker are considered incomplete. These exposure routes for the construction worker are considered a potentially complete pathway, depending on the nature of the work. For volatilization from soil to outdoor air, vapor inhalation is the potential exposure pathway. Given dilution effects that take place outdoors, this exposure pathway is considered incomplete for all three potential receptors. For indoor air, this exposure pathway is considered potentially complete for all three potential receptors.		

Table 4-1
Site Conceptual Model (Continued)

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
		For leaching of contaminants from soil to groundwater, the ingestion and dermal pathways for groundwater are considered incomplete, except for the construction worker, as shallow groundwater is not utilized as a drinking water source at the Site. For the construction worker, incidental ingestion and dermal contact is a potentially complete pathway. For volatilization from groundwater to outdoor air, the exposure pathway is considered insignificant due to dilution effects that take place outdoors. For indoor air, volatilization from groundwater to indoor air is considered a potentially complete pathway.		

Table 5-1
Data Gaps Summary and Proposed Investigation

Item	Data Gap Item #	Proposed Investigation	Rationale	Analyses
1	Groundwater flow direction and gradient is unknown. There are only grab groundwater data points; there are no monitoring wells on site. There are no upgradient groundwater sample locations. The current groundwater data sets are 7 and 9 years old and may not be representative of current site conditions.	Install five groundwater monitoring wells, as described in the work plan. Wells will be constructed of 2-inch-diameter Schedule 40 PVC well casing, total depth up to 25 feet bgs; the screened interval will be determined based on observations of groundwater levels during field work. The well screen will consist of 5 to 10 feet of 0.010-inch well screen. Soil samples will be collected at 12 feet, 15 feet, and 20 feet bgs. Additional samples may be collected based on professional judgment.	The wells will be located to provide up- and downgradient control for the shallow groundwater plume. They will enable water level data to be collected to allow the groundwater flow direction and gradient to be calculated. Wells will be installed as follows: At the source area associated with UST #3. Downgradient of the site to the northwest, near the billboard. At the source area associated with USTs 1 and 2. Upgradient of the site adjacent to the ramp and pit. Adjacent to prior soil boring S4 (prior BTEX detections). Soil samples will be collected during well installation to further characterize subsurface soil contamination. Northern (off-site, downgradient) grab groundwater samples (far side of MLK, sidewalk): three borings.	Soil: TPH-g, BTEX, EDB, EDC. Soil samples from MW-1 will also be analyzed for PAHs. Groundwater: Natural attenuation parameters [COD, Fe(2+), Dissolved Gases (methane)] at selected locations (2). BTEX, TPH-g

Table 5-1
Data Gaps Summary and Proposed Investigation (Continued)

Item	Data Gap Item #	Proposed Investigation	Rationale	Analyses
2	The soil data set does not adequately characterize the contamination (if any) that may remain on site after the excavation to approximately 11 to 12 feet bgs for the underground parking structure. The current soil data sets are 7 and 9 years old and may not be representative of current site conditions. Lithology below is not adequately characterized.	Ten soil borings will be drilled to a total depth of 20 feet bgs. Soil samples will be collected at 12 feet, 15 feet, and 20 feet bgs from soil borings SB-4 through SB-10. Soil samples will not be collected from soil borings SB-1, SB-2, and SB-3 which are located across MLK north of the site, as there is no reason to suspect an off-site soil contamination source in this area. Borings will be logged using the Unified Soil Classification System. Grab groundwater samples will be collected from the first encountered groundwater at each soil boring.	Soil samples will be collected starting at 12 feet bgs. Shallow soil on site is to be excavated for disposal during the construction of the underground parking garage. Excavation will be conducted to a depth of about 12 feet bgs. Soil borings will be located as shown in the work plan figure: Source area borings: At the former locations of USTs 1, 2 and 3. One boring north of the site on the side walk of MLK Way. One boring between USTs 1 and 2 and the pump island (potential leakage from conveyance piping). One boring at the approximate location of UST 3 (in addition to the soil samples to be collected from the monitoring well to be installed at this location). One boring in the vicinity of the ramps and pit in the southern portion of the site (in addition to soil samples to be collected from the monitoring well in this area). Step out borings: Step out boring SB-5 to be completed proximal to the UST #3 source area. GP4 Area: Benzene was previously detected at 25,000 µg/kg at location GP4 (Carver, 2006). Two step-out borings will be completed in this area to further characterize soils at depth.	TPH-g, BTEX, EDB, EDC. Boring SB-4 (on sidewalk of MLK near UST 1): PAHs

Table 5-1
Data Gaps Summary and Proposed Investigation (Continued)

Item	Data Gap Item #	Proposed Investigation	Rationale	Analyses
3	There is no data on the presence and usage of wells in the vicinity of the site.	Obtain a well survey.	Identify irrigation and other wells in the site vicinity.	N/A
4	PAHs are potential COCs at the northern boundary of the site.	See soil borings – Item 2. PAHs will be analyzed at select locations as described in Item 2.	Item 2	Item 2
5	There is a potential source area in the vicinity of the ramps and pit.	A monitoring well will be installed in this area. It will also serve as the upgradient well for the site. See Item 2. A soil boring will also be completed in this area.	Item 2	Item 2
6	Determine size and contents of the three USTs that were removed from the site	Review prior reports.	Tanks #1 and #2 were identified as 650-gallon gasoline tanks. Tank #3 was a 500-gallon gasoline tank [Tank Removal Report – 1995]. Tanks #2 and #3 were observed to be badly deteriorated with holes due to corrosion.	NA
7	Confirm whether TPH-g and BTEX were detected during construction of the adjacent residential unit	Review prior reports.	The URS site investigation conducted in 2004 found no detections of TPH-g [<1,000 µg/kg] or BTEX [<5.0 µg/kg] in the borings completed to 14 feet bgs.	NA

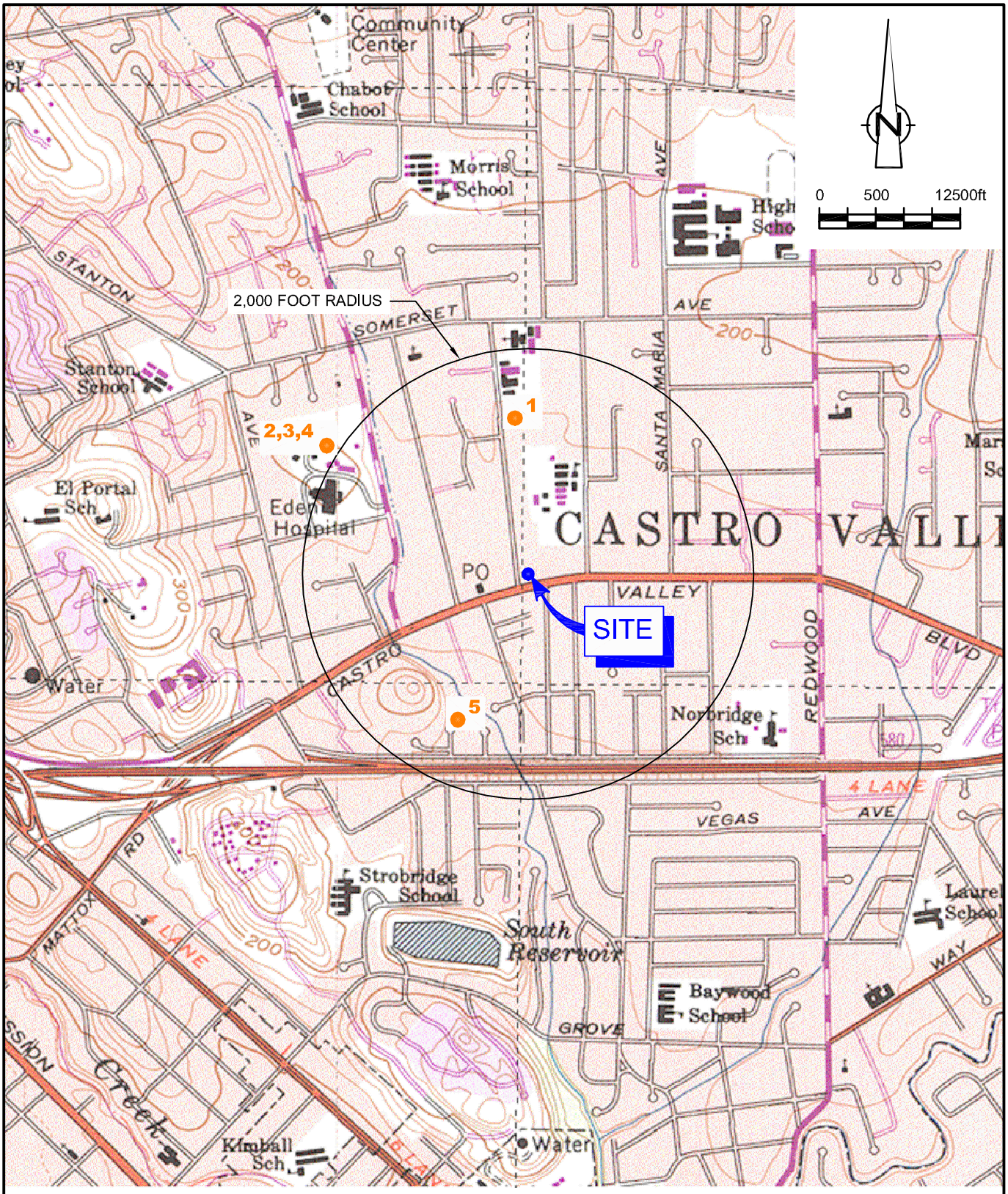
Table 5-1
Data Gaps Summary and Proposed Investigation (Continued)

Item	Data Gap Item #	Proposed Investigation	Rationale	Analyses
8	Review data from the nearby service stations (Arco)	Review prior reports.	The former Arco station (731 West MacArthur Blvd.) is about 0.5 miles crossgradient of the 3884 MLK site. The BTEX levels are lower than those at the subject site; the Arco site does not appear to be contributing to on site TPH or BTEX contamination. Groundwater elevation data from this site was used to calculate groundwater flow direction, since there are currently no wells at the 3884 MLK site.	NA

ATTACHMENT 4

WELL SURVEY RESULTS
CHEVRON STATION 9-6991
2920 CASTRO VALLEY BOULEVARD
CASTRO VALLEY, CALIFORNIA

Well No./ Figure ID	*Well Owner*	*Well Address* *Street*	*City*	*Total Well Depth (ft)*	*Date Installed*	*Distance/Direction from Site (ft) (approx)*	*Well Use*
1	Private	20036 Anita Avenue Lake Chabot Road	Castro Valley	51	2/19/1953	1,400 N	Domestic
2	Eden Township Hospital	1,000' south of Williams	Castro Valley	150	9/30/1953	2,000 NW	Test well
3	Eden Township Hospital	Eden Township Hospital	Castro Valley	250	9/9/1952	2,000 NW	Domestic
4	Eden Township Hospital	Eden Township Hospital	Castro Valley	60	7/11/1952	2,000 NW	Cooling system return
5	Sam Wallace	Tyee Court	Castro Valley	52	7/3/1953	1,400 S-SW	Domestic

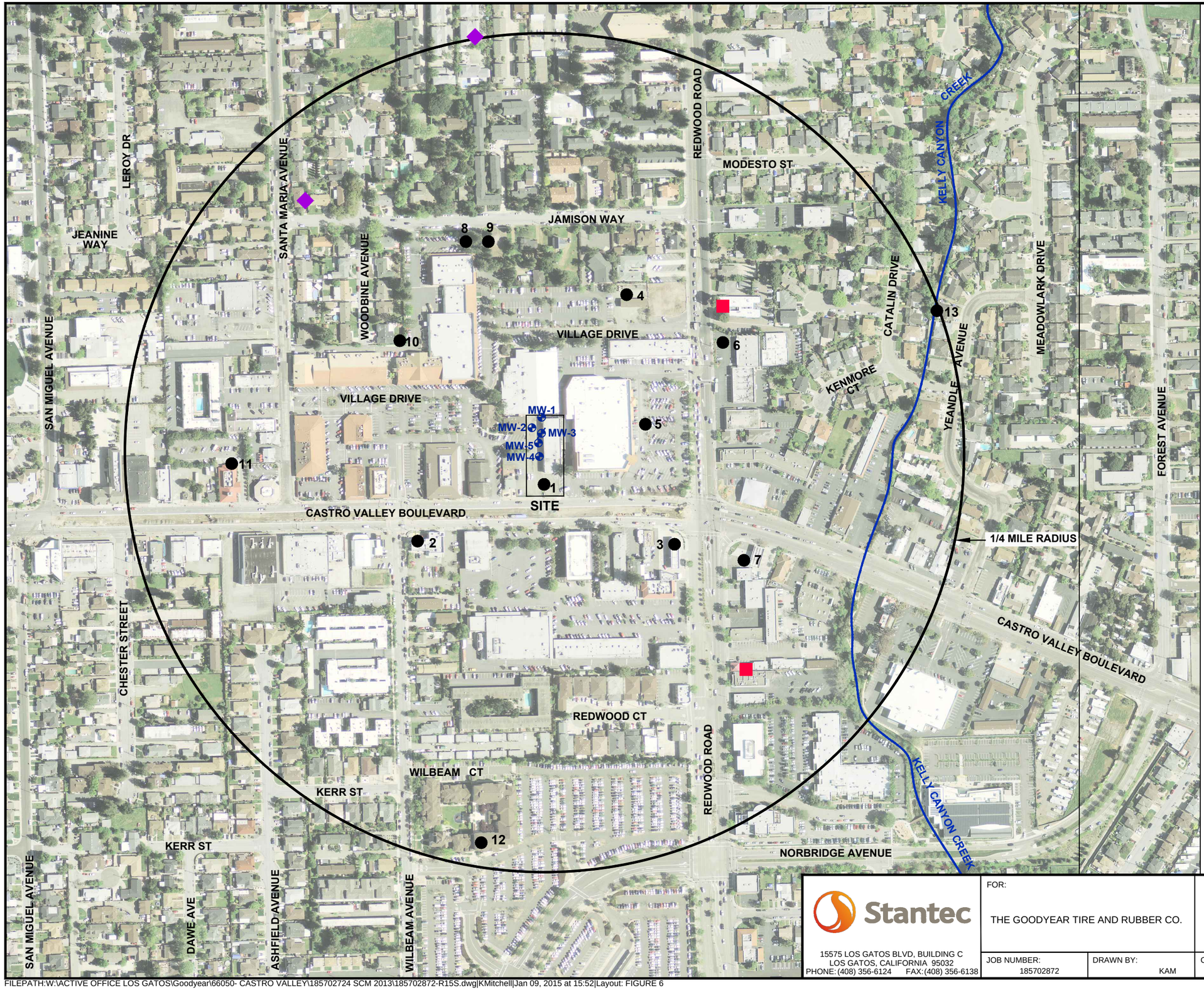


SOURCE: TOPO! MAPS.

LEGEND

- APPROXIMATE WELL LOCATION

WELL SURVEY MAP
CHEVRON SERVICE STATION 9-6991
2920 CASTRO VALLEY BOULEVARD
Castro Valley, California



LEGEND:

- PROPERTIES WITH WELLS WITHIN 1/4-MILE OF SITE
- MEDICAL OFFICES WITHIN 1/4-MILE OF SITE
- SCHOOLS WITHIN 1/4-MILE OF SITE
- ACTIVE GROUNDWATER MONITORING WELL LOCATION
- DESTROYED GROUNDWATER MONITORING WELL LOCATION

N

0 300 600

APPROXIMATE SCALE (FEET)

Stantec
15575 LOS GATOS BLVD, BUILDING C
LOS GATOS, CALIFORNIA 95032
PHONE: (408) 356-6124 FAX:(408) 356-6138

FOR: THE GOODYEAR TIRE AND RUBBER CO.

WELL & SENSITIVE RECEPTOR SURVEY
GOODYEAR DEX #9578
3430 CASTRO VALLEY BOULEVARD
CASTRO VALLEY, CALIFORNIA

FIGURE: 6

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185702872	KAM	KM	GM	01/08/15

FILEPATH:W:\ACTIVE OFFICE LOS GATOS\Goodyear\66050- CASTRO VALLEY\185702724 SCM 2013\185702872-R15S.dwg|KMitchell|Jan 09, 2015 at 15:52|Layout: FIGURE 6