

ALLIED ENGINEERING & PRODUCTION CORP.

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Alameda County
Environmental Health

June 13, 2012

In reference to Report of June 2012 Sampling, 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.


Cassandra Miller, Vice President

Allied Engineering & Production Corporation

geo - logic

geotechnical and environmental consulting services

1140 - 5th Avenue, Crockett, CA 94525

(510) 593-5382 - Fax (510) 787-1457

June 12, 2012

Ms. Donna Drogos
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

**RE: Report of June 2012 Sampling
Allied Engineering Co., 2421 Blanding Avenue, Alameda, CA
Fuel Leak Case No. RO0002601**

Dear Ms. Drogos:

This report documents the recent sampling of three monitoring wells at the above-referenced site, the second sampling event. The wells were installed in April, 2010, in accordance with Geo-Logic's work plan dated December 22, 2008, as requested in a letter from Alameda County Environmental Health (ACEH) dated November 13, 2008.

SITE DESCRIPTION

The subject site is located on the northeastern side of Blanding Avenue, southeast of Park Street, on the eastern perimeter of Alameda, Alameda County, California. The site is located adjacent to the tidal canal of Alameda Harbor. At the site, a 2,000-gallon gasoline tank, dispenser and the related product piping were removed. A Site Plan (Figure 1) showing the location of these features is attached to this report.

PREVIOUS FIELD ACTIVITIES

On January 7, 2004, one 2,000-gasoline tank was removed. Mr. Bill Oyas, Fire Inspector with the City of Alameda, and Mr. Rob Weston of Alameda County Environmental Health (ACEH) witnessed the tank removal. Mr. Weston also directed the soil and groundwater sampling.

The tank was constructed of single wall steel, and appeared to have been covered with a tar paper that was largely dissolved. The tank, which measured approximately six feet in diameter and ten feet in length, appeared to be in good condition and no holes were observed. The fill port for the tank was located on the eastern end of the tank, and had consisted of a "T" fitting that was plumbed to a remote fill location and a fill port directly over the tank. The tank was transported under manifest to ECI in Richmond, California.

Odors of hydrocarbons were detected in the excavated soils and sidewalls, and in the groundwater. Groundwater collected in the tank pit excavation at approximately nine feet below grade.

The tank pit backfill material appeared to be a silty fine-grained sand which was stained dark gray to black. The native material in the sidewalls, beneath about 1.5 feet of fill material, appeared to be clayey silt and silty clay, which was dark brown to about five feet below grade, where the color changed to olive green.

Following the tank removal, a "grab" groundwater sample was collected from the tank pit excavation. The sample was collected using a disposable teflon bailer. Some oily product appeared to have collected on the surface of the water, which may have been the result of the dissolving of the tar paper that was originally on the tank. The groundwater sample had a moderate odor of weathered fuel.

One soil sample, designated as TP-W (7.25'), was collected from the sidewall of the western end of the tank pit excavation at the depth indicated. The soil at this location consisted of dark gray to black silty sand backfill with a moderate odor of weathered fuel. A second sample, designated as TP-N (8'), was collected from the northern sidewall of the excavation. The soil at this location consisted of green clayey silt/silty clay, which also had a moderate odor of weathered fuel. The locations of the sample points are shown on Figure 1.

One soil sample, designated as P1 (3.5'), was collected at a 90 degree elbow location in the product piping trench, approximately 1.5 foot below the excavation bottom. No odors of hydrocarbons were observed at this location. Another soil sample, designated as Disp. (3.5'), was collected from beneath the former dispenser location. A moderate odor of weathered fuel was observed on this sample. The materials at these locations consisted of native dark gray clayey silt/silty clay. The locations of these sample points are shown on Figure 1.

The soil and groundwater samples were analyzed for TPH as gasoline, benzene, toluene, ethylbenzene, and xylenes (BTEX) and methyl tertiary butyl ether (MTBE) by EPA method 8020, and for total lead. All of the soil and groundwater samples were also analyzed for the eight fuel oxygenates by EPA Method 8260. The groundwater sample was also analyzed for organic lead.

Elevated concentrations of TPH as gasoline and BTEX were detected in the soil and groundwater samples. MTBE and the eight fuel oxygenates were non-detectable. 8.4 parts per billion of 1,2-dichloroethane was detected in the grab groundwater sample. Total Lead was detected in the samples at what appears to be naturally-occurring background concentrations. Organic Lead was non-detectable in the grab ground water sample.

On March 8, 2007, one four-part composite sample was collected from approximately 100 cubic yards of soil that had remained on site since the tank removal. The soil was underlain by plastic tarps. The stockpile sample was analyzed for TPH as gasoline, BTEX, and MTBE by EPA method 8020, and for total lead and STLC lead. The soil was profiled for disposal and was later removed from the site and transported to the Altamont Landfill in Livermore, California.

Based on letters from the ACEH dated September 22, 2006 and March 28, 2005, Geo-Logic prepared a work plan dated March 16, 2007 for a soil and groundwater investigation. The work plan was reviewed by ACEH and revisions were requested in a letter dated April 10, 2007. The revisions to the work plan were prepared and submitted on April 23, 2007, and were conditionally approved by the ACEH in a letter dated May 24, 2007.

On June 27, 2007, six of the eight proposed borings were completed to groundwater, and other shallow borings were completed. Borings B1, B5, B6 and B8 were completed at the proposed locations. Due to access limitations (the presence of concrete near the bank and trees overhead), boring B2 was not completed at the proposed location and B3 was relocated midway between the originally proposed locations of B2 and B3. Boring B4 could not be completed with the drilling rig due to the presence of trees. Two attempts were made using a hand auger. The first attempt, designated as B4A, encountered sheet metal at about one foot, proximal to a sheet metal building. The second attempt, designated as B4B, encountered metal shavings at about one foot below grade, and the hole was terminated due to refusal.

Boring 7 was attempted three times at or near the original location with the drill rig but encountered concrete about one foot below grade. As it was observed that there was an active storm drain that outletted to the estuary underlying this area, the boring was relocated and completed to the northwest. This location was desirable to provide delineation both of the hydrocarbons in water, and possible metal debris near the bank.

The borings were completed using a geoprobe rig provided by Vironex of Pacheco, California, a state-licensed driller. The locations of the borings are shown on Figure 1. The borings were continuously cored and the subsurface soils were examined for evidence of contamination. A photo-ionization detector (PID) was also used to screen the soil for contamination. Samples were selected from about five feet below grade, at the capillary fringe (about 7.5 feet below grade), and at about 12.5 feet and 15 feet below grade. The 12.5 foot samples generally corresponded to the last part of a layer of low permeability soils that appeared to contain hydrocarbons in many of the holes. The sample at the total depth (about 15 feet below grade) was generally in higher permeability water-bearing sandy soils and no odor of hydrocarbons was apparent.

All of the soil and groundwater samples were analyzed for TPH as gasoline, BTEX, and MTBE by EPA Methods 8015 and 8020. The ground water samples were analyzed for the fuel oxygenates and lead scavengers by EPA Method 8260. Selected soil samples from B3, B7B and B7C from a depth of four to 4.5 feet below grade, and the groundwater samples from B3 and B7C, were analyzed for the CAM 17 metals. The soil from B7B and B7C at that interval had visible metal debris in it. Mr. Steven Plunkett of ACDEH witnessed most of the drilling and sampling.

The analytical results of the soil samples indicated predominantly non-detectable results for petroleum hydrocarbons, except at the capillary fringe (about 7.5 feet below grade). The samples from B3, which was about 1.5 foot higher in elevation than the tank pit borings, had an elevated TPH as gasoline concentration at 12.5 feet below grade and non-detectable results at 7.5 feet below grade. The sample from 4.5 feet below grade near the former dispenser location at B5 also had elevated concentrations of hydrocarbons.

The analytical results of the grab groundwater samples indicated dissolved concentrations of hydrocarbons in groundwater in all of the borings except B7C, which was non-detectable. The concentrations of benzene in groundwater attenuated to very low (2.4 ppb in B3) to non-detectable to the north and east. The concentrations were not defined below about 100 to 160 ppb to the west and south.

The analytical results for the CAM 17 metals in B3 at 4.5 feet below grade, which appeared to be native soil, did not indicate any metals above the ESLs. The sample from B7B at four feet below grade, which contained abundant metal debris, had concentrations of nine of the CAM 17 metals above the ESLs. This sample, which contained the highest concentration of chromium of the soil samples analyzed, was also analyzed for hexavalent chromium by method E218.6m, which indicated a concentration of hexavalent chromium of 500 ppm. Arsenic and chromium concentrations exceeded their respective ESLs in the soil sample from B7C at 4.5 feet below grade, which also appeared to be historical fill material similar to the sample from B7B.

The analytical results for the CAM 17 metals in groundwater indicated concentrations of 14 metals above their respective ESLs in B3, and eleven metals above their respective ESLs in B7C. Except for lead and molybdenum, the concentrations of metals in the groundwater sample from B7C are significantly lower than the concentrations in B3. The collection of the sample in B7C was difficult and the rods were retracted three times, making it possible that metal debris from shallower depth affected the water sample analyses.

This work is summarized in Geo-Logic's "Report of Soil and Groundwater Investigation" dated July 18, 2007.

On April 19, 2010, three monitoring wells, designated as MW1 through MW3 on the attached Figure 3, were installed at the site. Well MW1 was located in the vicinity of previous boring B1, on the northeast side of the former tank pit, within the warehouse. Well MW2 was located adjacent to previous boring B5, at the former dispenser location. Well MW3 was located adjacent to previous boring B3, near the top of the estuary bank. Due to the previous logging and sampling, soil samples were not collected from the borings for these wells, however, the drill cuttings were examined for lithology and evidence of contamination. Odors of hydrocarbons were encountered beginning at approximately 6 feet (capillary fringe) in MW1, and at approximately two feet in MW2, in the former dispenser area.

Well Construction: The well casings consisted of two-inch diameter schedule 40 PVC with flush threaded joints and 0.010 inch factory slots. Based on previous conditions encountered in exploratory borings, the wells were screened between approximately 5 and 20 feet below grade with 0.010 inch screen. #2/12 sand was used for the filter pack and was placed from approximately 4.5 to 20 feet below grade, starting approximately 1/2 foot above the perforated interval. A 0.5-foot thick bentonite seal was placed in the annular space on top of the sand pack. Neat cement grout was placed on top of the bentonite seal to the surface.

On May 4, 2010, samples were obtained from the three wells, and the wells were monitored and sampled. The groundwater samples were analyzed for TPH as gasoline, BTEX, and MTBE and the fuel oxygenates and lead scavengers by EPA Method 8260 B, and for the CAM 17 metals. The analytical results of the groundwater samples collected from the three monitoring wells indicated concentrations ranging from predominantly non-detectable in MW3 to up to 2,300 parts per billion (ppb) of TPH as gasoline and up to 210 ppb of benzene in MW2, at the former dispenser area. At MW3, the only detected analyte was MTBE, at a concentration of 1.6 ppb. Toluene and xylenes were also detected in MW2 at concentrations of 5.8 and 130 ppb, respectively. At MW1, adjacent to the former tank pit, TPH as gasoline, benzene, toluene, xylenes and t-Butyl Alcohol were detected at concentrations of 380, 22, 0.77, 1.2 and 2.4 ppb, respectively. The concentrations of TPH as gasoline (2,300 ppb), benzene (210 ppb), and xylenes (130 ppb) are in excess of their respective Environmental Screening Levels (Table F-1b).

For the CAM 17 metals, six metals (beryllium, chromium, mercury, selenium, silver, and thallium) were non-detectable. Of the other eleven metals, cadmium, cobalt, copper, lead and nickel were detected in excess of their respective ESLs. Nickel concentrations were particularly elevated (ranging up to 190 ppb in MW2, in excess of the ESL of 8.2 ppb).

The analytical data is summarized in Tables 2 and 3. The results of this work were summarized in Geo-Logic's "Report of Monitoring Well Installation and May 2010 Sampling", dated May 14, 2010.

On Nov. 5, 2010, samples were again obtained from the three wells, and the wells were monitored. That work is summarized in Geo-Logic's "Report of November 2010 Sampling" dated November 19, 2010.

On May 13, 2011, and December 5, 2011, samples were again obtained from the three wells, and the wells were monitored. Also, two samples were obtained from the inner harbor waters, which yielded entirely non-detectable results for metals. That work is summarized in Geo-Logic's "Report of May 2011 Sampling" dated May 24, 2011, and "Report of December 2011 Sampling", dated December 16, 2011.

RECENT FIELD ACTIVITIES –GROUNDWATER SAMPLING

On June 1, 2012, samples were again obtained from the three wells, and the wells were monitored. The groundwater samples were collected as follows: prior to sampling, the wells were checked for depth to water and the presence of free product and sheen. No free product or sheen was noted in the wells.

The wells were bailed until the volume of water withdrawn was equal to at least three casing volumes. To assure that a representative groundwater sample was collected, periodic measurements of the temperature, pH and specific conductance were made. The samples were collected only when the temperature, pH, and/or specific conductance reached relatively constant values.

Water samples were collected using disposable bailers. An effort was made to minimize exposure of the samples to air. The samples were decanted into clean VOA vials that were then sealed with Teflon-lined screw caps, labeled, and stored in a cooler, on ice, until delivery to the laboratory. The samples for metals analyses were filtered in the field due to hold time requirements. Excess water resulting from the purging and cleaning procedures was collected and contained in a drum.

HYDROLOGY

On June 1, 2012, the measured depth to groundwater in wells MW1 through MW3 varied between approximately 5.35 to 7.50 feet below the tops of the well casings. As shown on Figure 2, the estimated hydraulic gradient was to the north at approximately 0.0009 feet per foot. The direction of groundwater flow was similar to the previous event on December 5, 2011.

The groundwater elevation data is summarized in Table 1 and on Figure 2. . Copies of the field data sheets are attached to this report.

ANALYTICAL RESULTS

The groundwater samples were analyzed by McCampbell Analytical Laboratory in Pittsburg, California, a state-certified laboratory. The groundwater samples were analyzed for TPH as gasoline, BTEX, and MTBE and the fuel oxygenates and lead scavengers by EPA Method 8260 B, and for the CAM 17 metals.

The analytical results of the groundwater samples collected from the three monitoring wells indicated concentrations ranging from largely non-detectable in MW3 (0.70 ppb of MTBE) to up to 1,900 parts per billion (ppb) of TPH as gasoline and up to 190 ppb of benzene in MW2, at the former dispenser area. Ethylbenzene and xylenes were also detected in MW2 at concentrations of 34 and 15 ppb, respectively. Benzene was the only contaminant detected in MW1 (adjacent to the former tank pit) at a concentration of 2.1 ppb. The concentrations of hydrocarbons detected are relatively similar to previous events in MW2 and MW3, and lower in MW1, where the only contaminant detected was 2.1 ppb of benzene. The concentrations of TPH as gasoline, benzene and xylenes in MW2 are in excess of their respective Environmental Screening Levels (where groundwater is not considered a potential drinking water source, Table F1b).

For the CAM 17 metals in the monitoring well samples, antimony, beryllium, mercury, selenium, silver and thallium were non-detectable. Of the other eleven metals, cadmium and copper were detected above their respective ESLs in MW3, and nickel again was detected in all three wells at elevated concentrations in excess of the ESL (where groundwater is not considered a potential drinking water source, Table F-1b). The nickel concentrations ranged up to 220 ppb in MW2, in excess of the ESL of 8.2 ppb.

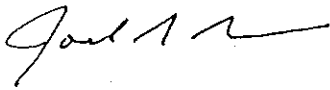
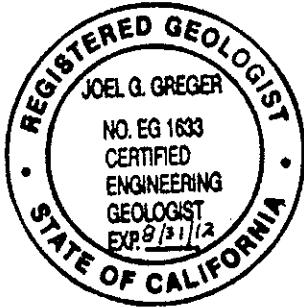
The analytical data is summarized in Tables 2 and 3 and Figure 3. Copies of the laboratory analyses data sheets and chain of custody are attached to this report.

RECOMMENDATIONS

This report will be uploaded to the Geotracker database in addition to the ACEH database. The next monitoring and sampling event will take place about December, 2012.

Should you have any questions regarding this report, please do not hesitate to call me at (510) 593-5382.

Sincerely,
Geo-Logic



Joel G. Greger
Certified Engineering Geologist
Registered Environmental Assessor
CEG # EG1633, REA # 07079

cc: Mr. Dave Belcher, Allied Engineering

Attachments: Tables 1 through 3
Figures 1 through 3
Laboratory Analytical Data
Field Data Sheets

TABLE I
GROUNDWATER MONITORING DATA
2421 Blanding Ave., Alameda, CA

Well No.	Date	Groundwater Elevation	Top of casing Elevation	Depth to Water	Well Depth	Product Thickness	Seen	Water purged (gallons)
MW1	4/26/2010	2.37	8.27	5.90	20.13	0	No	25
	5/4/2010	-0.30		8.57	20.18	0	No	7
	11/5/2010	2.24		6.03	20.16	0	No	9
	5/13/2011	1.99		6.28	20.27	0	No	9
	12/5/2011	1.94		6.33	20.15	0	No	8.5
	6/1/2012	1.86		6.41	20.06	0	No	9.5
MW2	4/27/2010	2.60	7.24	4.64	18.90	0	No	28
	5/4/2010	0.48		6.76	19.18	0	No	8.5
	11/5/2010	1.91		5.33	19.14	0	No	8
	5/13/2011	2.15		5.09	19.09	0	No	9
	12/5/2011	2.15		5.09	19.14	0	No	8.5
	6/1/2012	1.89		5.35	19.16	0	No	9.5
MW3	4/26/2010	2.36	9.33	6.97	20.02	0	No	25
	5/4/2010	-1.16		10.49	20.04	0	No	5.75
	11/5/2010	3.93		5.40	20.03	0	No	9
	5/13/2011	1.84		7.49	20.03	0	No	8
	12/5/2011	1.70		7.63	20.04	0	No	8
	6/1/2012	1.83		7.50	20.07	0	No	9.5

TABLE 2
GROUNDWATER ANALYTICAL RESULTS - HYDROCARBONS
2421 Blanding Ave., Alameda, CA

Well No.	Date	TPH-g (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	MTBE (ppb)	TBA (ppb)
MW1	5/4/2010	380	22	0.77	<0.5	1.2	<0.5	2.4
	11/5/2010	120	4.5	<0.5	<0.5	<0.5	<0.5	<2.0
	5/13/2011	250	14	<0.5	<0.5	<0.5	<0.5	<2.0
	12/5/2011	200	8.9	<0.5	<0.5	<0.5	<0.5	<2.0
	6/1/2012	<50	2.1	<0.5	<0.5	<0.5	<0.5	<2.0
MW2	5/4/2010	2,300	210	5.8	<5.0	130	<5.0	<20
	11/5/2010	110	28	<0.5	2.3	<0.5	0.55	<2.0
	5/13/2011	2,600	240	<5.0	57	25	<5.0	<2.0
	12/5/2011	990	140	<2.5	9.8	3.7	<2.5	<10
	6/1/2012	1,900	190	<5.0	34	15	<5.0	<20
MW3	5/4/2010	<50	<0.5	<0.5	<0.5	<0.5	1.6	<2.0
	11/5/2010	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
	5/13/2011	<50	<0.5	<0.5	<0.5	<0.5	0.84	<2.0
	12/5/2011	<50	<0.5	<0.5	<0.5	<0.5	0.84	3.4
	6/1/2012	<50	<0.5	<0.5	<0.5	<0.5	0.70	<2.0
ESL		100/500	1.0/46	40/130	30/290	13/13	5.0/1,800	12/18,000

EXPLANATION:

ppb = parts per billion

TPH = Total Petroleum Hydrocarbons as gasoline.

TBA = t-Butyl alcohol

ESL - Environmental Screening Level, Tables F-1a/F-1b (groundwater is/is not a potential drinking water source).

TABLE 3
GROUNDWATER ANALYTICAL RESULTS - CAM 17 METALS
2421 Blanding Avenue, Alameda, CA

Well No.	Date	Antimony (ppb)	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Cobalt (ppb)	Copper (ppb)	Lead (ppb)	Mercury (ppb)	Molybdenum (ppb)	Nickel (ppb)	Selenium (ppb)	Silver (ppb)	Vanadium (ppb)	Zinc (ppb)
MW1	5/4/2010	<0.5	17	130	0.29	<0.5	6.2	<0.5	2.1	<0.025	4.8	120	<0.5	<0.19	6.0	5.9
	11/5/2010	<0.5	15	93	<0.25	<0.5	1.4	0.83	<0.5	<0.025	2.0	75	<0.5	<0.19	2.7	<5.0
	5/13/2011	<0.5	18	100	<0.25	<0.5	0.92	<0.5	<0.5	<0.025	2.3	85	<0.5	<0.19	0.71	<5.0
	12/5/2011	<0.5	19	110	<0.25	<0.5	0.76	<0.5	<0.5	<0.025	1.8	82	<0.5	<0.19	1.7	<5.0
	6/1/2012	<0.5	11	99	<0.25	<1.0	0.70	<0.5	<0.5	<0.025	1.6	59	<0.5	<0.19	0.75	<5.0
MW2	5/4/2010	<0.5	4.1	84	1.0	<0.5	7.9	1.7	4.0	<0.025	2.4	190	<0.5	<0.19	8.0	14
	11/5/2010	<0.5	5.3	61	<0.25	<0.5	1.9	3.6	1.7	<0.025	0.74	110	<0.5	<0.19	9.1	10
	5/13/2011	<0.5	5.7	62	<0.25	<0.5	1.6	<0.5	<0.5	<0.025	0.56	170	<0.5	<0.19	3.7	<5.0
	12/5/2011	<0.5	7.8	81	<0.25	<0.5	0.98	<0.5	0.81	<0.025	<0.5	220	<0.5	<0.19	5.1	<5.0
	6/1/2012	<0.5	5.4	89	<0.25	<1.0	1.1	<0.5	<0.5	<0.025	<0.5	220	<0.5	<0.19	5.6	<5.0
MW3	5/4/2010	0.65	2.7	180	2.1	<0.5	5.9	6.4	14	<0.025	20	85	<0.5	<0.19	4.4	7.0
	11/5/2010	0.91	2.1	81	6.2	7.6	3.6	7.7	4.9	0.055	26	15	2.7	3.0	3.3	35
	5/13/2011	<0.5	2.7	63	0.51	<0.5	2.1	4.9	2.1	<0.025	6.0	55	0.70	<0.19	4.4	<5.0
	12/5/2011	<0.5	5.5	48	0.91	0.57	0.64	4.9	1.0	<0.025	14	52	2.1	<0.19	7.6	<5.0
	6/1/2012	<0.5	3.3	38	0.37	<1.0	3.8	5.3	1.1	<0.025	6.1	91	<0.5	<0.19	6.3	6.8
IHC-W	5/13/2011	<0.5	<0.5	<5.0	<0.25	<0.5	<0.5	<0.5	<0.5	<0.025	<0.5	<0.5	<0.5	<0.19	<0.5	<5.0
IHC-E	5/13/2011	<0.5	<0.5	<5.0	<0.25	<0.5	<0.5	<0.5	<0.5	<0.025	<0.5	<0.5	<0.5	<0.19	<0.5	<5.0
ESL -		6.0	36	1000	0.25	50	3.0	3.1	2.5	0.025	35	8.2	5.0	0.19	15	81
Table F-1a																
ESL -		30	36	1000	0.25	180	3.0	3.1	2.5	0.025	240	8.2	5.0	0.19	19	81
Table F-1b																

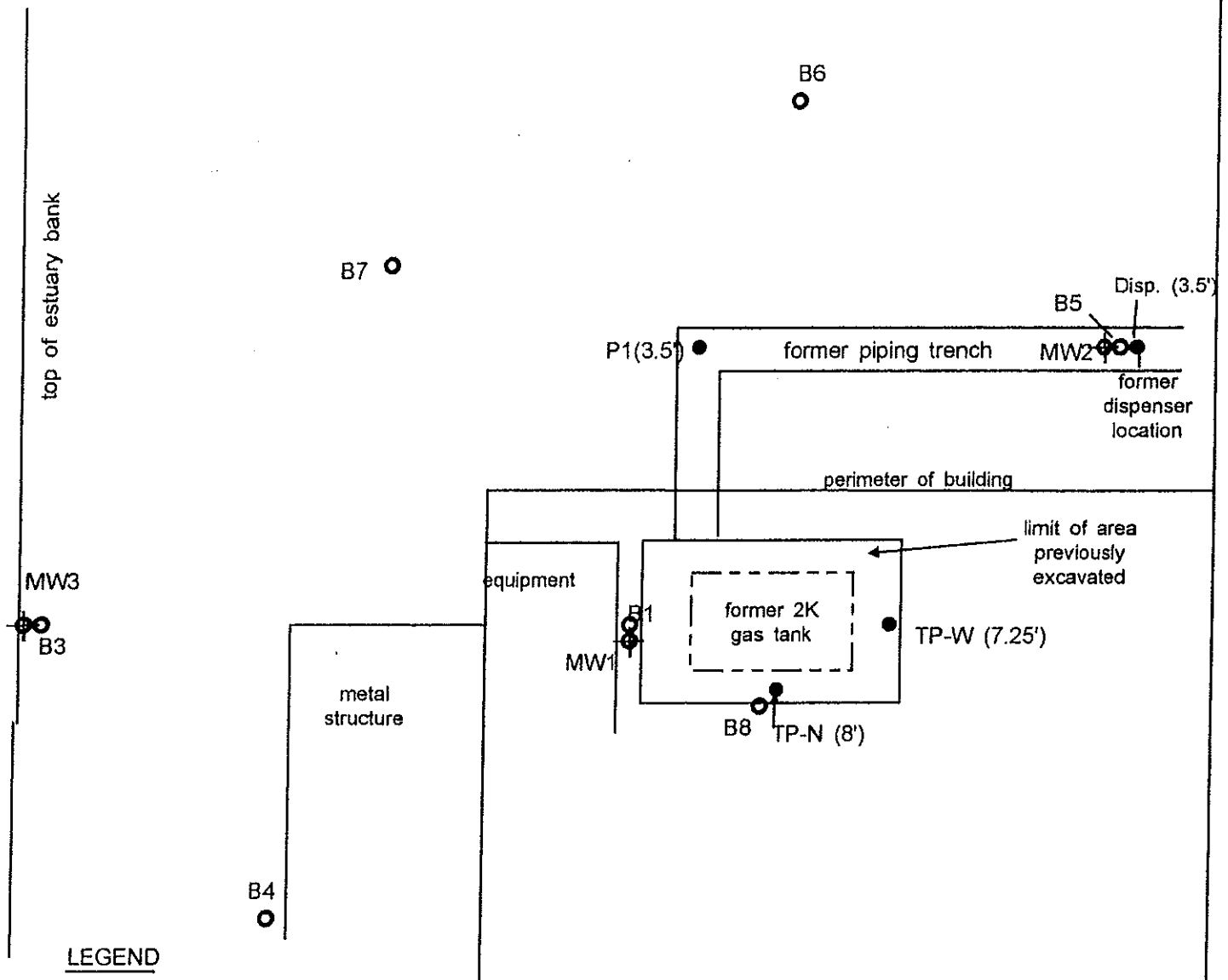
EXPLANATION:

ESL = Environmental Screening Level, RWQCB, May 2008. Table F-1a, groundwater is a potential drinking water source, Table F-1b, groundwater is not a potential drinking water source.

Beryllium and thallium were non-detectable.

IHC = Inner Harbor Channel

ppb = parts per billion



LEGEND

- soil sample, 1/7/04
- exploratory boring, 6/27/07
- ◆ monitoring well, installed 4/19/2010

SCALE: 1" = 10'

Allied Engineering & Production Co.
2421 Blanding Avenue
Alameda, California

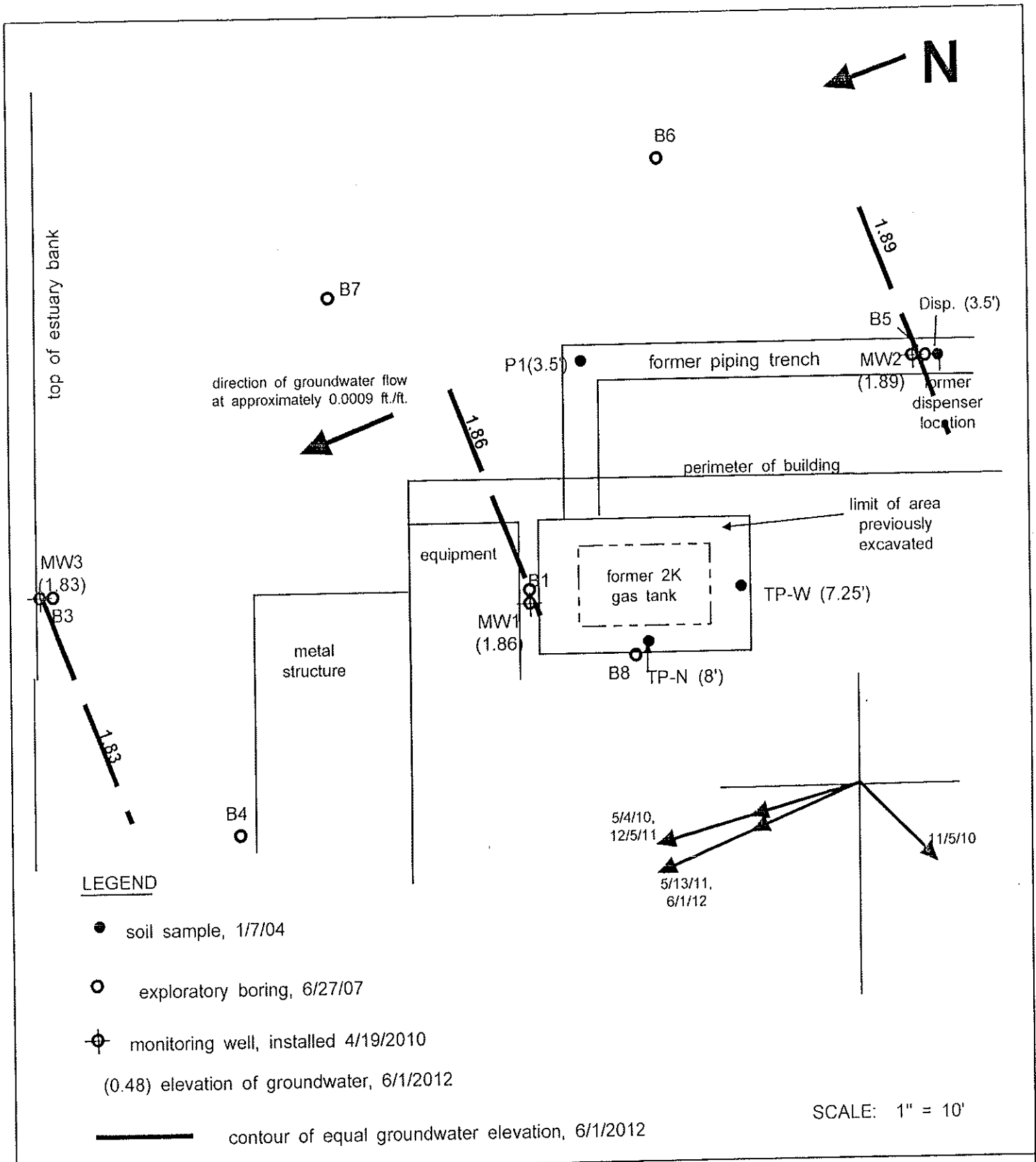
Figure No:

1

Date: May 6, 2010

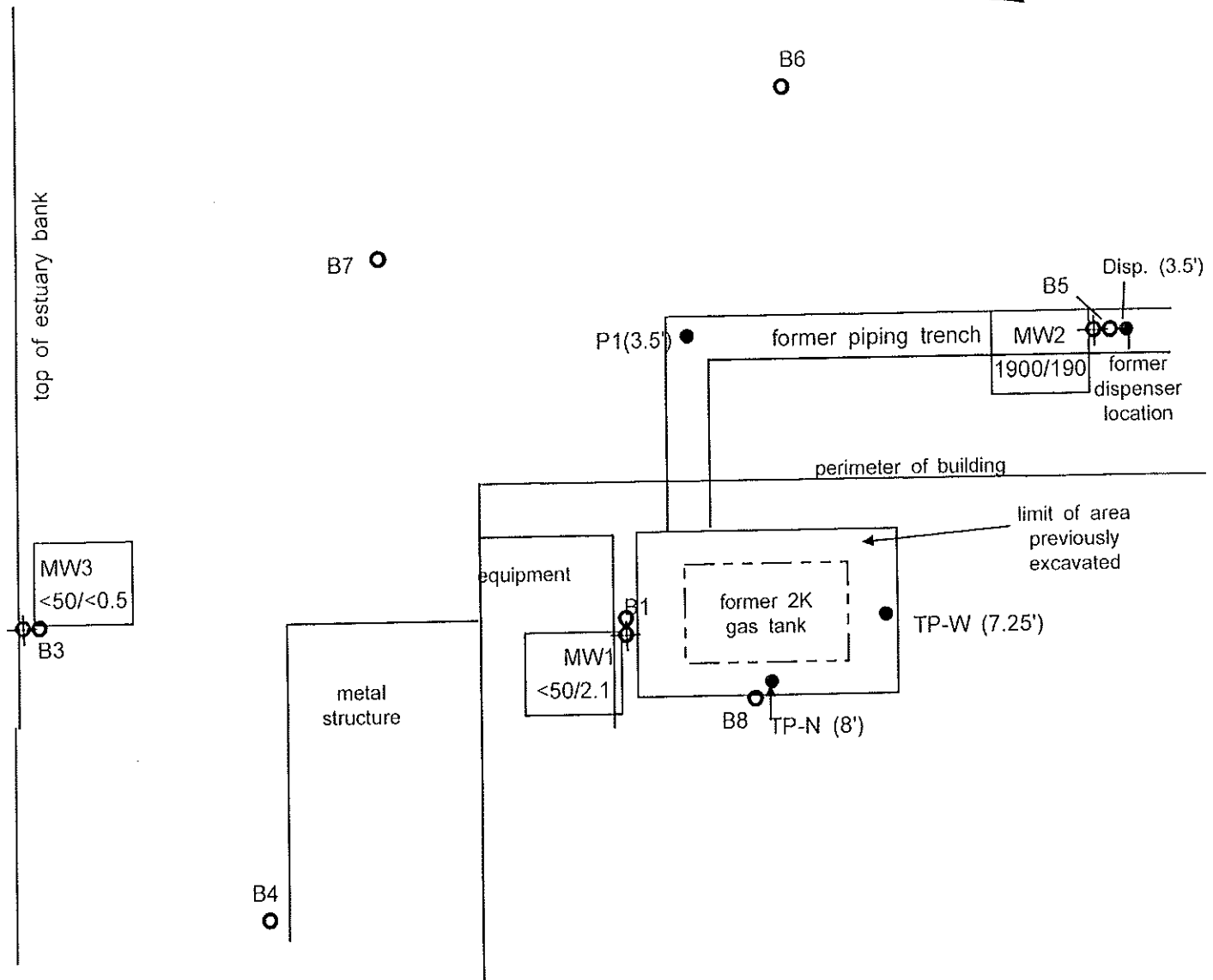
Drawn By: JG/Geo-Logic

Site Plan



Allied Engineering & Production Co. 2421 Blanding Avenue Alameda, California	Figure No:	Date: June 11, 2012
	2	Drawn By: JG/Geo-Logic

Potentiometric Surface Map



LEGEND

- soil sample, 1/7/04
- exploratory boring, 6/27/07
- ⊕ monitoring well, installed 4/19/2010

MW3
<50/<0.5 concentration of TPH-gas/benzene in ppb, 6/1/2012

SCALE: 1" = 10'

Allied Engineering & Production Co.
2421 Blanding Avenue
Alameda, California

Figure No:

3

Date: June 11, 2012

Drawn By: JG/Geo-Logic

Groundwater Contaminant Concentration Map

**LABORATORY
ANALYTICAL DATA**



Geo-Logic 1140 5th Avenue Crockett, CA 94525	Client Project ID: Allied Engineering	Date Sampled: 06/01/12
		Date Received 06/04/12
	Client Contact: Joel Gregor	Date Extracted 06/04/12
	Client P.O.:	Date Analyzed 06/06/12-06/11/12

CAM / CCR 17 Metals*

Lab ID	1206086-001A	1206086-002A	1206086-003A	Reporting Limit for DF = 1, ND means not detected above the reporting limit	
Client ID	MW1	MW2	MW3	S	W
Matrix	W	W	W		
Extraction Type	DISS.	DISS.	DISS.	mg/kg	µg/L

ICP-MS Metals, Concentration*

Analytical Method: E200.8

Extraction Method: E200.8

Work Order: 1206086

Dilution Factor	1	1	1		1	1
Antimony	ND	ND	ND		NA	0.5
Arsenic	11	5.4	3.3		NA	0.5
Barium	99	89	38		NA	5.0
Beryllium	ND	ND	ND		NA	0.5
Cadmium	ND	ND	0.37		NA	0.25
Chromium	ND<1.0	ND<1.0	ND<1.0		NA	0.5
Cobalt	0.70	1.1	3.8		NA	0.5
Copper	ND	ND	5.3		NA	0.5
Lead	ND	ND	1.1		NA	0.5
Mercury	ND	ND	ND		NA	0.025
Molybdenum	1.6	ND	6.1		NA	0.5
Nickel	59	220	91		NA	0.5
Selenium	ND	ND	ND		NA	0.5
Silver	ND	ND	ND		NA	0.19
Thallium	ND	ND	ND		NA	0.5
Vanadium	0.75	5.6	6.3		NA	0.5
Zinc	ND	ND	6.8		NA	5.0
%SS:	N/A	N/A	N/A			

Comments

*water samples are reported in µg/L, product/oil/non-aqueous liquid samples and all TCLP / STLC / DISTLC / SPLP extracts are reported in mg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, filter samples in µg/filter.

means surrogate diluted out of range; ND means not detected above the reporting limit/method detection limit; N/A means not applicable to this sample or instrument; %SS = Percent Recovery of Surrogate Standard; DF = Dilution Factor

TOTAL = Hot acid digestion of a representative sample aliquot.

TRM = Total recoverable metals is the "direct analysis" of a sample aliquot taken from its acid-preserved container.

DISS = Dissolved metals by direct analysis of 0.45 µm filtered and acidified sample.



McC Campbell Analytical, Inc.

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Geo-Logic 1140 5th Avenue Crockett, CA 94525	Client Project ID: Allied Engineering	Date Sampled: 06/01/12
		Date Received: 06/04/12
	Client Contact: Joel Gregor	Date Extracted: 06/05/12-06/07/12
	Client P.O.:	Date Analyzed: 06/05/12-06/07/12

Oxygenates, MBTEX & Lead Scavengers by GC/MS*

Extraction Method: SW5030B

Analytical Method: SW8260B

Work Order: 1206086

Lab ID	1206086-001B	1206086-002B	1206086-003B	Reporting Limit for DF =1		
Client ID	MW1	MW2	MW3			
Matrix	W	W	W			
DF	1	10	1		S	W

Compound	Concentration			ug/kg	ug/L
tert-Amyl methyl ether (TAME)	ND	ND<5.0	ND	NA	0.5
Benzene	2.1	190	ND	NA	0.5
t-Butyl alcohol (TBA)	ND	ND<20	ND	NA	2.0
1,2-Dibromoethane (EDB)	ND	ND<5.0	ND	NA	0.5
1,2-Dichloroethane (1,2-DCA)	ND	ND<5.0	ND	NA	0.5
Diisopropyl ether (DIPE)	ND	ND<5.0	ND	NA	0.5
Ethylbenzene	ND	34	ND	NA	0.5
Ethyl tert-butyl ether (ETBE)	ND	ND<5.0	ND	NA	0.5
Methyl-t-butyl ether (MTBE)	ND	ND<5.0	0.70	NA	0.5
Toluene	ND	ND<5.0	ND	NA	0.5
Xylenes, Total	ND	15	ND	NA	0.5

Surrogate Recoveries (%)

%SS1:	82	99	101	
%SS2:	81	113	112	
%SS3:	94	99	96	

Comments

* water and vapor samples are reported in ug/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in ug/wipe.

ND means not detected above the reporting limit/method detection limit; N/A means analyte not applicable to this analysis.

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

%SS = Percent Recovery of Surrogate Standard

DF = Dilution Factor



QC SUMMARY REPORT FOR E200.8

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 68051

WorkOrder: 1206086

EPA Method: E200.8 Extraction: E200.8 Spiked Sample ID: 1206052-001A

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	Acceptance Criteria (%)		
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	MS / MSD	RPD	LCS
Antimony	ND	50	92.6	98	5.69	96.8	70 - 130	20	70 - 130
Arsenic	2.1	50	93.5	95.3	1.86	95.9	70 - 130	20	70 - 130
Barium	45	500	97.5	103	4.92	103	70 - 130	20	70 - 130
Beryllium	ND	50	87.2	92.8	6.20	94.3	70 - 130	20	70 - 130
Cadmium	ND	50	94.9	101	5.87	103	70 - 130	20	70 - 130
Chromium	3.5	50	102	101	0.313	107	70 - 130	20	70 - 130
Cobalt	ND	50	92.1	97.9	6.06	102	70 - 130	20	70 - 130
Copper	34	50	75.8	77.5	1.15	91.9	70 - 130	20	70 - 130
Lead	ND	50	96.7	101	4.82	102	70 - 130	20	70 - 130
Mercury	ND	1.25	102	108	6.01	105	70 - 130	20	70 - 130
Molybdenum	2.3	50	92.3	97.4	5.13	96.6	70 - 130	20	70 - 130
Nickel	0.94	50	88.7	89.9	1.34	92.1	70 - 130	20	70 - 130
Selenium	ND	50	101	106	4.41	107	70 - 130	20	70 - 130
Silver	ND	50	87.1	91.7	5.12	95.6	70 - 130	20	70 - 130
Thallium	ND	50	98.6	104	5.35	104	70 - 130	20	70 - 130
Vanadium	2.5	50	105	104	0.548	102	70 - 130	20	70 - 130
Zinc	7.4	500	94.6	95.6	1.08	97.5	70 - 130	20	70 - 130

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 68051 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1206086-001A	06/01/12 12:05 PM	06/04/12	06/07/12 2:31 AM	1206086-002A	06/01/12 12:45 PM	06/04/12	06/06/12 10:48 PM
1206086-002A	06/01/12 12:45 PM	06/04/12	06/11/12 6:00 PM	1206086-003A	06/01/12 11:25 AM	06/04/12	06/06/12 11:13 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = $100 * (MS - Sample) / (Amount Spiked)$; RPD = $100 * (MS - MSD) / ((MS + MSD) / 2)$.

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not applicable to this method.

NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.



QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 68100

WorkOrder: 1206086

EPA Method: SW8260B		Extraction: SW5030B				Spiked Sample ID: 1206086-003B			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	Acceptance Criteria (%)		
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	MS / MSD	RPD	LCS
tert-Amyl methyl ether (TAME)	ND	10	101	107	5.94	105	70 - 130	20	70 - 130
Benzene	ND	10	90.9	99.1	8.62	96.7	70 - 130	20	70 - 130
t-Butyl alcohol (TBA)	ND	40	96.2	98.3	2.17	103	70 - 130	20	70 - 130
1,2-Dibromoethane (EDB)	ND	10	96.5	101	4.85	97	70 - 130	20	70 - 130
1,2-Dichloroethane (1,2-DCA)	ND	10	90.5	96.9	6.82	94.4	70 - 130	20	70 - 130
Diisopropyl ether (DIPE)	ND	10	97.8	102	4.48	97.8	70 - 130	20	70 - 130
Ethyl tert-butyl ether (ETBE)	ND	10	103	109	5.74	106	70 - 130	20	70 - 130
Methyl-t-butyl ether (MTBE)	0.70	10	97.3	102	4.30	99.9	70 - 130	20	70 - 130
Toluene	ND	10	86.6	92.6	6.66	92.2	70 - 130	20	70 - 130
%SS1:	101	25	80	81	1.75	82	70 - 130	20	70 - 130
%SS2:	112	25	81	81	0	83	70 - 130	20	70 - 130
%SS3:	96	2.5	98	99	0.479	98	70 - 130	20	70 - 130

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
 NONE

BATCH 68100 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1206086-001B	06/01/12 12:05 PM	06/05/12	06/05/12 1:17 PM	1206086-002B	06/01/12 12:45 PM	06/07/12	06/07/12 1:39 AM
1206086-003B	06/01/12 11:25 AM	06/07/12	06/07/12 2:22 AM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.
 $\% \text{ Recovery} = 100 * (\text{MS-Sample}) / (\text{Amount Spiked}); \text{RPD} = 100 * (\text{MS} - \text{MSD}) / ((\text{MS} + \text{MSD}) / 2).$
 MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.
 N/A = not enough sample to perform matrix spike and matrix spike duplicate.
 NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.
 Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.



McCAMPBELL ANALYTICAL, INC.

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1206086

CHAIN OF CUSTODY RECORD

TURN AROUND TIME

RUSH 24 HR 48 HR 72 HR 5 DAY

GeoTracker EDF PDF Excel Write On (DW)

Check if sample is effluent and "J" flag is required

Report To: JAN GIBBONS Bill To: GEO-LOGIC
 Company: GEO-LOGIC
1140 5TH AVE
CROCKETT CA 94535 Email: JOE.GIBBONS@GEOLOGIC.COM
 Tele: (510) 993 5382 Fax: (510) 757 1437
 Project #: _____ Project Name: ALTED ENGINEERING
 Project Location: 2421 BLANDING AVE ALAMEDA CA
 Sampler Signature: _____

Analysis Request

Other Comments

- BTEX & TPH in Gas (602 / 8021 + 8015) (MTR)
- TPH as Diesel (8015)
- Total Petroleum Oil & Grease (1664 / 5520 E/BK/F)
- Total Petroleum Hydrocarbons (418-1)
- EPA 502.2 (601 / 8010 / 8021) (HYD/C)
- MIBK / BTEX ONLY (EPA 601 / 8021)
- EPA 505.605 / 8081 (CI Pesticides)
- EPA 608 / 8082 (PCP'S ONLY: Aroclors / Compomers)
- EPA 807 / 811 (NP Pesticides)
- EPA 815 / 815 (Acidic Chlorides)
- EPA 832.2 (824 / 8260) (VOC'S)
- EPA 825.2 (625 / 6270) (SVOC)
- EPA 8270 (S/M) / 8310 (PARK / PNAS)
- CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)
- LUT'S Metals (200.7 / 200.8 / 6010 / 6020)
- Lead (200.7 / 200.8 / 6010 / 6020)

Filter sample for DISSOLVED metals analysis
DISPOSABLE CHANGING (over 1000)
SAFETY DATA SHEET (MSDS) FOR ALL SAMPLES
 **Indicate here if these samples are potentially dangerous to handle:

SAMPLE ID	LOCATION Field Point Name	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED						
		Date	Time			Water	Soil	Air	Sludge	Other	ICE	HCL	HNO3	Other			
+ MW1	1205	6/1/12		5	WAL	X					X	X	X				
+ MW2	1245	6/1/12		5	WAL	X					X	X	X				
+ MW3	1125	6/1/12		5	WAL	X					X	X	X				

**MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate \$250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

Relinquished By: <u>[Signature]</u>	Date: <u>6/1/12</u>	Time: <u>1445</u>	Received By: <u>FZ #01</u>
Relinquished By: <u>[Signature]</u>	Date: <u>6/1/12</u>	Time: <u>0830</u>	Received By: <u>RICHARD D'ASOUBERT</u>
Relinquished By: <u>[Signature]</u>	Date: <u>6/1/12</u>	Time: <u>0835</u>	Received By: <u>COOPER</u>

ICE/C 24
 GOOD CONDITION _____
 HEAD SPACE ABSENT _____
 BE CHLORINATED IN LAB _____
 APPROPRIATE CONTAINERS _____
 PRESERVED IN LAB _____
 COMMENTS:
SAMPLES FOR DISSOLVED
CAM 17 FILTERED IN FIELD
WITH DISSOLVED METALS
TRIAL
DATA IN ONLY PROVIDED
 VOAS O&G METALS OTHER
 PRESERVATION pH<2

[Handwritten notes and signatures]

1534 Willow Pass Rd
 Pittsburg, CA 94565-1701
 (925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1206086

ClientCode: GLC

WaterTrax
 WriteOn
 EDF
 Excel
 Fax
 Email
 HardCopy
 ThirdParty
 J-flag

Report to:
 Joel Gregor
 Geo-Logic
 1140 5th Avenue
 Crockett, CA 94525
 (510) 787-6867 FAX: (510) 787-1457

Email: joelgreger2@gmail.com
cc:
PO:
ProjectNo: Allied Engineering

Bill to:
 Joel Greger
 Geo-Logic
 1140 5th Avenue
 Crockett, CA 94525

Requested TAT: 5 days
Date Received: 06/04/2012
Date Printed: 06/04/2012

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)												
					1	2	3	4	5	6	7	8	9	10	11	12	
1206086-001	MW1	Water	6/1/2012 12:05	<input type="checkbox"/>	A	B	A										
1206086-002	MW2	Water	6/1/2012 12:45	<input type="checkbox"/>	A	B											
1206086-003	MW3	Water	6/1/2012 11:25	<input type="checkbox"/>	A	B											

Test Legend:

1	CAM17MS DISS	2	GAS8260_W	3	PREF REPORT	4		5	
6		7		8		9		10	
11		12							

The following SampIDs: 001B, 002B, 003B contain testgroup.

Prepared by: Zoraida Cortez

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days). Hazardous samples will be returned to client or disposed of at client expense.

FIELD DATA SHEETS



FLUID-LEVEL MONITORING DATA

Project Name: _____ Date: 6.1.12

Project/Site Location: 2421 BLANDINGS AVE ALAMEDA CA

Technician: KIAN ATANSON Method: ELECTRONIC

Boring/ Well	Depth to Water (feet)	Depth to Product (feet)	Product Thickness (feet)	Total Well Depth (feet)	Comments
MW1	6.41	ND	ND	20.06	@ 1041 WATER IN WELL BOX
MW2	5.35	↓	↓	19.16	@ 1045
MW3	7.50	↓	↓	20.07	@ 1036

Measurements referenced to top of well casing. MW274

Well ID: MW1



DYSERT ENVIRONMENTAL, INC.
WELL PURGING / SAMPLING DATA

Dysert Environmental, Inc.

PROJECT: 42375
SITE LOCATION:

DATE: 6/1/12

2121 BUNDING AVE

CITY: ALAMEDA

STATE: CA

PURGE DEVICE
circle one submersible pump peristaltic pump bladder pump disposable bailer

SAMPLING DEVICE
circle one bladder pump peristaltic pump disposable bailer discrete sampler other

casing diameter (inches) circle one 0.75 1 1.5 2 6
casing volumes (gallons) circle one 0.02 0.05 0.15 0.2 0.7 1.52

WELL DATA

SAMPLER/S: VAN ALSTON

WELL NUMBER / FIELD POINT ID: MW1

A. TOTAL WELL DEPTH: 20.00

B. DEPTH TO WATER: 6.41

C. WATER HEIGHT (A-B): 13.65

D. WELL CASING DIAMETER: 2

E. CASING VOLUME: .2

F. SINGLE CASE VOLUME (Cx E): 2.73

G. CASE VOLUME (s) (Cx Ex 3): 8.19

H: 80% RECHARGE LEVEL (F+B): 9.14

PURGE DATA

START TIME: 1140

FINISH TIME: 1205

RECHARGE / SAMPLE TIME

DEPTH TO WATER: 7.90

TIME MEASURED: 1205

GREATER THAN OR EQUAL TO 80% RECHARGE LEVEL (H): circle one YES NO

SAMPLE TIME: 1205

DEPTH TO WATER: 7.08

SAMPLE APPEARANCE / ODOR: CLEAR w/ GAS ODOR

TOTAL GALLONS PURGED: 9.5

WELL FLUID PARAMETERS

CASE VOLUME	0	1	2	3			
pH	6.94	6.89	6.90	6.94			
TEMP in °C	17.4	17.3	17.3	17.4			
COND / SC	1298 ^{us}	1250 ^{us}	1232 ^{us}	1214 ^{us}			
DTW	6.98	8.72	9.10	9.25			
Pump Depth	10	13	→	→			
Pump Rate	1800 gpm	→	→	→			

NOTES:

Well ID: MW 2



DYSERT ENVIRONMENTAL, INC.
WELL PURGING / SAMPLING DATA

Dysert Environmental, Inc.

PROJECT:
SITE LOCATION:

DATE: 6/1/12

2421 BURNING AVE

CITY: ANIMOSA

STATE: CA

circle one submersible pump circle one peristaltic pump bladder pump disposable bailer

circle one bladder pump circle one peristaltic pump disposable bailer discrete sampler other
casing diameter (inches) circle one 0.75 1 1.5 circle one 2 4 6
casing volumes (gallons) circle one 0.02 0.05 0.15 circle one 0.2 0.7 1.52

WELL DATA

SAMPLER/S: KUN ATINSON

WELL NUMBER / FIELD POINT ID: MW 2

A. TOTAL WELL DEPTH: 19.16

B. DEPTH TO WATER: 5.35

C. WATER HEIGHT (A-B): 13.8

D. WELL CASING DIAMETER: 2

E. CASING VOLUME: .2

F. SINGLE CASE VOLUME (CxE): 2.76

G. CASE VOLUME (s) (CxE x 2): 5.28

H: 80% RECHARGE LEVEL (F+B): 8.11

PURGE DATA

START TIME: 1245

FINISH TIME: 1245

RECHARGE / SAMPLE TIME

DEPTH TO WATER: 7.50 TIME MEASURED: 1245

GREATER THAN OR EQUAL TO 80% RECHARGE LEVEL (H): circle one YES NO

SAMPLE TIME: 1245 DEPTH TO WATER: 7.40

SAMPLE APPEARANCE / ODOR: CLEAR / SLIGHT STAINMENT w/ GAS ODOR

TOTAL GALLONS PURGED:

WELL FLUID PARAMETERS

CASE VOLUME	0	1	2	3			
pH	6.90	6.91	6.91	6.94			
TEMP in °C	19.1	19.0	18.9	18.9			
COND / SC	786 ^{us}	769 ^{us}	763 ^{us}	749 ^{us}			
DTW	5.70	7.80	8.45	8.80			
Pump Depth	9	11	12	→			
Pump Rate	1800ml/min	→	→	→			

NOTES:

Well ID: MW3



DYSERT ENVIRONMENTAL, INC.
WELL PURGING / SAMPLING DATA

Dysert Environmental, Inc.

PROJECT:
SITE LOCATION:

DATE: 6/1/12

2421 BUNDINO AVE

CITY: AMMESA

STATE: CA

PURGE DEVICE

circle one submersible pump peristaltic pump bladder pump disposable bailer

SAMPLING DEVICE

circle one bladder pump peristaltic pump disposable bailer discrete sampler other
casing diameter (inches) circle one 0.75 1 1.5 2 6
casing volumes (gallons) circle one 0.02 0.05 0.15 0.2 0.7 1.52

WELL DATA

SAMPLER/S: KIM ADINSON

WELL NUMBER / FIELD POINT ID: MW3

A. TOTAL WELL DEPTH: 20.07

B. DEPTH TO WATER: 7.50

C. WATER HEIGHT (A-B): 12.57

D. WELL CASING DIAMETER: 2

E. CASING VOLUME: 2

F. SINGLE CASE VOLUME (Cx): 2.57

G. CASE VOLUME (s) (CxEx 2): 7.53

H: 80% RECHARGE LEVEL (F+B): 10.01

PURGE DATA

START TIME: 1100

FINISH TIME: 1125

RECHARGE / SAMPLE TIME

DEPTH TO WATER: 9.90

TIME MEASURED: 1125

GREATER THAN OR EQUAL TO 80% RECHARGE LEVEL (H): circle one YES NO

SAMPLE TIME: 1125

DEPTH TO WATER: 9.89

SAMPLE APPEARANCE / ODOR: CLEAR / NO ODOR

TOTAL GALLONS PURGED: 8.5

WELL FLUID PARAMETERS

CASE VOLUME	0	1	2	3			
pH	7.16	7.20	7.12	7.15			
TEMP in °C	17.1	17.1	17.2	17.1			
COND / SC	12.37 ^{MS}	11.53 ^{MS}	9.13 ^{MS}	8.56 ^{MS}			
DTW	7.50	9.01	10.60	10.98			
Pump Depth	9	12	13	→			
Pump Rate	1000 ml/min	→	→	→			

NOTES: