R0371

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October 21, 2005

Mr. Don Hwang
Alameda County Health Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Alameda County
OCT 25 2005
Environmental Health

Re: **Document Transmittal**
Fuel Leak Case
76 Station #7004
15599 Hesperian Blvd.
San Leandro, CA

Dear Mr. Hwang:

Please find attached Secor's *Work Plan for Additional Assessment, dated October 21, 2005,* for the above referenced site. I declare, under penalty of perjury, that to the best of my knowledge the information and/or recommendations contained in the attached proposal or report are true and correct.

If you have any questions or need additional information, please call me at (916) 558-7666.

Sincerely,

Thomas H. Kosel
Site Manger, Risk Management and Remediation
ConocoPhillips
76 Broadway, Sacramento, CA 95818

Attachment
cc: Tom Potter, Secor

SECOR
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www.secor.com
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October 21, 2005

Mr. Don Hwang
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

RE: **Work Plan for Additional Assessment**
Former 76 Service Station No. 7004
15599 Hesperian Boulevard, San Leandro, CA
SECOR Project No.: 77CP.67004.06.0010

Dear Mr. Hwang:

SECOR International Incorporated (SECOR) is pleased to submit this Work Plan for Additional Assessment to the Alameda County Department of Environmental Health (ACDEH) on behalf of ConocoPhillips, to further investigate subsurface conditions beneath Former 76 Service Station No. 7004, located at 15599 Hesperian Boulevard, San Leandro, California (Figure 1).

BACKGROUND

The site is located at the northwest corner of Hesperian Boulevard and East Lewelling Boulevard, in San Leandro, California. The site is a former 76 Service Station which was demolished in May of 2000. At that time subsurface tanks, piping and aboveground components were removed. The site is currently a paved parking lot within a Target department store complex, and is situated adjacent to a former Kragan Auto Parts store, which is currently vacant.

PREVIOUS INVESTIGATIONS

In October, 1990, Kaprealian Engineering, Inc (Kaprealian) observed the removal of three underground storage tanks (USTs) and removal and replacement of product piping at the site. The tanks included one [steel] 12,000-gallon super unleaded fuel tank and two [steel] 12,000-gallon regular unleaded fuel tanks. No holes or cracks were observed in the tanks. 14 confirmation soil samples were collected from the tank pit and analyzed for total petroleum hydrocarbons as gasoline (TPHg), and benzene, toluene, ethylbenzene, and xylenes (BTEX). Soil samples collected from the final tank excavation contained up to 30 milligrams per kilogram (mg/kg) TPHg and 0.054 mg/kg benzene. Toluene, ethylbenzene, and xylenes were also detected. A water sample collected from the tank pit contained 4,300 parts per billion (ppb) TPHg and 40 ppb benzene. Samples collected from the final pipeline trenches contained up to 20 mg/kg TPHg and 0.057 mg/kg benzene, as well as toluene, ethylbenzene, and xylenes.

In April and June, 1991 KEI supervised the installation of six 2-inch diameter monitoring wells (MW1 through MW6). The wells were completed to 25 to 26 feet below ground surface (bgs). Selected soil samples and grab groundwater samples from each well were analyzed for TPHg and BTEX. Soil samples contained up to 4,800 parts per million (ppm) TPHg and 23 ppm benzene (17.5 feet bgs in MW3). Toluene, ethylbenzene, and xylenes were also detected. Post development groundwater samples from these wells contained up to 34,000 ppb TPHg and 6,100 ppb benzene (MW3).

In May, 1992 KEI installed a 6-inch diameter aquifer test well (RW-1) and conducted an Aquifer test using RW-1 for extraction and MW-2, MW3, MW4, and MW5 for observation. Aquifer parameters determined from the test (via the Theis method) for RW1 were as follows:

- Transmissivity (confined): 35 ft^2/day
- Storativity (confined): $6.3E^{-6}$
- Conductivity (confined): 0.3 ft/day

Oxygen releasing compound was placed in MW-5 in 1999. Oxygen releasing compound (360 pounds) was also placed in the bottom of the UST pit during tank removal in 2000. There is no current active remediation.

In May, 2000, Gettler-Ryan observed the removal of two 12,000-gallon, double-walled glasteel USTs and fiberglass product piping and dispensers at the site. At this time Station-related structures were also demolished and removed. Four soil samples were collected from the tank pit excavation, and four were collected from the pipeline trenches. The samples were analyzed for TPHg, BTEX and methyl tertiary butyl ether (MtBE). Tank pit samples contained up to 350 ppm TPHg, 4.8 ppm ethylbenzene, and 0.81 ppm xylenes, but were non-detectable for benzene and MtBE. Pipeline trench samples were non-detectable for the analytes.

In November, 2001, SECOR conducted a 5 day dual phase extraction (DPE) test at the site. The test utilized MW-3 and RW-1 for extraction. During the test, applied vacuum was approximately 25 inches of mercury, vapor extraction flow rates ranged from approximately 22 to 155 cubic feet per minute, and groundwater extraction flow rates ranged from 0.05 to 0.5 gallons per minute. Influent vapor concentrations dropped from a high of 5,200 parts per million by volume (ppmv) TPHg at the start of the test to 440 ppmv TPHg at the end of test. Based on the data collected during the test, approximately 36.55 pounds of vapor phase TPHg, 0.56 pounds of vapor phase benzene, and 0.47 pounds of vapor phase MtBE were removed from the subsurface. The radius of influence was estimated at 15 to 55 feet for MW-3 and 48 to 85 feet for RW-1.

In September, 2002, Gettler-Ryan drilled and sampled five direct push soil borings (GP-1 through GP-5) in the vicinity of the Kragen Auto Parts building and the former USTs. Soil and groundwater samples were collected from each boring and analyzed for TPHg, BTEX, and fuel oxygenates. Soil samples were below detection for the analytes, except for sample GP-3 @13.5 feet which contained 0.051 mg/kg MtBE and 0.083 mg/kg tertiary butyl alcohol (TBA). Groundwater samples contained 22 to 96,000 ppb TPHg, and 0.47 to 360 ppb MtBE. Ethylbenzene and TBA were also detected.

The site has been monitored and sampled since the 2nd quarter, 1991. Between 1991 and 1995, monitoring was conducted quarterly. Between 1996 and 2001, the site was monitored semiannually. From January, 2002 to July, 2003 the site was monitored monthly. Currently, seven well (MW-1 through MW-6 and RW-1) are sampled quarterly. Samples are analyzed for total purgable petroleum hydrocarbons (TPPH), BTEX, and fuel oxygenates.

In August 2005, SECOR completed the drilling of the 23 proposed soil borings (SB1 through SB23) in the area of the former USTs and off site down-gradient of the former USTs. The soil borings were advanced to depths between 19 and 28 feet bgs using direct push equipment. Soil and groundwater samples were collected with the exception of SB22 from which a groundwater sample could not be collected. Precision Sampling, Inc. of Richmond, California advanced the 23 borings using a GeoProbe rig with direct-push technology.

Petroleum hydrocarbon impacts to soil at depths ranging from 10 to 22 feet bgs were reported in soil samples collected from SB-4, SB-6, SB-17 through SB-19, SB-21, and SB-23. The locations of these borings are northwest, west, southwest, south, and southeast of the former USTs and dispenser islands. The only petroleum hydrocarbon constituents detected in soil were ethylbenzene (one sample), MtBE (six samples), and TBA (three samples). Ethylbenzene was detected at a maximum concentration of 0.24 mg/kg in the soil sample collected from SB21 at 22 feet bgs; MtBE was detected at a maximum concentration of 0.022 mg/kg in the soil sample collected from SB18 at 13 feet bgs; and TBA was detected at a maximum concentration of 0.024 mg/kg also from the soil sample collected from SB18 at 13 feet bgs. No other requested petroleum hydrocarbon constituents were reported above laboratory method reporting limits in the soil samples collected from SB-1 through SB-23. Total lead was also analyzed in the soil samples using EPA Method 6010B. Total lead was reported in all soil samples at a maximum concentration of 10 mg/kg in the sample collected from SB15 at 13 feet bgs.

Gasoline range organics (GRO), BTEX, MtBE, TBA, and ethanol were reported in groundwater samples collected from SB1, SB3 through 8, and SB16 through SB21 and SB23. No petroleum hydrocarbon constituents were reported above laboratory method reporting limits in groundwater samples collected from SB2, and SB9 through SB15. A groundwater sample was not able to be collected from SB22. It should be noted that the groundwater samples collected from SB16, SB17, SB 19, and SB21 were extracted by the laboratory out of holding times for 8260B analysis. GRO was detected at a maximum concentration of 4,100 µg/L in the groundwater sample collected from SB17. Benzene, toluene, ethylbenzene, and total xylenes were reported at maximum concentrations of 14 μg/L (SB21), 1.4 μg/L (SB4), 340 μg/L (SB21), and 9.4 μg/L (SB4), respectively. Of the BTEX compounds, only benzene exceeds its California Primary maximum contaminant level (MCL), which is 1.0 μg/L. Groundwater samples collected from SB17 and SB20 also had benzene concentrations greater than the MCL. MtBE was detected in more groundwater samples than the other petroleum hydrocarbon constituents. The maximum concentration of MtBE detected was 180 μg/L in the groundwater sample collected from SB4, which is located southwest and downgradient from MW-5 and the former USTs and dispenser islands. Three of the ten samples in which MtBE was detected had concentrations that exceed the MCL of 13 μg/L. TBA was reported at a maximum concentration of 71 μg/L in the groundwater sample collected from SB17. Ethanol was detected in one groundwater sample (SB4) at a concentration of 1,100 μg/L. Total lead was reported in 20 of the 22 groundwater samples analyzed. The maximum concentration reported was 430 μg/L, which is greater than the MCL of 15 μg/L. Nineteen of the 20 groundwater samples in which lead was reported had a concentration that is greater than the MCL. It should be noted that the lead concentrations reported are unreliable due to improper preservatives and sample containers.

PROPOSED SCOPE OF WORK

The scope of work for this site assessment will include a the drilling of six Geoprobe® borings at the locations shown on Figure 2 to delineate the lateral extent of hydrocarbon impacts in groundwater from the site. Eight Geoprobe® borings will also be advanced by request of ConocoPhillips in the vicinity of the former tank pit and building at the locations shown on Figure 2. Additionally, four groundwater monitoring wells will be installed at the locations shown on Figure 2.

The specific scope of work is discussed below:

Site Safety Plan. As required by the Occupational Health and Safety Administration (OSHA) Standard "Hazardous Waste Operations and Emergency Response" guidelines (29 CFR 1910.120), and by the California Occupational Health and Safety Administration (Cal-OSHA) "Hazardous Waste Operations and Emergency Response" guidelines (CCR Title 8, Section 5192), a Health and Safety Plan (HASP) will be prepared. The HASP will be reviewed by the field staff and contractors before beginning field operations at the site.

Permitting. Soil boring permits will be obtained from the Alameda County Department of Environmental Health (ACDEH) prior to initiating work.

Borehole Clearance Activities. Prior to initiating field activities, SECOR will mark the boring locations, contact Underground Service Alert (USA) at least 48 hours prior to the initiation of field work, and will contract a private utility locator to determine whether the proposed boring locations are clear of potential subsurface obstructions. After clearance is verified by USA and the utility locator, the borings will be air knifed to a depth of approximately 5 feet bgs to further minimize the risk of encountering utility lines that are not anticipated at these locations.

Geoprobe® Borings. Six Geoprobe® soil borings will be advanced at the locations shown on Figure 2. Geoprobe® borings will be advanced to a depth of approximately 20 to 25 feet bgs for lateral definition of groundwater. Groundwater at the site ranges from 12 to 18 feet bgs. The borings will allow evaluation of soil lithology and facilitate sampling of first encountered groundwater and deeper silty sand units, which have been first encountered at depths of approximately 16 to 20 feet bgs. The additional eight Geoprobe® borings requested by ConocoPhillips will be advanced to a maximum depth of 10 to 15 feet bgs to address the presence of, or lack thereof, petroleum hydrocarbons in the upper layers of soil at the locations shown on Figure 2.

Sample Selection and Analysis. Soil encountered will be logged by a SECOR geologist under the direction of a State of California Professional Geologist. Soil samples will also be screened in the field for the presence of volatile organic compounds (VOCs) using a photoionization detector (PID). Soil samples will be selected for chemical analysis based on visual observations, odors and PID readings. Selected soil samples will be analyzed for TPHg, BTEX compounds, MtBE, ethyl tert-butyl ether (EtBE), tert-Amyl methyl ether (TAME), TBA, di-isopropal ether (DIPE), ethylene dibromide (EDB), di-chloroethane (1,2-DCA), and ethanol by EPA Method 8260, single run, and total lead by EPA Method 6010. Field and laboratory procedures are presented as Attachment 2.

Grab groundwater Samples. Groundwater will be sampled in the borings using either a HydroPunch® sampling apparatus or by lowering a clean disposable bailer through the Geoprobe® rods and retrieving a sample of the formation water. Groundwater is anticipated to be at 12.21 to 13.70 bgs. Historical groundwater ranged from 11.25 to 16.71 feet bgs. Groundwater samples will be collected and decanted directly from bailers into laboratory supplied glassware. Samples will be sent under chain-of-custody procedures to a California State-certified laboratory. Select grab groundwater samples will be analyzed for TPHg, BTEX, fuel oxygenates (MtBE, DIPE, TAME, EtBE, TBA and ethanol), and lead scavengers (1,2-DCA and EDB) by EPA Method 8260B.

Soil Samples.

Borehole Abandonment. Each soil boring will be backfilled from the bottom up with cement grout. The grout will be placed in the borehole through the Geoprobe® rods as they are being retracted. The boring will be filled to surface with cement to match the existing grade.

Groundwater Monitoring Well Installation. Four soil borings will be advanced at the locations shown on Figure 2 using hollow-stem auger drilling equipment. Eight-inch diameter soil borings will be advanced to a total depth of 25 feet bgs. A 2-inch well will be completed within each borehole, and will be constructed with Schedule 40 PVC casing with 5 feet of 0.020-inch slotted screen extending 20 feet to 25 feet bgs.

Monitoring Well Development/Sampling/Analysis. Groundwater monitoring wells will be developed by rigorously surging each well over the length of the screen interval and by purging approximately 10 casing volumes of water. Groundwater samples will be collected and analyzed for the presence of TPHg, BTEX, fuel oxygenates (MtBE, DIPE, TAME, EtBE, TBA and ethanol), and lead scavengers (1,2-DCA and EDB) by EPA Method 8260B.

Well Surveying. Following installation, newly installed groundwater wells will be surveyed by a licensed surveyor to a local benchmark relative to mean sea level. Survey data including elevation, longitude, and latitude will be included in information uploaded to the State Water Resources Control Board (SWRCB) Geotracker Database (www.swrcb.geotracker.ca.gov) in accordance with Assembly Bill (AB) 2886 requirements.

Compliance with AB 2886 Requirements. Also per AB 2886 requirements, SECOR will electronically upload the data obtained during this investigation into the SWRCB Geotracker Database (www.swrcb.geotracker.ca.gov). Documentation of the electronic data format (EDF) submittals will be included in the final report.

Soil and Water Disposal. Soil cuttings and rinsate water generated during drilling operations will be temporarily stored onsite in DOT-approved 55-gallon drums pending characterization and disposal. Soil cuttings and rinsate water will be removed by a licensed disposal contractor and will be transported to an appropriate disposal facility. Drums will be stored in a secure location while on the site.

Report. Following the completion on-site activities, SECOR will submit a report documenting the findings of the Geoprobe® investigation and include recommendations for the installation of wells, if merited. Additional wells could enhance DPE efforts in the source area and near MW-5, and delineate the MtBE extent downgradient of MW-5. Any well locations in the southwestern downgradient direction will be selected to minimize disruption to future site occupants. The report would present an accelerated schedule to allow well installation before or concurrent to DPE efforts. The report will also include soil boring logs, soil and groundwater analytical results, chain-of-custody documentation, and conclusions/recommendations.

SCHEDULE

SECOR is prepared to initiate soil boring field activities for upon approval of this Work Plan by the ACDEH. Below are timelines that SECOR would like to achieve:

1. Final ACDEH comments and workplan approval by October 31, 2005
2. Perform borings by November 30, 2005
3. Assessment report to ACDEH by January 15, 2006

Should you have any questions or concerns regarding these activities, please feel free to contact the undersigned at (916) 861-0400.

Sincerely,
SECOR International Incorporated

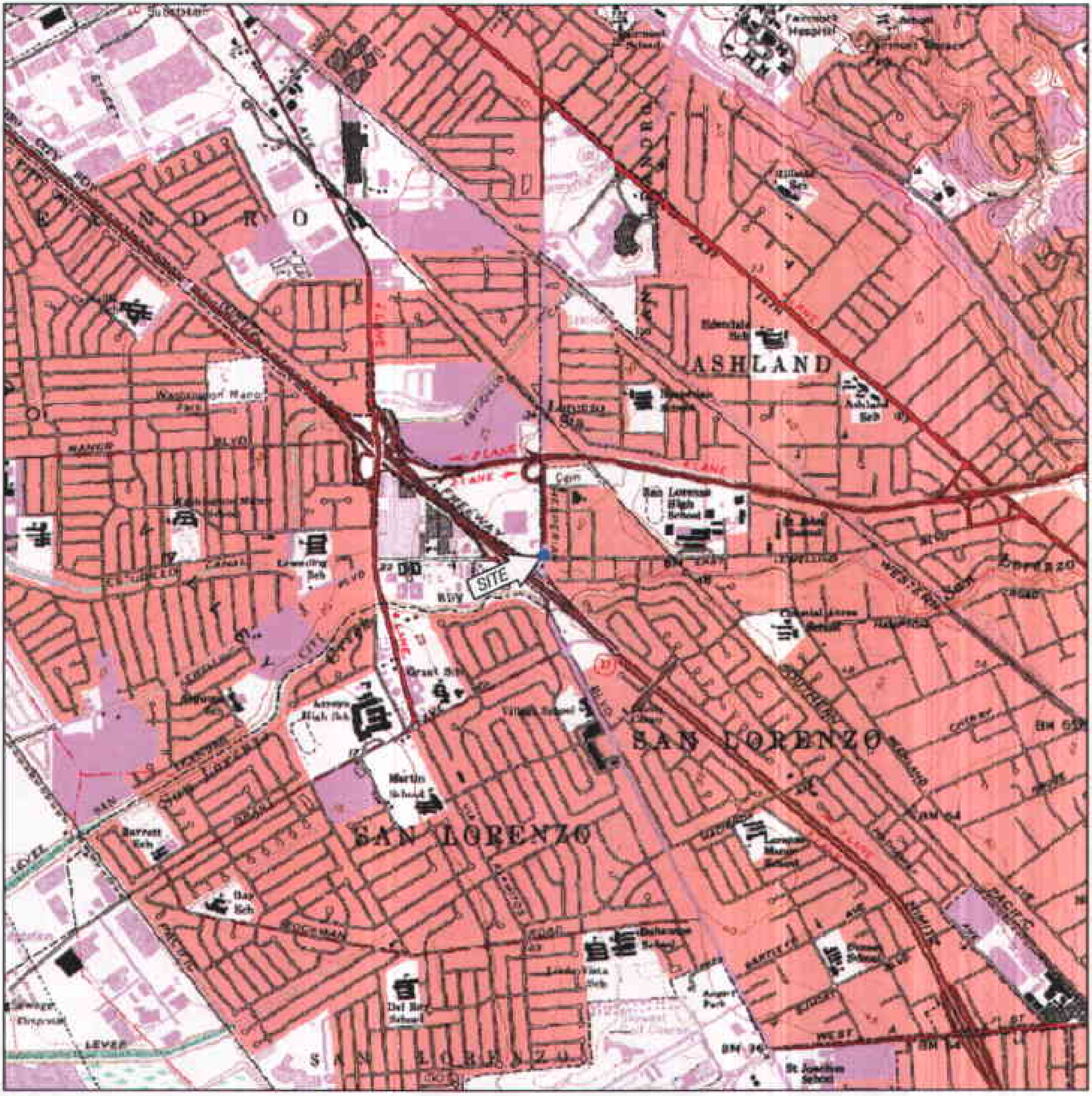
Thomas M. Potter
Project Scientist

PROFESSIONAL GEOLOGIST
Dan Schreiner
No: 7646
STATE OF CALIFORNIA

Dan Schreiner, P.G.
Associate Geologist

Figure 1 – Site Location Map
Figure 2 – Site Map with Proposed Soil Boring and Well Locations
Attachment 1 –
Attachment 1 – Field and Laboratory Procedures

cc: Mr. Thomas Kosel, ConocoPhillips
Mr. David Luick, Target Corporation, 1000 Nicollet Mall, TPN – 0725 Minneapolis, MN 55403-9411
Mr. Alan Guttenberg, Guttenberg, Rapson and Colvin LLP, 101 Lucas Valley Road Suite 216, San Rafael, CA 94903
Gary Ragghianti, Ragghianti Freitas LLP, 874 Fourth Street, Suite D, San Rafael CA 94901
Ms. Shelly Eisaman, Wells Fargo Bank, N.A., Brunetti Trust, 420 Montgomery Street, 3rd Fl., San Francisco, CA 94104
Mr. Ladd Cahoon, Law Office of John D. Edgcomb, 115 Sansome St., Suite 805, San Francisco, CA 94104
Mr. Daniel J. Barry, Stein & Lubin, LLP, Transamerica Pyramid, 600 Montgomery St., 14th Floor, San Francisco, CA 94111
Mr. Michael DiGeronimo, Esq., Miller Starr & Regalia, 1331 N. California Blvd., Fifth Floor, Walnut Creek, CA 94596



North

CALIFORNIA

1 1/2 0 1

SCALE (MILES)

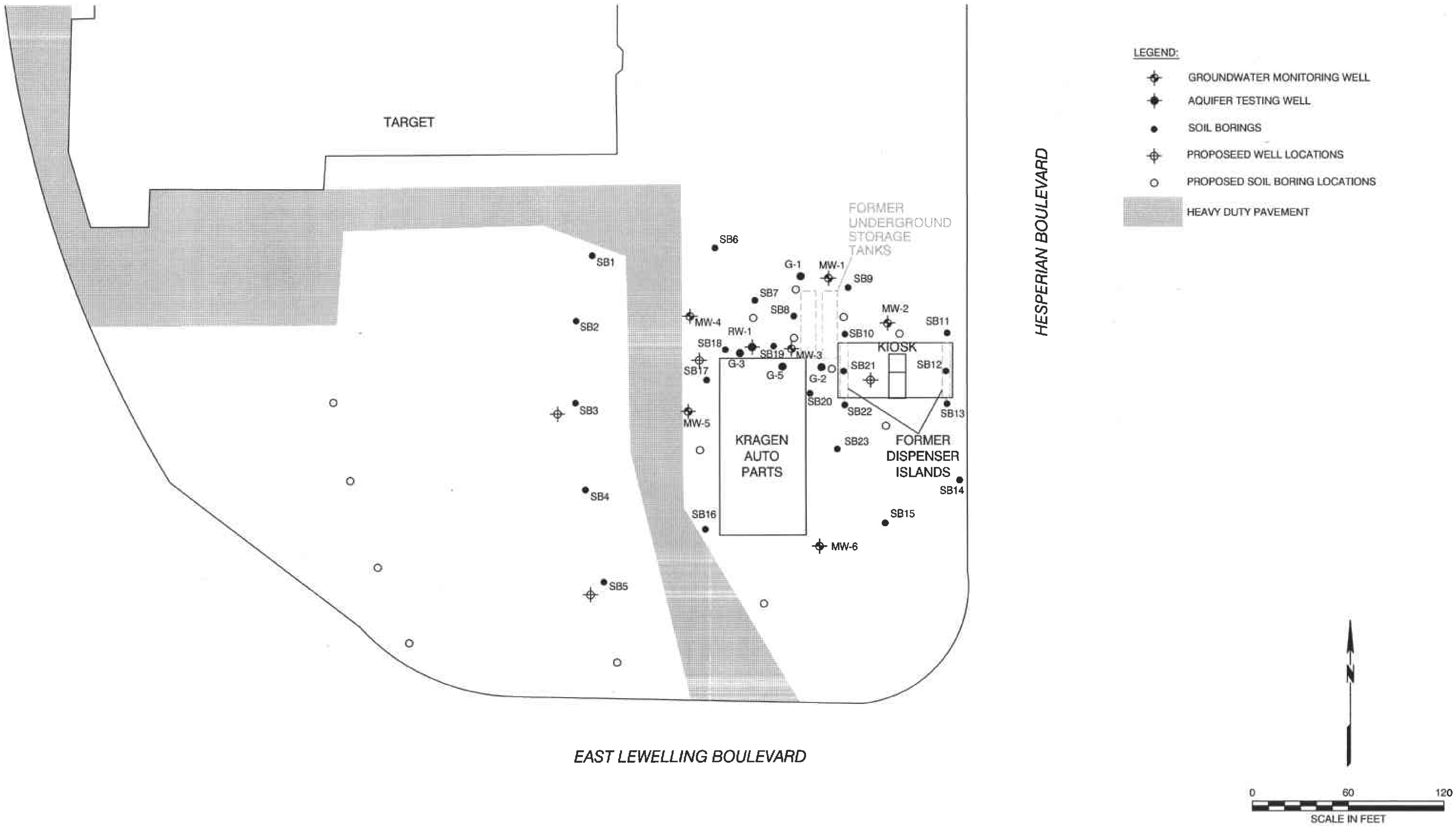
1000 0 1000 2000 3000 4000 5000 6000 7000

SCALE (FEET)

REFERENCE: USGS 7.5 MINUTE QUADRANGLE, SAN LEANDRO, CALIFORNIA

SECOR
3017 KILGORE ROAD, SUITE 100
RANCHO CORDOVA, CALIFORNIA
PHONE: (916) 861-0400/861-0430 (FAX)

FOR:		SITE LOCATION MAP		FIGURE:
CONOCOPHILLIPS FORMER 76 SERVICE STATION NO. 7004 15599 HESPERIAN BOULEVARD SAN LEANDRO, CALIFORNIA				1
JOB NUMBER: 77CP.67004.00	DRAWN BY: DWR	CHECKED BY: ST	APPROVED BY: TP	DATE: 9/16/05



SECOR
3017 KILGORE ROAD, SUITE 100
RANCHO CORDOVA, CALIFORNIA
PHONE: (916) 861-0400/861-0430 (FAX)

FOR: CONOCOPHILLIPS FORMER 76 SERVICE STATION NO. 7004 15599 HESPERIAN BOULEVARD SAN LEANDRO, CALIFORNIA		**SITE PLAN WITH PROPOSED SOIL BORING & MONITORING WELLS**		FIGURE: **2**
JOB NUMBER: 77CP.67004.00	DRAWN BY: DWR	CHECKED BY: ST	APPROVED BY: TP	DATE: 9/16/05

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ATTACHMENT 1

Field and Laboratory Procedures

Former 76 Service Station No. 7004
15599 Hesperian Boulevard
San Leandro, CA

ATTACHMENT 1
SECOR INTERNATIONAL INCORPORATED
FIELD AND LABORATORY PROCEDURES

STANDARD PROCEDURE FOR HOLLOW STEM AUGER DRILLING

Prior to drilling, the boring locations are marked with white paint or other discernible marking and cleared for underground utilities through USA. In addition, the first five feet of each borehole are drilled with a hand auger, posthole digger, or air/water knife to evaluate the presence of underground structures or utilities.

Once predrilling efforts to identify subsurface structures are complete, precleaned hollow stem augers (typically 8 to 10 inches in diameter) are advanced using a rotary drill rig for the purpose of collecting samples and evaluating subsurface conditions. Upon completion of drilling and sampling the augers are retracted and the borehole is either completed as a well or filled with concrete, bentonite grout, hydrated bentonite chips or pellets as required by the regulatory agency. In areas where the borehole penetrates asphalt or concrete, the borehole is capped with an equivalent thickness of asphalt or concrete patch to match finish grade.

During the drilling process, a physical description of the encountered soil characteristics (i.e. moisture content, consistency, odor, color, etc.), drilling difficulty and soil type as a function of depth are described on boring logs. The soil cuttings are classified in accordance with the Unified Soil Classification System (USCS).

Soil cuttings are temporarily stored on-site in 55-gallon DOT-approved drums pending waste profiling and proper disposal. A label is affixed to the drums indicating the contents of the drum, suspected contaminants, date of drilling, borehole number, and depth interval from which the contents were generated.

STANDARD PROCEDURE FOR SOIL SAMPLING
SPLIT SPOON SAMPLING

The precleaned split spoon sampler lined with three 6-inch long brass or stainless steel tubes is driven 18 inches into the underlying soils at the desired sample depth interval. The sampler is driven by repeatedly dropping a 140-pound hammer a free fall distance of 30 inches. The number of blows (blow count) to advance the sampler for each six-inch drive length are recorded on the field logs. Once the sampler is driven the full 18-inch drive length or the sampler has met refusal (typically 50 blows per six inches), the sampler is retrieved.

Of the three sample tubes, the bottom sample is generally selected for laboratory analysis. The sample is carefully packaged for chemical analysis by capping each end of the sample with a Teflon sheet followed by a tight-fitting plastic cap and sealing the cap with non-volatile organic compound (VOC), self-adhering silicon tape. A label is affixed to the sample indicating the sample identification number, borehole number, sampling depth, sample collection date and time, the sampler's name, job number, etc. The sample is then annotated on a chain-of-custody form and placed in an ice-filled cooler for transport to the laboratory.

The remaining soil samples are used for soil classification and field evaluation of headspace volatile organic vapors, where applicable, using a PID or flame-ionization detector calibrated to a calibration gas (typically isobutylene or hexane). VOC vapor concentrations are recorded on the boring logs. A physical description of the encountered soil characteristics (i.e. moisture content, consistency, odor, color, etc.) and soil type as a function of depth are indicated on the boring logs. In addition, the sample recovery and sampler penetration are also noted on the boring logs. The sampled soils are classified in accordance with the USCS.

STANDARD PROCEDURE FOR
EQUIPMENT DECONTAMINATION

Equipment that could potentially contact subsurface media and compromise the integrity of the samples is carefully decontaminated prior to drilling and sampling. Drill augers and other large pieces of equipment are decontaminated using high pressure hot water spray. Samplers, groundwater pumps, liners and other equipment are decontaminated in an Alconox scrub solution, and double-rinsed in clean tap water rinse followed by a final distilled water rinse.

The rinsate and other wastewater are contained in 55-gallon, DOT-approved drums, labeled (to identify the contents, generation date and project) and stored on-site pending waste profiling and disposal.

STANDARD PROCEDURE FOR GROUNDWATER SAMPLING

Depth to Groundwater/LPH Thickness Measurements

Prior to purging each of the wells, the depth to groundwater and thickness of liquid phase hydrocarbons (LPH), if present, within each well casing is measured to the nearest 0.01 foot using either an electronic Solinst water level indicator or an electronic oil-water interface probe. Measurements are taken from a point of known elevation on the top of each well casing as determined in accordance with previous surveys.

Groundwater Monitoring Well Purging

Groundwater wells will be purged prior to sampling with a bailer or groundwater pump. Purge water may be contained on-site in 55-gallon DOT-approved drums. To help assure that the collected samples were representative of fresh formation water, the conductivity, temperature, and pH of the delivered effluent are monitored and recorded using a Cambridge Hydac meter or another meter similar in nature during purge operations. Purge operations are determined to be sufficient once successive measurements of pH, conductivity, and temperature stabilize to within +/- 10 percent.

During purging a minimum of three (3) well volumes, measured as the annular space of the well casing below the groundwater surface, are removed from each well. However, in the case of very slow recharging wells, purging is deemed sufficient if the well contents are completely evacuated during purge operations. Unless recharge takes more than two hours, wells are sampled once the well is recharged to within in 80 percent of the pre-purge groundwater elevation. For very slow recharging wells (wells pumped dry during purging), samples may be collected after two hours of recharge.

Groundwater Sample Acquisition and Handling

Following purging operations, groundwater samples are collected from each of the wells, using pre-cleaned, single-sample polypropylene, disposable bailers. The groundwater sample is discharged from the bailer to the sample container through a bottom emptying flow control valve to minimize volatilization.

Collected water samples are discharged directly into laboratory provided, pre-cleaned, 40-milliliter (ml) glass vials and sealed with Teflon-lined septum, screw-on lids. Labels documenting sample number, well identification, collection date and time, type of sample and type of preservative (if applicable) are affixed to each sample. The samples are then placed into an ice-filled cooler for delivery under chain-of-custody to a laboratory certified to perform the specified tests by the State of California Department of Health Services Environmental Laboratory Accreditation Program.

Trip Blanks

To help assure the quality of the collected samples and to evaluate the potential for cross contamination during transport to the laboratory, a distilled-water trip blank accompanies the samples in the cooler. The trip blank is typically analyzed for the presence of VOCs of concern. For petroleum hydrocarbons, the trip blank is typically analyzed for TPHg, BTEX, and MtBE by EPA Method 8260B.

Containment and Disposal of Generated Water/LPH

All wastewater, purge water and LPH (if present) generated during the field activities are retained on-site in appropriate containers (i.e. DOT-approved drums or bulk tanks) for future disposal. Wastewater is delivered under appropriate manifest to a facility certified and licensed to receive such waste streams.

STANDARD PROCEDURE FOR GROUNDWATER MONITORING WELL CONSTRUCTION FOR WELLS SCREENED ACROSS THE PHREATIC SURFACE UNCONFINED AQUIFERS – HOLLOW STEM AUGER METHOD

Groundwater monitoring wells are constructed by inserting or tremming well materials through the annulus of the hollow stem auger. In general, the groundwater monitoring wells are constructed with 10 feet of screen below groundwater and 10 feet above groundwater, for a total screen length of 20 feet. Where shallow groundwater is encountered or perched water dictates otherwise, the screen is adjusted, as appropriate, to maintain a proper seal at the surface (minimum three feet) and to avoid penetrating low permeable horizons or aquicludes. Groundwater wells are installed in accordance with the conditions of the well construction permit issued by the regulatory agency exercising jurisdiction over the project site.

Once the borehole has been drilled to the desired depth, approximately six inches of filter sand are tremmied to the bottom of the boring. A groundwater monitoring well consisting of Schedule 40 PVC casing containing 0.020-inch perforations is then inserted through the annulus of the hollow stem augers. The well screen is then sandpacked by tremming the appropriate filter sand (Monterey No.3 Sand or equivalent) through the annulus between the casing and augers while slowly retracting the augers. During this operation, the depth of the sand pack in the auger is continuously sounded to make sure that the sand remains in the auger annulus during auger retraction to avoid shortcircuiting the well. The sand pack is tremmied to approximately two feet above the screen, at which time pre-development surging is performed to consolidate the sand pack. Additional sand is added as necessary to help assure that the sand pack extends a minimum of two feet above top of screen. Following construction of the sand pack, a two-foot thick, bentonite seal is tremmied over the sand and hydrated in place. The remainder of the borehole is backfilled with neat cement grout. The well head is then capped with a locking cap, and secured with a lock to protect the well from surface water intrusion and vandalism. The well head is further protected from damage with a traffic-rated well box in paved areas or locking steel riser in undeveloped areas. The protective boxes or risers are set in concrete. The details of well construction are recorded on the field logs.

Following well construction, the wells are developed in accordance with agency protocols by intermittently surging and bailing the wells. Development is determined to be sufficient once pH, conductivity and temperature stabilize to within 10 percent of the previous two readings. To evaluate groundwater gradient and groundwater elevation, the well heads are surveyed by a professional, licensed surveyor to an assumed or legal bench mark depending on the requirements of the project, in accordance with AB 2886 requirements.

Soil Cuttings and Rinsate/Purge Water Disposal

Wastewater collected during development is contained in 55-gallon, DOT-approved drums and stored on site pending waste characterization and disposal. A label is affixed to the drums indicating the contents of the drum, suspected contaminants, date of generation and the monitoring well number from which the waste water was generated.