

ATTACHMENT B

ARUP PB JV PROJECT MEMORANDUM

PROJECT MEMORANDUM

Doyle Drive Replacement Project

Date: February 2, 2008 (Rev. 2)
January 26, 2009 (Rev. 1)
January 16, 2009

To: Bruce Abelli-Amen, BASELINE Environmental Consulting
Frank Greguras, Geotechnical Task Manager for Arup PB Joint Venture

From Alexandra Srebro, Arup PB Joint Venture

Subject: Summary of Aquifer Test

Introduction

This report summarizes the field work completed in preparation for the constant rate aquifer test done for the Girard Road Depressed Section of the Doyle Drive Replacement Project in the Presidio, San Francisco. The purpose of the constant rate aquifer test and related field work was to determine the properties, such as hydraulic conductivity and storativity, of the uppermost water-bearing zone and the deeper confined zone with artesian pressures. The field work leading up to the aquifer test began on September 18 and was completed on November 14, 2008. The constant rate aquifer test was conducted from November 18 to November 21, 2008. This report summarizes the drilling and sampling prior to well construction, the well installation and development, several slug tests, and a step drawdown test.

Borehole PW-1A

The borehole for the pumping well was drilled on September 18, 2008 by Gregg Drilling and Testing, Inc. (Gregg Drilling) under the direction of the Arup PB Joint Venture (Arup PB JV). Dave Nesbitt and Ed Kretschmer, both of the Department, were also present for the drilling. Prior to drilling, the borehole location was marked with white paint and Underground Services Alert was called to contact private utilities to clear the location. An additional private utility locating company, OHJ Subsurface was also retained to clear the location.

The borehole was initially called PW-1. However, a hard concrete slab was encountered at a depth of 4.8 feet. Subsequently, OHJ Subsurface was called to check for utilities. Once the location was again cleared, drilling was resumed 2 feet to the south and the new borehole was called PW-1A.

PW-1A was drilled to a diameter of 5 inches with mud rotary to a depth of 5 feet. Then the drillers switched to a 101-coring system (punch-core). Rock was encountered at 58 feet and

drilling was terminated at 60 feet below the ground surface. The boring logs for PW-1 and PW-1A can be found in Appendix A to this memorandum.

Fill is present in the borehole to a depth of 5 feet. The Fill consists of poorly graded sand and gravel. Beneath the Fill from 5 to 7.5 feet lies a layer of Marine Sand characterized by loose poorly graded sand and clayey sand. From 7.5 to approximately 13 feet, there is a layer of Bay Mud/Marsh Deposits consisting of soft to medium stiff fat clay. From 13 to 36 feet there is another layer of Marine Sand, similar to the layer above the Bay Mud/Marsh Deposits. From 36 to 58 feet lies Colma Sand. Colma Sand is a medium dense to very dense sand with varying fines content. Bedrock was encountered at 58 feet and consists of intensely weathered sandstone. Several laboratory tests were conducted on samples to verify index properties and soil classifications and are presented in Appendix B.

The ground water level of the uppermost water-bearing zone was not directly measured because it was obscured by the mud rotary drilling method. However, by examining shallow wells that are near PW-1A (<50 feet), the ground water level of the uppermost water-bearing zone is approximately 3.5 feet below the ground surface. Based on data from nearby deeper wells, a slight artesian pressure was expected in the Colma Sand. After well installation and development was completed, the ground water for this layer was measured at 0.3 feet from the ground surface, indicating an artesian pressure is present in the Colma Sand.

Well Installation and Development

The pumping well (PW-1A) was installed on September 19, 2008 by Gregg Drilling. Installation began by reaming borehole PW-1A to a diameter of 12 inches to allow for proper annular space around a 6 inch diameter PVC pipe. The borehole was also drilled an additional 2 feet to a final depth of 60 feet. During reaming, the concrete slab encountered in PW-1 was encountered again so the well was shifted 4 inches south so that the concrete slab was avoided. After reaming of the borehole was completed, 35 feet of 6-inch-diameter slotted (0.020 in.) PVC pipe and 25 feet of solid PVC pipe. The length of pipe was adjusted for field conditions and differs from the original work plan which called for 40 feet of slotted pipe. Centralizers were placed at 10, 25 and 45 feet from the ground surface to stabilize and center the well casing within the borehole. After the PVC pipe was placed, No. 3 sand was wet tremied to the bottom of the well up to 23 feet below the ground surface. After the sand was in place, the well was surged by bailing to consolidate the sand pack, then 2 feet of bentonite was placed to form a seal over the sand. The bentonite seal was allowed to hydrate for 30 minutes. Neat cement grout was then placed from the top of the bentonite to the top of casing. Finally, a 2-foot by 2-foot box was cut into the asphalt by Del Secco Concrete Coring around the well casing, the well vault box was placed into position, and the concrete surface around the vault box was finished to complete the well. A diagram of the well construction is shown on Figure 1. Pumping well PW-1A is a fully penetrating well.

Well development took place on September 22, 2008. Development was done by Gregg Drilling under the direction of Arup PB JV. Development began with bailing the well to remove any sediment that may have settled since installation. After bailing, the well was surged in two foot intervals with a minimum of 40 strokes per interval. The purpose of surging is to break up any bentonite that may still be on the sides of the well from the mud rotary drilling. After surging, approximately 1,170 gallons were pumped from the well until the water was clear and at least ten well volumes were removed. Values of measurements taken on the water during well development, such as pH, turbidity, and temperature, can be found in Table 1. The water pumped from the well was stored onsite in a Baker Tank. Sampling of the well development water was performed by AEW Engineering, Inc. (AEW). Chemical analyses were performed by McCampbell Analytical Inc. The results of the chemical analyses were used to apply for a sanitary sewer discharge permit from the city of San Francisco and are presented Appendix C.

Slug Tests

Slug tests were performed on November 13, 2008 in several wells in the area surrounding PW-1A under the direction of BASELINE Environmental Consulting (BASELINE) with assistance from Arup PB JV. The objective of the slug tests was to measure the hydraulic conductivity of the subsurface soils at different depths. This information will aid in evaluating the results of the aquifer test. The procedure begins by dropping a copper slug 5 feet long and 1 inch in diameter into each well. The volume of the slug displaces the water in the well above static levels. The water then returns to static level as it is reabsorbed into the surrounding material. The time the water takes to stabilize to static level is recorded by a levellogger. Then, the slug is pulled out of the well, this time dropping the water level and the time is again recorded for the groundwater to stabilize. The test was then repeated to verify the results. From the information gained from these tests, the hydraulic conductivity of the different soil layers will be calculated. Results will be presented by BASELINE.

Step Test

A step drawdown test was done on November 14, 2008 under the direction of BASELINE and Arup PB JV to determine the optimal pumping rate for the constant rate aquifer test. The ideal rate is one that matches the recharge rate of the well, i.e. the water level drops and stays constant. Pumping began at a rate of 15 gallons per minute (gal/min). It was then increased to 20 gal/min and finally 40 gal/min. It was decided that 20 gal/min would be the rate used during the constant rate aquifer test. The water pumped during the step test was stored in a Baker Tank until the water could be analyzed. During the test, water samples were taken by AEW to confirm the requirements of the discharge permit were met. Chemical analyses were performed by McCampbell Analytical, Inc. and are presented in Appendix D. Results will be presented by BASELINE.

Constant Rate Test

The constant rate aquifer test was conducted from 11:00 am on November 18 to 10:00 am on November 21, 2008 by BASELINE with the assistance of Arup PB JV. The purpose of the constant rate aquifer test is to determine if the aquifer that includes the Colma Sand is confined. The effect of the test on the water level in the area around the pumping well was measured in 34 nearby wells. Fourteen of these wells were measured with levelloggers and the remaining twenty were measured by hand. In addition, the tidal influences during the test were also measured by a levellogger. The results of the constant rate aquifer test will be presented by BASELINE.

Survey of Buildings 115 and 1167

To determine whether the pumping of groundwater during the step test and constant rate aquifer test affected the surrounding area, surveys were conducted on the two buildings nearest pumping well PW-1A. Preconstruction visual and photographic surveys were conducted by Arup PB JV on October 8 and 9, 2008 that documented the physical condition of Buildings 1158 and 1167 of the Presidio Trust including the location and magnitude of cracking on the interiors and exteriors of the buildings. Also, as part of the aquifer test program, surveys were conducted by Chaudhary & Associates, Inc. (Chaudhary) that recorded horizontal and vertical movements of Buildings 1158 and 1167 that occurred during the step drawdown and constant rate aquifer tests. There was no significant movement that occurred after the two baseline readings taken on October 10 and 13, 2008. The results of the survey program are presented in Attachment C to the BASELINE report.

Water Discharge

The water pumped from PW-1A during the constant rate aquifer test and temporarily stored in the Baker Tank was subsequently discharged into a sanitary sewer from 11:10 am on November 18 to 2:00 pm on November 21, 2008. A total of 96,296 gallons was discharged into the sewer. A copy of the permit is presented in Appendix E.

Tables

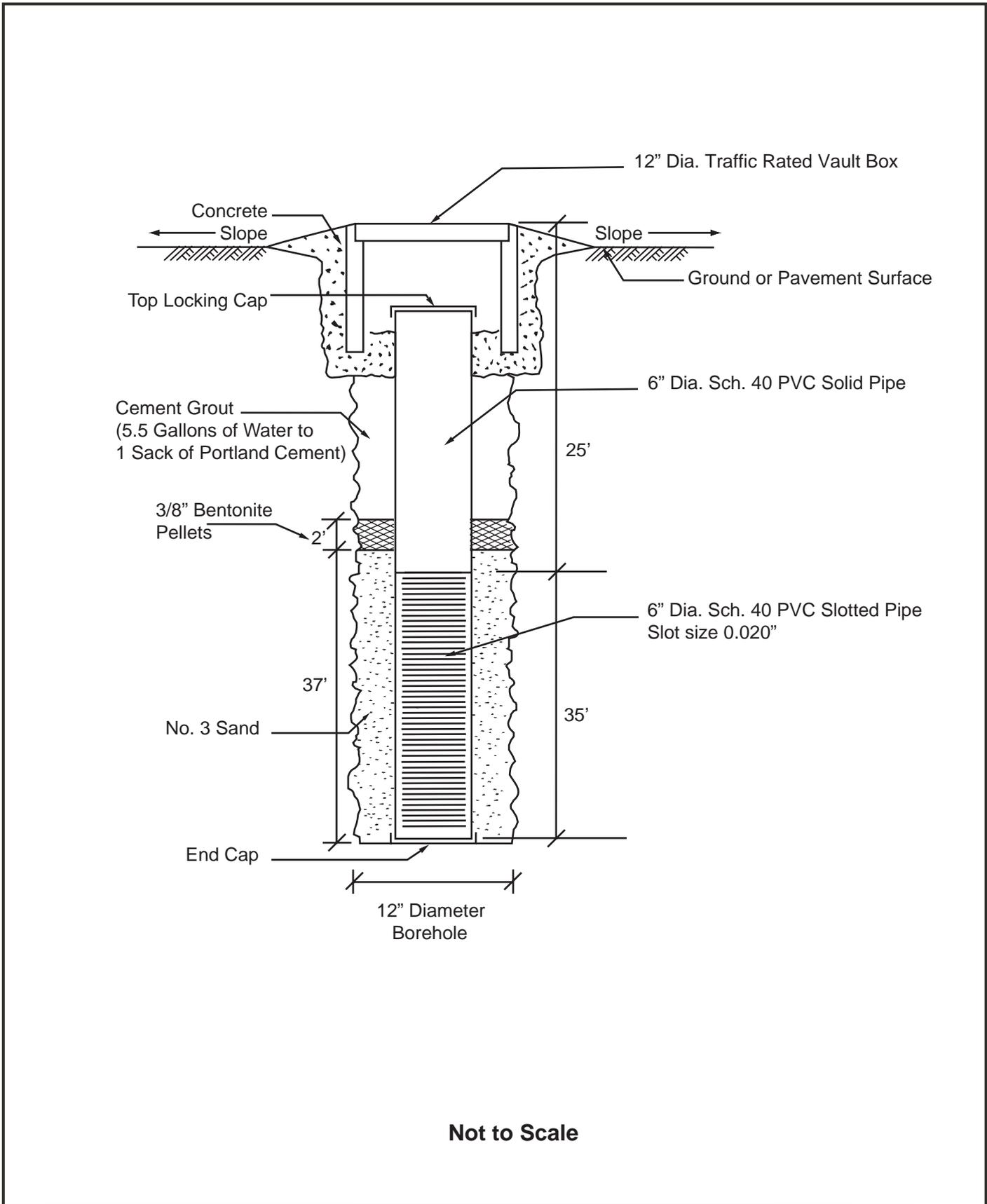
TABLE 1

PW-1A PIEZOMETER INSTALLATION DEVELOPMENT SUMMARY

Piezo- meter ID	Installed By	Date of Installation	Northing (ft)	Easting (ft)	Elevation (NAVD88) (ft)	Slotted Interval Depth* (ft)	Sand Interval Depth* (ft)	Date of Develop- ment	Time Start	Time Completed	Duration of Development (min)	Initial Water Depth from Ground Surface (ft)	Pumped (Y/N)	Surged (Y/N)	Pumping Rate (gpm)	Average Water Depth from Ground Surface During Pumping (ft)	Water Collected (gal)	Water Quality at Last Reading			
																		pH	Electrical Conductivity (mS/cm)	Turbidity (NTU)	Temperature (°C)
PW-1A	Gregg Drilling	9/19/2008	2120861.716	5997884.652	11.502	25 to 60	23 to 60	9/22/2008	9:57	14:15	258	2.86	Y	Y	10.0	8.48	1170	7.36	0.703	19	18.2

*Depths are measured from ground surface.

Figures



PUMPING WELL PW-1A CONSTRUCTION DETAILS

Doyle Drive Replacement Project
 Summary of Aquifer Test
 San Francisco County Transportation Authority
 February 2009
 San Francisco, California



FIGURE 1

Appendix A

LOGGED BY A. Srebro	BEGIN DATE 9-18-08	COMPLETION DATE 9-18-08	BOREHOLE LOCATION (Lat/Long or North/East and Datum) N / E (NAD83)	HOLE ID PW-1
DRILLING CONTRACTOR Gregg Drilling and Testing, Inc.			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION ft (NAVD88)
DRILLING METHOD Mud Rotary			DRILL RIG Mobile B53 with Fraste Head	BOREHOLE DIAMETER 5 in.
SAMPLER TYPE(S) AND SIZE(S) (ID) MC (2.4"), SPT (1.4"), Grab			SPT HAMMER TYPE Automatic, 140 lbs., 30-inch drop	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION Neat Cement Grout backfill			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS	TOTAL DEPTH OF BORING 4.8 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 in	Blows per Foot	Recovery (%)	RCQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		3.5" ASPHALT CONCRETE.		S1										
1	1		SILTY GRAVEL with SAND (GM), loose, brown, dry, SAND is fine, GRAVEL is subangular to subrounded, occasional wood/grass piece. [AGGREGATE BASE]		S2	8	23	100							
2	2		CLAYEY SAND with GRAVEL (SC), loose, brown, dry. [FILL]			12									
3	3		Poorly graded SAND (SP), loose, dark yellowish brown, moist, fine to coarse GRAVEL, fine to medium SAND, trace fines.			11									
4	4		1.5', grades to light yellowish brown without GRAVEL.		S3	2		100							
5	5		4.0', grades wet with trace shell fragments.			3									
5	5		Borehole terminated at a depth of 4.8 feet on 9/18/2008.		R										Hit refusal at 4.8'; switched to PW-1A
6	6		See Boring Record Legend for soil classification chart and key to test data and sampler type.												
7	7														
8	8														
9	9														
10	10														
11	11														
12	12														
13	13														
14	14														
15	15														
16	16														
17	17														
18	18														
19	19														
20	20														
21	21														
22	22														
23	23														
24	24														
25	25														

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS.GPJ_ARUP_LIBRARY_CALTRANS FORMAT.GLB 1/13/09



Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE BORING RECORD				HOLE ID PW-1
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project				
BRIDGE NUMBER	PREPARED BY T. Carroll	DATE 1-13-09	SHEET 1 of 1	

LOGGED BY A. Srebro	BEGIN DATE 9-18-08	COMPLETION DATE 9-18-08	BOREHOLE LOCATION (Lat/Long or North/East and Datum) N / E (NAD83)	HOLE ID PW-1A
DRILLING CONTRACTOR Gregg Drilling and Testing, Inc.			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION ft (NAVD88)
DRILLING METHOD Mud Rotary, Punch Core			DRILL RIG Mobile B53 with Fraste Head	BOREHOLE DIAMETER 12 in.
SAMPLER TYPE(S) AND SIZE(S) (ID) MC (2.4"), SPT (1.4"), Grab, Punch Core (2")			SPT HAMMER TYPE Automatic, 140 lbs., 30-inch drop	HAMMER EFFICIENCY, ERI
BOREHOLE BACKFILL AND COMPLETION 6" dia. Standpipe Piezo Screened 25.0 to 60.0 ft			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS	TOTAL DEPTH OF BORING 61.8 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 in	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		3.5" ASPHALT CONCRETE.												
1	1		Poorly graded SAND with SILT and GRAVEL (SP-SM), brown, dry, SAND is fine to medium, GRAVEL is subangular. [AGGREGATE BASE]		S1			100							
2	2		Poorly graded SAND (SP), loose, dark yellowish brown, moist to wet, SAND is fine to medium. [FILL]		S2	11	17/2"	100							
3	3		Poorly graded GRAVEL with SAND (GP), light yellowish brown, dry, GRAVEL is angular to subangular, SAND is fine to coarse.												
4	4		Poorly graded SAND with SILT (SP-SM), grayish brown, wet, SAND is fine to coarse, trace fine GRAVEL, subangular, trace shell fragments. [MARINE SAND]		S3			100							
5	5		Poorly graded SAND (SP), very loose, dark yellowish brown, wet, SAND is fine to medium, trace shell fragments, trace fines.		S4	2	5	100							No liners in MC for S4
6	6		6.5', grades to gray with increasing fines.		S5	2		100							
7	7		CLAYEY SAND (SC), loose to medium dense, dark bluish gray, wet, SAND is fine.		S6	2		100							
8	8		7.3', black organic layer (2") to 7.5', decayed vegetation.		U7			75				PP = 0.30			
9	9		Fat CLAY (CH), soft, medium stiff, dark bluish gray, moist, black mottles, with decayed vegetation, slight organic odor. [BAY MUD/MARSH DEPOSIT]									TV = 0.17			
10	10		8.0', grades with fine SAND lenses, with less decayed vegetation.												
11	11				S8		0	100							
12	12														
13	13														
14	14				S9			100							
15	15														
16	16		Poorly graded SAND (SP), very loose, greenish gray, wet, trace fines, trace shell fragments, seams of CLAYEY SAND, SAND is fine to medium. [MARINE SAND]		S10	5	12	78							
17	17				S11	6		100							
18	18														
19	19		CLAYEY SAND (SC), loose, dark greenish gray, wet, SAND is fine to medium, trace shell fragments (up to 1/2" diameter).												
20	20														
21	21		Poorly graded SAND (SP), medium dense, dark greenish gray, wet, trace SILT, SAND is fine to medium, trace shell fragments with lenses of abundant shells.		S12	9	27	78							
22	22					13									
23	23					14									15" recovery from punch core from 22.5' - 26'
24	24														
25	25														

(continued)



Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE BORING RECORD				HOLE ID PW-1A
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project				
BRIDGE NUMBER	PREPARED BY T. Carroll	DATE 1-13-09	SHEET 1 of 3	

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS.GPJ ARUP LIBRARY CALTRANS FORMAT.GLB 1/13/09

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
25															
26		[Diagonal hatching pattern]	CLAYEY SAND (SC), very loose, dark greenish gray, wet, trace shell fragments, SAND is fine, layers of cleaner SAND, seams of FAT CLAY.	X	S13	3	9	100					[Diamond pattern]		
27					4										
28					5										
29		[Diagonal hatching pattern]	Poorly graded SAND with CLAY (SP-SC), medium dense, olive brown, wet, trace fine subangular GRAVEL. Grades to orangish brown.	X	S14	7	24	100					[Diamond pattern]		
31					9										
32					15										
33		[Diagonal hatching pattern]		X	S15			100					[Diamond pattern]		Sample is slough
34															
35															
36		[Diagonal hatching pattern]	Poorly graded SAND (SP), very dense, yellowish brown, wet, SAND is fine, trace fines. [COLMA SAND]	X	S16	20	59	89					[Diamond pattern]		
37					25										
38					34										
39		[Diagonal hatching pattern]	Grades with increased fines content. Grades with trace fine subrounded GRAVEL.	X	S17	15	60	100					[Diamond pattern]		
40					29										
41					31										
42		[Diagonal hatching pattern]	Grades fine to very fine SAND, with less fines.	X	S18	20	74	100					[Diamond pattern]		
43					27										
44					47										
45		[Diagonal hatching pattern]	Grades with iron-oxide staining, occasional subrounded GRAVEL.	X	S19	15	66	100					[Diamond pattern]		
46					26										
47					40										
48		[Diagonal hatching pattern]	Grades without GRAVEL. 2" of heavy iron-oxide staining.	X	S19	15	66	100					[Diamond pattern]		
49					26										
50					40										
51		[Diagonal hatching pattern]	Poorly graded SAND with SILT (SP-SM), very dense, olive brown, moist, fine SAND, iron-oxide mottles.	X	S19	15	66	100					[Diamond pattern]		
52					26										
53					40										
54		[Diagonal hatching pattern]	52.5' - 56.0', several nodules of iron-oxide (3/4" - 1" diameter).	X	S19	15	66	100					[Diamond pattern]		
55					26										

(continued)



Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE BORING RECORD				HOLE ID PW-1A
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project				
BRIDGE NUMBER	PREPARED BY T. Carroll	DATE 1-13-09	SHEET 2 of 3	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
55			Poorly graded SAND with SILT (SP-SM), very dense, olive brown, moist, fine SAND, iron-oxide mottles.												
56			CLAYEY SAND with GRAVEL (SC), hard, light greenish gray, dry to moist, GRAVEL is fine to coarse, angular, SAND is fine.		S20	12	40	67							Very hard drilling at 58'
57						18									
58							22								
59			SEDIMENTARY ROCK (Sandstone), fine-grained, light yellowish gray with iron-oxide staining, intensely weathered, moderately soft. [BEDROCK]												
60															
61					S21	37	100/5'	73							
62						100/5"									
63			Borehole terminated at a depth of 61.8 feet on 9/18/2008.												
64			See Boring Record Legend for soil classification chart and key to test data and sampler type.												
65															
66															
67															
68															
69															
70															
71															
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REPORT TITLE BORING RECORD				HOLE ID PW-1A	
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701	
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project					
BRIDGE NUMBER		PREPARED BY T. Carroll		DATE 1-13-09	SHEET 3 of 3

Appendix B

MOISTURE & DENSITY TEST

Client : Arup Project : Doyle Dr. Replacement Project Job no : 131558

Boring #	PW-1A	PW-1A								
Sample #	5	13								
Depth (ft.)	7-7.5	26-27.5								
Soil type: (visual)										
1. Date tested:	01/08/09	01/08/09								1.
2. Tested by:	JH	JH								2.
3. Specimen height (in.)										3.
4. Wt. of specimen + tare (gm)										4.
5. Tare wt. (gm)										5.
6. Diameter (in.)										6.
7. Wet wt. of soil + dish wt. (gm)	310.02	217.96								7.
8. Dry wt. of soil + dish wt. (gm)	262.52	181.24								8.
9. Wt. of dish (gm)	41.22	52.33								9.
10. Dish ID										10.

Wet Density (pcf)

Dry Density (pcf)

Moisture Content (%)

Gs (Assumed)

Void Ratio

Saturation (%)

Additional data:

Wt. of dry soil + dish before washing (gm)

Wt. of dry soil + dish after washing (gm)

% Passing # 200 sieve

USCS symbol

2.70

2.70

2.70

2.70

2.70

2.70

2.70

2.70

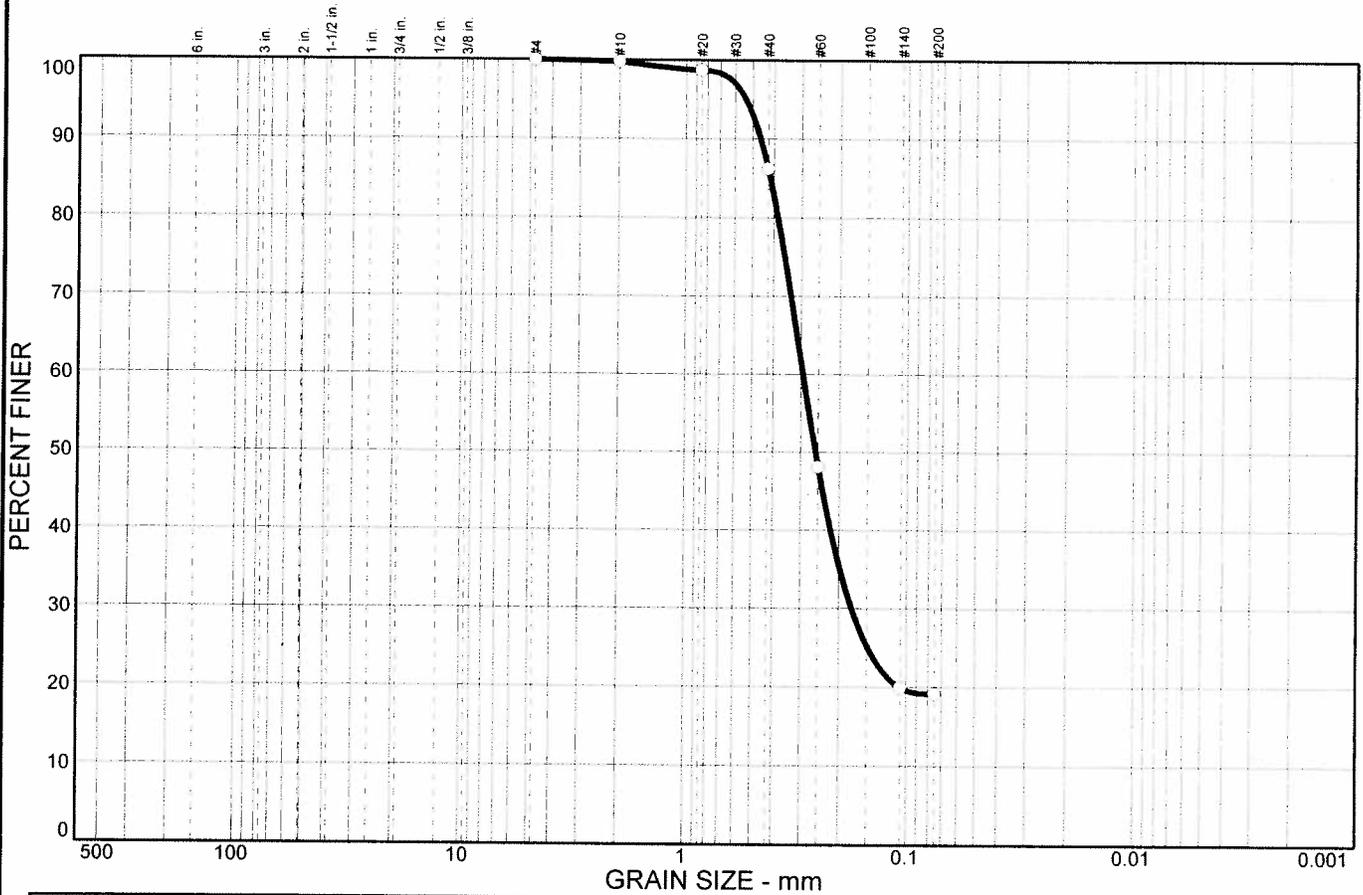
2.70

2.70

21.5

28.5

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.2	13.6	67.1	19.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.8		
#20	98.7		
#40	86.2		
#60	48.1		
#140	19.9		
#200	19.1		

Soil Description

Gray Silty sand

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 0.416 D₆₀= 0.294 D₅₀= 0.257
D₃₀= 0.175 D₁₅= D₁₀=
C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

* (no specification provided)

Sample No.: 13
Location:

Source of Sample: PW-1A

Date: 1-8-09
Elev./Depth: 26-27.5

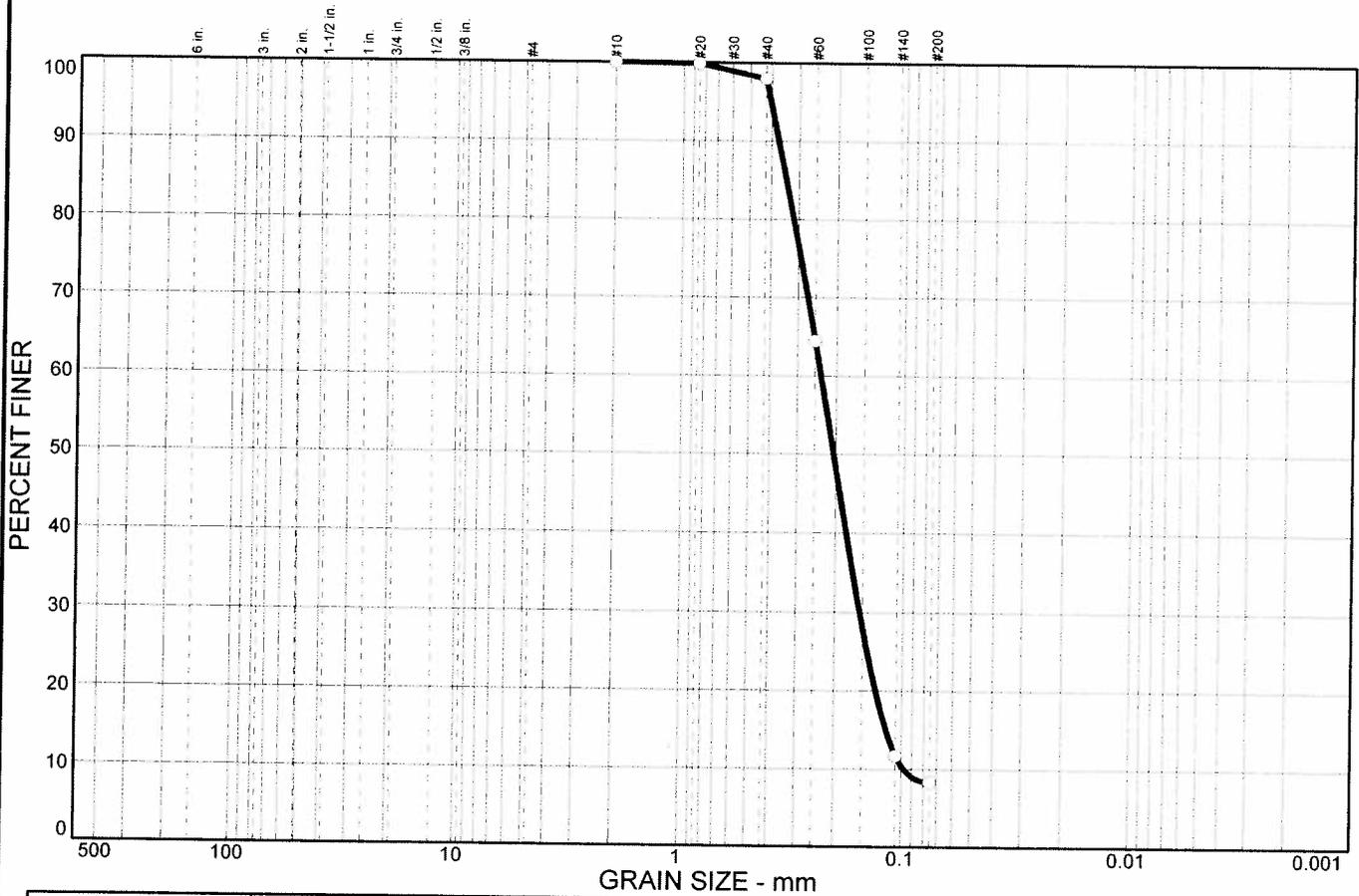


Client: ARUP
Project: Main Post Tunnel - Doyle Drive Replacement Project

Project No: 131558

Figure

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	2.0	89.7	8.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	99.9		
#40	98.0		
#60	64.4		
#140	11.7		
#200	8.3		

Soil Description

Dark olive brown Poorly graded sand with silt

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 0.343 D₆₀= 0.235 D₅₀= 0.205
D₃₀= 0.155 D₁₅= 0.117 D₁₀= 0.0977
C_u= 2.41 C_c= 1.04

Classification

USCS= SP-SM AASHTO=

Remarks

* (no specification provided)

Sample No.: 19
Location:

Source of Sample: PW-1A

Date: 1-8-09
Elev./Depth: 51-52.5



Client: ARUP
Project: Main Post Tunnel - Doyle Drive Replacement Project

Project No: 131558

Figure

Appendix C



McC Campbell Analytical, Inc.

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mcccampbell.com E-mail: main@mcccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

AEW Engineering, Inc. 55 New Montgomery St, Ste 722 San Francisco, CA 94105	Client Project ID: #2007-014; Doyle Drive	Date Sampled: 09/22/08
		Date Received: 09/23/08
	Client Contact: Randall Young	Date Reported: 10/01/08
	Client P.O.:	Date Completed: 10/01/08

WorkOrder: 0809714

October 01, 2008

Dear Randall:

Enclosed within are:

- 1) The results of the **1** analyzed sample from your project: **#2007-014; Doyle Drive,**
- 2) A QC report for the above sample,
- 3) A copy of the chain of custody, and
- 4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McC Campbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McC Campbell Analytical, Inc.

McC Campbell Analytical, Inc.



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

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0809714 ClientCode: AEW

WriteOn EDF Excel Fax Email HardCopy ThirdParty J-flag

Report to: **Randall Young** Email: **ryoung@aewengineering.com** Requested TAT: **5 days**
AEW Engineering, Inc. cc: **Kenneth Leung**
55 New Montgomery St, Ste 722 PO: **55 New Montgomery St, Ste 507** **Date Received: 09/23/2008**
San Francisco, CA 94105 ProjectNo: **#2007-014; Doyle Drive** **San Francisco, CA 94105** **Date Printed: 09/30/2008**
 (415) 495-8401 FAX (415) 358-5598

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
0809714-001	PW-1A	Water	9/22/2008 14:45	<input type="checkbox"/>	A	B	I	D	G	F	H	K	J	G	K	F

Test Legend:

1	5520B_SG_W	2	5520B_W	3	8260B_W	4	8270D_W	5	CAM17MS DISS
6	CN_TOTAL_W	7	COD_W	8	FLASH_W	9	G-MBTEX_W	10	HG DISS
11	PH_W	12	PRDISSOLVED						

Prepared by: Samantha Arbuckle

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.

McC Campbell Analytical, Inc.



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 Pittsburg, CA 94565-1701
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CHAIN-OF-CUSTODY RECORD

WorkOrder: 0809714 ClientCode: AEW

WriteOn EDF Excel Fax Email HardCopy ThirdParty J-flag

Report to: **Randall Young** Email: **ryoung@aewengineering.com** Requested TAT: **5 days**
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San Francisco, CA 94105 ProjectNo: **#2007-014; Doyle Drive** **San Francisco, CA 94105** **Date Printed: 09/30/2008**
 (415) 495-8401 FAX (415) 358-5598

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)													
					13	14	15	16	17	18	19	20	21	22	23	24		
0809714-001	PW-1A	Water	9/22/2008 14:45	<input type="checkbox"/>	F	C	K	E										

Test Legend:

13	SULFIDE DISS	14	TPH(DMO)WSG W	15	TS W	16	TSS W	17	
18		19		20		21		22	
23		24							

Prepared by: Samantha Arbuckle

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.



Sample Receipt Checklist

Client Name: **AEW Engineering, Inc.**

Date and Time Received: **9/23/2008 9:43:14 PM**

Project Name: **#2007-014; Doyle Drive**

Checklist completed and reviewed by: **Samantha Arbuckle**

WorkOrder N°: **0809714** Matrix Water

Carrier: Rob Pringle (MAI Courier)

Chain of Custody (COC) Information

- Chain of custody present? Yes No
- Chain of custody signed when relinquished and received? Yes No
- Chain of custody agrees with sample labels? Yes No
- Sample IDs noted by Client on COC? Yes No
- Date and Time of collection noted by Client on COC? Yes No
- Sampler's name noted on COC? Yes No

Sample Receipt Information

- Custody seals intact on shipping container/cooler? Yes No NA
- Shipping container/cooler in good condition? Yes No
- Samples in proper containers/bottles? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No

Sample Preservation and Hold Time (HT) Information

- All samples received within holding time? Yes No
- Container/Temp Blank temperature Cooler Temp: 5.1°C NA
- Water - VOA vials have zero headspace / no bubbles? Yes No No VOA vials submitted
- Sample labels checked for correct preservation? Yes No
- TTLC Metal - pH acceptable upon receipt (pH<2)? Yes No NA
- Samples Received on Ice? Yes No

(Ice Type: WET ICE)

* NOTE: If the "No" box is checked, see comments below.

Client contacted:

Date contacted:

Contacted by:

Comments:



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AEW Engineering, Inc. 55 New Montgomery St, Ste 722 San Francisco, CA 94105	Client Project ID: #2007-014; Doyle Drive	Date Sampled: 09/22/08
	Client Contact: Randall Young	Date Received: 09/23/08
	Client P.O.:	Date Extracted: 09/25/08
		Date Analyzed: 09/25/08

Volatile Organics by P&T and GC/MS (Basic Target List)*

Extraction Method: SW5030B

Analytical Method: SW8260B

Work Order: 0809714

Lab ID	0809714-0011
Client ID	PW-1A
Matrix	Water

Compound	Concentration *	DF	Reporting Limit	Compound	Concentration *	DF	Reporting Limit
Acetone	ND	1.0	10	tert-Amyl methyl ether (TAME)	ND	1.0	0.5
Benzene	ND	1.0	0.5	Bromobenzene	ND	1.0	0.5
Bromochloromethane	ND	1.0	0.5	Bromodichloromethane	0.57	1.0	0.5
Bromoform	1.6	1.0	0.5	Bromomethane	ND	1.0	0.5
2-Butanone (MEK)	ND	1.0	2.0	t-Butyl alcohol (TBA)	ND	1.0	2.0
n-Butyl benzene	ND	1.0	0.5	sec-Butyl benzene	ND	1.0	0.5
tert-Butyl benzene	ND	1.0	0.5	Carbon Disulfide	ND	1.0	0.5
Carbon Tetrachloride	ND	1.0	0.5	Chlorobenzene	ND	1.0	0.5
Chloroethane	ND	1.0	0.5	Chloroform	ND	1.0	0.5
Chloromethane	ND	1.0	0.5	2-Chlorotoluene	ND	1.0	0.5
4-Chlorotoluene	ND	1.0	0.5	Dibromochloromethane	1.2	1.0	0.5
1,2-Dibromo-3-chloropropane	ND	1.0	0.2	1,2-Dibromoethane (EDB)	ND	1.0	0.5
Dibromomethane	ND	1.0	0.5	1,2-Dichlorobenzene	ND	1.0	0.5
1,3-Dichlorobenzene	ND	1.0	0.5	1,4-Dichlorobenzene	ND	1.0	0.5
Dichlorodifluoromethane	ND	1.0	0.5	1,1-Dichloroethane	ND	1.0	0.5
1,2-Dichloroethane (1,2-DCA)	ND	1.0	0.5	1,1-Dichloroethene	ND	1.0	0.5
cis-1,2-Dichloroethene	ND	1.0	0.5	trans-1,2-Dichloroethene	ND	1.0	0.5
1,2-Dichloropropane	ND	1.0	0.5	1,3-Dichloropropane	ND	1.0	0.5
2,2-Dichloropropane	ND	1.0	0.5	1,1-Dichloropropene	ND	1.0	0.5
cis-1,3-Dichloropropene	ND	1.0	0.5	trans-1,3-Dichloropropene	ND	1.0	0.5
Diisopropyl ether (DIPE)	ND	1.0	0.5	Ethylbenzene	ND	1.0	0.5
Ethyl tert-butyl ether (ETBE)	ND	1.0	0.5	Freon 113	ND	1.0	10
Hexachlorobutadiene	ND	1.0	0.5	Hexachloroethane	ND	1.0	0.5
2-Hexanone	ND	1.0	0.5	Isopropylbenzene	ND	1.0	0.5
4-Isopropyl toluene	ND	1.0	0.5	Methyl-t-butyl ether (MTBE)	ND	1.0	0.5
Methylene chloride	ND	1.0	0.5	4-Methyl-2-pentanone (MIBK)	ND	1.0	0.5
Naphthalene	ND	1.0	0.5	n-Propyl benzene	ND	1.0	0.5
Styrene	ND	1.0	0.5	1,1,1,2-Tetrachloroethane	ND	1.0	0.5
1,1,1,2-Tetrachloroethane	ND	1.0	0.5	Tetrachloroethene	ND	1.0	0.5
Toluene	ND	1.0	0.5	1,2,3-Trichlorobenzene	ND	1.0	0.5
1,2,4-Trichlorobenzene	ND	1.0	0.5	1,1,1-Trichloroethane	ND	1.0	0.5
1,1,2-Trichloroethane	ND	1.0	0.5	Trichloroethene	ND	1.0	0.5
Trichlorofluoromethane	ND	1.0	0.5	1,2,3-Trichloropropane	ND	1.0	0.5
1,2,4-Trimethylbenzene	ND	1.0	0.5	1,3,5-Trimethylbenzene	ND	1.0	0.5
Vinyl Chloride	ND	1.0	0.5	Xylenes	ND	1.0	0.5

Surrogate Recoveries (%)

%SS1:	100	%SS2:	106
%SS3:	82		

Comments:

* water and vapor samples are reported in µg/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 µg/wipe.

ND means not detected above the reporting 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.



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AEW Engineering, Inc. 55 New Montgomery St, Ste 722 San Francisco, CA 94105	Client Project ID: #2007-014; Doyle Drive	Date Sampled: 09/22/08
	Client Contact: Randall Young	Date Received: 09/23/08
	Client P.O.:	Date Extracted: 09/23/08
		Date Analyzed: 09/27/08

Semi-Volatile Organics by GC/MS (Basic Target List)*

Extraction Method: SW3510C

Analytical Method: SW8270C

Work Order: 0809714

Lab ID	0809714-001D
Client ID	PW-1A
Matrix	Water

Compound	Concentration *	DF	Reporting Limit	Compound	Concentration *	DF	Reporting Limit
Acenaphthene	ND	1.0	10	Acenaphthylene	ND	1.0	10
Acetochlor	ND	1.0	10	Anthracene	ND	1.0	10
Benzidine	ND	1.0	50	Benzoic Acid	ND	1.0	50
Benzo(a)anthracene	ND	1.0	10	Benzo(b)fluoranthene	ND	1.0	10
Benzo(k)fluoranthene	ND	1.0	10	Benzo(g,h,i)perylene	ND	1.0	10
Benzo(a)pyrene	ND	1.0	10	Benzyl Alcohol	ND	1.0	50
1,1-Biphenyl	ND	1.0	10	Bis (2-chloroethoxy) Methane	ND	1.0	10
Bis (2-chloroethyl) Ether	ND	1.0	10	Bis (2-chloroisopropyl) Ether	ND	1.0	10
Bis (2-ethylhexyl) Phthalate	ND	1.0	20	4-Bromophenyl Phenyl Ether	ND	1.0	10
Butylbenzyl Phthalate	ND	1.0	10	4-Chloroaniline	ND	1.0	20
4-Chloro-3-methylphenol	ND	1.0	10	2-Chloronaphthalene	ND	1.0	10
2-Chlorophenol	ND	1.0	10	4-Chlorophenyl Phenyl Ether	ND	1.0	10
Chrysene	ND	1.0	10	Dibenzo(a,h)anthracene	ND	1.0	10
Dibenzofuran	ND	1.0	10	Di-n-butyl Phthalate	ND	1.0	10
1,2-Dichlorobenzene	ND	1.0	10	1,3-Dichlorobenzene	ND	1.0	10
1,4-Dichlorobenzene	ND	1.0	10	3,3-Dichlorobenzidine	ND	1.0	20
2,4-Dichlorophenol	ND	1.0	10	Diethyl Phthalate	ND	1.0	10
2,4-Dimethylphenol	ND	1.0	10	Dimethyl Phthalate	ND	1.0	10
4,6-Dinitro-2-methylphenol	ND	1.0	50	2,4-Dinitrophenol	ND	1.0	50
2,4-Dinitrotoluene	ND	1.0	10	2,6-Dinitrotoluene	ND	1.0	10
Di-n-octyl Phthalate	ND	1.0	10	1,2-Diphenylhydrazine	ND	1.0	10
Fluoranthene	ND	1.0	10	Fluorene	ND	1.0	10
Hexachlorobenzene	ND	1.0	10	Hexachlorobutadiene	ND	1.0	10
Hexachlorocyclopentadiene	ND	1.0	50	Hexachloroethane	ND	1.0	10
Indeno (1,2,3-cd) pyrene	ND	1.0	10	Isophorone	ND	1.0	10
2-Methylnaphthalene	ND	1.0	10	2-Methylphenol (o-Cresol)	ND	1.0	10
3 &/or 4-Methylphenol (m,p-Cresol)	ND	1.0	10	Naphthalene	ND	1.0	10
2-Nitroaniline	ND	1.0	50	3-Nitroaniline	ND	1.0	50
4-Nitroaniline	ND	1.0	50	Nitrobenzene	ND	1.0	10
2-Nitrophenol	ND	1.0	50	4-Nitrophenol	ND	1.0	50
N-Nitrosodiphenylamine	ND	1.0	10	N-Nitrosodi-n-propylamine	ND	1.0	10
Pentachlorophenol	ND	1.0	50	Phenanthrene	ND	1.0	10
Phenol	ND	1.0	10	Pyrene	ND	1.0	10
1,2,4-Trichlorobenzene	ND	1.0	10	2,4,5-Trichlorophenol	ND	1.0	10
2,4,6-Trichlorophenol	ND	1.0	10				

Surrogate Recoveries (%)

%SS1:	60	%SS2:	61
%SS3:	65	%SS4:	47
%SS5:	53	%SS6:	80

Comments:

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

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

#) surrogate diluted out of range; &) low or no surrogate due to matrix interference.



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AEW Engineering, Inc. 55 New Montgomery St, Ste 722 San Francisco, CA 94105	Client Project ID: #2007-014; Doyle Drive	Date Sampled: 09/22/08
	Client Contact: Randall Young	Date Received 09/23/08
	Client P.O.:	Date Extracted 09/23/08
		Date Analyzed 09/26/08

CAM / CCR 17 Metals*

Lab ID	0809714-001G				Reporting Limit for DF =1; ND means not detected above the reporting limit	
Client ID	PW-1A				S	W
Matrix	W				mg/kg	µg/L
Extraction Type	DISS.					

ICP-MS Metals, Concentration*

Analytical Method: E200.8	Extraction Method: E200.8	Work Order: 0809714
Dilution Factor	1	1
Antimony	1.5	NA
Arsenic	9.5	NA
Barium	32	NA
Beryllium	ND	NA
Cadmium	ND	NA
Chromium	12	NA
Cobalt	0.53	NA
Copper	2.3	NA
Lead	0.85	NA
Mercury	0.043	NA
Molybdenum	15	NA
Nickel	2.4	NA
Selenium	0.98	NA
Silver	ND	NA
Thallium	ND	NA
Vanadium	27	NA
Zinc	5.5	NA
%SS:	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; N/A means not applicable to this sample or instrument.

TOTAL = acid digestion.

WET = Waste Extraction Test (STLC).

DI WET = Waste Extraction Test using de-ionized water.



QC SUMMARY REPORT FOR SW8015B

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 38363

WorkOrder 0809714

EPA Method SW8015B		Extraction SW3510C/3630C							Spiked Sample ID: N/A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH-Diesel (C10-C23)	N/A	1000	N/A	N/A	N/A	89.6	90.7	1.16	N/A	N/A	70 - 130	30
%SS:	N/A	2500	N/A	N/A	N/A	83	84	1.78	N/A	N/A	70 - 130	30

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

BATCH 38363 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809714-001C	09/22/08 2:45 PM	09/23/08	09/27/08 9:36 AM				

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 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.



QC SUMMARY REPORT FOR SM5520B/F

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 38385

WorkOrder 0809714

EPA Method SM5520B/F		Extraction SM5520B/F							Spiked Sample ID: N/A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/L	mg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
POG	N/A	20.83	N/A	N/A	N/A	93.3	90.4	3.21	N/A	N/A	70 - 130	25

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

BATCH 38385 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809714-001A	09/22/08 2:45 PM	09/23/08	09/26/08 10:30 AM	0809714-001B	09/22/08 2:45 PM	09/23/08	09/26/08 10:35 AM

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 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.



QC SUMMARY REPORT FOR E410.4

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 38343

WorkOrder 0809714

EPA Method E410.4		Extraction E410.4							Spiked Sample ID: 0809595-001D			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/L	mg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
COD	ND	400	97.2	100	3.02	103	101	1.75	80 - 120	20	90 - 110	20

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

BATCH 38343 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809714-001H	09/22/08 2:45 PM	09/24/08	09/24/08 2:19 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 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.



QC SUMMARY REPORT FOR E200.8

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 38436

WorkOrder 0809714

Analyte	EPA Method E200.8 Extraction E200.8								Spiked Sample ID: 0809694-008A			
	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Antimony	0.80	10	97	99.1	1.98	99.9	99.9	0	70 - 130	20	80 - 120	20
Arsenic	1.2	10	106	108	2.27	104	103	0.675	70 - 130	20	80 - 120	20
Barium	27	100	102	104	2.00	101	101	0	70 - 130	20	80 - 120	20
Beryllium	ND	10	111	113	2.23	110	112	1.53	70 - 130	20	80 - 120	20
Cadmium	0.46	10	102	106	4.06	103	105	2.21	70 - 130	20	80 - 120	20
Chromium	8.0	10	86.4	89.7	1.96	111	108	2.29	70 - 130	20	80 - 120	20
Cobalt	0.97	10	103	106	2.46	100	100	0	70 - 130	20	80 - 120	20
Copper	150	10	NR	NR	NR	108	109	0.0921	70 - 130	20	80 - 120	20
Lead	4.2	10	96.9	99.4	1.78	102	102	0	70 - 130	20	80 - 120	20
Mercury	0.89	0.25	NR	NR	NR	109	112	3.08	70 - 130	20	80 - 120	20
Molybdenum	3.0	10	102	109	5.47	103	102	0.195	70 - 130	20	80 - 120	20
Nickel	5.6	10	113	108	2.94	104	106	1.14	70 - 130	20	80 - 120	20
Selenium	0.66	10	98	100	2.27	104	103	0.483	70 - 130	20	80 - 120	20
Silver	2.1	10	91.9	95.1	2.79	97.8	98.3	0.531	70 - 130	20	80 - 120	20
Thallium	ND	10	85.4	86.3	1.04	96	97.1	1.18	70 - 130	20	80 - 120	20
Vanadium	4.3	10	100	104	2.41	106	108	1.49	70 - 130	20	80 - 120	20
Zinc	320	100	95.3	101	1.44	103	104	0.964	70 - 130	20	80 - 120	20
%SS:	103	750	97	97	0	98	98	0	70 - 130	20	70 - 130	20

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

BATCH 38436 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809714-001G	09/22/08 2:45 PM	09/23/08	09/26/08 3:24 AM				

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: 38437

WorkOrder 0809714

Analyte	Extraction SW5030B			Spiked Sample ID: 0809697-003A								
	Sample µg/L	Spiked µg/L	MS % Rec.	MSD % Rec.	MS-MSD % RPD	LCS % Rec.	LCSD % Rec.	LCS-LCSD % RPD	Acceptance Criteria (%)			
tert-Amyl methyl ether (TAME)	ND	10	101	108	6.85	98.1	96	2.19	70 - 130	30	70 - 130	30
Benzene	ND	10	94.9	96.9	2.06	109	107	2.54	70 - 130	30	70 - 130	30
t-Butyl alcohol (TBA)	ND	50	97.6	113	14.7	77.7	73.6	5.45	70 - 130	30	70 - 130	30
Chlorobenzene	ND	10	87.8	89.5	1.97	101	100	0.966	70 - 130	30	70 - 130	30
1,2-Dibromoethane (EDB)	ND	10	81.7	86.2	5.41	101	97.3	3.59	70 - 130	30	70 - 130	30
1,2-Dichloroethane (1,2-DCA)	ND	10	103	110	5.87	107	105	2.20	70 - 130	30	70 - 130	30
1,1-Dichloroethene	ND	10	75.1	77	2.54	89.8	86.9	3.28	70 - 130	30	70 - 130	30
Diisopropyl ether (DIPE)	ND	10	98.2	102	3.78	101	99.1	2.04	70 - 130	30	70 - 130	30
Ethyl tert-butyl ether (ETBE)	ND	10	118	124	4.98	110	106	3.86	70 - 130	30	70 - 130	30
Methyl-t-butyl ether (MTBE)	ND	10	94.6	102	7.34	99.9	96.8	3.11	70 - 130	30	70 - 130	30
Toluene	ND	10	84.8	85.8	1.19	99.8	98.7	1.11	70 - 130	30	70 - 130	30
Trichloroethene	ND	10	94.6	96.6	2.09	114	111	2.76	70 - 130	30	70 - 130	30
%SS1:	92	25	89	89	0	91	91	0	70 - 130	30	70 - 130	30
%SS2:	93	25	90	90	0	95	95	0	70 - 130	30	70 - 130	30
%SS3:	98	2.5	77	75	1.85	102	99	2.49	70 - 130	30	70 - 130	30

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

BATCH 38437 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809714-001I	09/22/08 2:45 PM	09/25/08	09/25/08 12:13 AM				

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 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.



QC SUMMARY REPORT FOR SW8021B/8015Cm

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 38438

WorkOrder 0809714

EPA Method SW8021B/8015Cm		Extraction SW5030B							Spiked Sample ID: 0809713-001A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex) [£]	ND	60	100	97.9	2.51	91.5	94.8	3.50	70 - 130	20	70 - 130	20
MTBE	ND	10	106	104	1.70	103	104	0.573	70 - 130	20	70 - 130	20
Benzene	ND	10	96.2	97.3	1.21	99.6	99.9	0.295	70 - 130	20	70 - 130	20
Toluene	ND	10	97.8	98.2	0.447	97.9	100	2.30	70 - 130	20	70 - 130	20
Ethylbenzene	ND	10	103	104	0.488	106	106	0	70 - 130	20	70 - 130	20
Xylenes	ND	30	115	116	0.506	105	118	11.4	70 - 130	20	70 - 130	20
%SS:	98	10	95	95	0	96	97	0.866	70 - 130	20	70 - 130	20

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

BATCH 38438 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809714-001J	09/22/08 2:45 PM	09/24/08	09/24/08 7:47 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.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

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, or inconsistency in sample containers.



QC SUMMARY REPORT FOR Kelada-01

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 38443

WorkOrder 0809714

EPA Method Kelada-01		Extraction Kelada-01							Spiked Sample ID: 0809706-001D			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Total Cyanide	2.4	40	103	104	0.946	100	104	3.84	80 - 120	20	90 - 110	20

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

BATCH 38443 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809714-001F	09/22/08 2:45 PM	09/24/08	09/24/08 1:06 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 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.



QC SUMMARY REPORT FOR SM4500 S-2 D

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 38444

WorkOrder 0809714

EPA Method SM4500 S-2 D		Extraction SM4500-S ⁻² D							Spiked Sample ID: 0809706-001D			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/L	mg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Dissolved Sulfide	ND	2.5	101	103	2.37	108	106	1.29	75 - 125	20	80 - 120	20

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

BATCH 38444 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809714-001F	09/22/08 2:45 PM	09/23/08	09/24/08 11:07 AM				

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 = 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 SW8270C

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 38446

WorkOrder 0809714

Analyte	EPA Method SW8270C Extraction SW3510C								Spiked Sample ID: N/A			
	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Acenaphthene	N/A	50	N/A	N/A	N/A	65.3	65.4	0.107	N/A	N/A	30 - 130	20
4-Chloro-3-methylphenol	N/A	100	N/A	N/A	N/A	101	95.9	5.51	N/A	N/A	30 - 130	20
2-Chlorophenol	N/A	100	N/A	N/A	N/A	82.6	87	5.10	N/A	N/A	30 - 130	20
1,4-Dichlorobenzene	N/A	50	N/A	N/A	N/A	55.5	56.6	2.00	N/A	N/A	30 - 130	20
2,4-Dinitrotoluene	N/A	50	N/A	N/A	N/A	66.9	66.9	0	N/A	N/A	30 - 130	20
4-Nitrophenol	N/A	100	N/A	N/A	N/A	97.7	98.8	1.07	N/A	N/A	30 - 130	20
N-Nitrosodi-n-propylamine	N/A	50	N/A	N/A	N/A	99	100	1.01	N/A	N/A	30 - 130	20
Pentachlorophenol	N/A	100	N/A	N/A	N/A	55.8	57.4	2.83	N/A	N/A	30 - 130	20
Phenol	N/A	100	N/A	N/A	N/A	93.2	96.4	3.41	N/A	N/A	30 - 130	20
Pyrene	N/A	50	N/A	N/A	N/A	74.4	75	0.884	N/A	N/A	30 - 130	20
1,2,4-Trichlorobenzene	N/A	50	N/A	N/A	N/A	50	50.7	1.51	N/A	N/A	30 - 130	20
%SS1:	N/A	5000	N/A	N/A	N/A	83	88	4.98	N/A	N/A	30 - 130	20
%SS2:	N/A	5000	N/A	N/A	N/A	103	109	6.09	N/A	N/A	30 - 130	20
%SS3:	N/A	5000	N/A	N/A	N/A	111	113	2.57	N/A	N/A	30 - 130	20
%SS4:	N/A	5000	N/A	N/A	N/A	66	66	0	N/A	N/A	30 - 130	20
%SS5:	N/A	5000	N/A	N/A	N/A	87	90	3.39	N/A	N/A	30 - 130	20
%SS6:	N/A	5000	N/A	N/A	N/A	76	79	4.64	N/A	N/A	30 - 130	20

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

BATCH 38446 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809714-001D	09/22/08 2:45 PM	09/23/08	09/27/08 12:11 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 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.



QC SUMMARY REPORT FOR WET CHEMISTRY TESTS

Test Method: Flash Point

Matrix: W

WorkOrder: 0809714

Method Name: SW1010			Units ± °C			BatchID: 38432	
Lab ID	Sample	DF	Dup / Ser. Dil.	DF	Precision	Acceptance Criteria	
0809714-001K	>100 °C	1	>100 °C	1	N/A	2	

BATCH 38432 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809714-001K	09/22/08 2:45 PM	09/24/08	09/24/08 5:00 PM				

Test Method: pH

Matrix: W

WorkOrder: 0809714

Method Name: SM4500H+B			Units ±, pH units @ °C			BatchID: 38371	
Lab ID	Sample	DF	Dup / Ser. Dil.	DF	Precision	Acceptance Criteria	
0809714-001K	8.32 @ 23.7°C	1	8.31 @ 23.7°C	1	0.01	0.02	

BATCH 38371 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809714-001K	09/22/08 2:45 PM	09/24/08	09/24/08 6:20 PM				

Dup = Duplicate; Ser. Dil. = Serial Dilution; MS = Matrix Spike; RD = Relative Difference; RPD = Relative Percent Deviation.

Precision = Absolute Value (Sample - Duplicate)

$RPD = 100 * (Sample - Duplicate) / [(Sample + Duplicate) / 2]$

%RPD is calculated using results of up to 10 significant figures, however the reported results are rounded to 2 or 3 significant figures. Therefore there may be a slight discrepancy between the %RPD displayed above and %RPD calculated using the reported results. MAI considers %RPD based upon more significant figures to be more accurate.



QC SUMMARY REPORT FOR E245.2

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 38588

WorkOrder: 0809714

EPA Method E245.2		Extraction E245.1							Spiked Sample ID: N/A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Mercury	N/A	1	N/A	N/A	N/A	82.9	80.4	3.11	N/A	N/A	80 - 120	20

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

BATCH 38588 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809714-001G	09/22/08 2:45 PM	09/30/08	09/30/08 7:23 AM				

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 = 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 WET CHEMISTRY TESTS

Test Method: Total Solids

Matrix: W

WorkOrder: 0809714

Method Name: SM2540B		Units mg/L			BatchID: 38460	
Lab ID	Sample	DF	Dup / Ser. Dil.	DF	% RPD	Acceptance Criteria (%)
0809714-001K	740	1	763	1	3.06	<10

BATCH 38460 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809714-001K	09/22/08 2:45 PM	09/24/08	09/26/08 5:40 PM				

Test Method: Total Suspended Solids

Matrix: W

WorkOrder: 0809714

Method Name: SM2540D		Units mg/L			BatchID: 38440	
Lab ID	Sample	DF	Dup / Ser. Dil.	DF	% RPD	Acceptance Criteria (%)
0809714-001E	114	10	107	10	6.33	<10

BATCH 38440 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809714-001E	09/22/08 2:45 PM	09/24/08	09/24/08 7:55 PM				

Dup = Duplicate; Ser. Dil. = Serial Dilution; MS = Matrix Spike; RD = Relative Difference; RPD = Relative Percent Deviation.

Precision = Absolute Value (Sample - Duplicate)

RPD = 100 * (Sample - Duplicate) / [(Sample + Duplicate) / 2]

%RPD is calculated using results of up to 10 significant figures, however the reported results are rounded to 2 or 3 significant figures. Therefore there may be a slight discrepancy between the %RPD displayed above and %RPD calculated using the reported results. MAI considers %RPD based upon more significant figures to be more accurate.



McC Campbell Analytical, Inc.

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mcccampbell.com E-mail: main@mcccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

AEW Engineering, Inc. 55 New Montgomery St, Ste 722 San Francisco, CA 94105	Client Project ID: #2007-014; Doyle Drive	Date Sampled: 10/08/08
		Date Received: 10/08/08
	Client Contact: Randall Young	Date Reported: 10/09/08
	Client P.O.:	Date Completed: 10/09/08

WorkOrder: 0810185

October 09, 2008

Dear Randall:

Enclosed within are:

- 1) The results of the **1** analyzed sample from your project: **#2007-014; Doyle Drive,**
- 2) A QC report for the above sample,
- 3) A copy of the chain of custody, and
- 4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McC Campbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McC Campbell Analytical, Inc.

McC Campbell Analytical, Inc.



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

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0810185 **ClientCode: AEW**

WriteOn EDF Excel Fax Email HardCopy ThirdParty J-flag

Report to: Randall Young **Email:** ryoung@aewengineering.com **Requested TAT:** 1 day
 AEW Engineering, Inc. **cc:** Kenneth Leung
 55 New Montgomery St, Ste 722 **PO:** 55 New Montgomery St, Ste 507 **Date Received:** 10/08/2008
 San Francisco, CA 94105 **ProjectNo:** #2007-014; Doyle Drive **San Francisco, CA 94105** **Date Printed:** 10/08/2008
 (415) 495-8401 **FAX:** (415) 358-5598

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							
0810185-001	PW-1A	Water	10/8/2008 9:15	<input type="checkbox"/>	A																		

Test Legend:

1	300_1_W	2	3	4	5
6		7	8	9	10
11		12			

Prepared by: Maria Venegas

Comments: 24hr Rush

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.



Sample Receipt Checklist

Client Name: **AEW Engineering, Inc.**

Date and Time Received: **10/08/08 4:34:08 PM**

Project Name: **#2007-014; Doyle Drive**

Checklist completed and reviewed by: **Maria Venegas**

WorkOrder N°: **0810185** Matrix Water

Carrier: Rob Pringle (MAI Courier)

Chain of Custody (COC) Information

- Chain of custody present? Yes No
- Chain of custody signed when relinquished and received? Yes No
- Chain of custody agrees with sample labels? Yes No
- Sample IDs noted by Client on COC? Yes No
- Date and Time of collection noted by Client on COC? Yes No
- Sampler's name noted on COC? Yes No

Sample Receipt Information

- Custody seals intact on shipping container/cooler? Yes No NA
- Shipping container/cooler in good condition? Yes No
- Samples in proper containers/bottles? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No

Sample Preservation and Hold Time (HT) Information

- All samples received within holding time? Yes No
- Container/Temp Blank temperature Cooler Temp: 6.6°C NA
- Water - VOA vials have zero headspace / no bubbles? Yes No No VOA vials submitted
- Sample labels checked for correct preservation? Yes No
- TTLC Metal - pH acceptable upon receipt (pH<2)? Yes No NA
- Samples Received on Ice? Yes No

(Ice Type: WET ICE)

* NOTE: If the "No" box is checked, see comments below.

Client contacted:

Date contacted:

Contacted by:

Comments:



QC SUMMARY REPORT FOR E300.1

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 38729

WorkOrder 0810185

EPA Method E300.1		Extraction E300.1							Spiked Sample ID: N/A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/L	mg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Bromide	N/A	1	N/A	N/A	N/A	109	110	1.41	N/A	N/A	85 - 115	15
Chloride	N/A	1	N/A	N/A	N/A	99	98	0.982	N/A	N/A	85 - 115	15
Fluoride	N/A	1	N/A	N/A	N/A	95.8	96.6	0.840	N/A	N/A	85 - 115	15
Sulfate	N/A	1	N/A	N/A	N/A	96.7	95.3	1.54	N/A	N/A	85 - 115	15
%SS:	N/A	0.10	N/A	N/A	N/A	111	110	1.41	N/A	N/A	90 - 115	10

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

BATCH 38729 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0810185-001A	10/08/08 9:15 AM	10/09/08	10/09/08 1:57 AM	0810185-001A	10/08/08 9:15 AM	10/09/08	10/09/08 2:38 AM

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 = 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.



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Telephone: 877-252-9262 Fax: 925-252-9269

AEW Engineering, Inc. 55 New Montgomery St, Ste 722 San Francisco, CA 94105	Client Project ID: #2007-014; Doyle Drive	Date Sampled: 09/22/08
		Date Received: 09/23/08
	Client Contact: Randall Young	Date Reported: 10/01/08
	Client P.O.:	Date Completed: 10/09/08

WorkOrder: 0809714

October 09, 2008

Dear Randall:

Enclosed within are:

- 1) The results of the **1** analyzed sample from your project: **#2007-014; Doyle Drive,**
- 2) A QC report for the above sample,
- 3) A copy of the chain of custody, and
- 4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McC Campbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McC Campbell Analytical, Inc.



McC Campbell Analytical, Inc.

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mcccampbell.com E-mail: main@mcccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

AEW Engineering, Inc. 55 New Montgomery St, Ste 722 San Francisco, CA 94105	Client Project ID: #2007-014; Doyle Drive	Date Sampled: 09/22/08
	Client Contact: Randall Young	Date Received: 09/23/08
	Client P.O.:	Date Extracted: 09/23/08
		Date Analyzed: 10/09/08

Polychlorinated Biphenyls (PCBs) Aroclors by GC-ECD*

Extraction Method: SW3510C

Analytical Method: SW8082

Work Order: 0809714

Lab ID	0809714-001D			Reporting Limit for DF =1	
Client ID	PW-1A				
Matrix	W				
DF	1				S

Compound	Concentration				ug/kg	µg/L
Aroclor1016	ND<1.0				NA	0.5
Aroclor1221	ND<1.0				NA	0.5
Aroclor1232	ND<1.0				NA	0.5
Aroclor1242	ND<1.0				NA	0.5
Aroclor1248	ND<1.0				NA	0.5
Aroclor1254	ND<1.0				NA	0.5
Aroclor1260	ND<1.0				NA	0.5
PCBs, total	ND<1.0				NA	0.5

Surrogate Recoveries (%)

%SS:	124			
Comments	a7			

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

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

surrogate diluted out of range or surrogate coelutes with another peak.

a7) reporting limit raised due to insufficient sample amount



QC SUMMARY REPORT FOR SW8082

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 38804

WorkOrder: 0809714

EPA Method SW8082		Extraction SW3510C							Spiked Sample ID: N/A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Aroclor1260	N/A	3.75	N/A	N/A	N/A	91.7	96	4.57	N/A	N/A	70 - 130	20
%SS:	N/A	2.5	N/A	N/A	N/A	126	130	3.25	N/A	N/A	70 - 130	30

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

BATCH 38804 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0809714-001D	09/22/08 2:45 PM	09/23/08	10/09/08 11:11 AM				

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 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.

Appendix D



McC Campbell Analytical, Inc.

"When Quality Counts"

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AEW Engineering, Inc. 55 New Montgomery St, Ste 722 San Francisco, CA 94105	Client Project ID: #2007-014; Doyle Drive, San Francisco	Date Sampled: 11/14/08
	Client Contact: Randall Young	Date Received: 11/14/08
	Client P.O.:	Date Reported: 11/18/08
		Date Completed: 11/18/08

WorkOrder: 0811452

November 18, 2008

Dear Randall:

Enclosed within are:

- 1) The results of the **1** analyzed sample from your project: **#2007-014; Doyle Drive, San Francis**
- 2) A QC report for the above sample,
- 3) A copy of the chain of custody, and
- 4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McC Campbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McC Campbell Analytical, Inc.



Sample Receipt Checklist

Client Name: **AEW Engineering, Inc.** Date and Time Received: **11/14/08 2:03:59 PM**
 Project Name: **#2007-014; Doyle Drive, San Francisco** Checklist completed and reviewed by: **Ana Venegas**
 WorkOrder N°: **0811452** Matrix Water Carrier: Client Drop-In

Chain of Custody (COC) Information

Chain of custody present? Yes No
 Chain of custody signed when relinquished and received? Yes No
 Chain of custody agrees with sample labels? Yes No
 Sample IDs noted by Client on COC? Yes No
 Date and Time of collection noted by Client on COC? Yes No
 Sampler's name noted on COC? Yes No

Sample Receipt Information

Custody seals intact on shipping container/cooler? Yes No NA
 Shipping container/cooler in good condition? Yes No
 Samples in proper containers/bottles? Yes No
 Sample containers intact? Yes No
 Sufficient sample volume for indicated test? Yes No

Sample Preservation and Hold Time (HT) Information

All samples received within holding time? Yes No
 Container/Temp Blank temperature Cooler Temp: 5.8°C NA
 Water - VOA vials have zero headspace / no bubbles? Yes No No VOA vials submitted
 Sample labels checked for correct preservation? Yes No
 TTLC Metal - pH acceptable upon receipt (pH<2)? Yes No NA
 Samples Received on Ice? Yes No
 (Ice Type: WET ICE)

* NOTE: If the "No" box is checked, see comments below.

Client contacted: Date contacted: Contacted by:

Comments:



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AEW Engineering, Inc. 55 New Montgomery St, Ste 722 San Francisco, CA 94105	Client Project ID: #2007-014; Doyle Drive, San Francisco	Date Sampled: 11/14/08
	Client Contact: Randall Young	Date Received: 11/14/08
	Client P.O.:	Date Extracted: 11/14/08
		Date Analyzed: 11/14/08

Volatile Organics by P&T and GC/MS (Basic Target List)*

Extraction Method: SW5030B

Analytical Method: SW8260B

Work Order: 0811452

Lab ID	0811452-001B
Client ID	Tank 3259
Matrix	Water

Compound	Concentration *	DF	Reporting Limit	Compound	Concentration *	DF	Reporting Limit
Acetone	ND	1.0	10	tert-Amyl methyl ether (TAME)	ND	1.0	0.5
Benzene	ND	1.0	0.5	Bromobenzene	ND	1.0	0.5
Bromochloromethane	ND	1.0	0.5	Bromodichloromethane	ND	1.0	0.5
Bromoform	ND	1.0	0.5	Bromomethane	ND	1.0	0.5
2-Butanone (MEK)	ND	1.0	2.0	t-Butyl alcohol (TBA)	ND	1.0	2.0
n-Butyl benzene	ND	1.0	0.5	sec-Butyl benzene	ND	1.0	0.5
tert-Butyl benzene	ND	1.0	0.5	Carbon Disulfide	ND	1.0	0.5
Carbon Tetrachloride	ND	1.0	0.5	Chlorobenzene	ND	1.0	0.5
Chloroethane	ND	1.0	0.5	Chloroform	ND	1.0	0.5
Chloromethane	ND	1.0	0.5	2-Chlorotoluene	ND	1.0	0.5
4-Chlorotoluene	ND	1.0	0.5	Dibromochloromethane	ND	1.0	0.5
1,2-Dibromo-3-chloropropane	ND	1.0	0.2	1,2-Dibromoethane (EDB)	ND	1.0	0.5
Dibromomethane	ND	1.0	0.5	1,2-Dichlorobenzene	ND	1.0	0.5
1,3-Dichlorobenzene	ND	1.0	0.5	1,4-Dichlorobenzene	ND	1.0	0.5
Dichlorodifluoromethane	ND	1.0	0.5	1,1-Dichloroethane	ND	1.0	0.5
1,2-Dichloroethane (1,2-DCA)	ND	1.0	0.5	1,1-Dichloroethene	ND	1.0	0.5
cis-1,2-Dichloroethene	ND	1.0	0.5	trans-1,2-Dichloroethene	ND	1.0	0.5
1,2-Dichloropropane	ND	1.0	0.5	1,3-Dichloropropane	ND	1.0	0.5
2,2-Dichloropropane	ND	1.0	0.5	1,1-Dichloropropene	ND	1.0	0.5
cis-1,3-Dichloropropene	ND	1.0	0.5	trans-1,3-Dichloropropene	ND	1.0	0.5
Diisopropyl ether (DIPE)	ND	1.0	0.5	Ethylbenzene	ND	1.0	0.5
Ethyl tert-butyl ether (ETBE)	ND	1.0	0.5	Freon 113	ND	1.0	10
Hexachlorobutadiene	ND	1.0	0.5	Hexachloroethane	ND	1.0	0.5
2-Hexanone	ND	1.0	0.5	Isopropylbenzene	ND	1.0	0.5
4-Isopropyl toluene	ND	1.0	0.5	Methyl-t-butyl ether (MTBE)	ND	1.0	0.5
Methylene chloride	ND	1.0	0.5	4-Methyl-2-pentanone (MIBK)	ND	1.0	0.5
Naphthalene	ND	1.0	0.5	n-Propyl benzene	ND	1.0	0.5
Styrene	ND	1.0	0.5	1,1,1,2-Tetrachloroethane	ND	1.0	0.5
1,1,1,2-Tetrachloroethane	ND	1.0	0.5	Tetrachloroethene	ND	1.0	0.5
Toluene	ND	1.0	0.5	1,2,3-Trichlorobenzene	ND	1.0	0.5
1,2,4-Trichlorobenzene	ND	1.0	0.5	1,1,1-Trichloroethane	ND	1.0	0.5
1,1,2-Trichloroethane	ND	1.0	0.5	Trichloroethene	ND	1.0	0.5
Trichlorofluoromethane	ND	1.0	0.5	1,2,3-Trichloropropane	ND	1.0	0.5
1,2,4-Trimethylbenzene	ND	1.0	0.5	1,3,5-Trimethylbenzene	ND	1.0	0.5
Vinyl Chloride	ND	1.0	0.5	Xylenes	ND	1.0	0.5

Surrogate Recoveries (%)

%SS1:	100	%SS2:	88
%SS3:	79		

Comments: b1

* water and vapor samples are reported in µg/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 µg/wipe.

ND means not detected above the reporting 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.

b1) aqueous sample that contains greater than ~1 vol. % sediment



QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 39663

WorkOrder: 0811452

Analyte	EPA Method SW8260B Extraction SW5030B								Spiked Sample ID: N/A			
	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
tert-Amyl methyl ether (TAME)	N/A	10	N/A	N/A	N/A	113	113	0	N/A	N/A	70 - 130	30
Benzene	N/A	10	N/A	N/A	N/A	114	109	4.32	N/A	N/A	70 - 130	30
t-Butyl alcohol (TBA)	N/A	50	N/A	N/A	N/A	105	102	3.68	N/A	N/A	70 - 130	30
Chlorobenzene	N/A	10	N/A	N/A	N/A	109	103	5.13	N/A	N/A	70 - 130	30
1,2-Dibromoethane (EDB)	N/A	10	N/A	N/A	N/A	123	118	4.33	N/A	N/A	70 - 130	30
1,2-Dichloroethane (1,2-DCA)	N/A	10	N/A	N/A	N/A	119	118	1.05	N/A	N/A	70 - 130	30
1,1-Dichloroethene	N/A	10	N/A	N/A	N/A	92.5	90.8	1.79	N/A	N/A	70 - 130	30
Diisopropyl ether (DIPE)	N/A	10	N/A	N/A	N/A	111	108	2.80	N/A	N/A	70 - 130	30
Ethyl tert-butyl ether (ETBE)	N/A	10	N/A	N/A	N/A	125	122	2.71	N/A	N/A	70 - 130	30
Methyl-t-butyl ether (MTBE)	N/A	10	N/A	N/A	N/A	105	102	2.83	N/A	N/A	70 - 130	30
Toluene	N/A	10	N/A	N/A	N/A	129	121	6.03	N/A	N/A	70 - 130	30
Trichloroethene	N/A	10	N/A	N/A	N/A	110	105	4.80	N/A	N/A	70 - 130	30
%SS1:	100	25	N/A	N/A	N/A	91	91	0	N/A	N/A	70 - 130	30
%SS2:	88	25	N/A	N/A	N/A	95	94	1.17	N/A	N/A	70 - 130	30
%SS3:	79	2.5	N/A	N/A	N/A	88	83	5.59	N/A	N/A	70 - 130	30

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

BATCH 39663 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0811452-001B	11/14/08 11:40 AM	11/14/08	11/14/08 3:51 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 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.



QC SUMMARY REPORT FOR SM4500 S-2 D

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 39564

WorkOrder: 0811452

EPA Method SM4500 S-2 D		Extraction SM4500-S ⁻² D							Spiked Sample ID: 0811322-001D			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/L	mg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Dissolved Sulfide	ND	2.5	95.7	94.1	1.65	103	102	1.23	75 - 125	20	80 - 120	20

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

BATCH 39564 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0811452-001D	11/14/08 11:40 AM	11/14/08	11/14/08 5:01 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 = 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 SW8021B/8015Cm

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 39662

WorkOrder: 0811452

Analyte	EPA Method SW8021B/8015Cm		Extraction SW5030B						Spiked Sample ID: 0811451-001A			
	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex) ^f	ND	60	88.8	92.2	3.76	108	98.8	9.21	70 - 130	20	70 - 130	20
MTBE	ND	10	107	112	5.31	116	110	5.57	70 - 130	20	70 - 130	20
Benzene	ND	10	91.2	94.5	3.54	89.6	92.1	2.81	70 - 130	20	70 - 130	20
Toluene	ND	10	101	104	3.21	102	103	0.943	70 - 130	20	70 - 130	20
Ethylbenzene	ND	10	99.5	103	3.05	99.5	101	1.52	70 - 130	20	70 - 130	20
Xylenes	ND	30	110	113	2.87	111	111	0	70 - 130	20	70 - 130	20
%SS:	97	10	94	94	0	93	94	1.16	70 - 130	20	70 - 130	20

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

BATCH 39662 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0811452-001A	11/14/08 11:40 AM	11/14/08	11/14/08 7:00 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.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

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, or inconsistency in sample containers.



QC SUMMARY REPORT FOR WET CHEMISTRY TESTS

Test Method: pH

Matrix: W

WorkOrder: 0811452

Method Name: SM4500H+B			Units ±, pH units @ °C			BatchID: 39601	
Lab ID	Sample	DF	Dup / Ser. Dil.	DF	Precision	Acceptance Criteria	
0811452-001D	7.52 @ 20.1°C	1	7.51 @ 20.1°C	1	0.01	0.02	

BATCH 39601 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0811452-001D	11/14/08 11:40 AM	11/14/08	11/14/08 4:00 PM				

Test Method: Total Suspended Solids

Matrix: W

WorkOrder: 0811452

Method Name: SM2540D			Units mg/L			BatchID: 39582	
Lab ID	Sample	DF	Dup / Ser. Dil.	DF	% RPD	Acceptance Criteria (%)	
0811452-001E	22,500	500	22,200	500	1.34	<15	

BATCH 39582 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0811452-001E	11/14/08 11:40 AM	11/17/08	11/17/08 4:00 PM				

Dup = Duplicate; Ser. Dil. = Serial Dilution; MS = Matrix Spike; RD = Relative Difference; RPD = Relative Percent Deviation.

Precision = Absolute Value (Sample - Duplicate)

$RPD = 100 * (Sample - Duplicate) / [(Sample + Duplicate) / 2]$

%RPD is calculated using results of up to 10 significant figures, however the reported results are rounded to 2 or 3 significant figures. Therefore there may be a slight discrepancy between the %RPD displayed above and %RPD calculated using the reported results. MAI considers %RPD based upon more significant figures to be more accurate.



QC SUMMARY REPORT FOR SW8015B

W.O. Sample Matrix: Water

QC Matrix: Water

BatchID: 39603

WorkOrder: 0811452

EPA Method SW8015B		Extraction SW3510C/3630C							Spiked Sample ID: N/A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH-Diesel (C10-C23)	N/A	1000	N/A	N/A	N/A	95.1	95	0.0529	N/A	N/A	70 - 130	30
%SS:	N/A	2500	N/A	N/A	N/A	106	106	0	N/A	N/A	70 - 130	30

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

BATCH 39603 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0811452-001C	11/14/08 11:40 AM	11/14/08	11/15/08 1:46 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 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.



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QC SUMMARY REPORT FOR WET CHEMISTRY TESTS

Test Method: Total Solids

Matrix: W

WorkOrder: 0811452

Method Name: SM2540B			Units mg/L			BatchID: 39666
Lab ID	Sample	DF	Dup / Ser. Dil.	DF	% RPD	Acceptance Criteria (%)
0811452-001D	561	1	568	1	1.24	<10

BATCH 39666 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0811452-001D	11/14/08 11:40 AM	11/14/08	11/18/08 2:00 PM				

Dup = Duplicate; Ser. Dil. = Serial Dilution; MS = Matrix Spike; RD = Relative Difference; RPD = Relative Percent Deviation.

Precision = Absolute Value (Sample - Duplicate)

$RPD = 100 * (Sample - Duplicate) / [(Sample + Duplicate) / 2]$

%RPD is calculated using results of up to 10 significant figures, however the reported results are rounded to 2 or 3 significant figures. Therefore there may be a slight discrepancy between the %RPD displayed above and %RPD calculated using the reported results. MAI considers %RPD based upon more significant figures to be more accurate.

Appendix E



SAN FRANCISCO PUBLIC UTILITIES COMMISSION
Wastewater Enterprise/Collection System Division



October 22, 2008

Mr. John E. Karn
Project Manager
Arup/PB Joint Venture
% Arup North America Ltd.
901 Market St., Suite 260
San Francisco, CA 94103

GAVIN NEWSOM
MAYOR

ANN MOLLER CAEN
PRESIDENT

F.X. CROWLEY
VICE PRESIDENT

FRANCESCA VIETOR
COMMISSIONER

ED HARRINGTON
GENERAL MANAGER

**SUBJECT: Wastewater Discharge Permit, re groundwater from
aquifer hydraulic properties test**

Dear Mr. Karn:

We have reviewed your request, dated October 20, 2008, for approval to discharge groundwater generated from pumping of a well, for an aquifer hydraulic properties test at Building 1158 – Presidio Dance Theatre. Pursuant to the provisions of Sections 120, 124 and 125 of Chapter X (Public Works Code) of Part II of the San Francisco Municipal Code, Article 4.1 (hereinafter referred to as “Article 4.1”), permission is hereby granted to Arup/PB Joint Venture (“Permittee”) to discharge **approximately 70,000 gallons** of groundwater from the on-site storage tank, to the City’s sewerage system. **This permit expires on December 31, 2008.**

Discharges by the permittee shall be in compliance with:

- (1) The requirements of Article 4.1 and amendments thereto, as well as the City’s Department of Public Works Order No. 158170;
- (2) The United States Environmental Protection Agency’s regulations contained in 40 CFR Part 403; and
- (3) All applicable pretreatment regulations, standards or requirements under local, state and federal laws.

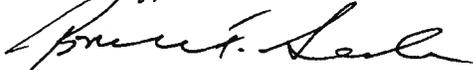
The permittee, by its acceptance of this permit, agrees:

- (1) To control and monitor the discharge to ensure that the hydraulic capacity of the receiving street sewer is not exceeded;
- (2) To pay to the City the sum of **\$616.61** (to be billed by the Bureau of Financial Services of the San Francisco Public Utilities Commission), representing the sewer service charge (worksheet enclosed) for the wastewater to be discharged; and

- (3) To indemnify and hold harmless the City from any and all costs, claims, damages, fines, remediation costs, losses and other expenses arising from the discharges into the sewerage system.

If you have any questions about the above requirements, please contact me at (415) 695-7369.

Sincerely,



Bruce Seale, Acting Manager
Pretreatment Program
Wastewater Enterprise / Collection System Division

Enclosure

Sewer Service Charge for Batch Wastewater Discharges

Source: Groundwater from an aquifer test
Building 1158 - Presidio Dance Theatre

Flow / Concentration Data:

Discharge Date	Discharge Volume (gallons)	Discharge Volume (units)*	Pollutant Concentration		
			Tot. O&G (mg/L)	Tot. Susp. Solids (mg/L)	COD (mg/L)
10/24 to 11/03/08 (Projected)	70,000	93.6	BDL	114	BDL
(McCampbell Analytical, Inc.)					

Sewer Service Charge:

(using FY 2007/2008 rates)

	Concentration (mg/L)	Concentration (lbs/unit)	Cost (\$/lb)	Cost (\$/unit)
Total Oil & Grease	BDL	0.000	1.0124	0.0000
Total Suspended Solids	114	0.711	0.8091	0.5753
Chemical Oxygen Demand	BDL	0.000	0.1978	0.0000
Flow (\$/unit)				6.0136

Sewer Service Charge Rate (\$/unit): \$6.5889

Total Sewer Service Charge = \$6.5889 x 80.2 = \$616.61

BDL - Below detection limit

* 1 Unit = 100 cubic feet = 748 gallons



SAN FRANCISCO PUBLIC UTILITIES COMMISSION

Wastewater Enterprise/Collection System Division

3801 THIRD STREET, SUITE 600, SAN FRANCISCO, CA 94124 • Tel. (415) 695-7310 • Fax (415) 695-7388



BATCH WASTEWATER PERMIT APPLICATION

1. Name of business where wastewater was generated :

Presidio Trust

2. Name of business applying for permit (if different from 1. above) :

Arup/PB Joint Venture

3. Mailing address of business applying for permit :

c/o Arup North America Ltd.

901 Market St., Suite 260, San Francisco, CA 94103

4. Activity resulting in wastewater generation :

Pumping of well for aquifer hydraulic properties test

5. Location of wastewater generation :

Building 1158 - Presidio Dance Theatre

6. Total estimated volume (or volume flow rate) of wastewater discharge :

70,000 gallons

7. Estimated duration of wastewater discharge :

Intermittently over a period of about one week

8. Proposed sewer opening for discharge :

Side Sewer; Catch Basin; Storm Drain; Manhole

9. Location of sewer opening :

About 370 feet southeast of pumping well - see figure (attached)

10. Does an underground storage tank for petroleum liquids currently exist on the site ?

YES; NO Presidio Trust does not have a record of a UST onsite.

11. Has an underground storage tank for petroleum liquids been recently removed from the site ?

YES; NO

12. Has the wastewater been exposed to petroleum contamination ?

YES; NO Groundwater sample from the pumping well was reported with 370 mg/L of Total Petroleum Hydrocarbons as diesel.

13. Were hazardous materials or waste ever stored on the site ?

YES; NO Unknown*

14. Has the wastewater been exposed to hazardous waste contamination ?

YES; NO Based on groundwater samples from the pumping well (attached)

15. Has the wastewater resulted from groundwater extracted within the reclaimed area specified in Section 1001(a)2.(A) of Article 20 ? (See Section 11.0 in "Requirements For Batch Wastewater Discharges".)

YES; NO

16. Will the wastewater be subjected to any treatment before discharge ?

YES; NO

* Presidio Trust considers the area a potential fill site based on an unconfirmed report. However, evidence of fill has not been encountered during recent drilling of the pumping well and geotechnical borings in the area (see figure). No other site investigation has been performed.

17. If so, describe the method(s) of treatment :

18. **Attach a site plan** showing the source of the wastewater, the sampling location(s) or monitoring well(s), and the proposed discharge location (side sewer(s), catch basin(s), storm drain(s) or manhole(s)).

19. **Attach a copy of applicable analytical results from a representative sample of the wastewater.** (See Sections 8.0, 9.0, 10.0 & 11.0 in "Requirements For Batch Wastewater Discharges".) Attached analytical reports are for a groundwater sample from the pumping well.

20. Certification Statement :

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: JOHN E KARN

Title: ARUP-PB JV - PROJECT MANAGER

Signature¹: John E. Karn

Date: 20-OCT-08

¹ To be signed by an authorized representative of the applicant. An authorized representative may be (a) a principal executive officer or official; (b) a general partner or proprietor; or (c) a duly authorized representative of the individual designated in (a) or (b).

