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ADDITIONAL INVESTIGATION WORKPLAN

FORMER CALTRANS HEGENBERGER
MAINTENANCE STATION
555 HEGENBERGER ROAD
OAKLAND, ALAMEDA COUNTY, CALIFORNIA

PREPARED FOR

CALIFORNIA DEPARTMENT OF
TRANSPORTATION, DISTRICT 4
OFFICE OF ENVIRONMENTAL ENGINEERING
111 GRAND AVENUE, 14TH FLOOR
OAKLAND, CA

PREPARED BY

GEOCON CONSULTANTS, INC.
6671 BRISA ST.
LIVERMORE, CA 94550

CALTRANS CONTRACT NO. 04A4337
TASK ORDER NO. 1

GEOCON PROJECT NO. E8722-02-01B

DECEMBER 2014

GEOCON
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GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

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Geocon Project No. E8722-02-01B
December 16, 2014

Mr. Bahram Sazegar
Caltrans – District 4
Office of Environmental Engineering, MS 8C
111 Grand Avenue, 14th Floor
Oakland, California 94623

Subject: ADDITIONAL INVESTIGATION WORKPLAN
FORMER CALTRANS HEGENBERGER MAINTENANCE STATION
555 HEGENBERGER ROAD
OAKLAND, ALAMEDA COUNTY, CALIFORNIA

Dear Mr. Sazegar:

Geocon has prepared this *Additional Investigation Workplan* for the Former Caltrans Maintenance Station site. The report contains details of field services and laboratory analytical results.

If there are any questions concerning the contents of this report, or if Geocon may be of further service, please contact the undersigned at your convenience.

Sincerely,

GEOCON CONSULTANTS, INC.

John Love
Sr. Project Geologist

PROFESSIONAL GEOLOGIST
JOHN W. LOVE
No. 6315
Exp. 11-30-16
STATE OF CALIFORNIA

(5) Addressee
(1) Keith Nowell, Alameda County LOP

TABLE OF CONTENTS

ADDITIONAL INVESTIGATION WORKPLAN Page

ADDITIONAL INVESTIGATION WORKPLAN

1.0 INTRODUCTION

On behalf of Caltrans District 4, we have prepared this workplan for the Former Caltrans Hegenberger Maintenance Station site located at 555 Hegenberger Road in Oakland, California (Figure 1). The contents of this workplan were prepared based on information discussed during a meeting between Caltrans, Geocon Consultants, Inc. (Geocon), and Alameda County Health Services Agency (HSA) personnel on November 14, 2014. The purpose of that meeting was to formulate a path to closure for this site based on criteria established in the 2012 Low Threat Case Closure Policy (LTCP).

1.1 Background

Since 1948, the site is known to have been used as both City of Oakland and Caltrans maintenance yards. The latter occupied the site from at least 1978 until the early 1990's, at which time two 2,000-gallon diesel underground storage tanks (USTs) and two 6,500-gallon gasoline USTs were reportedly removed in 1994. The USTs were reportedly last used in 1986.

In September 1994, GHH Engineering, Inc. removed the four USTs. During the UST removals approximately 8,100 gallons of water and product were removed from the tanks. Upon removal from the ground, holes were observed in each UST indicating that a release had occurred. Approximately 280 cubic yards of soil was over-excavated from the common UST pit and disposed offsite during the UST removal.

After the USTs were removed in 1994, several subsurface investigations have been conducted at the site to delineate the petroleum-impacts to soil and groundwater resulting from the unauthorized release(s) of gasoline and diesel fuel from the four USTs.

Geocon conducted soil and groundwater investigations in 1995 and 2001 which included the advancement of nine soil borings (BH-1 to BH-9) and the construction of five groundwater monitoring wells (MW-1 to MW-5). Stantec advanced 14 soil borings (SB-1 to SB-12, SB-12A and SB-13) in April 2012 to further delineate impacts to soil and groundwater surrounding the former UST excavation area (see Figure 2). The groundwater monitoring wells have been sampled sporadically during the last 19 years. Soil and groundwater sample results from the borings and monitoring wells are summarized in Tables 1 to 3.

On November 14, 2014, a meeting was held at the HSA office in Alameda to discuss issues that need to be addressed in order to facilitate eventual case closure under the 2012 LTCP guidelines. Issues that need to be addressed are as follows:

1) Assess whether more than one groundwater-bearing zone exists beneath the investigation area. This information is critical to understanding how petroleum-impacts to shallow-depth soils throughout the site may have occurred.

   During the construction of MW-1 to MW-5 in 2005, groundwater was initially encountered between 13 and 18 feet below ground surface (bgs); however, depth to groundwater measured in these wells over the last 19 years indicates that confined conditions likely exist since depth to groundwater in these wells has been measured at depths of less than 4 feet.

   Soil sample data collected from outlying borings such as SB3 indicate that total petroleum hydrocarbons as gasoline (TPHg), as diesel (TPHd), and benzene are present in soil between 0 and 5 feet at concentrations of 16 milligrams per kilogram (mg/kg), 120 mg/kg, and 0.530 mg/kg, respectively. Given their location and shallow depth (<5 feet) it is unclear if these contaminants originated from the former leaking USTs or from other unknown source(s) given the site's known land use as both City of Oakland and Caltrans vehicle maintenance facilities. Presumably, if they originated from the former USTs they would have been deposited in soils near SB3 via migration through groundwater. However, if it turns out that groundwater is confined as past circumstances seem to indicate, then TPH-impacts to shallow-depth soils will need to be addressed as a separate issue from the unauthorized release from the former USTs.

2) Further delineate (to the extent feasible given the close proximity of Hegenberger Road to the site) the lateral extent of petroleum impacts to shallow-depth soil and groundwater northwest, northeast, and east of the former UST excavation area.

3) Assess potential vapor intrusion for existing buildings.

4) Assess potential impacts to sensitive receptors such as the tidal channel located approximately 300 feet south of the site.

Once these issues have been addressed it is presumed that active remediation of soil and groundwater within the immediate vicinity of the former UST excavation will be necessary to close this case using the guidelines established in the 2012 LTCP.

2.0 Proposed Scope of Services

The proposed investigation will include the following general scope of services:

- Obtain permission from offsite property owner to advance temporary borings on their property;
- Conduct utility clearance
- Advance three sets of boring clusters near SB1, SB3, and SB7 to assess depth(s) to groundwater
- Advance four additional borings to further assess the lateral extent of impacts to groundwater
- Advance five borings around and within the former UST excavation to assess soil and groundwater conditions for source area remedial action
- Collect and submit soil and groundwater samples for laboratory analysis
- Prepare a report of findings.

2.1 Mobilization

Prior to advancing temporary borings, we will obtain permission from the adjacent site owner to advance borings on their property and will obtain a soil boring permit from the Alameda County Public Works Agency.

Prior to conducting the field investigation a utility clearance will be performed by notifying Underground Services Alert at least 48 hours in advanced of the planned drilling activities.

3.0 TEMPORARY BORING ADVANCEMENT

Temporary borings will be advanced using a Geoprobe direct-push sample rig. The Geoprobe sampler hydraulically advances an approximately two-inch-diameter by four-foot-long core barrel sampler lined with an acetate sample tube into undisturbed soil at four-foot intervals until the total depth of each borehole is reached. Soil samples will be collected by cutting an approximately six-inch-long section of the acetate tube from each four-foot sample interval, capping the ends with Teflon tape and plastic end caps, labeling the sample tubes with the sample location, date, depth, and time, and then placing the sample in a chest cooled with ice.

Grab groundwater samples will be collected from select borings by installing a temporary ¾-inch-diameter PVC well casing into the each open borehole and extracting a groundwater sample through the casing using disposable polyethylene tubing fitted with a check valve at the bottom of the tubing. Groundwater will be discharged at ground surface into one unpreserved 1-liter glass amber jar and three 40-milliliter glass vials preserved with hydrochloric acid. The sample containers will then be labeled with the sample location, date, and time, and then placed in a chest cooled with ice for transport to the analytical laboratory

Sampling equipment will be cleaned between sample locations using a non-phosphate detergent (Alconox™ or Liquinox™ solution) followed by a double rinse with deionized water.

When sample collection at each borehole has been completed it will be backfilled with Portland cement from the bottom of the boring to within three inches of ground surface. The upper three inches of ground surface will be repaired with ready-mix concrete.

Soil cuttings and rinsate fluids generated during the field sampling will be containerized and stored onsite pending disposal arrangements.

3.1 Depth to Groundwater Investigation

Three boring clusters (BC-1 to BC-3) will be advanced near former borings SB1, SB3, and SB7 where TPH-related compounds were reported during Stantec's 2012 investigation (see Figure 2). The purpose of the boring clusters will be to assess whether more than one groundwater-bearing zone is present beneath the investigation area. If it is established that groundwater is confined at depths greater than 10 feet then it can be assumed that TPH-related compounds reported in shallow-depth (<5 feet) soils in outlying borings such as SB1, SB3, and SB7, originated from an unknown source(s) other than the former leaking USTs, in which case additional soil investigation beyond the immediate proximity of the former USTs will no longer be warranted.

Five borings will be advanced at each boring cluster location. The borings will be completed to depths of 3, 6, 9, 12, and 15 feet. The boreholes will be left open for three days to determine if groundwater accumulates in each borehole. After three days, depth to groundwater will be measured in each boring to establish whether shallow-depth soils could be affected by contaminants migrating through groundwater.

If groundwater is present, grab groundwater samples will be collected to further assess whether groundwater is affecting TPH compound concentrations in overlying soils. The groundwater samples will be analyzed for TPHg and TPHd (using silica gel cleanup) following EPA Method 8015B, and benzene, toluene, ethylbenzene, and xylenes (BTEX) following EPA Method 8021B.

3.2 Additional Delineation of the Lateral Impacts to Groundwater

Impacts to groundwater remain undefined northwest of SB3, northeast of SB11, and east of SB1. Therefore, we propose advancing four borings (SB14 to SB17) at the locations shown on Figure 4 with the intent of adequately defining the lateral extent of impacts to groundwater in these areas. Grab groundwater samples will be collected at each boring and analyzed for TPHg and TPHd (using silica gel cleanup) following EPA Method 8015B, and BTEX following EPA Method 8021B.

3.3 UST Excavation Area Soil and Groundwater Investigation

Based on results of soil samples collected within and adjacent to the former UST excavation, impacts to soil surrounding the former excavation area appear to be restricted to that immediate area. Therefore, in anticipation of future source removal we propose advancing four borings (SB18 to SB21) around the perimeter of the former excavation area as shown on Figure 4 to help assess the volume of soil that will need likely require removal and disposal offsite. One boring (SB22) will also be advanced within the boundary of the former excavation to assess worse-case contaminant concentrations for disposal purposes, as well as assess the vertical extent of impacts beneath the former USTs.

Each boring will be advanced to a depth of 20 feet. Soil samples will be collected every 5 feet for laboratory analysis and at depths where obvious petroleum impacts are observed.

One grab groundwater sample will be collected at each borehole for laboratory analysis. Analytical groundwater data can be used to prepare a chemical oxidation dosage to remediate groundwater within and immediately surrounding the source area.

Soil and groundwater samples will be analyzed for TPHg and TPHd following EPA Method 8015B and volatile organic compounds (VOCs) following EPA Method 8260B.

3.4 Tidal Channel Investigation

During the November 14, 2014, meeting the HSA expressed concern that TPH-related compounds released from the former fuel storage and delivery system could impact surface water in the tidal channel situated approximately 250 feet to the south.

We propose advancing three borings (SB18 to SB20) approximately 50 feet north of the tidal channel as show on Figure 5. If TPH-related compounds are migrating towards the tidal channel then groundwater samples collected from these borings should indicate whether surface water in the channel is at risk of being affected. Grab groundwater samples will be collected from each boring and analyzed for TPHg and TPHd (using silica gel cleanup) following EPA Method 8015B and BTEX following EPA Method 8021B.

We do not recommend collecting soil or groundwater samples from the tidal channel unless grab groundwater sample results from the three borings warrant.

3.5 Vapor Intrusion to Existing Buildings

Presently, there are no existing buildings on the Former Caltrans Maintenance Yard site. However, there is a large commercial building located approximately 260 feet west of the former UST excavation area (see Figure 2).

Potential vapor intrusion, as related to the offsite building, will be calculated once true depth to groundwater conditions have been assessed as described previously in Section 3.1.

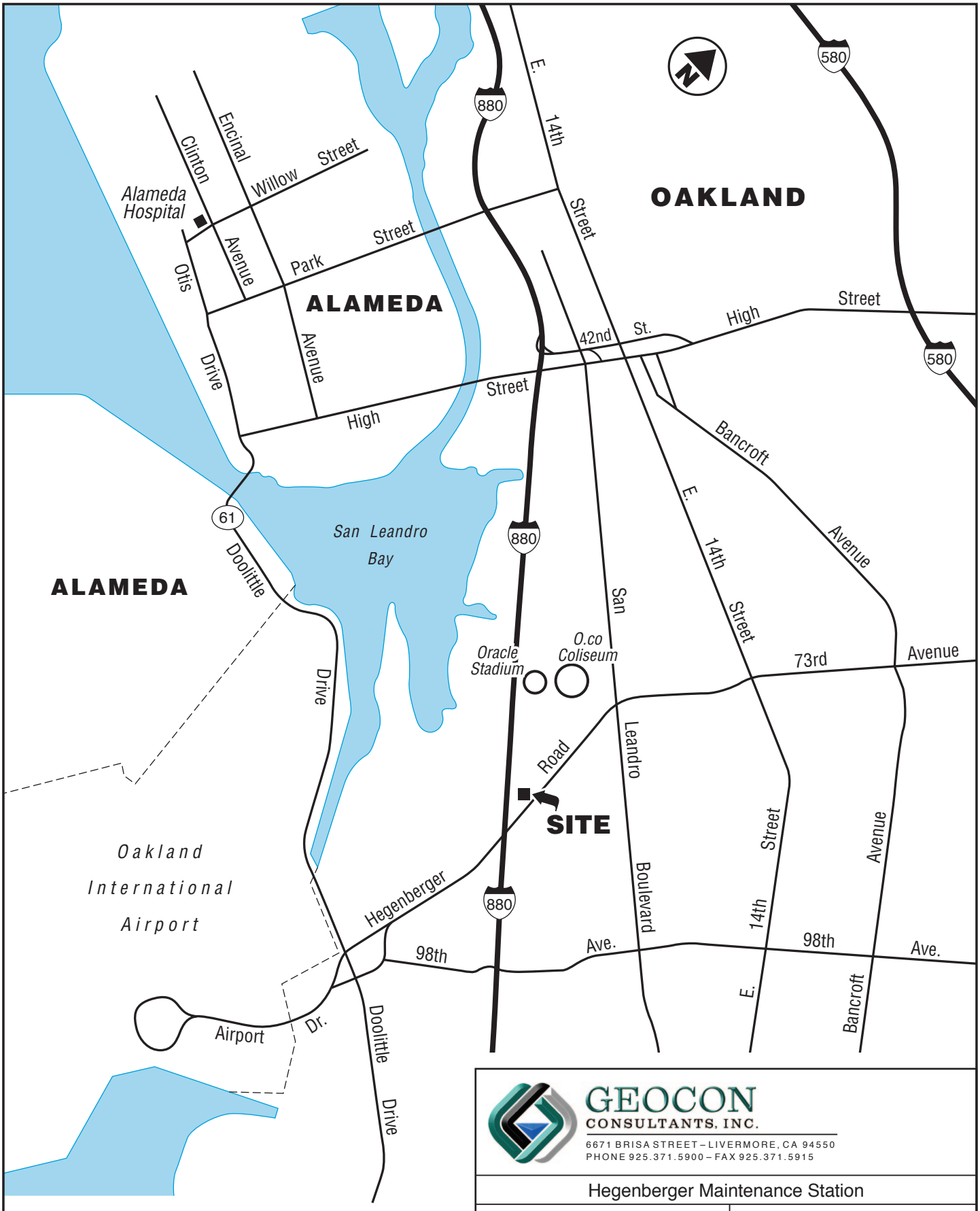
If it turns out that groundwater is actually confined below 10 feet then additional vapor intrusion evaluation will not be necessary because the contaminant concentrations in grab groundwater samples collected from borings closest to the building (SB4 to SB7) (see Figure 3) advanced in 2012 are below the environmental screening levels (ESLs).

4.0 REPORT PREPARATION

Once the soil and groundwater investigation has been completed the results will be presented in a report to the DHS. The report will include the following:

- Observations noted during the field activities.
- Investigative methods and procedures.
- Copies of the analytical laboratory reports and chain-of-custody documentation.
- An updated site conceptual model.
- Laboratory results presented in tabular format.
- Conclusions and recommendations towards moving this case to closure under the 2012 LTCP guidelines.

The report and associated analytical laboratory results and updated site map will be uploaded to the State Geotracker Database prior to submission to the DHS.



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Hegenberger Maintenance Station

555 Hegenberger Road
Oakland, California

VICINITY MAP

GEOCON Proj. No. E8722-02-01B

Task Order No. 1 | December 2014 | Figure 1

ENGINEERED CHANNEL

S. COLISEUM WAY

HEGENBERGER ROAD

MW-2

ASPHALT PARKING

ASPHALT PARKING

LIGHT POLE

APPROXIMATE LOCATION OF FORMER GASOLINE AND DIESEL USTs

MW-6

MW-5

GMC FACILITY SALES BUILDING

APPROXIMATE LOCATION OF FORMER WASTE OIL UST

MW-7

MW-8

EDGE OF PAVEMENT

MW-3

APPROXIMATE LOCATION OF OIL/WATER SEPARATOR

CONCRETE MEDIAN

MW-1

MW-4

BH9

SB12

SB12A

SB11

SB3

SB2

SB1

SB4

SB5

SB10

SB6

SB7

SB8

SB9

SB13

FORMER CALTRANS MAINTENANCE STATION

CONSTRUCTION PATH

FORMER USTs

BH1 BH2 BH3 BH4 BH5 BH6 BH7

TE-1 TE-2 TE-3 TE-4 TE-5 TE-6 TE-7 TE-8

PI-1 PI-2

FORMER BUILDING

FORMER BUILDING

MOBILE GMC SALES OFFICE

SHELL

JACK IN THE BOX

Legend

- Groundwater Monitoring Well (Associated with Former Caltrans)
- Groundwater Monitoring Well (Associated with GMC Facility)
- Soil Boring (1993)
- Soil Boring (1995)
- Soil Sample
- Soil Boring (2001)
- Soil Boring (2012)

N

0 30 60

SCALE: feet

Reference: STANTEC, Figure 8 - "Subsurface Utility Map", dated 05/30/12.

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Hegenberger Maintenance Station

555 Hegenberger Road, Oakland, California

SITE PLAN

GEOCON Proj. No. E8722-02-01B | December 2014 | Figure 2

SITE1214

ENGINEERED CHANNEL

S. COLISEUM WAY

MW-2

ASPHALT PARKING

ASPHALT PARKING

LIGHT POLE

APPROXIMATE LOCATION OF FORMER GASOLINE AND DIESEL USTs

MW-6

MW-5

GMC FACILITY SALES BUILDING

APPROXIMATE LOCATION OF FORMER WASTE OIL UST

MW-7

MW-8

EDGE OF PAVEMENT

MW-3

APPROXIMATE LOCATION OF OIL/WATER SEPARATOR

CONCRETE MEDIAN

MW-1

BH9

BC-1

SB3

SB4

SB5

SB10

MW-4

SB6

MW-4

SB7

BC-3

MOBILE GMC SALES OFFICE

TE-1 @ 8'
290 / 27 / 2.0

SB13

SB13 @ 4'
<0.340 / 31 / <0.00063

SB12 @ 4'
<0.340 / <0.646* /<0.00063

SB3 @ 4'
16 / 120*+ / 0.530

SB4 @ 4'
<0.340 / <0.646* /<0.00063

SB5 @ 4'
<0.340 / 35*+ / <0.00063

SB10 @ 4'
2.7 / 0.646* / <0.0052

SB6 @ 4'
<0.340 / 15*+ / <0.00063

SB7 @ 4'
<0.340 / 87+ / <0.00063

SB12A

SB12

SB11

FORMER CALTRANS MAINTENANCE STATION

CONSTRUCTION PATH

FORMER USTs

BC-2

SB1

SB2

MW-3

MW-2

MW-1

BH1 BH2 BH3 BH4 BH5 BH6 BH7

TE-1 TE-2 TE-3 TE-4 TE-5 TE-6 TE-7 TE-8

PI-1 PI-2

FORMER BUILDING

MW-5

SB8

SB9

FORMER BUILDING

SB9 @ 4'
<0.340 / <0.646* /<0.00063

HEGENBERGER ROAD

SHELL

TE-8 @ 8'
480 / <1.0 / 1.8

TE-6 @ 8'
140 / <1.0 / 0.13

TE-7 @ 8'
400 / <1.0 / 0.83

SB1 @ 4'
1.3 / 0.646* / 0.0014J

TE-3 @ 18'
11 / 11 / 0.03

PI-1 @ 4'
<20 / 380 / <0.10

PI-2 @ 4'
<10 / <1.0 / 0.076

N

0 30 60
SCALE: feet

Legend

- Groundwater Monitoring Well (Associated with Former Caltrans)
- Groundwater Monitoring Well (Associated with GMC Facility)
- Soil Boring (1993)
- Soil Boring (1995)
- Soil Sample
- Soil Boring (2001)
- Soil Boring (2012)
- BC-1 Proposed Boring Cluster Location

Data Key

- Sample Location
- Sample Depth

SB1 @ 4'
1.3 / 0.646* / 0.0014J

- Benzene Concentration (mg/kg)
- TPHd Concentration (mg/kg)
- TPHg Concentration (mg/kg)

TPHg Total Petroleum Hydrocarbons as Gasoline
TPHd Total Petroleum Hydrocarbons as Diesel
< Not detected at or above the method detection limit
mg/kg milligrams per kilogram

Reference: STANTEC, Figure 11 - "Lateral Extent of Contaminates in Unsaturated Zone Soil 0-5 feet bgs", dated 05/30/12.

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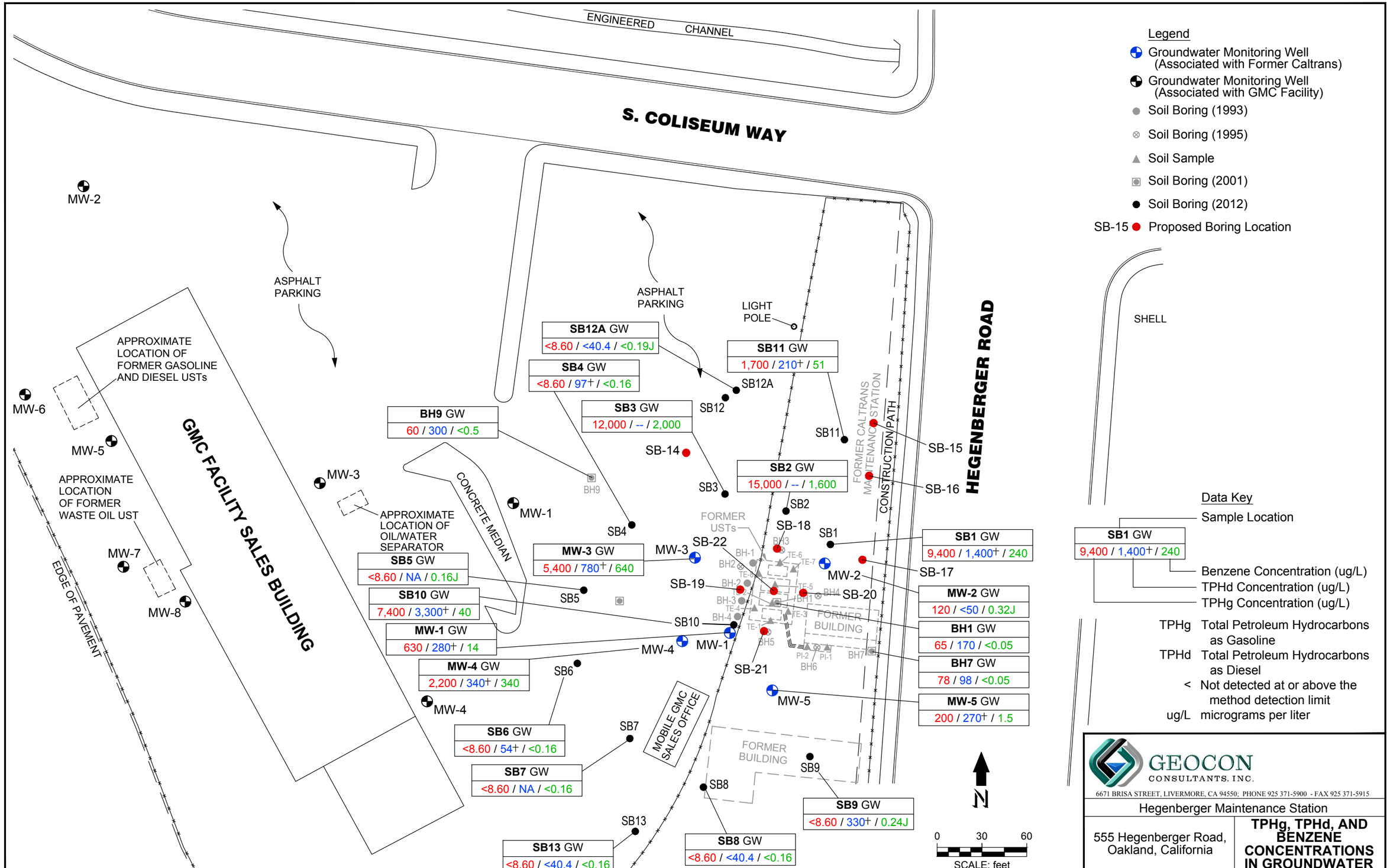
Hegenberger Maintenance Station

555 Hegenberger Road, Oakland, California

TPHg, TPHd, AND BENZENE CONCENTRATIONS IN SOIL

GEOCON Proj. No. E8722-02-01B | December 2014 | Figure 3

SITE1214



Legend

- Groundwater Monitoring Well (Associated with Former Caltrans)
- Groundwater Monitoring Well (Associated with GMC Facility)
- Soil Boring (1993)
- Soil Boring (1995)
- Soil Sample
- Soil Boring (2001)
- Soil Boring (2012)
- SB-15 Proposed Boring Location

Data Key

- Sample Location
- SB1 GW 9,400 / 1,400+ / 240
  - Benzene Concentration (ug/L)
  - TPHd Concentration (ug/L)
  - TPHg Concentration (ug/L)

TPHg Total Petroleum Hydrocarbons as Gasoline
TPHd Total Petroleum Hydrocarbons as Diesel
< Not detected at or above the method detection limit
ug/L micrograms per liter

Reference: STANTEC, Figure 13 - "Lateral Extent of Dissolved Phase Contaminates", dated 05/30/12.

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Hegenberger Maintenance Station

555 Hegenberger Road, Oakland, California

TPHg, TPHd, AND BENZENE CONCENTRATIONS IN GROUNDWATER

GEOCON Proj. No. E8722-02-01B | December 2014 | Figure 4

SITE1214

GEOCON CONSULTANTS, INC.

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Hegenberger Maintenance Station

555 Hegenberger Road, Oakland, California

PROPOSED TIDAL CHANNEL BORING LOCATIONS

GEOCON Proj. No. E8722-02-01B | December 2014 | Figure 5

SITE1214

Table 1
Historical Soil Analytical Results
Caltrans Former Hegenberger Maintenance Station
555 Hegenberger Road
Oakland, CA

Sample ID	Date	Depth (feet)	TPHg (mg/kg)	TPHd (mg/kg)	O&G (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)
PI-1	9/22/1994	4.0	<20	**380**	**2,200**	<0.10	<0.10	**0.18**	<0.10
PI-2	9/22/1994	4.0	<10	<1.0	**190**	**0.076**	<0.05	<0.05	<0.05
TE-1	9/22/1994	8.0	**290**	**27**	**1,900**	**2.0**	<0.5	**0.74**	**1.2**
TE-2	9/22/1994	18.0	<1.0	<1.0	**200**	<0.005	<0.005	<0.005	<0.005
TE-3	9/22/1994	18.0	**11**	**11**	**580**	**0.03**	**0.014**	**0.020**	**0.022**
TE-4	9/22/1994	18.0	<20	<1.0	**70**	<0.10	<0.10	<0.10	<0.10
TE-5	9/22/1994	13.0	<1.0	<1.0	**80**	<0.005	<0.005	<0.005	<0.005
TE-6	9/22/1994	13.0	**140**	<1.0	**1,200**	**0.13**	<0.10	**0.51**	**0.3**
TE-7	9/22/1994	8.0	**400**	<1.0	**530**	**0.83**	<0.50	**0.62**	**1.2**
TE-8	9/22/1994	8.0	**480**	<1.0	**100**	**1.8**	**0.51**	**7.6**	**8.7**
BH1-15	9/26/1995	16.0	<1.0	<1.0	<50	<0.005	<0.005	**0.006**	**0.021**
BH1-20	9/26/1995	21.0	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
BH2-10	9/26/1995	11.0	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
BH2-20	9/26/1995	21.0	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
BH3-5	9/26/1995	6.0	<1.0	<1.0	**80**	<0.005	<0.005	<0.005	<0.005
BH3-10	9/26/1995	11.0	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
BH3-20	9/26/1995	21.0	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
BH4-10	9/26/1995	11.0	<1.0	<1.0	**55**	<0.005	<0.005	<0.005	<0.005
BH4-20	9/26/1995	21.0	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
BH5-10	9/26/1995	11.0	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
BH5-20	9/26/1995	21.0	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
BH6-5	9/26/1995	6.0	<1.0	**24**	**80**	<0.005	<0.005	<0.005	<0.005
BH6-10	9/26/1995	11.0	<1.0	**16**	**65**	<0.005	<0.005	<0.005	<0.005
BH6-20	9/26/1995	21.0	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
MW1-10	9/27/1995	11.0	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
MW1-20	9/27/1995	19.5	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
MW2-5	9/27/1995	6.0	<1.0	<1.0	**75**	<0.005	<0.005	<0.005	<0.005
MW2-20	9/27/1995	21.0	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
MW3-8	9/27/1995	7.5	<1.0	<1.0	<50	**0.012**	<0.005	<0.005	<0.005
MW3-10	9/27/1995	11.0	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
MW3-20	9/27/1995	21.0	<1.0	<1.0	<50	**0.030**	**0.028**	**0.030**	**0.058**
MW4-5	9/27/1995	5.5	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005
MW4-10	9/27/1995	11.0	<1.0	<1.0	**75**	<0.005	<0.005	<0.005	<0.005
MW4-15	9/27/1995	16.0	<1.0	<1.0	**75**	<0.005	<0.005	<0.005	<0.005
MW5-5	9/27/1995	6.0	**1.6**	<1.0	**60**	<0.005	**0.020**	**0.028**	**0.088**
MW5-10	9/27/1995	11.0	<1.0	<1.0	**65**	<0.005	<0.005	<0.005	<0.005
MW5-20	9/27/1995	19.5	<1.0	<1.0	<50	<0.005	<0.005	<0.005	<0.005

Table 1
Historical Soil Analytical Results
Caltrans Former Hegenberger Maintenance Station
555 Hegenberger Road
Oakland, CA

Sample ID	Date	Depth (feet)	TPHg (mg/kg)	TPHd (mg/kg)	O&G (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)
BH6-11	12/26/2001	11.0	<1.0	**1.0**	<0.005	<0.005	<0.005	<0.005	<0.005
BH9-6.5	12/26/2001	6.5	<1.0	**1.7**	<0.005	<0.005	<0.005	<0.005	<0.005
SB1 @ 4'	4/3/2012	4.0	**1.3**	<0.646	NA	**0.0014** J	**0.0017** J	<0.00064	**0.0051**
SB3 Comp 0'-5'	4/2/2012	0-5	**16**	**120**	NA	**0.530**	**0.039**	**0.023**	**0.083**
SB4 @ 4'	4/2/2012	4.0	<0.340	<0.646	NA	<0.00063	<0.00065	<0.00064	<0.00068
SB5 @ 4.5'	4/2/2012	4.5	<0.340	**35**	NA	<0.00063	<0.00065	<0.00064	<0.00068
SB6 @ 4'	4/2/2012	4.0	<0.340	**15**	NA	<0.00063	<0.00065	<0.00064	<0.00068
SB7 @ 4'	4/5/2012	4.0	<0.340	**87**	NA	<0.00063	<0.00065	<0.00064	<0.00068
SB7 @ 10'	4/5/2012	10.0	<0.340	<0.646	NA	<0.00063	<0.00065	<0.00064	<0.00068
SB8 @ 8'	4/5/2012	8.0	<0.340	**4.6**	NA	<0.00063	<0.00065	<0.00064	<0.00068
SB8 @ 10'	4/5/2012	10.0	<0.340	<0.646	NA	<0.00063	<0.00065	<0.00064	<0.00068
SB9 @ 4'	4/3/2012	4.0	<0.340	<0.646	NA	<0.00063	<0.00065	<0.00064	<0.00068
SB10 @ 4'	4/3/2012	4.0	**2.7**	<0.646	NA	**0.0052**	**0.0013** J	**0.00078** J	**0.0012** J
SB12 @ 4'	4/4/2012	4.0	<0.340	<0.646	NA	<0.00063	<0.00065	<0.00064	<0.00068
SB12 @ 7.5'	4/4/2012	7.5	<0.340	**110**	NA	<0.00063	<0.00065	<0.00064	<0.00068
SB13 @ 4'	4/5/2012	4.0	<0.340	**31**	NA	<0.00063	<0.00065	<0.00064	<0.00068

Notes:

Bold type indicates analyte detected above reporting limit

NA = Not analyzed

TPHg = Total petroleum hydrocarbons as gaseline range organics

TPHd = Total petroleum hydrocarbons as diesel range organics

O&G = Oil and Grease

J = Estimated value between method detection limit and practical quantitation limit.

Table 2
Grab Groundwater Analytical Results
Caltrans Former Hegenberger Maintenance Station
555 Hegenberger Road
Oakland, CA

Sample ID	Date	TPH-GRO (µg/l)	TPH-DRO (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Xylenes (µg/l)	MTBE (µg/l)	EDB (µg/l)	EDC (µg/l)	ETBE (µg/l)	DIPE (µg/l)	TAME (µg/l)	TBA (µg/l)
BH6	12/26/2001	65	170	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH7	12/26/2001	78	98	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH8	12/26/2001	89	NA	<0.05	0.7	<0.05	1.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH9	12/26/2001	60	**300**	<0.05	<0.05	<0.05	0.8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SB1 GW	4/6/2012	**9,400**	**1,400**	**240**	**22**	**8.8**	**30**	<0.26	<0.20	<0.14	<0.19	<0.16	<0.14	<10.00
SB2 GW	4/4/2012	**15,000**	NA	**1,600**	**52**	**21**	**50**	<0.26	<0.20	<0.14	<0.19	<0.16	<0.14	<10.00
SB3 GW	4/4/2012	**12,000**	NA	**2,000**	**66**	**22**	**82**	<0.26	<0.20	<0.14	<0.19	<0.16	<0.14	<10.00
SB4 GW	4/6/2012	<8.60	**97**	<0.16	<0.17	<0.23	<0.19	<0.26	<0.20	<0.14	<0.19	<0.16	<0.14	<10.00
SB5 GW	4/6/2012	<8.60	NA	**0.16** J	<0.17	<0.23	<0.19	<0.26	<0.20	<0.14	<0.19	<0.16	<0.14	<10.00
SB6 GW	4/5/2012	<8.60	**54**	<0.16	<0.17	<0.23	<0.19	<0.26	<0.20	<0.14	<0.19	<0.16	<0.14	<10.00
SB7 GW	4/6/2012	<8.60	NA	<0.16	<0.17	<0.23	<0.19	<0.26	<0.20	<0.14	<0.19	<0.16	<0.14	<10.00
SB8 GW	4/6/2012	<8.60	<40.40	<0.16	<0.17	<0.23	<0.19	<0.26	<0.20	<0.14	<0.19	<0.16	<0.14	<10.00
SB9 GW	4/6/2012	<8.60	**330**	**0.24** J	<0.17	<0.23	<0.19	<0.26	<0.20	<0.14	<0.19	<0.16	<0.14	<10.00
SB10 GW	4/4/2012	**7,400**	**3,300**	40	**9.6**	**2.8**	**14**	<0.26	<0.20	<0.14	<0.19	<0.16	<0.14	<10.00
SB11 GW	4/4/2012	**1,700**	**210**	**51**	**3.5**	**4.1**	**11**	<0.26	<0.20	<0.14	<0.19	<0.16	<0.14	<10.00
SB12A GW	4/4/2012	<8.60	<40.40	**0.19** J	<0.17	<0.23	<0.19	<0.26	<0.20	<0.14	<0.19	<0.16	<0.14	<10.00
SB13 GW	4/6/2012	<8.60	<40.40	<0.16	<0.17	<0.23	<0.19	<0.26	<0.20	<0.14	<0.19	<0.16	<0.14	<10.00

Notes:

Bold type indicates analyte detected above reporting limit

ug/l = micrograms per liter

NA = Not analyzed

TPHg = Total petroleum hydrocarbons as gaseline range organics

TPHd = Total petroleum hydrocarbons as diesel range organics

MTBE = Methyl tertiary butyl ether

EDB = Ethylene dibromide

EDC = Ethylene dichloride

ETBE = Ethyl tertiary butyl ether

DIPE = Diisopropyl ether

TAME = Tertiary amyl methyl ether

TBA = Tertiary butyl alcohol

< = value less than method detection limit

J = Estimated value between method detection limit and practical quantitation limit.

TABLE 3
Depth to Water and Groundwater Sample Results
Former Hegenberger Maintenance Station
555 Hegenberger Road
Oakland, California

Monitoring Well	Sample Date	TOC Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Change in Elevation (ft)	TPHg (ug/l)	TPHd (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	1,2-DCA (ug/l)	EDB (ug/l)	DIPE (ug/l)	ETBE (ug/l)	MTBE (ug/l)	TAME (ug/l)	TBA (ug/l)
MW-1	10/11/95	13.31	6.55	6.76	--	720	<50	660	13	4.7	2.8	--	--	--	--	--	--	--
	1/17/96	13.31	5.64	7.67	0.91	4,400	<50	1,000	30	21	17	--	--	--	--	--	--	--
	4/16/96	13.31	5.46	7.85	0.18	6,050	7,450	914	34.7	34.4	15.8	--	--	--	--	--	--	--
	8/26/96	13.31	5.91	7.40	-0.45	3,800	430	780	23	21	20	--	--	--	--	--	--	--
	11/14/96	13.31	6.16	7.15	-0.25	2,600	270	500	18	14	8.9	--	--	--	--	--	--	--
	2/18/98	13.31	3.82	9.49	2.34	3,100	800	240	18	7.8	11	--	--	--	--	20	--	--
	3/30/01	13.31	6.19	7.12	-2.37	3,600	480	150	13	0.7	10.8	--	--	--	--	<0.5	--	--
	12/26/01	13.31	4.08	9.23	2.11	3,000	1,100	86	11	3.4	10.5	--	--	--	--	<5	--	--
	9/30/02	13.31	5.79	7.52	-1.71	590	<50	12	2.7	<0.5	1.6	--	--	--	--	<0.5	--	--
	2/20/03	13.31	4.49	8.82	1.3	2,660	--	36.9	10.6	7	18.1	--	--	--	--	<5	--	--
	1/12/04	13.31	4.41	8.90	0.08	1,610	--	6.8	1.8	1.8	1.4	--	--	--	--	--	--	--
	5/12/05	13.31	4.45	8.86	-0.04	1,200	--	20	<5	<5	<5	--	--	--	--	--	--	--
	9/29/11	13.31	5.57	7.74	-1.12	950	530	14	6.5	0.36[J]	6.9	<0.14	<0.20	<0.16	<0.19	<0.19	<0.14	<10.00
	3/30/12	13.31	3.50	9.81	2.07	630	280	14	4.4	0.36[J]	4.9	<0.14	<0.20	<0.16	<0.19	<0.26	<0.14	<10.00
	9/11/12	13.31	6.15	7.16	-2.65	600	470	5.5	4.7	0.30[J]	6.0	<0.14	<0.20	<0.16	<0.19	<0.26	<0.14	<10.00
	3/20/13	13.31	5.48	7.83	0.67	1,200	130	7.2	4.0	0.35[J]	4.8	<0.14	<0.20	<0.16	<0.19	<0.26	<0.14	<10.00
	8/28/13	13.31	6.13	7.18	-0.65	700	580	5.8	4.6	0.31[J]	6.0	0.17[J]	<0.20	<0.16	<0.19	<0.26	<0.14	<10.00
	3/31/14	13.31	4.10	9.21	2.03	620	570	5.7	2.3	<0.50	2.91	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<10

TABLE 3
Depth to Water and Groundwater Sample Results
Former Hegenberger Maintenance Station
555 Hegenberger Road
Oakland, California

Monitoring Well	Sample Date	TOC Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Change in Elevation (ft)	TPHg (ug/l)	TPHd (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	1,2-DCA (ug/l)	EDB (ug/l)	DIPE (ug/l)	ETBE (ug/l)	MTBE (ug/l)	TAME (ug/l)	TBA (ug/l)
MW-2	10/11/95	13.10	6.88	6.22	--	<50	<50	<0.3	<0.3	<0.3	<0.5	--	--	--	--	--	--	--
	1/17/96	13.10	5.32	7.78	1.56	4,900	<50	2,100	<1.5	<15	<15	--	--	--	--	--	--	--
	4/16/96	13.10	5.81	7.29	-0.49	<50	<50	1.0	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
	8/26/96	13.10	5.98	7.12	-0.17	<50	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
	11/14/96	13.10	6.72	6.38	-0.74	<50	56	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
	2/18/98	13.10	5.01	8.09	1.71	<50	260	<0.5	<0.5	<0.5	<0.5	--	--	--	--	<0.5	--	--
	3/30/01	13.10	6.54	6.56	-1.53	<200	370	2.7	0.8	<0.5	0.8	--	--	--	--	<0.5	--	--
	12/26/01	13.10	5.53	7.57	1.01	86	140	<0.5	<0.5	<0.5	<0.5	--	--	--	--	<0.5	--	--
	9/30/02	13.10	6.48	6.62	-0.95	<50	<50	<0.5	<5	<0.5	<1.5	--	--	--	--	<0.5	--	--
	2/20/03	13.10	5.98	7.12	0.5	110	--	6.6	<0.5	<0.5	<1	--	--	--	--	<0.5	--	--
	1/12/04	13.10	5.69	7.41	0.29	67	--	<0.5	<0.5	<0.5	<1	--	--	--	--	--	--	--
	5/12/05	13.10	5.55	7.55	0.14	330	--	<1	<1	<1	<1	--	--	--	--	--	--	--
	9/29/11	13.10	6.21	6.89	-0.66	130	<40.40	<0.16	<0.17	<0.23	<0.19	<0.14	<0.20	<0.16	<0.19	<0.19	<0.14	<10.00
	3/30/12	13.10	5.00	8.10	1.21	120	<40.40	0.32 J	0.24 J	<0.23	0.44 J	<0.14	<0.20	<0.16	<0.19	<0.26	<0.14	<10.00
	9/11/12	13.10	6.29	6.81	-1.29	13 J	<40.40	<0.16	<0.17	<0.23	<0.19	<0.14	<0.20	<0.16	<0.19	<0.26	<0.14	<10.00
	3/20/13	13.10	6.20	6.90	0.09	110	<40.40	1.2	0.59 J	<0.23	0.77	<0.14	<0.20	<0.16	<0.19	<0.26	<0.14	<10.00
	8/28/13	13.10	6.32	6.78	-0.12	14 J	<40.40	<0.16	<0.17	<0.23	<0.19	<0.14	<0.20	<0.16	<0.19	<0.26	<0.14	<10.00
	3/31/14	13.10	--	--	--	Not Sampled - Inaccessible												

TABLE 3
Depth to Water and Groundwater Sample Results
Former Hegenberger Maintenance Station
555 Hegenberger Road
Oakland, California

Monitoring Well	Sample Date	TOC Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Change in Elevation (ft)	TPHg (ug/l)	TPHd (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	1,2-DCA (ug/l)	EDB (ug/l)	DIPE (ug/l)	ETBE (ug/l)	MTBE (ug/l)	TAME (ug/l)	TBA (ug/l)
MW-3	10/11/95	12.34	6.42	5.92	--	1,300	<50	1.0	<0.3	<0.3	<0.3	--	--	--	--	--	--	--
	1/17/96	12.34	5.82	6.52	0.6	171	<50	64	<0.3	1	<0.3	--	--	--	--	--	--	--
	4/16/96	12.34	5.85	6.49	-0.03	6,740	565	2,770	31	13.9	21.9	--	--	--	--	--	--	--
	8/26/96	12.34	5.72	6.62	0.13	700	700	180	4.2	1	4.6	--	--	--	--	--	--	--
	11/14/96	12.34	6.28	6.06	-0.56	300	120	6.2	1.2	0.7	1.4	--	--	--	--	--	--	--
	2/18/98	12.34	4.65	7.69	1.63	11,000	2,500	3,070	50	54	19	--	--	--	--	25	--	--
	3/30/01	12.34	5.62	6.72	-0.97	9,900	490	2,000	48	39	39	--	--	--	--	<0.5	--	--
	12/26/01	12.34	4.66	7.68	0.96	9,400	1,700	1,500	45	33	28	--	--	--	--	12	--	--
	9/30/02	12.34	5.84	6.50	-1.18	2,020	570	775	17.2	1	8.4	--	--	--	--	<0.5	--	--
	2/20/03	12.34	5.55	6.79	0.29	4,010	--	1,120	<50	<50	<100	--	--	--	--	<50	--	--
	1/12/04	12.34	4.77	7.57	0.78	3,520	--	632	26.9	<25	<50	--	--	--	--	--	--	--
	5/12/05	12.34	4.63	7.71	0.14	5,200	--	1,000	30	20	10	--	--	--	--	--	--	--
	9/29/11	12.34	5.50	6.84	-0.87	3,800	900	390	16	1.1	14	<0.14	<0.20	<0.16	<0.19	<0.14	<0.14	<10.00
	3/30/12	12.34	2.75	9.59	2.75	5,400	780	640	29	10	24	<0.14	<0.20	<0.16	<0.19	<0.26	<0.14	<10.00
	9/11/12	12.34	5.55	6.79	-2.8	2,000	210	22	7.4	<0.23	5.8	<0.14	<0.20	0.27[J]	<0.19	<0.26	<0.14	<10.00
	3/20/13	12.34	4.20	8.14	1.35	4,900	1,000	930	32	5.9	19	<0.14	<0.20	<0.16	<0.19	<0.26	<0.14	<10.00
	8/28/13	12.34	5.54	6.80	-1.34	920	660	39	9.5	0.53[J]	8.9	<0.14	<0.20	<0.16	<0.19	<0.26	<0.14	<10.00
	3/31/14	12.34	3.48	8.86	2.06	3,600	1,400	660	18	6.1	11.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<20

TABLE 3
Depth to Water and Groundwater Sample Results
Former Hegenberger Maintenance Station
555 Hegenberger Road
Oakland, California

Monitoring Well	Sample Date	TOC Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Change in Elevation (ft)	TPHg (ug/l)	TPHd (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	1,2-DCA (ug/l)	EDB (ug/l)	DIPE (ug/l)	ETBE (ug/l)	MTBE (ug/l)	TAME (ug/l)	TBA (ug/l)
MW-4	10/11/95	12.85	6.63	6.22	--	500	<50	17	1.1	<0.3	0.5			--	--	--	--	--
	1/17/96	12.85	5.77	7.08	0.86	460	<50	72	4.1	<0.3	1.7			--	--	--	--	--
	4/16/96	12.85	5.89	6.96	-0.12	2,200	<50	851	7.7	1.4	5.7			--	--	--	--	--
	8/26/96	12.85	6.14	6.71	-0.25	300	110	55	4.9	1.2	<0.5			--	--	--	--	--
	11/14/96	12.85	6.72	6.13	-0.58	200	200	3.4	<0.5	--	<0.5			--	--	--	--	--
	2/18/98	12.85	5.02	7.83	1.7	1,500	260	320	9.1	1	0.6			--	--	1.7	--	--
	3/30/01	12.85	6.21	6.64	-1.19	2,700	350	320	16	5.3	13.6			--	--	<0.5	--	--
	12/26/01	12.85	5.37	7.48	0.84	600	200	33	3	<0.5	1.7			--	--	0.8	--	--
	9/30/02	12.85	6.40	6.45	-1.03	67	<50	<0.5	<0.5	<0.5	<1.5			--	--	<0.5	--	--
	2/20/03	12.85	5.83	7.02	0.57	570	--	107	<10	<10	<2.0			--	--	<10	--	--
	1/12/04	12.85	5.41	7.44	0.42	700	--	122	13.5	0.6	8.8			--	--	--	--	--
	5/12/05	12.85	5.59	7.26	-0.18	760	--	14	5.7	<5	<5			--	--	--	--	--
	9/29/11	12.85	6.23	6.62	-0.64	14[J]	<40.40	<0.16	<0.17	<0.23	<0.19	<0.20	<0.14	<0.16	<0.19	<0.19	<0.14	<10.00
	3/30/12	12.85	3.30	9.55	2.93	2,200	340	340	23	2.8	19	<0.20	<0.14	<0.16	<0.19	<0.26	<0.14	<10.00
	9/11/12	12.85	5.86	6.99	-2.56	2,500	310	92	16	1.3	16	<0.40	<0.28	<0.32	<0.38	<0.52	<0.28	<20.00
	3/20/13	12.85	5.23	7.62	0.63	4,800	680	200	21	3.7	21	<0.20	<0.14	<0.16	<0.19	<0.26	<0.14	<10.00
	8/28/13	12.85	5.86	6.99	-0.63	2,300	500	60	17	1.7	18	<0.20	<0.14	<0.16	<0.19	<0.26	<0.14	<10.00
	3/31/14	12.85	3.85	9.00	2.01	6,100	1,000	250	21	3.6	21.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<10

TABLE 3
Depth to Water and Groundwater Sample Results
Former Hegenberger Maintenance Station
555 Hegenberger Road
Oakland, California

Monitoring Well	Sample Date	TOC Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Change in Elevation (ft)	TPHg (ug/l)	TPHd (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	1,2-DCA (ug/l)	EDB (ug/l)	DIPE (ug/l)	ETBE (ug/l)	MTBE (ug/l)	TAME (ug/l)	TBA (ug/l)
MW-5	10/11/95	13.33	6.68	6.65	--	1,000	<50	45	15	1.9	6.1	--	--	--	--	--	--	--
	1/17/96	13.33	5.74	7.59	0.94	<50	<50	2	<0.3	<0.3	<0.3	--	--	--	--	--	--	--
	4/16/96	13.33	5.85	7.48	-0.11	1,740	855	157	20.1	3.9	22.4	--	--	--	--	--	--	--
	8/26/96	13.33	5.99	7.34	-0.14	900	270	55	6.4	0.9	3.7	--	--	--	--	--	--	--
	11/14/96	13.33	6.70	6.63	-0.71	700	320	31	5.7	0.7	0.38	--	--	--	--	--	--	--
	2/18/98	13.33	5.74	7.59	0.96	1,200	580	14	5.2	0.8	5.5	--	--	--	--	9.5	--	--
	3/30/01	13.33	6.73	6.60	-0.99	1,500	480	7.2	6.5	<0.5	10.7	--	--	--	--	<0.5	--	--
	12/26/01	13.33	5.23	8.10	1.5	5,000	7,200	0.8	10.5	3.8	10.5	--	--	--	--	3.6	--	--
	9/30/02	13.33	6.18	7.15	-0.95	560	430	1.8	5.2	<0.5	6.5	--	--	--	--	<0.5	--	--
	2/20/03	13.33	5.80	7.53	0.38	1,040	--	<2.5	8.6	<2.5	11.3	--	--	--	--	<2.5	--	--
	1/12/04	13.33	5.60	7.73	0.2	1,820	--	4.2	8	0.6	12.8	--	--	--	--	--	--	--
	5/12/05	13.33	6.18	7.15	-0.58	1,300	--	<5	<5	<5	<5	--	--	--	--	--	--	--
	9/29/11	13.33	6.37	6.96	-0.19	960	440	0.34[J]	0.52[J]	<0.23	1.8	<0.20	<0.14	<0.16	<0.19	<0.19	<0.14	<10.00
	3/30/12	13.33	4.61	8.72	1.76	200	270	1.5	2.4	<0.23	5.2	<0.20	<0.14	<0.16	<0.19	<0.26	<0.14	<10.00
	9/11/12	13.33	6.40	6.93	-1.79	550	200	1.0	1.6	<0.23	3.2	<0.20	<0.14	<0.16	<0.19	<0.26	<0.14	<10.00
	3/20/13	13.33	5.73	7.60	0.67	900	230	0.86	1.3	<0.23	3.3	<0.20	<0.14	<0.16	<0.19	<0.26	<0.14	<10.00
	8/28/13	13.33	6.17	7.16	-0.44	760	250	0.27[J]	0.26[J]	<0.23	1.4	<0.20	<0.14	<0.16	<0.19	<0.26	<0.14	<10.00
	3/31/14	13.33	--	--	--	Not Sampled - Inaccessible												

Notes:
TOC = top of casing
TPHg = total petroleum hydrocarbons as gasoline
TPHd = total petroleum hydrocarbons as diesel
J = Concentration is above the detection limit and below the practical quantitation limit
EDB = ethylene dibromide or 1,2-dibromethane
1,2-DCA = 1,2-dichloroethane
DIPE = Di-isopropyl ether
ETBE = Ethyl tert-butyl ether
MTBE = methy tertiary butyl ether
TAME = tert-Amyl methyl ether
TBA = tert-Butanol