28 June 2018

Ms. Karel Detterman, P.G.
Hazardous Materials Specialist
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502

Subject: **Revised Final Results of the May 2018 Groundwater Monitoring**
3093 Broadway
Oakland, California
ACEH Case No.: RO0000199
Langan Project No.: 731637001

Dear Ms. Detterman:

This letter transmits the results of the recent groundwater sampling event performed at the Former Connell Oldsmobile property located at 3093 Broadway in Oakland, California (the Site; Figure 1). In an email dated 17 April 2018, Alameda County Department of Environmental Health (ACEH) requested that a groundwater sampling event be conducted to determine current site conditions and facilitate site closure discussions.

Sampling Program

A total of 8 groundwater monitoring wells were sampled on 15 and 16 May 2018 (Figure 2). Prior to sample collection, Langan personnel recorded water levels at each well. No free product was encountered in any of the wells sampled. The wells were opened and allowed to equilibrate for a minimum of 15 minutes prior to measuring the water level to the top of the casing at each well. Following water level measurement, Langan personnel performed sampling using U.S. EPA low-flow sampling procedures. Water quality parameters (including temperature, pH, specific electrical conductance, oxidation-reduction potential [ORP], dissolved oxygen [DO], and turbidity) were measured using a flow-through cell during low-flow pumping. Langan personnel collected samples once water quality parameters stabilized. Samples were stored on ice and sent to McCampbell Analytical under proper chain-of-custody procedures for analysis of petroleum compounds, including total petroleum hydrocarbons as gasoline and diesel (TPH-g and TPH-d, respectively), benzene, toluene, ethylbenzene, and xylenes (BTEX), methyl tert-butyl ether (MTBE), 1,2-dichloroethane (1,2-DCA), and naphthalene. Analysis also included sulfate, sulfite, and sulfide. The groundwater sampling schedule and analytical methods used are summarized in Table 1. Cumulative groundwater elevations are presented in Table 2 and chemical analyses and water quality parameters are presented in Tables 3 through 5. Laboratory analytical reports and field documentation are provided in Attachments A and B, respectively.

Discussion

Groundwater elevations at the monitoring wells gauged during the May 2018 sampling event ranged from 28.61 ft a-msl at MW-13 to 42.31 ft a-msl at MW-20. Groundwater elevations are presented on Figure 3. The groundwater elevation contours indicate that groundwater flow is predominantly to the southeast and is consistent with the historical groundwater flow direction.

The highest recorded groundwater elevations since monitoring began in 1990 were observed during monitoring in 2017. This general increase in groundwater elevations was likely in part attributable to above average seasonal rainfall. In contrast, groundwater elevations in 6 of the 8 monitoring wells decreased by approximately 1 foot between May 2017 and May 2018, likely due to the lower seasonal rainfall experienced during the winter months of 2017/2018. Between July 2017 and May 2018, Oakland received 15.05 inches of precipitation compared to 25.71 inches received between July 2016 and July 2017. Langan expects that groundwater elevations across the site will continue to decrease to historic levels in the absence of above-average precipitation.

As a result of the above-average groundwater elevations recorded in 2017, 6 of the 8 monitoring wells' screened intervals were submerged during the May 2017 sampling event. However, groundwater elevations have generally decreased across the site since May 2017, and only 2 of the 8 screened intervals at monitoring wells MW-13 and MW-27 were submerged during the May 2018 sampling event. During the May 2018 sampling event, the top of the screened intervals for MW-13 and MW-27 (off-site monitoring wells) were approximately 2.7 feet and 6.4 feet below their respective groundwater elevations. The groundwater elevation at on-site monitoring well MW-23 is approximately equivalent to the screened interval and the groundwater elevation at this location is expected to continue to decrease to within the well screen under average seasonal precipitation conditions.

A fully-submerged screened interval may result in stagnant water accumulating within the well casing above the screen and may prevent the sampling of light non-aqueous phase liquid (LNAPL) present at the top of the groundwater. However, during sampling, tubing was placed within the screened portion of the well, and according to the DTSC guidance[1] the low-flow sampling practices should isolate the screened interval from the overlying stagnant casing water resulting in a sample that is representative of formation water. In addition LNAPL is no longer present at the site and petroleum hydrocarbons were either below detection limits or below screening levels in off-site, down-gradient wells MW-25 and MW-26, which have not experienced submerged screening intervals during either the quarterly post-remediation sampling events or the May 2018 additional sampling event. Therefore, submerged or occasionally-submerged screen intervals are not expected to appreciably affect either analytical results or interpretations of chemical trends.

Field water quality parameters are summarized in Table 6 and field forms are provided in Attachment B. During the May 2018 sampling event, pH was approximately neutral and ranged

[1] Representative Sampling of Groundwater for Hazardous Substances, Guidance Manual for Groundwater Investigations. CalEPA and DTSC. Revised February 2008.

from 6.17 to 6.98, which is favorable for bioremediation. Conductivity values ranged from 509 to 1,640 microsiemens (µS). Turbidity values ranged from 0.0 to 13.5 nephelometric turbidity units (NTUs). Reducing conditions are present within the plume at monitoring wells MW-20, MW-21, MW-23, and MW-24 as demonstrated by May 2018 sampling results, where the DO is low (0.00 to 2.76 milligrams per liter [mg/L]) and ORP is negative (-95 to -143 millivolts [mV]). Off-site wells had generally higher concentrations of DO (0.21 to 9.03 mg/L) as well as positive ORP values (19 to 230 mV) suggesting minimal effects of remediation off-site.

Groundwater analytical results for natural attenuation parameters are summarized in Table 5. Sulfate was present at concentrations ranging from 15 to 180 mg/L in on-site wells MW-20, MW-21, and MW-23 and generally at greater than pre-remediation concentrations in former on-site wells MW-1, MW-4, and MW-14, which ranged from 0.33 to 21 mg/L. Sulfate was not detected in on-site well MW-24. This provides evidence that the gypsum (calcium sulfate) may be continuing to dissolve into the groundwater column from the remediation borings in the vicinity of MW-20, MW-21, and MW-23. Neither sulfite nor sulfide was detected in on-site wells. The sulfate concentrations ranged from 32 to 45 mg/L at off-site, cross- to down-gradient monitoring wells MW-13, MW-25, MW-26, and MW-27. These values are consistent with or slightly lower than concentrations at MW-5, MW-7, MW-8 and MW-13 prior to emplacement of gypsum in May 2015 (27 to 100 mg/L sulfate). Sulfite and sulfide concentrations were below detection limits in all off-site wells.

Analytical results for petroleum compounds are summarized in Table 3 with concentrations of select compounds shown on Figure 4. Although there were some increases in chemical concentrations in certain wells between May 2017 and May 2018, benzene and TPH compound concentrations are consistent with a generally decreasing trend at wells monitoring the on-site plume (MW-20, -21, -23, and -24) compared to pre-remediation concentrations. Between 2013 and 2015, pre-remediation concentrations of benzene ranged from 250 to 5,700 micrograms per liter (µg/L) at representative on-site wells MW-1, MW-4, and MW-14, and RW-3A. During the May 2018 monitoring event, concentrations of benzene ranged from 1,100 to 1,600 µg/L at on-site wells MW-20, MW-21, MW-23, and MW-24. Graph 1 depicts benzene concentration trends at on-site wells following emplacement of gypsum in May 2015. Benzene was detected at 1.4 µg/L in off-site well MW-27, but was not detected above laboratory reporting limits in off-site, down- to cross-gradient monitoring wells MW-13, MW-25, or MW-26 (Figure 4).

Between 2013 and 2015, pre-remediation TPHg concentrations ranged from 20,000 to 110,000 µg/L at representative on-site wells MW-1, MW-4, MW-14, and RW-3A. During the May 2018 monitoring event, concentrations of TPHg ranged from 9,500 to 57,000 µg/L at on-site wells MW-20, MW-21, MW-23, and MW-24. Graph 2 depicts TPHg concentration trends at on-site wells following emplacement of gypsum in May 2015. TPHg was detected at 140 µg/L in off-site well MW-25, but was not detected above laboratory reporting limits in off-site, down- to cross-gradient monitoring wells MW-13, MW-26 or MW-27.

Between 2013 and 2015, pre-remediation TPHd concentrations ranged from 1,500 to 14,000 µg/L at representative on-site wells MW-1, MW-4, MW-14, and RW-3B. With the exception of MW-24, which had a reported value of 21,000 µg/L TPH-d in May 2018, on-site concentrations of TPH-d in May 2018 ranged from 1,000 to 7,600 µg/L and are generally lower

than pre-remediation TPH-d concentrations. Graph 2 depicts TPHd concentration trends at on-site wells following emplacement of gypsum in May 2015. TPHd was not detected above laboratory reporting limits in off-site, down- to cross-gradient monitoring wells MW-13, MW-25, MW-26, or MW-27.

Other petroleum hydrocarbons detected on-site exhibit a similar trend and include toluene, ethylbenzene, xylenes, MTBE, 1,2-DCA, and naphthalene. During the May 2018 sampling event, concentrations ranged from 210 to 610 µg/L toluene, 150 to 460 µg/L ethylbenzene, 370 to 5,500 µg/L xylenes, and 140 to 1,300 µg/L naphthalene at on-site wells MW-20, MW-21, MW-23, and MW-24. 1,2-DCA was detected in MW-20 at a concentration of 54.0 µg/L. MTBE was below laboratory detection limits in all samples collected from both on-site and off-site wells. 1,2-DCA was detected in off-site well MW-25 at a concentration of 4.5 µg/L. Ethylbenzene, toluene, xylenes, and naphthalene were all detected at low levels, in addition to benzene, in off-site well MW-27. However, none of these compounds were detected in the duplicate sample collected from MW-27, and they have not been detected previously at this location.

The above data indicate that concentrations of petroleum compounds, including benzene, TPHg, and TPHd, are decreasing following the implementation of the groundwater corrective action and that benzene and TPH compounds are not migrating off site. These findings provide further support for the recommendation for case closure presented previously in the Case Closure Report dated 18 September 2017.

As requested by ACEH, Langan is preparing a revision to the "PVI Assessment of Current Conditions," dated 20 September 2017, to incorporate the results of this groundwater monitoring event and to confirm that risk estimates in the PVI Addendum remain valid and protective of human health. Following submittal of this revision, we would like to schedule a meeting with you to further discuss these findings and discuss case closure.

If you have any questions, please call Christina Rain at (415) 955-5247 or Christopher Glenn at (510) 874-7074.

Sincerely yours,
Langan Engineering and Environmental Services, Inc.

C. Rain

Christina Rain, PE
Project Manager

Christopher Glenn, PE, LEED GA
Senior Project Manager

cc: Dilan Roe, ACEH
Stephen Siri, CityView

Attachments:

Table 1	Groundwater Sampling Analytical Schedule
Table 2	Cumulative Groundwater Elevations – June 2013 to May 2018
Table 3	Groundwater Analytical Results – Field Parameters
Table 4	Groundwater Analytical Results – Petroleum Compounds
Table 5	Groundwater Analytical Results – Natural Attenuation Parameters

Figure 1	Site Location Map
Figure 2	Monitoring Well Locations
Figure 3	Groundwater Elevations May 2018
Figure 4	Groundwater Analytical Results 2015 to 2018

Graph 1	Benzene Trend On-Site Monitoring Wells, 2013-2018 (MW-20, MW-21, MW-23, MW-24)
Graph 2	TPH Trend On-Site Monitoring Wells, 2013-2018 (MW-20, MW-21, MW-23, MW-24)

Attachment A	Analytical Laboratory Reports
Attachment B	Field Documentation

TABLES

Table 1
Post-Remediation Groundwater Sampling Analytical Schedule
August 2016 through May 2018
3093 Broadway
Oakland, California

Sampling Location	Sample Date	Petroleum Compounds				Electron Acceptors/Reduced Electron Acceptors		Microbial[1]				
		BTEX/ MTBE	TPH-Gasoline and Diesel	1,2-DCA	Naphthalene	Sulfate	Sulfite/ Sulfide	Sulfate Reducing Bacteria	Benzene Carboxylase	Sulfate Reducing Bacteria	Benzene Carboxylase	Benzene
Analytical Methods		8260B	8015B	8260B	8260B	E300.1	E300.1	CENSUS APS	CENSUS abcA	mRNA APS	mRNA abcA	SIP
		µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	cells/mL	gene copies/mL	cells/mL	gene copies/mL	Varies[2]
MW-13	8/25/2016	X	X	X	X	X	X					
MW-13	11/8/2016	X	X	X	X	X	X					
MW-13	2/21/2017	X	X	X	X	X	X					
MW-13	5/24/2017	X*	X	X	X	X	X					
MW-13	5/15/2018	X	X	X	X	X	X					
MW-20	8/26/2016	X	X	X	X	X	X					
MW-20	11/9/2016	X	X	X	X	X	X					
MW-20	2/22/2017	X	X	X	X	X	X					
MW-20	5/25/2017	X*	X	X	X	X	X	X	X	X	X	X
MW-20	5/16/2018	X	X	X	X	X	X					
MW-21	8/26/2016	X	X	X	X	X	X					
MW-21	11/9/2016	X	X	X	X	X	X					
MW-21	2/22/2017	X	X	X	X	X	X					
MW-21	5/25/2017	X*	X	X	X	X	X	X	X	X	X	
MW-21	5/16/2018	X	X	X	X	X	X					
MW-23	8/26/2016	X	X	X	X	X	X					
MW-23	11/9/2016	X	X	X	X	X	X					
MW-23	2/21/2017	X	X	X	X	X	X					
MW-23	5/25/2017	X*	X	X	X	X	X	X	X	X	X	
MW-23	5/16/2018	X	X	X	X	X	X					
MW-24	8/25/2016	X	X	X	X	X	X					
MW-24	11/9/2016	X	X	X	X	X	X					
MW-24	2/22/2017	X	X	X	X	X	X					
MW-24	5/24/2017	X*	X	X	X	X	X	X	X	X	X	
MW-24	5/16/2018	X	X	X	X	X	X					

LANGAN

Table 1
Post-Remediation Groundwater Sampling Analytical Schedule
August 2016 through May 2018
3093 Broadway
Oakland, California

Sampling Location	Sample Date	Petroleum Compounds				Electron Acceptors/Reduced Electron Acceptors		Microbial[1]				
		BTEX/ MTBE	TPH-Gasoline and Diesel	1,2-DCA	Naphthalene	Sulfate	Sulfite/ Sulfide	Sulfate Reducing Bacteria	Benzene Carboxylase	Sulfate Reducing Bacteria	Benzene Carboxylase	Benzene
Analytical Methods		8260B	8015B	8260B	8260B	E300.1	E300.1	CENSUS APS	CENSUS abcA	mRNA APS	mRNA abcA	SIP
		µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	cells/mL	gene copies/mL	cells/mL	gene copies/mL	Varies[2]
MW-25	8/25/2016	X	X	X	X	X	X					
MW-25	11/8/2016	X	X	X	X	X	X					
MW-25	2/21/2017	X	X	X	X	X	X					
MW-25	5/24/2017	X*	X	X	X	X	X					
MW-25	5/15/2018	X	X	X	X	X	X					
MW-26	8/25/2016	X	X	X	X	X	X					
MW-26	11/8/2016	X	X	X	X	X	X					
MW-26	2/21/2017	X	X	X	X	X	X					
MW-26	5/24/2017	X*	X	X	X	X	X					
MW-26	5/15/2018	X	X	X	X	X	X					
MW-27	8/25/2016	X	X	X	X	X	X					
MW-27	11/8/2016	X	X	X	X	X	X					
MW-27	2/21/2017	X	X	X	X	X	X					
MW-27	5/24/2017	X*	X	X	X	X	X					
MW-27	5/15/2018	X	X	X	X	X	X					

Notes:
1. CENSUS and mRNA tests detect and quantify the deoxyribonucleic acid (DNA) and ribonucleic acid (RNA), respectively, of members of the microbial community deemed critical for bioremediation. The tests specifically target sulfate reducing bacteria (MI Code: APS) and benzene carboxylase (MI Code: abcA).
2. Stable isotope probing (SIP) analyzes for multiple parameters, each with different units. See Table 7 for SIP results.
BTEX/MTBE = benzene, toluene, ethylbenzene, xylenes, methyl tertiary butyl ether
*Samples analyzed for BTEX but not MTBE
cells/mL = cells per milliliter
1,2-DCA = 1,2-dichloroethane
mg/L = milligrams per liter
SIP = Stable Isotope Probing
TOC = Top of casing elevation; top of casing elevation surveyed relative to City of Oakland Datum by BKF Engineers September 2014 and June 2015
TPH = total petroleum hydrocarbons
µg/L = micrograms per liter
– not applicable

LANGAN

Table 2
Cumulative Groundwater Elevations
June 2013 through May 2018
3093 Broadway
Oakland, California

Well ID	Date	TOC Elevation[1] (feet a-msl)	Depth to Groundwater (feet bgs)	Calculated Groundwater Elevation (feet a-msl)
AS-1B	05/22/14	61.45	22.78	38.67
MW-1	06/21/13	60.57	22.13	38.44
MW-1	06/21/13	60.57	22.28	38.29
MW-1	05/21/14	60.57	22.13	38.44
MW-1	11/19/14	60.57	22.70	37.87
MW-1	05/18/15	60.57	21.14	39.43
MW-1	08/17/15	60.57	22.50	38.07
MW-2	05/22/14	61.59	26.92	34.67
MW-2	05/22/14	61.59	26.92	34.67
MW-3	05/22/14	56.87	19.51	37.36
MW-3	05/22/14	56.87	19.51	37.36
MW-3	11/19/14	56.87	20.20	36.67
MW-3	05/22/15	56.87	18.98	37.89
MW-3	08/17/15	56.87	19.58	37.29
MW-4	06/21/13	55.67	18.15	37.52
MW-4	06/21/13	55.67	18.46	37.21
MW-4	06/21/13	55.67	18.15	37.52
MW-4	06/21/13	55.67	18.46	37.21
MW-4	05/20/14	55.67	18.15	37.52
MW-4	05/20/14	55.67	18.15	37.52
MW-4	05/22/15	55.67	17.95	37.72
MW-5	05/22/14	51.70	25.73	25.97
MW-5	05/22/15	51.70	26.68	25.02
MW-6	06/21/13	51.65	22.93	28.72
MW-6	06/21/13	51.65	21.56	30.09
MW-6	06/21/13	51.65	22.93	28.72
MW-6	06/21/13	51.65	21.56	30.09
MW-6	05/20/14	51.65	22.93	28.72
MW-6	05/20/14	51.65	22.93	28.72
MW-6	11/19/14	51.65	23.76	27.89
MW-6	05/22/15	51.65	22.66	28.99
MW-7	05/20/14	52.25	16.99	35.26
MW-7	05/20/14	52.25	16.99	35.26
MW-7	05/22/15	52.25	17.68	34.57
MW-8	05/21/14	52.30	26.14	26.16
MW-8	05/21/14	52.30	26.14	26.16
MW-8	05/22/15	52.30	25.44	26.86
MW-9	05/20/14	57.15	19.37	37.78
MW-9	05/20/14	57.15	19.37	37.78
MW-9	11/19/14	57.15	20.50	36.65
MW-10	05/20/14	54.89	17.45	37.44

LANGAN

Table 2
Cumulative Groundwater Elevations
June 2013 through May 2018
3093 Broadway
Oakland, California

Well ID	Date	TOC Elevation[1] (feet a-msl)	Depth to Groundwater (feet bgs)	Calculated Groundwater Elevation (feet a-msl)
MW-13	05/22/14	50.89	23.14	27.75
MW-13	08/17/15	50.89	23.42	27.47
MW-13	11/20/15	50.89	23.82	27.07
MW-13	02/18/16	50.89	23.49	27.4
MW-13	05/19/16	50.89	22.62	28.27
MW-13	08/25/16	50.89	23.32	27.57
MW-13	11/08/16	50.89	23.55	27.34
MW-13	02/21/17	50.89	21.91	28.98
MW-13	05/24/17	50.89	21.52	29.37
MW-13	**05/15/18**	**50.89**	**22.28**	**28.61**
MW-14[2]	06/21/13	61.50	21.54	39.96
MW-14[2]	05/22/15	61.50	21.38	40.12
MW-15	06/21/13	60.74	22.16	38.58
MW-15	06/21/13	60.74	22.24	38.50
MW-15	05/21/14	60.74	22.16	38.58
MW-16A	05/21/14	61.51	23.64	37.87
MW-16B	06/21/13	61.08	26.13	34.95
MW-16B	06/21/13	61.08	25.99	35.09
MW-16B	05/21/14	61.08	26.13	34.95
MW-17A	06/21/13	60.49	22.16	38.33
MW-17A	06/21/13	60.49	21.55	38.94
MW-17A	05/21/14	60.49	22.16	38.33
MW-17B	05/21/14	61.43	22.55	38.88
MW-18	05/22/15	52.51	15.25	37.26
MW-19	05/22/15	52.35	18.94	33.41
MW-20	08/25/16	55.76	15.79	39.97
MW-20	11/09/16	52.62	14.86	37.76
MW-20	02/21/17	52.43	10.70	41.73
MW-20	05/24/17	52.43	9.36	43.07
MW-20	**05/16/18**	**52.43**	**10.12**	**42.31**
MW-21	08/25/16	56.47	18.25	38.22
MW-21	11/09/16	52.58	14.94	37.64
MW-21	02/21/17	52.45	10.96	41.49
MW-21	05/24/17	52.45	9.55	42.9
MW-21	**05/16/18**	**52.45**	**10.50**	**41.95**
MW-23	08/25/16	55.78	18.90	36.88
MW-23	11/09/16	55.91	19.56	36.35
MW-23	02/21/17	51.61	12.28	39.33
MW-23	05/24/17	51.61	11.26	40.35
MW-23	**05/16/18**	**51.61**	**11.91**	**39.70**
MW-24	08/25/16	54.76	17.64	37.12
MW-24	11/09/16	52.27	15.91	36.36
MW-24	02/21/17	52.20	12.14	40.06
MW-24	05/24/17	52.20	10.91	41.29
MW-24	**05/16/18**	**52.20**	**12.21**	**39.99**

LANGAN

Table 2
Cumulative Groundwater Elevations
June 2013 through May 2018
3093 Broadway
Oakland, California

Well ID	Date	TOC Elevation[1] (feet a-msl)	Depth to Groundwater (feet bgs)	Calculated Groundwater Elevation (feet a-msl)
MW-25	06/23/15	51.38	22.66	28.72
MW-25	08/17/15	51.38	22.97	28.41
MW-25	11/20/15	51.38	23.42	27.96
MW-25	02/18/16	51.38	22.75	28.63
MW-25	05/19/16	51.38	21.94	29.44
MW-25	08/25/16	51.38	22.77	28.61
MW-25	11/08/16	51.38	24.15	27.23
MW-25	02/21/17	51.38	21.72	29.66
MW-25	05/24/17	51.38	20.66	30.72
MW-25	**05/15/18**	**51.38**	**21.46**	**29.92**
MW-26	06/23/15	51.19	17.21	33.98
MW-26	08/17/15	51.19	17.64	33.55
MW-26	11/20/15	51.19	16.01	35.18
MW-26	02/18/16	51.19	16.1	35.09
MW-26	05/19/16	51.19	13.84	37.35
MW-26	08/25/16	51.19	14.28	36.91
MW-26	11/08/16	51.19	15.76	35.43
MW-26	02/21/17	51.19	13.99	37.20
MW-26	05/24/17	51.19	14.10	37.09
MW-26	**05/15/18**	**51.19**	**12.80**	**38.39**
MW-27	06/23/15	50.94	18.69	32.25
MW-27	08/17/15	50.94	19.62	31.32
MW-27	11/20/15	50.94	17.16	33.78
MW-27	02/18/16	50.94	17.32	33.62
MW-27	05/19/16	50.94	15.43	35.51
MW-27	08/25/16	50.94	16.33	34.61
MW-27	11/08/16	50.94	16.65	34.29
MW-27	02/21/17	50.94	14.26	36.68
MW-27	05/24/17	50.94	14.95	35.99
MW-27	**05/15/18**	**50.94**	**14.60**	**36.34**
RW-2	06/21/13	54.11	15.92	38.19
RW-2	06/21/13	54.11	16.35	37.76
RW-2	05/20/14	54.11	15.92	38.19
RW-3A[2]	05/22/15	54.00	14.56	39.44
RW-3B[2]	05/22/15	54.00	23.83	30.17
RW-4	05/21/14	60.75	20.32	40.43
RW-5	05/21/14	60.48	21.33	39.15

Notes:
This table summarizes the groundwater elevation data collected for the site after shutdown of the former AS/SVE system in June 2013.
Results from the most recent monitoring event are **bolded** for ease of reference.
[1]TOC Elev (ft): Top of casing surveyed relative to City of Oakland Datum by BKF Engineers, September 2014 and June 2015
[2]TOC Elev (ft): Top of casing - approximate elevation from topographic contour map of the site
a-msl - above mean sea level
bgs - below ground surface

Table 3
Groundwater Analytical Results for Petroleum Compounds
June 2013 through May 2018
3093 Broadway
Oakland, California

Well ID	Date Sampled	TPHg	TPHd	TPHd w/ SGCU	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	1,2-DCA	Naphthalene	TBA
		µg/L										
AS-1B	05/22/14	170	--	--	4.9	4.0	< 2.5	6.5	< 2.5	< 2.5	< 2.5	460
MW-1	06/21/13	51,000	--	--	2,300	3,500	340	8,100	<120	--	--	--
MW-1	05/21/14	60,000	--	--	4,300	6,400	660	10,000	< 250	< 250	780	< 1,000
MW-1[a]	11/19/14	68,000	9,900	--	5,700	4,100	680	13,000	< 250	-	--	--
MW-1	05/18/15	31,000	10,000	--	2,300	650	260	5,400	<50	<50	430	--
MW-1	08/17/15	37,000	11,000	9,400	3,300	1,100	< 250	< 250	< 250	< 250	--	--
MW-2	05/22/14	< 50	--	--	< 0.5	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 2.0
MW-3	05/22/14	< 50	--	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 2.0
MW-3[a]	11/19/14	< 50	52	--	1	< 0.50	< 0.50	1	< 5.0	--	--	--
MW-3	05/21/15	< 50	380	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-3	08/17/15	< 50	360	150	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--	--
MW-4	06/21/13	110,000	--	--	4,400	15,000	1,700	13,000	<1,200	--	--	--
MW-4	05/20/14	72,000	--	--	1,900	7,300	1,400	9,400	< 250	< 250	1,100	< 1,000
MW-4	05/22/15	66,000	14,000	--	1,400	5,300	1,200	7,100	<250	<250	780	--
MW-5	05/22/14	< 50	--	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 2.0
MW-5	05/22/15	< 50	<50	--	< 0.50	0.5	< 0.50	1.4	< 0.50	< 0.50	< 0.50	--
MW-6	06/21/13	15,000	--	--	2,400	300	370	680	< 250	--	--	--
MW-6	05/20/14	17,000	--	--	3,700	530	830	840	< 50	< 50	200	490
MW-6[a]	11/19/14	20,000	3,200	--	3,500	400	900	970	< 250	--	--	--
MW-6	05/21/15	18,000	4,100	--	2,400	220	320	520	< 100	< 100	120	--
MW-7	05/20/14	< 50	--	--	< 0.50	< 0.50	< 0.50	0.64	< 0.50	< 0.50	< 0.50	< 2.0
MW-7	05/22/15	< 50	< 50	--	< 0.50	< 0.50	< 0.50	0.6	< 0.50	< 0.50	< 0.50	--
MW-8	05/21/14	70	--	--	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	9.7	< 2.5	310
MW-8	05/21/15	91	130	--	<0.5	<0.5	<0.5	<0.5	<0.5	10	<0.5	--
MW-9	05/20/14	< 50	--	--	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	100	< 2.5	640
MW-9[a]	11/19/14	240	83	--	4.5	2.2	< 0.5	6.2	< 5.0	--	--	--
MW-10	05/20/14	88,000	--	--	5,600	18,000	1,700	9,900	< 500	< 500	770	< 2,000
MW-13	05/22/14	< 50	--	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	6.2
MW-13	08/17/15	< 50	< 50	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	--
MW-13[b]	08/17/15	< 50	<50	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--	--
MW-13	11/20/15	< 50	--	190	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-13[b]	11/20/15	< 50	--	130	<0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	<0.50	--
MW-13	02/18/16	< 50	--	<50	<0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	<0.50	--
MW-13[b]	02/18/16	< 50	--	<50	<0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	<0.50	--
MW-13	05/19/16	< 50	--	< 50	<0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	<0.50	--
MW-13[b]	05/19/16	< 50	--	< 50	<0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	<0.50	--
MW-13	08/25/16	< 50	< 50	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-13	11/08/16	< 50	< 50	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-13	02/21/17	< 50	< 50	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-13	05/24/17	< 50	< 50	--	< 0.50	< 0.50	< 0.50	< 0.50	--	< 0.50	< 0.50	--
MW-13	**05/15/18**	**< 50**	**<50**	**--**	**< 0.50**	**<0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**--**
MW-14	06/21/13	36,000	--	--	1,100	4,000	550	6,400	< 250	--	--	--
MW-14	05/22/15	5,700	1,500	--	250	90	110	850	< 5.0	< 5.0	100	--
MW-15	06/21/13	11,000	--	--	390	710	120	2,200	< 50	--	--	--
MW-15	05/21/14	4,100	--	--	430	19	220	250	< 17	< 17	--	< 67
MW-16A	05/21/14	3,700	--	--	5.3	3.7	7.4	31	< 2.5	< 2.5	11	27
MW-16B	06/21/13	5,400	--	--	1,600	350	56	170	< 50	--	--	--
MW-16B	05/21/14	15,000	--	--	11,000	710	1,000	2,000	< 250	< 250	< 250	3,400
MW-17A	06/21/13	20,000	--	--	1,300	1,500	73	3,400	< 250	--	--	--
MW-17A	05/21/14	52,000	--	--	1,900	3500	970	10000	< 50	< 50	830	< 200
MW-17B	05/21/14	< 50	--	--	< 0.50	< 0.50	< 0.50	1.1	< 0.50	< 0.50	< 0.50	< 2.0
MW-18	05/21/15	3,200	2,000	--	240	< 5.0	42	26	< 5.0	74	14	--
MW-19	05/22/15	<50	<50	--	< 0.5	< 0.5	< 0.5	0.7	< 5.0	1.9	< 0.5	--
MW-20	08/26/16	56,000	13,000	--	1,000	750	590	7,600	< 25	27.0	590	--
MW-20	11/09/16	30,000	6,000	--	820	360	370	5,600	< 100	< 100	450	--
MW-20	02/22/17	350	450	--	6.4	11	20	220	< 5.0	< 5.0	43	--
MW-20	05/25/17	9,600	1,500	--	660	79	140	1,200	--	< 25	110	--
MW-20	**05/16/18**	**19,000**	**3,600**	**--**	**1,100**	**420**	**250**	**2,000**	**< 50**	**54.0**	**260**	--
MW-21	08/26/16	75,000	5,600	--	5,600	6,600	300	5,200	< 100	590	530	--
MW-21	11/09/16	43,000	7,100	--	6,800	5,000	270	6,000	< 100	760	500	--
MW-21	02/22/17	650	1,100	--	260	390	130	1,100	< 5.0	< 5.0	100	--
MW-21	05/25/17	27,000	4,200	--	2,500	810	320	2,300	--	< 100	250	--
MW-21	**05/16/18**	**9,500**	**1,000**	**--**	**1,200**	**210**	**150**	**670**	**< 50**	**< 50**	**140**	--
MW-23	08/26/16	38,000	13,000	--	1,500	1,900	430	2,100	< 50	< 50	1,400	--
MW-23	11/09/16	25,000	12,000	--	1,400	500	840	3,700	< 100	< 100	910	--
MW-23	02/21/17	350	16,000	--	3,000	270	650	1,600	< 50	< 50	1,400	--
MW-23	05/25/17	10,000	5,800	--	770	< 25	250	80	--	< 25	490	--
MW-23	**05/16/18**	**23,000**	**7,600**	**--**	**1,600**	**320**	**460**	**370**	**< 25**	**< 25**	**640**	--
MW-24	08/25/16	52,000	19,000	--	1,400	460	150	4,700	< 50	86	1,700	--
MW-24	11/09/16	35,000	18,000	--	1,200	96	< 50	3,000	< 50	100	1,500	--
MW-24	02/22/17	420	16,000	--	1,800	1,300	270	4,500	< 50	< 50	1,600	--
MW-24	05/24/17	34,000	16,000	--	1,500	280	150	3,200	--	< 50	1,400	--
MW-24	**05/16/18**	**57,000**	**21,000**	**--**	**1,500**	**610**	**330**	**5,500**	**< 25**	**<25**	**1,300**	--

LANGAN

Table 3
Groundwater Analytical Results for Petroleum Compounds
June 2013 through May 2018
3093 Broadway
Oakland, California

Well ID	Date Sampled	TPHg	TPHd	TPHd w/ SGCU	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	1,2-DCA	Naphthalene	TBA
		µg/L										
MW-25	06/23/15	350	84	--	61	< 1.7	< 1.7	< 1.7	< 1.7	4.6	2.7	--
MW-25	08/17/15	610	300	310	37	< 1.0	4	2.1	< 1.0	4.1	--	--
MW-25	11/20/15	220	--	120	7	< 0.50	< 0.50	< 0.50	< 0.50	4.3	< 0.50	--
MW-25	02/18/16	160	--	53	1	< 0.50	< 0.50	< 0.50	< 0.50	5.1	< 0.50	--
MW-25	05/19/16	170	--	< 50	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	4.4	< 1.7	--
MW-25	08/25/16	330	93	--	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	6.8	< 2.5	--
MW-25	11/08/16	260	94	--	0.64	< 0.50	< 0.50	< 0.50	< 0.50	7.0	< 0.50	--
MW-25	02/21/17	80	56	--	0.84	< 0.50	< 0.50	< 0.50	< 0.50	0.59	< 0.50	--
MW-25	05/24/17	180	59	--	< 0.50	< 0.50	< 0.50	< 0.50	--	6.7	< 0.50	--
MW-25	**05/15/18**	**140**	**< 50**	**--**	**< 0.50**	**<0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**4.5**	**< 0.50**	**--**
MW-26	06/23/15	< 50	< 50	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-26	08/17/15	< 50	58	55	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--	--
MW-26	11/20/15	< 50	--	<50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-26	02/18/16	< 50	--	<50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-26	05/19/16	< 50	--	<50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-26	08/25/16	< 50	< 50	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-26	11/08/16	< 50	< 50	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-26	02/21/17	< 50	< 50	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-26	05/24/17	< 50	< 50	--	< 0.50	< 0.50	< 0.50	< 0.50	--	< 0.50	< 0.50	--
MW-26	**05/15/18**	**< 50**	**< 50**	**--**	**< 0.50**	**<0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**--**
MW-27	06/23/15	<50	<50	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-27	08/17/15	<50	<50	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--	--
MW-27	11/20/15	<50	--	<50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-27	02/18/16	<50	--	<50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-27	05/19/16	<50	--	<50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-27	08/25/16	< 50	< 50	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-27[b]	08/25/16	< 50	< 50	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-27	11/08/16	< 50	59	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-27[b]	11/08/16	< 50	51	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-27	02/21/17	< 50	< 50	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-27[b]	02/21/17	< 50	< 50	--	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	--
MW-27	05/24/17	< 50	< 50	--	< 0.50	< 0.50	< 0.50	< 0.50	--	< 0.50	< 0.50	--
MW-27[b]	05/24/17	< 50	< 50	--	< 0.50	< 0.50	< 0.50	< 0.50	--	< 0.50	< 0.50	--
MW-27	**05/15/18**	**< 50**	**< 50**	**--**	**< 0.50**	**< 0.50**	**< 0.50**	**< 0.50**	**<0.50**	**< 0.50**	**< 0.50**	**--**
MW-27[b]	**05/15/18**	**< 50**	**< 50**	**--**	**1.4**	**< 0.50**	**0.5**	**3.3**	**< 0.50**	**< 0.50**	**14**	--
RW-2	05/20/14	3,600	--	--	220	330	140	780	< 10	< 10	38	49
RW-2	06/21/13	4,000	--	--	180	350	65	530	< 50	--	--	--
RW-3A	05/22/15	20,000	5,000	--	1,100	190	170	2,700	< 25	< 25	260	--
RW-3B	05/22/15	190	2,600	--	< 0.5	< 0.5	< 0.5	0.9	< 0.5	< 0.5	< 0.5	--
RW-4	05/21/14	11,000	--	--	200	670	310	1,700	< 17	< 17	170	< 67
RW-5	05/21/14	14,000	--	--	880	440	520	2,200	< 50	< 50	250	< 200

Notes:
This table summarizes the petroleum compounds data collected for the site after shutdown of the former AS/SVE system in June 2013.
Results from the most recent monitoring event are **bolded** for ease of reference.

[a] TPHg, benzene, toluene, ethylbenzene, xylenes, and MTBE analyzed using EPA Method 8021B/ 8015Bm

[b] Duplicate Sample (DUP-1)

-- = Not analyzed

< 50 - Analyte was not detected at or above the laboratory reporting limit (50 µg/L)

1,2-DCA = 1,2-dichloroethane

All volative organic compounds were analyzed using EPA method 8260B

MTBE = methyl-t-butyl ether

µg/L = micrograms per liter

SGCU = Silica Gel Clean-Up

TBA =t-butyl alcohol

TPHd = total petroleum hydrocarbons as diesel analyzed by EPA Method 8015B

TPHg = total petroleum hydrocarbons as gasoline analyzed by EPA Method 8015B unless otherwise indicated

Destroyed	Replacement
MW-1	MW-20
MW-14	MW-21
MW-4	MW-23
RW-3A	MW-24
MW-8	MW-25
MW-7	MW-26
MW-5	MW-27
MW-13	MW-13

LANGAN

Table 4
Groundwater Analytical Results for Field Parameters
June 2013 through May 2018
3093 Broadway
Oakland, California

Well ID	Date	Temperature (°C)	pH -	Conductivity (µS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Dissolved H2S (mg/L)	Observations
MW-1	06/21/13	18.1	7.1	1,019	--	0.78	--	--	Very Turbid
MW-1	05/21/14	19.5	6.42	1,309	718	--	--	--	Black/Odor
MW-1	11/19/14	19.55	6.11	1,105	9.8	2.21	-121.6	--	yellow brown
MW-1	05/18/15	18.5	7.13	1,486	110	--	-119	--	Odor
MW-1	08/17/15	24.1	6.56	1,901	227	0.27	-133.9	--	
MW-2	05/22/14	20.8	6.31	764	76	--	--	--	
MW-3	05/22/14	19.7	6.29	826	974	--	--	--	
MW-3	11/19/14	19.26	6.03	819	94.7	6.81	58.7	--	No Odor
MW-3	05/21/15	20.8	6.13	817	152	2.48	169	--	
MW-3	08/17/15	26.5	6.35	841	>1,000	1.48	150	--	
MW-4	06/21/13	18.9	7.25	1,532	--	0.85	--	--	Turbid, Odor
MW-4	05/20/14	20.2	6.37	749	109	--	--	--	Odor
MW-4	05/22/15	20.6	6.59	666	9	0.37	-131	--	Odor
MW-5	05/22/14	20.0	6.54	761	>1,000	--	--	--	
MW-5	05/22/15	19.6	6.51	823	127	0.6	78.7	--	
MW-6	06/21/13	18.9	7.3	1,788	--	0.81	--	--	Very Turbid
MW-6	05/20/14	21.3	6.68	1,023	33	--	--	--	Odor
MW-6	11/19/14	21.03	6.33	963	10.3	5.62	-260.4	--	Strong odor
MW-6	05/21/15	21.8	6.42	1,041	17	0.35	-127.6	--	
MW-7	05/20/14	20.4	7.3	608	79	--	--	--	
MW-7	05/22/15	20.3	6.56	6,625	82	1.95	96.8	--	
MW-8	05/20/14	17.9	7.22	991	18	--	--	--	
MW-8	05/21/15	20	6.38	946	6	0.36	50.7	--	
MW-9	05/20/14	19.7	6.52	862	22	--	--	--	
MW-9	11/19/14	18.35	5.67	792	10.8	59.4	-1.8	--	Clear
MW-10	05/20/14	20.7	6.69	1,198	31	--	--	--	Odor
MW-13	05/20/14	20.3	6.34	720	136	--	--	--	
MW-13	08/17/15	22.1	6.58	694	97	1.26	192.9	--	
MW-13	11/20/15	20.5	6.53	659	11	2.6	95	--	
MW-13	02/18/16	18.1	6.58	695	14	1.59	-135.9	--	
MW-13	05/19/16	20.7	6.38	662	3	1.43	121.3	--	
MW-13	08/25/16	21.73	6.63	555	1.36	1.42	183.8	--	
MW-13	11/08/16	20.27	6.66	687	1.38	3.4	115.5	0	
MW-13	02/21/17	19.9	6.60	608	0.57	1.43	226.2	--	
MW-13	05/24/17	21.1	6.54	530	0.13	1.41	55.1	0	
MW-13	**05/15/18**	**20.59**	**6.17**	**631**	**0.0**	**0.80**	**230**	**-**	
MW-14	06/21/13	18.3	6.83	1,049	--	0.95	--	-	Turbid
MW-15	06/21/13	17.9	7.24	1,376	--	1.12	--	--	Very Turbid
MW-15	05/21/14	19.8	6.32	749	98	--	--	--	Odor
MW-16A	05/21/14	19.9	6.7	722	97	--	--	--	Odor
MW-16B	06/21/13	17.8	6.87	1,123	--	1.74	--	--	Turbid
MW-16B	05/21/14	20	6.37	798	122	--	--	--	Odor
MW-17A	06/21/13	18.1	7.19	863	--	1.31	--	--	Turbid
MW-17A	05/21/14	19.7	6.57	1,029	342	--	--	--	
MW-17B	05/21/14	19.7	6.77	707	494	--	--	--	
MW-20	08/26/16	20.66	6.48	1,325	12.9	0.26	-31.2	--	Odor
MW-20	11/09/16	20.03	6.69	1,032	7.14	1.46	-96.7	0	Odor
MW-20	02/22/17	15.2	8.33	288.8	7.38	7.94	-9.6	--	Slight Odor
MW-20	05/25/17	17.67	6.61	1,076	5.5	0.56	-124.2	0	Slight Odor
MW-20	**05/16/18**	**17.00**	**6.61**	**1,640**	**2.4**	**0.00**	**-132**	**-**	
MW-21	08/26/16	20.42	6.71	778	5.76	0.22	-12.5	--	Odor
MW-21	11/09/16	20.64	6.88	845	6.56	0.88	-73.4	0	Odor
MW-21	02/22/17	16.9	7.86	280.9	20.5	0.2	-121.2	--	Odor
MW-21	05/25/17	17.18	6.85	664	4.64	0.47	-106.2	0	Slight Odor
MW-21	**05/16/18**	**16.71**	**6.98**	**1,050**	**9.5**	**0.09**	**-143**	**-**	Slight odor and yellow tint
MW-23	08/26/16	22.12	6.99	958	9.29	0.13	-39.3	--	Odor
MW-23	11/09/16	21.03	6.87	904	10.86	0.55	-238.7	0	Distinct odor from other wells
MW-23	02/21/17	18.7	6.88	760	39.4	0.28	-130.8	--	Odor
MW-23	05/25/17	18.42	6.83	744	7.3	0.55	-109.7	0	Odor
MW-23	**05/16/18**	**17.07**	**6.71**	**807**	**13.5**	**2.76**	**-136**	**-**	Odor and high turbidity
MW-24	08/25/16	22.55	6.38	1,047	38.3	0.12	-7.6	--	Odor
MW-24	11/09/16	21.26	6.53	1,306	47.4	0.51	29.5	0	Odor and higher turbidity
MW-24	02/22/17	19.0	6.92	969	4.59	0.21	-24.2	--	Odor
MW-24	05/24/17	18.32	6.26	815	8	0.81	-40.1	0	Odor
MW-24	**05/16/18**	**17.02**	**6.53**	**1,120**	**1.7**	**0.03**	**-95**	**-**	Odor

LANGAN

Table 4
Groundwater Analytical Results for Field Parameters
June 2013 through May 2018
3093 Broadway
Oakland, California

Well ID	Date	Temperature (°C)	pH -	Conductivity (µS)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Dissolved H2S (mg/L)	Observations
MW-25	06/23/15	23.3	6.19	965	4	0.46	65.9	–	
MW-25	08/17/15	23.4	6.52	940	>1000	0.65	8.9	–	
MW-25	11/20/15	16.6	6.4	898	6	4.02	3	–	
MW-25	02/18/16	18.2	6.36	916	91	0.41	-253.9	–	
MW-25	05/19/16	22.3	6.25	903	3	0.19	94.9	–	
MW-25	08/25/16	21.72	6.47	747	1.13	0.16	7.9	–	
MW-25	11/08/16	22.05	6.5	934	0.83	0.62	3.2	0	
MW-25	02/21/17	19.1	6.11	366	37.2	2.31	-13.2	–	
MW-25	05/24/17	20.53	7.15	734	0.5	0.44	-49.2	0	
MW-25	**05/15/18**	**21.32**	**6.43**	**920**	**0.0**	**4.50**	**19**	**-**	
MW-26	06/23/15	22.8	6.91	1,839	4	3.66	43.8	–	
MW-26	08/17/15	23.5	7.38	721	>1,000	2.16	76.1	–	
MW-26	11/20/15	18.5	6.97	544	10	4.05	51	–	
MW-26	02/18/16	20.1	6.78	491	21	2.65	-142	–	
MW-26	05/19/16	21.4	6.63	470	3	1.71	138.4	–	
MW-26	08/25/16	22.63	6.9	402	1.39	1.03	132.3	–	
MW-26	11/08/16	23.27	6.84	458	1.11	1.3	111.3	0	
MW-26	02/21/17	20.9	6.61	413.6	3.35	0.89	138.5	–	
MW-26	05/24/17	21.3	6.67	380	1.13	1.42	97.8	0	
MW-26	**05/15/18**	**21.74**	**6.71**	**509**	**0.0**	**9.03**	**229**	**-**	
MW-27	06/23/15	23.2	6.65	626	2	1.6	65.8	–	
MW-27	08/17/15	23.9	6.98	634	>1,000	0.71	101.5	–	
MW-27	11/20/15	21.2	6.84	617	2	2.58	63	–	
MW-27	02/18/16	20.8	6.74	634	7	0.72	-234.3	–	
MW-27	05/19/16	20.1	6.52	626	2	0.77	134.8	–	
MW-27	08/25/16	21.84	6.86	525	0.83	1.28	232.1	–	
MW-27	11/08/16	21.63	6.92	654	0.53	2.07	108.8	0	
MW-27	02/21/17	21.5	6.77	640	0.91	0.45	108.3	–	
MW-27	05/24/17	21.08	6.74	540	0.42	0.56	113.6	0	
MW-27	**05/15/18**	**21.69**	**6.63**	**680**	**0.0**	**0.21**	**214**	**-**	
AS-1B	05/22/14	19.2	7.01	718	622	--	--	–	
RW-2	06/21/13	18.0	7.16	967	--	1.81	--	–	Turbid
RW-2	05/20/14	20.6	6.81	789	123	--	--	–	Odor
RW-4	05/21/14	19.8	6.7	1,039	27	--	--	–	Odor
RW-5	05/21/14	20.0	6.51	1,083	420	--	--	–	Odor/Cloudy

Notes:
This table summarizes the petroleum compounds data collected for the site after shutdown of the former AS/SVE system in June 2013.
Results from the most recent monitoring event are **bolded** for ease of reference.

°C = degrees Celsius
DO = dissolved oxygen
mg/L = milligrams per liter
mV = millivolts
ORP = oxidation reduction potential
NTU = nephelometric turbidity units
µS = microsiemens

Destroyed	Replacement
MW-1	MW-20
MW-14	MW-21
MW-4	MW-23
RW-3A	MW-24
MW-8	MW-25
MW-7	MW-26
MW-5	MW-27
MW-13	MW-13

Table 5
Groundwater Analytical Results for Natural Attenuation Parameters
June 2013 through May 2018*
3093 Broadway
Oakland, California

Well ID	Sample Date	Nitrate & Nitrite as N	Nitrate as N	Nitrate as NO_3^-	Nitrite as NO_2^-	Total Nitrogen	Total Dissolved Solids	Total Organic Carbon	Total Phosphorous as P	Sulfate	Sulfide	Sulfite	Total Alkalinity	Carbonate Alkalinity	Hydroxide Alkalinity	Bicarbonate Alkalinity	Total Iron	Ferrous Iron	Total Manganese	Dissolved Methane	CENSUS Sulfate Reducing Bacteria (APS)	CENSUS Benzene Carboxylase (abcA)	mRNA Sulfate Reducing Bacteria (APS)	mRNA Benzene Carboxylase (abcA)	SIP Benzene				
																									^{13}C Benzene Pre-Deployment	^{13}C Benzene Post-Deployment	Total Biomass	PFLA $\delta^{13}C$	DIC $\delta^{13}C$
		mg/L											mg $CaCO_3$/L				µg/L				cells/mL	cells/mL	gene copies/mL	gene copies/mL	µg/bead	µg/bead	cells/bead	‰	‰
MW-1	11/19/14	–	< 0.1	< 0.45	–	–	–	73	–	0.73	–	–	–	–	–	501	16,000	–	9,800	4,300	–	–	–	–	–	–	–	–	–
MW-1	05/18/15	< 0.2	< 0.1	< 0.45	–	5.2	728	53	1.1	0.33	0.094	< 10	–	–	–	711	33,000	27,000	11,000	5,700	284,000	–	–	–	–	–	–	–	–
MW-1	08/17/15	< 0.2	< 0.1	< 0.45	<0.33	–	227	–	–	210	< 0.05	< 10	562	< 1.0	< 1.0	562	24,000	–	12,000	–	23,400	–	–	–	–	–	–	–	–
MW-3	11/19/14	–	1.3	5.6	–	–	–	3.0	–	140	–	–	–	–	–	220	3,000	–	59	0.37	–	–	–	–	–	–	–	–	–
MW-3	05/21/15	1.1	1.1	5	–	1.4	476	3.1	0.25	200	0.067	< 10	–	–	–	239	5,700	<50	71	0.52	5,940	–	–	–	–	–	–	–	–
MW-4	05/22/15	–	–	–	–	–	–	–	–	1	0.65	< 0.1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-5	05/22/15	–	–	–	–	–	–	–	–	100	<0.05	< 10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-6	11/19/14	–	<0.1	< 0.45	–	–	–	21	–	9.1	–	–	–	–	–	462	6,000	–	4,400	510	–	–	–	–	–	–	–	–	–
MW-6	05/21/15	< 0.2	<0.1	< 0.45	–	< 0.7	817	13	0.54	1.6	1.1	< 0.1	–	–	–	510	11,000	10,000	6,700	560	1,050,000	–	–	–	–	–	–	–	–
MW-7	05/22/15	–	–	–	–	–	–	–	–	80	< 0.05	< 10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-8	05/21/15	< 0.2	<0.1	< 0.45	–	< 0.7	517	3.5	0.13	27	< 0.05	< 1.0	–	–	–	374	380	210	720	190	59,300	–	–	–	–	–	–	–	–
MW-9	11/19/14	–	<0.1	< 0.45	–	–	–	6.0	–	110	–	–	–	–	–	234	1,300	–	580	47	–	–	–	–	–	–	–	–	–
MW-13	11/20/15	–	–	–	–	–	–	–	–	47	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-13[a]	11/20/15	–	–	–	–	–	–	–	–	46	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-13	02/18/16	–	–	–	–	–	–	–	–	42	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-13[b]	02/18/16	–	–	–	–	–	–	–	–	44	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-13	05/19/16	–	–	–	–	–	–	–	–	45	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-13[b]	05/19/16	–	–	–	–	–	–	–	–	45	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-13	08/25/16	–	–	–	–	–	–	–	–	44	< 0.05	220	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-13	11/08/16	–	–	–	–	–	–	–	–	42	< 0.05	< 1.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-13	02/21/17	–	–	–	–	–	–	–	–	43	<0.05	< 1.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-13	05/24/17	–	–	–	–	–	–	–	–	43	< 0.05	< 0.10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-13	**05/15/18**	–	–	–	–	–	–	–	–	**40**	**< 0.05**	**<2.0**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-14	05/25/15	–	–	–	–	–	–	–	–	21	1.1	< 5.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-18	05/21/15	< 0.2	< 0.1	< 0.45	–	< 0.7	–	16	0.14	140	0.14	< 10	–	–	–	500	11,000	520	1,100	2.5	30,300	–	–	–	–	–	–	–	–
MW-19	05/22/15	–	–	–	–	–	–	–	–	66	< 0.05	< 10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-20	08/26/16	–	–	–	–	–	–	–	–	160	< 0.05	< 10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-20	11/09/16	–	–	–	–	–	–	–	–	57	0.17	< 1.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-20	02/22/17	–	–	–	–	–	–	–	–	25	<0.05	< 1.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-20	05/25/17	–	–	–	–	–	–	–	–	130	0.51	< 2.0	–	–	–	–	–	--	–	–	1,120,000	43.4	82,400	< 10	288 ± 17	228 ± 19	2.93E+05	114	-14.1
MW-20	**05/16/18**	–	–	–	–	–	–	–	–	**180**	**< 0.05**	**<2.0**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-21	08/26/16	–	–	–	–	–	–	–	–	12	< 0.05	< 10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-21	11/09/16	–	–	–	–	–	–	–	–	18	< 0.05	< 2.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-21	02/22/17	–	–	–	–	–	–	–	–	21	<0.05	< 1.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MW-21	05/25/17	–	–	–	–	–	–	–	–	0.75	0.33	< 0.10	–	–	–	–	–	–	–	–	309,000	15.3	12,900	< 10	–	–	–	–	–
MW-21	**05/16/18**	–	–	–	–	–	–	–	–	**37**	**< 0.05**	**<2.0**	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–

LANGAN

Table 5
Groundwater Analytical Results for Natural Attenuation Parameters
June 2013 through May 2018*
3093 Broadway
Oakland, California

Well ID	Sample Date	Nitrate & Nitrite as N	Nitrate as N	Nitrate as NO_3^-	Nitrite as NO_2^-	Total Nitrogen	Total Dissolved Solids	Total Organic Carbon	Total Phosphorous as P	Sulfate	Sulfide	Sulfite	Total Alkalinity	Carbonate Alkalinity	Hydroxide Alkalinity	Bicarbonate Alkalinity	Total Iron	Ferrous Iron	Total Manganese	Dissolved Methane	CENSUS Sulfate Reducing Bacteria (APS)	CENSUS Benzene Carboxylase (abcA)	mRNA Sulfate Reducing Bacteria (APS)	mRNA Benzene Carboxylase (abcA)	SIP Benzene				
																									^{13}C Benzene Pre-Deployment	^{13}C Benzene Post-Deployment	Total Biomass	PFLA $\delta^{13}C$	DIC $\delta^{13}C$
		mg/L											mg $CaCO_3$/L				µg/L				cells/mL	cells/mL	gene copies/mL	gene copies/mL	µg/bead	µg/bead	cells/bead	‰	‰
MW-23	08/26/16	--	--	--	--	--	--	--	--	77	0.063 [1]	< 10 [1]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-23	11/09/16	--	--	--	--	--	--	--	--	83	0.45	< 1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-23	02/21/17	--	--	--	--	--	--	--	--	19	0.056	< 1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-23	05/25/17	--	--	--	--	--	--	--	--	62	0.27	< 0.10	--	--	--	--	--	--	--	--	2,240	137	5.1 (J)	< 50	--	--	--	--	--
MW-23	**05/16/18**	--	--	--	--	--	--	--	--	**15**	**< 0.05**	**<2.0**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-24	08/25/16	--	--	--	--	--	--	--	--	2.4	0.059	< 10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-24	11/09/16	--	--	--	--	--	--	--	--	2.1	< 0.05	< 10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-24	02/22/17	--	--	--	--	--	--	--	--	5.3	<0.05	< 1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-24	05/24/17	--	--	--	--	--	--	--	--	0.48	0.085	< 0.10	--	--	--	--	--	--	--	--	49,700	4.7	205	< 5.0	--	--	--	--	--
MW-24	**05/16/18**	--	--	--	--	--	--	--	--	**< 0.50**	**< 0.05**	**< 4.0**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-25	06/23/15	--	--	--	--	--	--	--	--	31	< 0.05	< 2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-25	11/20/15	--	--	--	--	--	--	--	--	55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-25	02/18/16	--	--	--	--	--	--	--	--	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-25	05/19/16	--	--	--	--	--	--	--	--	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-25	08/25/16	--	--	--	--	--	--	--	--	35	< 0.05	< 10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-25	11/08/16	--	--	--	--	--	--	--	--	33	< 0.05	< 1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-25	02/21/17	--	--	--	--	--	--	--	--	17	< 0.05	< 1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-25	05/24/17	--	--	--	--	--	--	--	--	32	< 0.05	< 0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-25	**05/15/18**	--	--	--	--	--	--	--	--	**32**	**< 0.05**	**< 4.0**	--	--	--		--	--	--	--	--	--	--	--	--	--	--	--	--
MW-26	06/23/15	--	--	--	--	--	--	--	--	130	< 0.05	< 2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-26	11/20/15	--	--	--	--	--	--	--	--	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-26	02/18/16	--	--	--	--	--	--	--	--	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-26	05/19/16	--	--	--	--	--	--	--	--	37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-26	08/25/16	--	--	--	--	--	--	--	--	34	< 0.05	< 1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-26	11/08/16	--	--	--	--	--	--	--	--	37	< 0.05	< 1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-26	02/21/17	--	--	--	--	--	--	--	--	38	<0.05	< 1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-26	05/24/17	--	--	--	--	--	--	--	--	39	< 0.05	< 0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-26	**05/15/18**	--	--	--	--	--	--	--	--	**42**	**< 0.05**	**<2.0**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-27	06/23/15	--	--	--	--	--	--	--	--	38	< 0.05	< 2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-27	11/20/15	--	--	--	--	--	--	--	--	41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-27	02/18/16	--	--	--	--	--	--	--	--	41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-27	05/19/16	--	--	--	--	--	--	--	--	43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-27	08/25/16	--	--	--	--	--	--	--	--	45	< 0.05	< 2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-27[a]	08/25/16	--	--	--	--	--	--	--	--	44	< 0.05	< 2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-27	11/08/16	--	--	--	--	--	--	--	--	43	< 0.05	< 1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-27[a]	11/08/16	--	--	--	--	--	--	--	--	45	< 0.05	< 1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-27	02/21/17	--	--	--	--	--	--	--	--	43	< 0.05	< 1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-27 [a]	02/21/17	--	--	--	--	--	--	--	--	43	< 0.05	< 1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-27	05/24/17	--	--	--	--	--	--	--	--	43	< 0.05	< 0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-27 [a]	05/24/17	--	--	--	--	--	--	--	--	43	< 0.05	< 0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-27	**05/15/18**	--	--	--	--	--	--	--	--	**45**	**< 0.05**	**<2.0**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-27 [a]	**05/15/18**	--	--	--	--	--	--	--	--	**41**	**< 0.05**	**<2.0**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

LANGAN

Table 5
Groundwater Analytical Results for Natural Attenuation Parameters
June 2013 through May 2018*
3093 Broadway
Oakland, California

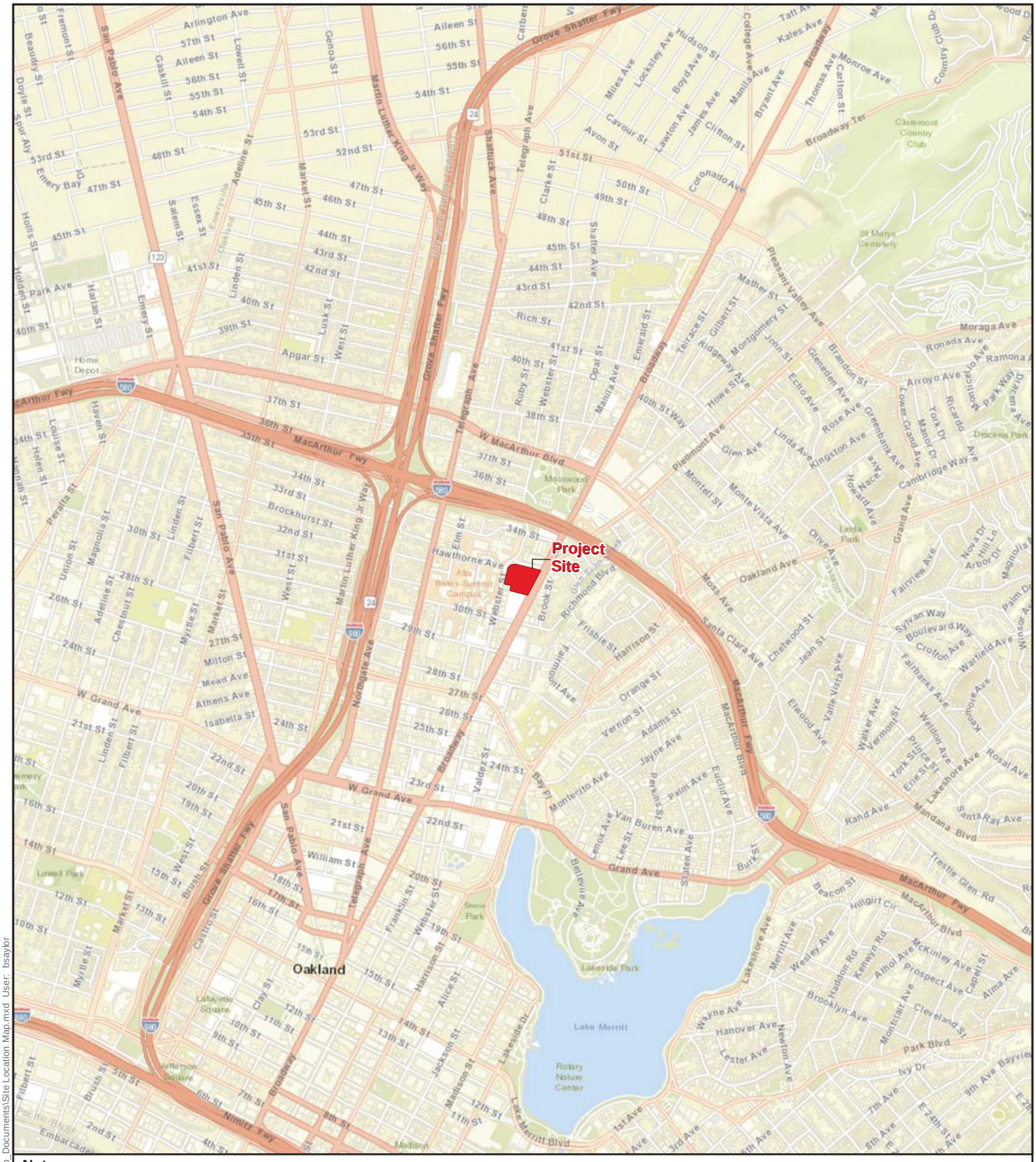
Well ID	Sample Date	Nitrate & Nitrite as N	Nitrate as N	Nitrate as NO_3^-	Nitrite as NO_2^-	Total Nitrogen	Total Dissolved Solids	Total Organic Carbon	Total Phosphorous as P	Sulfate	Sulfide	Sulfite	Total Alkalinity	Carbonate Alkalinity	Hydroxide Alkalinity	Bicarbonate Alkalinity	Total Iron	Ferrous Iron	Total Manganese	Dissolved Methane	CENSUS Sulfate Reducing Bacteria (APS)	CENSUS Benzene Carboxylase (abcA)	mRNA Sulfate Reducing Bacteria (APS)	mRNA Benzene Carboxylase (abcA)	SIP Benzene				
																									^{13}C Benzene Pre-Deployment	^{13}C Benzene Post-Deployment	Total Biomass	PFLA $\delta^{13}C$	DIC $\delta^{13}C$
		mg/L											mg $CaCO_3$/L				µg/L				cells/mL	cells/mL	gene copies/mL	gene copies/mL	µg/bead	µg/bead	cells/bead	$^0/_{00}$	$^0/_{00}$
RW-3A	05/22/15	–	–	–	–	–	–	–	–	0.59	0.14	< 0.1	–	–	–	–	–	--	–	–	–	–	–	–	–	–	–	–	–
RW-3B	05/22/15	–	–	–	–	–	–	–	–	69	2.4	< 10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Notes:
*This table summarizes the natural attenuation parameter data collected for the site after shutdown of the former AS/SVE system in June 2013.
Results from the most recent monitoring event are **bolded** for ease of reference.
[a] Duplicate Sample (DUP-1)
mg $CaCO_3$/L = miligrams per liter as Calcium Carbonate
mg/L = milligrams per liter
N = Nitrogen
µg/L = micrograms per liter
cells/mL = cells per milliliter
gene copies/mL = gene copies per milliliter
µg/bead = micrograms per bead
cells/bead = cells per bead
$^0/_{00}$ = parts per thousand
[1] Sample analyzed out of hold time
(J) Estimated gene copies below practical qualification limit (PQL) but above lower qualification limit (LQL)
< 50 - Analyte was not detected at or above the laboratory reporting limit (50 µg/L)
Bicarbonate by EPA method SM2320B
Ferrous Iron by EPA mehod SM3500-Fe B4c
Methane by EPA method RSK175
Nitrate & Nitrite as N, Nitrate as N, Nitrate as NO_3, Sulfate & Sulfite by EPA method E300.1
Sulfide by EPA method SM4500 S-2 D
TOC and Total Nitrogen by EPA method E415.3
Total Dissolved Soilds by EPA method SM2540C
Total Iron and Maganese by EPA method E200.8
Total Phosphorous as P by EPA method E365.1
SIP = Stable isotope probing
CENSUS, mRNA, and SIP testing conducted by Microbial Insights (MI).
CENSUS testing quantifies deoxyribonucleic acid (DNA) of targeted members of the microbial community.
mRNA testing quantifies ribonucleic acid (RNA) of targeted members of the microbial community.
APS = MI code for sulfate reducing bacteria
abcA = MI code for benzene carboxylase
^{13}C = carbon 13
PFLA = phospholipid fatty acids
DIC = dissolved organic carbon
$\delta^{13}C$ = delta of ^{13}C is the difference between the isotopic ratio (13C/12C) of the sample, and a standard normalized to the isotopic ratio of the standard and multiplied by 1,000
– = Not analyzed

Well Pairs	
Destroyed	Replacement
MW-1	MW-20
MW-14	MW-21
MW-4	MW-23
RW-3A	MW-24
MW-8	MW-25
MW-7	MW-26
MW-5	MW-27
MW-13	MW-13

LANGAN

FIGURES



Notes:

1. World street basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online. Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN.
2. Map displayed in California State Plane Coordinate System, Zone III, North American Datum of 1983 (NAD83), US Survey Feet.

0 1,000 2,000 4,000

Feet

N

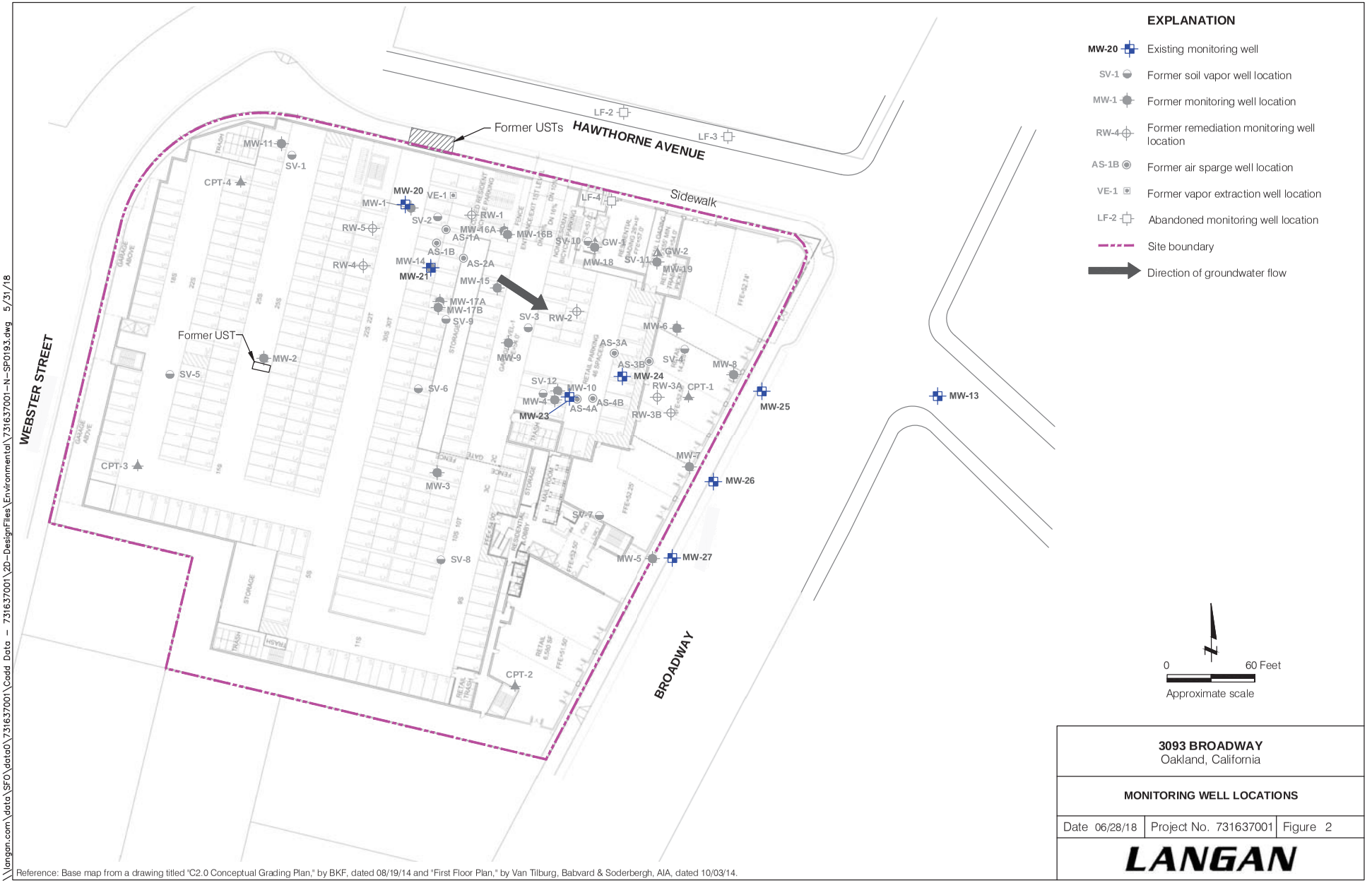
3093 BROADWAY
Oakland, California

SITE LOCATION MAP

LANGAN

Date 6/28/2018	Project 7316317001	Figure 1

\\langan.com\data\SFO\data\7\316317001\ArcGIS\ArcMap Documents\Site Location Map.mxd User: bsaylor



Reference: Base map from a drawing titled "C2.0 Conceptual Grading Plan," by BKF, dated 08/19/14 and "First Floor Plan," by Van Tilburg, Babvard & Soderbergh, AIA, dated 10/03/14.

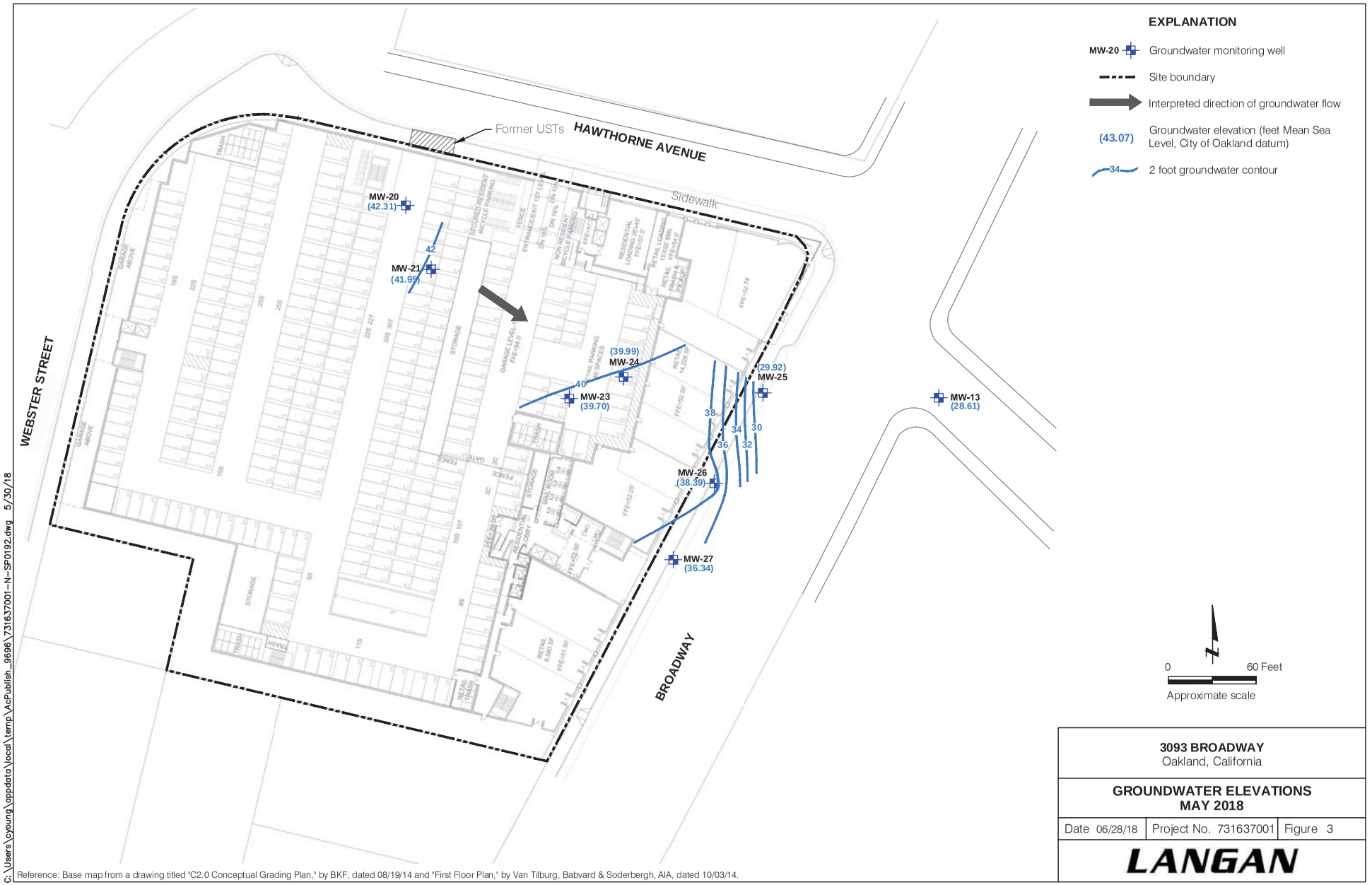
3093 BROADWAY
Oakland, California

MONITORING WELL LOCATIONS

Date 06/28/18	Project No. 731637001	Figure 2

LANGAN

\\langan.com\data\SFO\data0\731637001\Cadd Data – 731637001\2D-DesignFiles\Environmental\731637001-N-SP0193.dwg 5/31/18



Reference: Base map from a drawing titled "C2.0 Conceptual Grading Plan," by BKF, dated 08/19/14 and "First Floor Plan," by Van Tilburg, Babvard & Soderbergh, AIA, dated 10/03/14.

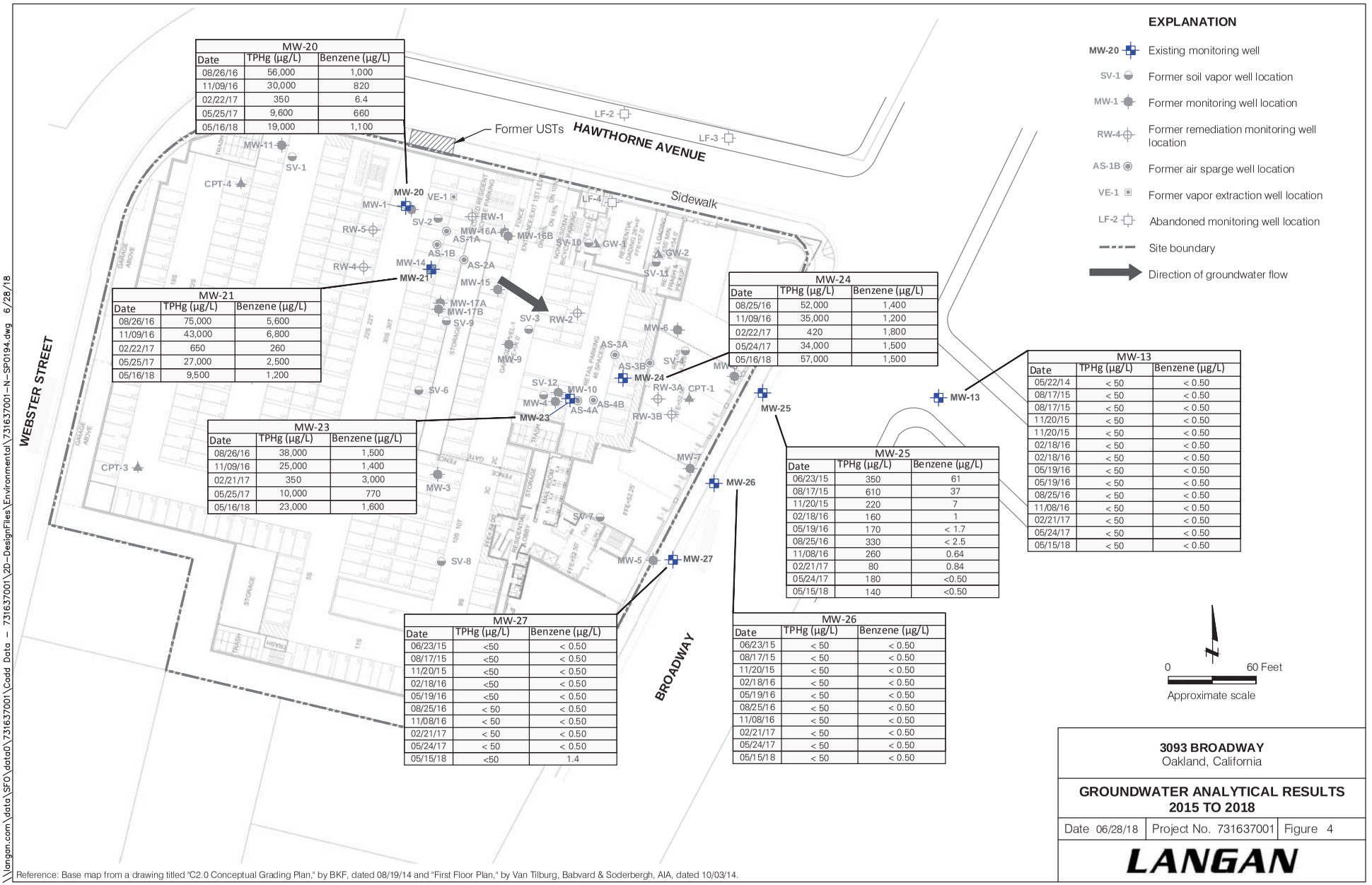
3093 BROADWAY
Oakland, California

GROUNDWATER ELEVATIONS MAY 2018

Date 06/28/18	Project No. 731637001	Figure 3

LANGAN

C:\Users\cyoung\appdata\local\temp\AcPublish_9696\731637001-N-SP0192.dwg 5/30/18



MW-20		
Date	TPHg (µg/L)	Benzene (µg/L)
08/26/16	56,000	1,000
11/09/16	30,000	820
02/22/17	350	6.4
05/25/17	9,600	660
05/16/18	19,000	1,100

MW-21		
Date	TPHg (µg/L)	Benzene (µg/L)
08/26/16	75,000	5,600
11/09/16	43,000	6,800
02/22/17	650	260
05/25/17	27,000	2,500
05/16/18	9,500	1,200

MW-23		
Date	TPHg (µg/L)	Benzene (µg/L)
08/26/16	38,000	1,500
11/09/16	25,000	1,400
02/21/17	350	3,000
05/25/17	10,000	770
05/16/18	23,000	1,600

MW-24		
Date	TPHg (µg/L)	Benzene (µg/L)
08/25/16	52,000	1,400
11/09/16	35,000	1,200
02/22/17	420	1,800
05/24/17	34,000	1,500
05/16/18	57,000	1,500

MW-13		
Date	TPHg (µg/L)	Benzene (µg/L)
05/22/14	< 50	< 0.50
08/17/15	< 50	< 0.50
08/17/15	< 50	< 0.50
11/20/15	< 50	< 0.50
11/20/15	< 50	< 0.50
02/18/16	< 50	< 0.50
02/18/16	< 50	< 0.50
05/19/16	< 50	< 0.50
05/19/16	< 50	< 0.50
08/25/16	< 50	< 0.50
11/08/16	< 50	< 0.50
02/21/17	< 50	< 0.50
05/24/17	< 50	< 0.50
05/15/18	< 50	< 0.50

MW-25		
Date	TPHg (µg/L)	Benzene (µg/L)
06/23/15	350	61
08/17/15	610	37
11/20/15	220	7
02/18/16	160	1
05/19/16	170	< 1.7
08/25/16	330	< 2.5
11/08/16	260	0.64
02/21/17	80	0.84
05/24/17	180	<0.50
05/15/18	140	<0.50

MW-26		
Date	TPHg (µg/L)	Benzene (µg/L)
06/23/15	< 50	< 0.50
08/17/15	< 50	< 0.50
11/20/15	< 50	< 0.50
02/18/16	< 50	< 0.50
05/19/16	< 50	< 0.50
08/25/16	< 50	< 0.50
11/08/16	< 50	< 0.50
02/21/17	< 50	< 0.50
05/24/17	< 50	< 0.50
05/15/18	< 50	< 0.50

MW-27		
Date	TPHg (µg/L)	Benzene (µg/L)
06/23/15	<50	< 0.50
08/17/15	<50	< 0.50
11/20/15	<50	< 0.50
02/18/16	<50	< 0.50
05/19/16	<50	< 0.50
08/25/16	< 50	< 0.50
11/08/16	< 50	< 0.50
02/21/17	< 50	< 0.50
05/24/17	< 50	< 0.50
05/15/18	<50	1.4

Reference: Base map from a drawing titled "C2.0 Conceptual Grading Plan," by BKF, dated 08/19/14 and "First Floor Plan," by Van Tilburg, Babvard & Soderbergh, AIA, dated 10/03/14.

3093 BROADWAY
Oakland, California

GROUNDWATER ANALYTICAL RESULTS 2015 TO 2018

Date 06/28/18 | Project No. 731637001 | Figure 4

LANGAN

\\langan.com\data\SFO\data0\731637001\Cadd Data – 731637001\2D-DesignFiles\Environmental\731637001-N-SP0194.dwg 6/28/18

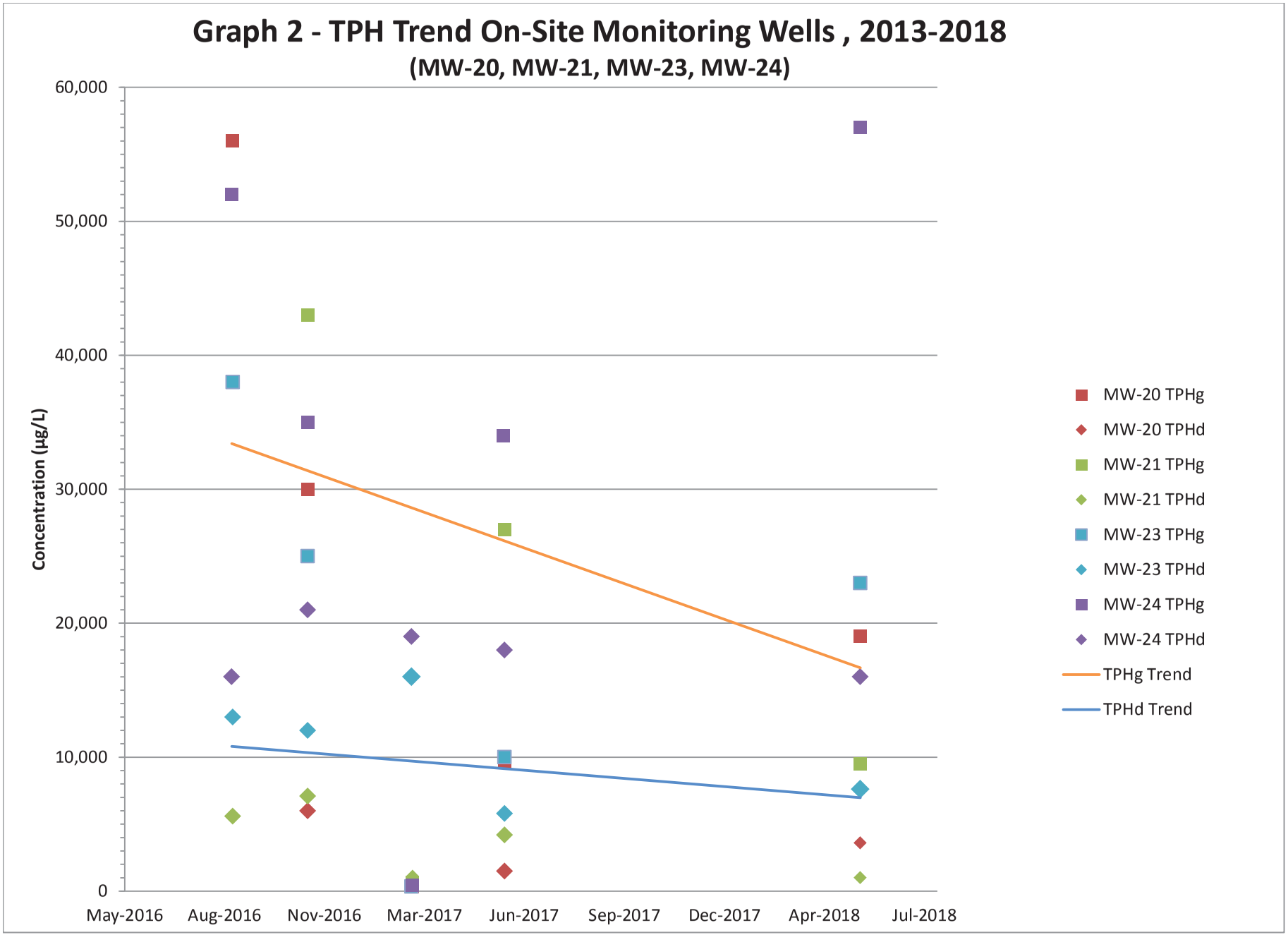
GRAPHS

Graph 1 - Benzene Trend On-Site Monitoring Wells, 2013-2018
(MW-20, MW-21, MW-23, MW-24)

LANGAN

Graph 2 - TPH Trend On-Site Monitoring Wells , 2013-2018

(MW-20, MW-21, MW-23, MW-24)



ATTACHMENT A
ANALYTICAL LABORATORY REPORTS

McCampbell Analytical, Inc.
"When Quality Counts"

Analytical Report

WorkOrder: 1805A65

Report Created for: Langan

555 Montgomery St., Suite 1300
San Francisco, CA 94111

Project Contact: Christina Rain
Project P.O.: 731637001
Project: 731637001; 3093 Broadway

Project Received: 05/17/2018

Analytical Report reviewed & approved for release on 05/24/2018 by:

Yen Cao
Project Manager

1534 Willow Pass Rd. Pittsburg, CA 94565 ♦ TEL: (877) 252-9262 ♦ FAX: (925) 252-9269 ♦ www.mccampbell.com
CA ELAP 1644 ♦ NELAP 4033 ORELAP

McCampbell Analytical, Inc.
"When Quality Counts"

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

Glossary of Terms & Qualifier Definitions

Client: Langan
Project: 731637001; 3093 Broadway
WorkOrder: 1805A65

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

McCampbell Analytical, Inc.
"When Quality Counts"

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

Glossary of Terms & Qualifier Definitions

Client: Langan
Project: 731637001; 3093 Broadway
WorkOrder: 1805A65

Analytical Qualifiers

S	Surrogate spike recovery outside accepted recovery limits.
a1	Sample diluted due to matrix interference.
a14	Reporting limit raised due to the physical nature of the sample.
c1	Surrogate recovery outside of the control limits due to the dilution of the sample.
c2	Surrogate recovery outside of the control limits due to matrix interference.
d1	Weakly modified or unmodified gasoline is significant.
d9	No recognizable pattern.
e2	Diesel range compounds are significant; no recognizable pattern.
e4	Gasoline range compounds are significant.

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD is out of acceptance criteria; LCS validates the prep batch.

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

Analytical Report

Client: Langan
Date Received: 5/17/18 16:15
Date Prepared: 5/18/18-5/21/18
Project: 731637001; 3093 Broadway

WorkOrder: 1805A65
Extraction Method: E300.1
Analytical Method: E300.1
Unit: mg/L

Sulfite by IC

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-13-GW	1805A65-001C	Water	05/15/2018 11:36	IC3 05211862.D	158611

Analytes	Result	RL	DF	Date Analyzed
Sulfite	ND	2.0	20	05/18/2018 22:03

Analyst(s): AO Analytical Comments: a14

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-27-GW	1805A65-002C	Water	05/15/2018 13:01	IC3 05211863.D	158611

Analytes	Result	RL	DF	Date Analyzed
Sulfite	ND	2.0	20	05/18/2018 23:18

Analyst(s): AO Analytical Comments: a14

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-26-GW	1805A65-003C	Water	05/15/2018 13:58	IC3 05211864.D	158611

Analytes	Result	RL	DF	Date Analyzed
Sulfite	ND	2.0	20	05/19/2018 00:33

Analyst(s): AO Analytical Comments: a14

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-25-Gw	1805A65-004C	Water	05/15/2018 14:59	IC3 05221805.D	158611

Analytes	Result	RL	DF	Date Analyzed
Sulfite	ND	4.0	40	05/21/2018 17:02

Analyst(s): AO Analytical Comments: a1

(Cont.)

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	E300.1
Date Prepared:	5/18/18-5/21/18	**Analytical Method:**	E300.1
Project:	731637001; 3093 Broadway	**Unit:**	mg/L

Sulfite by IC

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-24-GW	1805A65-005C	Water	05/16/2018 08:16	IC3 05221806.D	158611

Analytes	Result	RL	DF	Date Analyzed
Sulfite	ND	4.0	40	05/21/2018 18:23

Analyst(s): AO Analytical Comments: a1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-23-GW	1805A65-006C	Water	05/16/2018 09:21	IC3 05211865.D	158611

Analytes	Result	RL	DF	Date Analyzed
Sulfite	ND	2.0	20	05/19/2018 05:32

Analyst(s): AO Analytical Comments: a14

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-21-GW	1805A65-007C	Water	05/16/2018 10:07	IC3 05211866.D	158611

Analytes	Result	RL	DF	Date Analyzed
Sulfite	ND	2.0	20	05/19/2018 06:46

Analyst(s): AO Analytical Comments: a14

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW20-GW	1805A65-008C	Water	05/16/2018 10:59	IC3 05211867.D	158611

Analytes	Result	RL	DF	Date Analyzed
Sulfite	ND	2.0	20	05/19/2018 09:16

Analyst(s): AO Analytical Comments: a14

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	E300.1
Date Prepared:	5/18/18-5/21/18	**Analytical Method:**	E300.1
Project:	731637001; 3093 Broadway	**Unit:**	mg/L

Sulfite by IC

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Dup-GW	1805A65-009C	Water	05/15/2018	IC3 05211868.D	158611

Analytes	Result	RL	DF	Date Analyzed
Sulfite	ND	2.0	20	05/19/2018 10:31

Analyst(s): AO

Analytical Comments: a14

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	E300.1
Date Prepared:	5/17/18	**Analytical Method:**	E300.1
Project:	731637001; 3093 Broadway	**Unit:**	mg/L

Inorganic Anions by IC

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-13-GW	1805A65-001C	Water	05/15/2018 11:36	IC3 05171891.D	158448

Analytes	Result	RL	DF	Date Analyzed
Sulfate	**40**	5.0	50	05/17/2018 19:19

Surrogates	REC (%)	Qualifiers	Limits	
Formate	0	S	85-115	05/17/2018 19:19

Analyst(s): AO Analytical Comments: c1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-27-GW	1805A65-002C	Water	05/15/2018 13:01	IC3 05171892.D	158448

Analytes	Result	RL	DF	Date Analyzed
Sulfate	**45**	5.0	50	05/17/2018 19:33

Surrogates	REC (%)	Qualifiers	Limits	
Formate	0	S	85-115	05/17/2018 19:33

Analyst(s): AO Analytical Comments: c1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-26-GW	1805A65-003C	Water	05/15/2018 13:58	IC3 05171893.D	158448

Analytes	Result	RL	DF	Date Analyzed
Sulfate	**42**	5.0	50	05/17/2018 19:48

Surrogates	REC (%)	Qualifiers	Limits	
Formate	0	S	85-115	05/17/2018 19:48

Analyst(s): AO Analytical Comments: c1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-25-Gw	1805A65-004C	Water	05/15/2018 14:59	IC3 05171894.D	158448

Analytes	Result	RL	DF	Date Analyzed
Sulfate	**32**	5.0	50	05/17/2018 20:02

Surrogates	REC (%)	Qualifiers	Limits	
Formate	0	S	85-115	05/17/2018 20:02

Analyst(s): AO Analytical Comments: c1

(Cont.)

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	E300.1
Date Prepared:	5/17/18	**Analytical Method:**	E300.1
Project:	731637001; 3093 Broadway	**Unit:**	mg/L

Inorganic Anions by IC

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-24-GW	1805A65-005C	Water	05/16/2018 08:16	IC3 05181807.D	158448

Analytes	Result	RL	DF	Date Analyzed
Sulfate	ND	0.50	5	05/17/2018 21:59

Surrogates	REC (%)	Qualifiers	Limits	
Formate	41	S	85-115	05/17/2018 21:59

Analyst(s): AO Analytical Comments: a14,c2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-23-GW	1805A65-006C	Water	05/16/2018 09:21	IC3 05181808.D	158448

Analytes	Result	RL	DF	Date Analyzed
Sulfate	**15**	0.50	5	05/17/2018 22:13

Surrogates	REC (%)	Qualifiers	Limits	
Formate	0	S	85-115	05/17/2018 22:13

Analyst(s): AO Analytical Comments: c2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-21-GW	1805A65-007C	Water	05/16/2018 10:07	IC3 05171895.D	158448

Analytes	Result	RL	DF	Date Analyzed
Sulfate	**37**	5.0	50	05/17/2018 20:46

Surrogates	REC (%)	Qualifiers	Limits	
Formate	0	S	85-115	05/17/2018 20:46

Analyst(s): AO Analytical Comments: c1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW20-GW	1805A65-008C	Water	05/16/2018 10:59	IC3 05181805.D	158448

Analytes	Result	RL	DF	Date Analyzed
Sulfate	**180**	5.0	50	05/17/2018 21:30

Surrogates	REC (%)	Qualifiers	Limits	
Formate	0	S	85-115	05/17/2018 21:30

Analyst(s): AO Analytical Comments: c1

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	E300.1
Date Prepared:	5/17/18	**Analytical Method:**	E300.1
Project:	731637001; 3093 Broadway	**Unit:**	mg/L

Inorganic Anions by IC

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Dup-GW	**1805A65-009C**	**Water**	**05/15/2018**	**IC3 05181806.D**	**158448**

Analytes	Result	RL	DF	Date Analyzed
Sulfate	**41**	5.0	50	05/17/2018 21:44

Surrogates	REC (%)	Qualifiers	Limits	
Formate	0	S	85-115	05/17/2018 21:44

Analyst(s): AO Analytical Comments: c1

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	SW5030B
Date Prepared:	5/20/18-5/23/18	**Analytical Method:**	SW8260B
Project:	731637001; 3093 Broadway	**Unit:**	µg/L

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-13-GW	1805A65-001B	Water	05/15/2018 11:36	GC16 05201811.D	158568

Analytes	Result	RL	DF	Date Analyzed
Benzene	ND	0.50	1	05/20/2018 17:02
1,2-Dichloroethane (1,2-DCA)	ND	0.50	1	05/20/2018 17:02
Ethylbenzene	ND	0.50	1	05/20/2018 17:02
Methyl-t-butyl ether (MTBE)	ND	0.50	1	05/20/2018 17:02
Naphthalene	ND	0.50	1	05/20/2018 17:02
Toluene	ND	0.50	1	05/20/2018 17:02
Xylenes, Total	ND	0.50	1	05/20/2018 17:02

Surrogates	REC (%)	Limits	
Dibromofluoromethane	102	78-134	05/20/2018 17:02
Toluene-d8	108	82-120	05/20/2018 17:02
4-BFB	100	69-131	05/20/2018 17:02

Analyst(s): KF

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-27-GW	1805A65-002B	Water	05/15/2018 13:01	GC16 05201812.D	158568

Analytes	Result	RL	DF	Date Analyzed
Benzene	ND	0.50	1	05/20/2018 17:43
1,2-Dichloroethane (1,2-DCA)	ND	0.50	1	05/20/2018 17:43
Ethylbenzene	ND	0.50	1	05/20/2018 17:43
Methyl-t-butyl ether (MTBE)	ND	0.50	1	05/20/2018 17:43
Naphthalene	ND	0.50	1	05/20/2018 17:43
Toluene	ND	0.50	1	05/20/2018 17:43
Xylenes, Total	ND	0.50	1	05/20/2018 17:43

Surrogates	REC (%)	Limits	
Dibromofluoromethane	103	78-134	05/20/2018 17:43
Toluene-d8	106	82-120	05/20/2018 17:43
4-BFB	100	69-131	05/20/2018 17:43

Analyst(s): KF

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	SW5030B
Date Prepared:	5/20/18-5/23/18	**Analytical Method:**	SW8260B
Project:	731637001; 3093 Broadway	**Unit:**	µg/L

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-26-GW	1805A65-003B	Water	05/15/2018 13:58	GC16 05201813.D	158568

Analytes	Result	RL	DF	Date Analyzed
Benzene	ND	0.50	1	05/20/2018 18:24
1,2-Dichloroethane (1,2-DCA)	ND	0.50	1	05/20/2018 18:24
Ethylbenzene	ND	0.50	1	05/20/2018 18:24
Methyl-t-butyl ether (MTBE)	ND	0.50	1	05/20/2018 18:24
Naphthalene	ND	0.50	1	05/20/2018 18:24
Toluene	ND	0.50	1	05/20/2018 18:24
Xylenes, Total	ND	0.50	1	05/20/2018 18:24

Surrogates	REC (%)	Limits	
Dibromofluoromethane	104	78-134	05/20/2018 18:24
Toluene-d8	104	82-120	05/20/2018 18:24
4-BFB	104	69-131	05/20/2018 18:24

Analyst(s): KF

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-25-Gw	1805A65-004B	Water	05/15/2018 14:59	GC16 05201814.D	158568

Analytes	Result	RL	DF	Date Analyzed
Benzene	ND	0.50	1	05/20/2018 19:06
1,2-Dichloroethane (1,2-DCA)	**4.5**	0.50	1	05/20/2018 19:06
Ethylbenzene	ND	0.50	1	05/20/2018 19:06
Methyl-t-butyl ether (MTBE)	ND	0.50	1	05/20/2018 19:06
Naphthalene	ND	0.50	1	05/20/2018 19:06
Toluene	ND	0.50	1	05/20/2018 19:06
Xylenes, Total	ND	0.50	1	05/20/2018 19:06

Surrogates	REC (%)	Limits	
Dibromofluoromethane	102	78-134	05/20/2018 19:06
Toluene-d8	103	82-120	05/20/2018 19:06
4-BFB	102	69-131	05/20/2018 19:06

Analyst(s): KF

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	SW5030B
Date Prepared:	5/20/18-5/23/18	**Analytical Method:**	SW8260B
Project:	731637001; 3093 Broadway	**Unit:**	µg/L

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-24-GW	1805A65-005B	Water	05/16/2018 08:16	GC16 05211814.D	158568

Analytes	Result	RL	DF	Date Analyzed
Benzene	**1500**	25	50	05/21/2018 16:27
1,2-Dichloroethane (1,2-DCA)	ND	25	50	05/21/2018 16:27
Ethylbenzene	**330**	25	50	05/21/2018 16:27
Methyl-t-butyl ether (MTBE)	ND	25	50	05/21/2018 16:27
Naphthalene	**1300**	25	50	05/21/2018 16:27
Toluene	**610**	25	50	05/21/2018 16:27
Xylenes, Total	**5500**	25	50	05/21/2018 16:27

Surrogates	REC (%)	Limits	
Dibromofluoromethane	105	78-134	05/21/2018 16:27
Toluene-d8	105	82-120	05/21/2018 16:27
4-BFB	101	69-131	05/21/2018 16:27

Analyst(s): TK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-23-GW	1805A65-006B	Water	05/16/2018 09:21	GC16 05211832.D	158630

Analytes	Result	RL	DF	Date Analyzed
Benzene	**1600**	25	50	05/22/2018 04:54
1,2-Dichloroethane (1,2-DCA)	ND	25	50	05/22/2018 04:54
Ethylbenzene	**460**	25	50	05/22/2018 04:54
Methyl-t-butyl ether (MTBE)	ND	25	50	05/22/2018 04:54
Naphthalene	**640**	25	50	05/22/2018 04:54
Toluene	**320**	25	50	05/22/2018 04:54
Xylenes, Total	**370**	25	50	05/22/2018 04:54

Surrogates	REC (%)	Limits	
Dibromofluoromethane	101	78-134	05/22/2018 04:54
Toluene-d8	107	82-120	05/22/2018 04:54
4-BFB	106	69-131	05/22/2018 04:54

Analyst(s): KF

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	SW5030B
Date Prepared:	5/20/18-5/23/18	**Analytical Method:**	SW8260B
Project:	731637001; 3093 Broadway	**Unit:**	µg/L

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-21-GW	1805A65-007B	Water	05/16/2018 10:07	GC16 05221816.D	158630

Analytes	Result	RL	DF	Date Analyzed
Benzene	**1200**	50	100	05/22/2018 17:40
1,2-Dichloroethane (1,2-DCA)	ND	50	100	05/22/2018 17:40
Ethylbenzene	**150**	50	100	05/22/2018 17:40
Methyl-t-butyl ether (MTBE)	ND	50	100	05/22/2018 17:40
Naphthalene	**140**	50	100	05/22/2018 17:40
Toluene	**210**	50	100	05/22/2018 17:40
Xylenes, Total	**670**	50	100	05/22/2018 17:40

Surrogates	REC (%)	Limits	
Dibromofluoromethane	102	78-134	05/22/2018 17:40
Toluene-d8	106	82-120	05/22/2018 17:40
4-BFB	108	69-131	05/22/2018 17:40

Analyst(s): KF

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW20-GW	1805A65-008B	Water	05/16/2018 10:59	GC10 05221827.D	158630

Analytes	Result	RL	DF	Date Analyzed
Benzene	**1100**	50	100	05/23/2018 01:04
1,2-Dichloroethane (1,2-DCA)	**54**	50	100	05/23/2018 01:04
Ethylbenzene	**250**	50	100	05/23/2018 01:04
Methyl-t-butyl ether (MTBE)	ND	50	100	05/23/2018 01:04
Naphthalene	**260**	50	100	05/23/2018 01:04
Toluene	**420**	50	100	05/23/2018 01:04
Xylenes, Total	**2000**	50	100	05/23/2018 01:04

Surrogates	REC (%)	Limits	
Dibromofluoromethane	105	78-134	05/23/2018 01:04
Toluene-d8	104	82-120	05/23/2018 01:04
4-BFB	86	69-131	05/23/2018 01:04

Analyst(s): KF

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	SW5030B
Date Prepared:	5/20/18-5/23/18	**Analytical Method:**	SW8260B
Project:	731637001; 3093 Broadway	**Unit:**	µg/L

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Dup-GW	**1805A65-009B**	**Water**	**05/15/2018**	**GC16 05211810.D**	**158630**

Analytes	Result	RL	DF	Date Analyzed
Benzene	**1.4**	0.50	1	05/21/2018 13:23
1,2-Dichloroethane (1,2-DCA)	ND	0.50	1	05/21/2018 13:23
Ethylbenzene	**0.50**	0.50	1	05/21/2018 13:23
Methyl-t-butyl ether (MTBE)	ND	0.50	1	05/21/2018 13:23
Naphthalene	**14**	0.50	1	05/21/2018 13:23
Toluene	ND	0.50	1	05/21/2018 13:23
Xylenes, Total	**3.3**	0.50	1	05/21/2018 13:23

Surrogates	REC (%)	Limits	
Dibromofluoromethane	106	78-134	05/21/2018 13:23
Toluene-d8	110	82-120	05/21/2018 13:23
4-BFB	108	69-131	05/21/2018 13:23

Analyst(s): TK

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	SW5030B
Date Prepared:	5/19/18-5/23/18	**Analytical Method:**	SW8021B/8015Bm
Project:	731637001; 3093 Broadway	**Unit:**	µg/L

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-13-GW	1805A65-001A	Water	05/15/2018 11:36	GC3 05211806.D	158653

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	50	1	05/21/2018 12:40
MTBE	---	5.0	1	05/21/2018 12:40
Benzene	---	0.50	1	05/21/2018 12:40
Toluene	---	0.50	1	05/21/2018 12:40
Ethylbenzene	---	0.50	1	05/21/2018 12:40
Xylenes	---	0.50	1	05/21/2018 12:40

Surrogates	REC (%)	Limits	
aaa-TFT	103	90-117	05/21/2018 12:40

Analyst(s): IA

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-27-GW	1805A65-002A	Water	05/15/2018 13:01	GC3 05191816.D	158601

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	50	1	05/19/2018 20:38
MTBE	---	5.0	1	05/19/2018 20:38
Benzene	---	0.50	1	05/19/2018 20:38
Toluene	---	0.50	1	05/19/2018 20:38
Ethylbenzene	---	0.50	1	05/19/2018 20:38
Xylenes	---	0.50	1	05/19/2018 20:38

Surrogates	REC (%)	Limits	
aaa-TFT	102	90-117	05/19/2018 20:38

Analyst(s): HD

(Cont.)

NELAP 4033ORELAP

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	SW5030B
Date Prepared:	5/19/18-5/23/18	**Analytical Method:**	SW8021B/8015Bm
Project:	731637001; 3093 Broadway	**Unit:**	µg/L

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-26-GW	1805A65-003A	Water	05/15/2018 13:58	GC3 05191817.D	158601

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	50	1	05/19/2018 21:08
MTBE	---	5.0	1	05/19/2018 21:08
Benzene	---	0.50	1	05/19/2018 21:08
Toluene	---	0.50	1	05/19/2018 21:08
Ethylbenzene	---	0.50	1	05/19/2018 21:08
Xylenes	---	0.50	1	05/19/2018 21:08

Surrogates	REC (%)	Limits	
aaa-TFT	101	90-117	05/19/2018 21:08

Analyst(s): HD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-25-Gw	1805A65-004A	Water	05/15/2018 14:59	GC3 05191818.D	158601

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	**140**	50	1	05/19/2018 21:39
MTBE	---	5.0	1	05/19/2018 21:39
Benzene	---	0.50	1	05/19/2018 21:39
Toluene	---	0.50	1	05/19/2018 21:39
Ethylbenzene	---	0.50	1	05/19/2018 21:39
Xylenes	---	0.50	1	05/19/2018 21:39

Surrogates	REC (%)	Limits	
aaa-TFT	111	90-117	05/19/2018 21:39

Analyst(s): HD Analytical Comments: d9

(Cont.)

NELAP 4033ORELAP

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	SW5030B
Date Prepared:	5/19/18-5/23/18	**Analytical Method:**	SW8021B/8015Bm
Project:	731637001; 3093 Broadway	**Unit:**	µg/L

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-24-GW	**1805A65-005A**	**Water**	**05/16/2018 08:16**	**GC3 05221838.D**	**158653**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	**57,000**	2500	50	05/23/2018 06:52
MTBE	---	250	50	05/23/2018 06:52
Benzene	---	25	50	05/23/2018 06:52
Toluene	---	25	50	05/23/2018 06:52
Ethylbenzene	---	25	50	05/23/2018 06:52
Xylenes	---	25	50	05/23/2018 06:52

Surrogates	REC (%)	Limits	
aaa-TFT	97	90-117	05/23/2018 06:52

Analyst(s): IA Analytical Comments: d1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-23-GW	**1805A65-006A**	**Water**	**05/16/2018 09:21**	**GC3 05211831.D**	**158601**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	**23,000**	1700	33	05/22/2018 01:35
MTBE	---	170	33	05/22/2018 01:35
Benzene	---	17	33	05/22/2018 01:35
Toluene	---	17	33	05/22/2018 01:35
Ethylbenzene	---	17	33	05/22/2018 01:35
Xylenes	---	17	33	05/22/2018 01:35

Surrogates	REC (%)	Limits	
aaa-TFT	99	90-117	05/22/2018 01:35

Analyst(s): IA Analytical Comments: d1

(Cont.)

NELAP 4033ORELAP

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	SW5030B
Date Prepared:	5/19/18-5/23/18	**Analytical Method:**	SW8021B/8015Bm
Project:	731637001; 3093 Broadway	**Unit:**	µg/L

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-21-GW	1805A65-007A	Water	05/16/2018 10:07	GC3 05211832.D	158601

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	**9500**	1200	25	05/22/2018 02:05
MTBE	---	120	25	05/22/2018 02:05
Benzene	---	12	25	05/22/2018 02:05
Toluene	---	12	25	05/22/2018 02:05
Ethylbenzene	---	12	25	05/22/2018 02:05
Xylenes	---	12	25	05/22/2018 02:05

Surrogates	REC (%)	Limits	
aaa-TFT	100	90-117	05/22/2018 02:05

Analyst(s): IA Analytical Comments: d1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW20-GW	1805A65-008A	Water	05/16/2018 10:59	GC3 05211835.D	158601

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	**19,000**	1200	25	05/22/2018 03:37
MTBE	---	120	25	05/22/2018 03:37
Benzene	---	12	25	05/22/2018 03:37
Toluene	---	12	25	05/22/2018 03:37
Ethylbenzene	---	12	25	05/22/2018 03:37
Xylenes	---	12	25	05/22/2018 03:37

Surrogates	REC (%)	Limits	
aaa-TFT	98	90-117	05/22/2018 03:37

Analyst(s): IA Analytical Comments: d1

(Cont.)

NELAP 4033ORELAP

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	SW5030B
Date Prepared:	5/19/18-5/23/18	**Analytical Method:**	SW8021B/8015Bm
Project:	731637001; 3093 Broadway	**Unit:**	µg/L

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Dup-GW	**1805A65-009A**	**Water**	**05/15/2018**	**GC3 05211829.D**	**158601**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	50	1	05/22/2018 00:34
MTBE	---	5.0	1	05/22/2018 00:34
Benzene	---	0.50	1	05/22/2018 00:34
Toluene	---	0.50	1	05/22/2018 00:34
Ethylbenzene	---	0.50	1	05/22/2018 00:34
Xylenes	---	0.50	1	05/22/2018 00:34

Surrogates	REC (%)	Limits	
aaa-TFT	101	90-117	05/22/2018 00:34

Analyst(s): IA

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client: Langan
Date Received: 5/17/18 16:15
Date Prepared: 5/18/18
Project: 731637001; 3093 Broadway

WorkOrder: 1805A65
Extraction Method: SM4500-S^{-2} D-2000
Analytical Method: SM4500 S^{-2} D
Unit: mg/L

Total Sulfide - S

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-13-GW	1805A65-001C	Water	05/15/2018 11:36	SPECTROPHOTOMETER	158491

Analytes	Result	RL	DF	Date Analyzed
Total Sulfide	ND	0.050	1	05/18/2018 07:20

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-27-GW	1805A65-002C	Water	05/15/2018 13:01	SPECTROPHOTOMETER	158491

Analytes	Result	RL	DF	Date Analyzed
Total Sulfide	ND	0.050	1	05/18/2018 07:26

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-26-GW	1805A65-003C	Water	05/15/2018 13:58	SPECTROPHOTOMETER	158491

Analytes	Result	RL	DF	Date Analyzed
Total Sulfide	ND	0.050	1	05/18/2018 07:28

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-25-Gw	1805A65-004C	Water	05/15/2018 14:59	SPECTROPHOTOMETER	158491

Analytes	Result	RL	DF	Date Analyzed
Total Sulfide	ND	0.050	1	05/18/2018 07:30

Analyst(s): RB

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client: Langan
Date Received: 5/17/18 16:15
Date Prepared: 5/18/18
Project: 731637001; 3093 Broadway

WorkOrder: 1805A65
Extraction Method: SM4500-S^{-2} D-2000
Analytical Method: SM4500 S^{-2} D
Unit: mg/L

Total Sulfide - S

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-24-GW	1805A65-005C	Water	05/16/2018 08:16	SPECTROPHOTOMETER	158491

Analytes	Result	RL	DF	Date Analyzed
Total Sulfide	ND	0.050	1	05/18/2018 07:32

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-23-GW	1805A65-006C	Water	05/16/2018 09:21	SPECTROPHOTOMETER	158491

Analytes	Result	RL	DF	Date Analyzed
Total Sulfide	ND	0.050	1	05/18/2018 07:34

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-21-GW	1805A65-007C	Water	05/16/2018 10:07	SPECTROPHOTOMETER	158491

Analytes	Result	RL	DF	Date Analyzed
Total Sulfide	ND	0.050	1	05/18/2018 07:36

Analyst(s): RB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW20-GW	1805A65-008C	Water	05/16/2018 10:59	SPECTROPHOTOMETER	158491

Analytes	Result	RL	DF	Date Analyzed
Total Sulfide	ND	0.050	1	05/18/2018 07:38

Analyst(s): RB

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	SM4500-S^{-2} D-2000
Date Prepared:	5/18/18	**Analytical Method:**	SM4500 S^{-2} D
Project:	731637001; 3093 Broadway	**Unit:**	mg/L

Total Sulfide - S

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Dup-GW	1805A65-009C	Water	05/15/2018	SPECTROPHOTOMETER	158491

Analytes	Result	RL	DF	Date Analyzed
Total Sulfide	ND	0.050	1	05/18/2018 07:40

Analyst(s): RB

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	SW3510C
Date Prepared:	5/17/18	**Analytical Method:**	SW8015B
Project:	731637001; 3093 Broadway	**Unit:**	µg/L

Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-13-GW	1805A65-001A	Water	05/15/2018 11:36	GC6B 05181809.D	158468

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	50	1	05/18/2018 15:22

Surrogates	REC (%)	Limits	
C9	91	61-139	05/18/2018 15:22

Analyst(s): TD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-27-GW	1805A65-002A	Water	05/15/2018 13:01	GC6B 05181811.D	158468

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	50	1	05/18/2018 16:01

Surrogates	REC (%)	Limits	
C9	90	61-139	05/18/2018 16:01

Analyst(s): TD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-26-GW	1805A65-003A	Water	05/15/2018 13:58	GC6B 05181813.D	158468

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	50	1	05/18/2018 16:40

Surrogates	REC (%)	Limits	
C9	101	61-139	05/18/2018 16:40

Analyst(s): TD

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-25-Gw	1805A65-004A	Water	05/15/2018 14:59	GC6B 05181815.D	158468

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	50	1	05/18/2018 17:18

Surrogates	REC (%)	Limits	
C9	91	61-139	05/18/2018 17:18

Analyst(s): TD

(Cont.)

NELAP 4033ORELAP

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	SW3510C
Date Prepared:	5/17/18	**Analytical Method:**	SW8015B
Project:	731637001; 3093 Broadway	**Unit:**	µg/L

Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-24-GW	1805A65-005A	Water	05/16/2018 08:16	GC6B 05181817.D	158468

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**21,000**	50	1	05/18/2018 17:57

Surrogates	REC (%)	Limits	
C26	93	73-125	05/18/2018 17:57

Analyst(s): TD Analytical Comments: e4,e2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-23-GW	1805A65-006A	Water	05/16/2018 09:21	GC6A 05181810.D	158468

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**7600**	50	1	05/18/2018 15:22

Surrogates	REC (%)	Limits	
C9	111	61-139	05/18/2018 15:22

Analyst(s): TD Analytical Comments: e4,e2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-21-GW	1805A65-007A	Water	05/16/2018 10:07	GC6A 05181812.D	158468

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**1000**	50	1	05/18/2018 16:01

Surrogates	REC (%)	Limits	
C26	102	73-125	05/18/2018 16:01

Analyst(s): TD Analytical Comments: e4,(e2?)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW20-GW	1805A65-008A	Water	05/16/2018 10:59	GC6A 05181814.D	158468

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**3600**	50	1	05/18/2018 16:40

Surrogates	REC (%)	Limits	
C26	102	73-125	05/18/2018 16:40

Analyst(s): TD Analytical Comments: e4,e2

(Cont.)

NELAP 4033ORELAP

McCampbell Analytical, Inc.
"When Quality Counts"

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

Analytical Report

Client:	Langan	**WorkOrder:**	1805A65
Date Received:	5/17/18 16:15	**Extraction Method:**	SW3510C
Date Prepared:	5/17/18	**Analytical Method:**	SW8015B
Project:	731637001; 3093 Broadway	**Unit:**	µg/L

Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Dup-GW	**1805A65-009A**	**Water**	**05/15/2018**	**GC6A 05181816.D**	**158468**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	50	1	05/18/2018 17:18

Surrogates	REC (%)	Limits	
C26	101	73-125	05/18/2018 17:18

Analyst(s): TD

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/18/18	**BatchID:**	158611
Date Analyzed:	5/18/18	**Extraction Method:**	E300.1
Instrument:	IC3	**Analytical Method:**	E300.1
Matrix:	Water	**Unit:**	mg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS/LCSD-158611 1805A65-009CMS/MSD

QC Summary Report for E300.1

Analyte	MB Result	RL			
Sulfite	ND	0.10	-	-	-

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Sulfite	0.945	0.979	1	94	98	80-120	3.57	20

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Sulfite	NR	NR		ND<2	NR	NR	-	NR	-

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/17/18	**BatchID:**	158448
Date Analyzed:	5/17/18	**Extraction Method:**	E300.1
Instrument:	IC3	**Analytical Method:**	E300.1
Matrix:	Water	**Unit:**	mg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS/LCSD-158448 1805A02-001BMS/MSD

QC Summary Report for E300.1

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Sulfate	ND	0.10	-	-	-
Surrogate Recovery					
Formate	0.103		0.10	103	85-115

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Sulfate	0.957	0.969	1	96	97	85-115	1.25	15
Surrogate Recovery								
Formate	0.101	0.102	0.10	101	102	85-115	1.12	10

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Sulfate	15.9	15.9	1	15	126,F1	125,F1	85-115	0.0440	15
Surrogate Recovery									
Formate	0.102	0.102	0.10		102	102	85-115	0	10

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/20/18	**BatchID:**	158568
Date Analyzed:	5/20/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS-158568 1805A40-001BMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acetone	ND	163	10	200	-	82	47-122
tert-Amyl methyl ether (TAME)	ND	8.83	0.50	10	-	88	62-121
Benzene	ND	9.46	0.50	10	-	95	74-121
Bromobenzene	ND	9.87	0.50	10	-	99	63-127
Bromochloromethane	ND	8.61	0.50	10	-	86	70-126
Bromodichloromethane	ND	9.29	0.50	10	-	93	66-127
Bromoform	ND	8.22	0.50	10	-	82	60-119
Bromomethane	ND	11.7	0.50	10	-	117	32-155
2-Butanone (MEK)	ND	30.7	2.0	40	-	77	51-117
t-Butyl alcohol (TBA)	ND	30.1	2.0	40	-	75	41-122
n-Butyl benzene	ND	9.72	0.50	10	-	97	73-137
sec-Butyl benzene	ND	8.98	0.50	10	-	90	71-137
tert-Butyl benzene	ND	9.03	0.50	10	-	90	61-136
Carbon Disulfide	ND	9.29	0.50	10	-	93	61-139
Carbon Tetrachloride	ND	8.39	0.50	10	-	84	69-137
Chlorobenzene	ND	9.05	0.50	10	-	90	71-122
Chloroethane	ND	10.2	0.50	10	-	102	54-132
Chloroform	ND	9.28	0.50	10	-	93	73-122
Chloromethane	ND	11.7	0.50	10	-	117	48-136
2-Chlorotoluene	ND	9.69	0.50	10	-	97	65-134
4-Chlorotoluene	ND	9.65	0.50	10	-	96	65-130
Dibromochloromethane	ND	8.93	0.50	10	-	89	65-121
1,2-Dibromo-3-chloropropane	ND	3.51	0.20	4	-	88	41-132
1,2-Dibromoethane (EDB)	ND	9.18	0.50	10	-	92	67-125
Dibromomethane	ND	9.08	0.50	10	-	91	68-121
1,2-Dichlorobenzene	ND	9.09	0.50	10	-	91	69-128
1,3-Dichlorobenzene	ND	9.49	0.50	10	-	95	71-131
1,4-Dichlorobenzene	ND	9.15	0.50	10	-	92	70-128
Dichlorodifluoromethane	ND	8.04	0.50	10	-	80	21-158
1,1-Dichloroethane	ND	9.48	0.50	10	-	95	73-123
1,2-Dichloroethane (1,2-DCA)	ND	9.02	0.50	10	-	90	61-127
1,1-Dichloroethene	ND	9.15	0.50	10	-	91	68-130
cis-1,2-Dichloroethene	ND	9.50	0.50	10	-	95	72-123
trans-1,2-Dichloroethene	ND	9.36	0.50	10	-	94	64-138
1,2-Dichloropropane	ND	9.55	0.50	10	-	96	71-121
1,3-Dichloropropane	ND	9.17	0.50	10	-	92	69-120
2,2-Dichloropropane	ND	9.30	0.50	10	-	93	64-142

(Cont.)

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/20/18	**BatchID:**	158568
Date Analyzed:	5/20/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS-158568 1805A40-001BMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
1,1-Dichloropropene	ND	9.39	0.50	10	-	94	70-130
cis-1,3-Dichloropropene	ND	9.48	0.50	10	-	95	58-136
trans-1,3-Dichloropropene	ND	9.44	0.50	10	-	94	66-119
Diisopropyl ether (DIPE)	ND	9.30	0.50	10	-	93	66-123
Ethylbenzene	ND	9.28	0.50	10	-	93	71-125
Ethyl tert-butyl ether (ETBE)	ND	9.13	0.50	10	-	91	67-122
Freon 113	ND	8.88	0.50	10	-	89	68-132
Hexachlorobutadiene	ND	8.92	0.50	10	-	89	56-155
Hexachloroethane	ND	8.64	0.50	10	-	86	61-129
2-Hexanone	ND	7.74	0.50	10	-	77	51-115
Isopropylbenzene	ND	8.83	0.50	10	-	88	66-134
4-Isopropyl toluene	ND	8.92	0.50	10	-	89	70-136
Methyl-t-butyl ether (MTBE)	ND	8.64	0.50	10	-	86	64-118
Methylene chloride	ND	8.76	0.50	10	-	88	62-121
4-Methyl-2-pentanone (MIBK)	ND	8.23	0.50	10	-	82	51-115
Naphthalene	ND	9.15	0.50	10	-	91	55-137
n-Propyl benzene	ND	9.34	0.50	10	-	93	63-140
Styrene	ND	8.62	0.50	10	-	86	62-133
1,1,1,2-Tetrachloroethane	ND	8.89	0.50	10	-	89	69-128
1,1,2,2-Tetrachloroethane	ND	9.44	0.50	10	-	94	60-118
Tetrachloroethene	ND	9.04	0.50	10	-	90	63-136
Toluene	ND	9.14	0.50	10	-	91	67-124
1,2,3-Trichlorobenzene	ND	9.37	0.50	10	-	94	57-145
1,2,4-Trichlorobenzene	ND	9.79	0.50	10	-	98	60-144
1,1,1-Trichloroethane	ND	9.17	0.50	10	-	92	70-133
1,1,2-Trichloroethane	ND	9.08	0.50	10	-	91	65-125
Trichloroethene	ND	9.15	0.50	10	-	92	67-133
Trichlorofluoromethane	ND	8.80	0.50	10	-	88	59-145
1,2,3-Trichloropropane	ND	9.42	0.50	10	-	94	65-115
1,2,4-Trimethylbenzene	ND	10.2	0.50	10	-	102	67-136
1,3,5-Trimethylbenzene	ND	10.5	0.50	10	-	105	68-135
Vinyl Chloride	ND	10.8	0.50	10	-	108	53-146
Xylenes, Total	ND	26.0	0.50	30	-	87	68-128

(Cont.)

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/20/18	**BatchID:**	158568
Date Analyzed:	5/20/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS-158568 1805A40-001BMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Surrogate Recovery							
Dibromofluoromethane	25.7	25.7		25	103	103	91-133
Toluene-d8	26.4	27.3		25	105	109	87-127
4-BFB	2.59	2.65		2.5	104	106	66-140

(Cont.)

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/20/18	**BatchID:**	158568
Date Analyzed:	5/20/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS-158568 1805A40-001BMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Acetone	195	199	200	ND	93	95	56-141	1.94	20
tert-Amyl methyl ether (TAME)	9.63	9.79	10	ND	96	98	78-120	1.63	20
Benzene	9.74	9.56	10	ND	97	96	81-118	1.80	20
Bromobenzene	9.59	10.1	10	ND	96	101	71-119	5.04	20
Bromochloromethane	9.49	9.30	10	ND	95	93	80-124	2.02	20
Bromodichloromethane	9.83	9.81	10	ND	98	98	78-124	0	20
Bromoform	9.23	9.38	10	ND	92	94	65-127	1.59	20
Bromomethane	11.6	11.8	10	ND	117	118	22-175	0.888	20
2-Butanone (MEK)	37.1	38.0	40	ND	93	95	50-152	2.52	20
t-Butyl alcohol (TBA)	36.6	39.4	40	ND	92	98	49-141	7.21	20
n-Butyl benzene	9.39	9.47	10	ND	94	95	77-127	0.911	20
sec-Butyl benzene	8.86	8.42	10	ND	89	84	74-123	5.14	20
tert-Butyl benzene	8.86	8.59	10	ND	89	86	68-122	3.11	20
Carbon Disulfide	9.45	9.17	10	ND	95	92	74-123	3.09	20
Carbon Tetrachloride	8.91	8.70	10	ND	89	87	78-124	2.30	20
Chlorobenzene	9.14	9.19	10	ND	91	92	79-116	0.563	20
Chloroethane	10.2	9.73	10	ND	102	97	56-134	4.67	20
Chloroform	13.1	12.8	10	3.533	96	93	82-119	2.29	20
Chloromethane	10.4	9.90	10	ND	104	99	39-147	4.77	20
2-Chlorotoluene	9.19	9.34	10	ND	92	93	69-124	1.56	20
4-Chlorotoluene	9.31	9.10	10	ND	93	91	71-121	2.26	20
Dibromochloromethane	9.68	9.66	10	ND	97	97	76-119	0	20
1,2-Dibromo-3-chloropropane	3.67	4.24	4	ND	92	106	48-138	14.4	20
1,2-Dibromoethane (EDB)	9.83	9.88	10	ND	98	99	81-122	0.513	20
Dibromomethane	9.88	9.72	10	ND	99	97	83-121	1.60	20
1,2-Dichlorobenzene	9.09	9.35	10	ND	91	93	77-122	2.75	20
1,3-Dichlorobenzene	9.42	9.43	10	ND	94	94	76-125	0	20
1,4-Dichlorobenzene	9.04	9.19	10	ND	90	92	78-120	1.65	20
Dichlorodifluoromethane	7.55	6.92	10	ND	75	69	38-135	8.73	20
1,1-Dichloroethane	9.58	9.38	10	ND	96	94	80-120	2.11	20
1,2-Dichloroethane (1,2-DCA)	9.55	9.46	10	ND	95	95	78-122	0	20
1,1-Dichloroethene	9.32	9.09	10	ND	93	91	77-120	2.51	20
cis-1,2-Dichloroethene	10.0	9.42	10	ND	100	94	79-123	6.35	20
trans-1,2-Dichloroethene	9.55	9.47	10	ND	96	95	77-125	0.880	20
1,2-Dichloropropane	9.83	9.64	10	ND	98	96	80-121	1.97	20
1,3-Dichloropropane	9.55	9.65	10	ND	96	97	80-120	1.05	20
2,2-Dichloropropane	9.17	9.01	10	ND	92	90	70-132	1.80	20

(Cont.)

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/20/18	**BatchID:**	158568
Date Analyzed:	5/20/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS-158568 1805A40-001BMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
1,1-Dichloropropene	9.42	9.28	10	ND	94	93	78-122	1.56	20
cis-1,3-Dichloropropene	9.65	9.60	10	ND	96	96	73-121	0	20
trans-1,3-Dichloropropene	9.79	9.90	10	ND	98	99	77-116	1.11	20
Diisopropyl ether (DIPE)	9.66	9.67	10	ND	97	97	77-125	0	20
Ethylbenzene	9.21	9.15	10	ND	92	91	77-119	0.707	20
Ethyl tert-butyl ether (ETBE)	9.88	9.95	10	ND	99	100	81-122	0.711	20
Freon 113	9.22	8.91	10	ND	92	89	77-120	3.42	20
Hexachlorobutadiene	8.57	9.00	10	ND	86	90	57-141	4.85	20
Hexachloroethane	9.01	9.20	10	ND	90	92	26-168	2.09	20
2-Hexanone	9.09	9.36	10	ND	91	94	58-135	2.91	20
Isopropylbenzene	9.14	8.53	10	ND	91	85	74-120	6.92	20
4-Isopropyl toluene	8.84	8.58	10	ND	88	86	75-124	2.95	20
Methyl-t-butyl ether (MTBE)	9.58	9.62	10	ND	96	96	74-128	0	20
Methylene chloride	9.02	8.71	10	ND	89	86	55-130	3.53	20
4-Methyl-2-pentanone (MIBK)	9.18	9.74	10	ND	88	93	59-131	5.92	20
Naphthalene	9.57	10.8	10	ND	96	108	65-136	12.5	20
n-Propyl benzene	9.10	8.71	10	ND	91	87	67-128	4.39	20
Styrene	8.32	8.15	10	ND	83	82	64-133	2.09	20
1,1,1,2-Tetrachloroethane	9.13	9.16	10	ND	91	92	78-122	0.334	20
1,1,2,2-Tetrachloroethane	9.99	10.6	10	ND	100	106	72-123	5.51	20
Tetrachloroethene	8.77	8.70	10	ND	88	87	72-123	0.799	20
Toluene	9.18	9.26	10	ND	89	90	74-117	0.847	20
1,2,3-Trichlorobenzene	9.50	10.4	10	ND	95	104	61-141	9.50	20
1,2,4-Trichlorobenzene	9.68	10.6	10	ND	97	106	69-136	9.52	20
1,1,1-Trichloroethane	9.37	9.15	10	ND	94	92	78-122	2.36	20
1,1,2-Trichloroethane	9.77	9.78	10	ND	98	98	79-120	0	20
Trichloroethene	9.43	9.26	10	ND	94	93	76-122	1.79	20
Trichlorofluoromethane	8.96	8.66	10	ND	90	87	72-125	3.48	20
1,2,3-Trichloropropane	10.1	10.6	10	ND	101	106	72-123	4.71	20
1,2,4-Trimethylbenzene	9.87	10.1	10	ND	99	101	74-123	2.56	20
1,3,5-Trimethylbenzene	9.90	10.2	10	ND	99	102	73-123	2.86	20
Vinyl Chloride	10.4	9.92	10	ND	104	99	57-134	5.15	20
Xylenes, Total	26.5	25.5	30	ND	88	85	76-119	3.94	20

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/20/18	**BatchID:**	158568
Date Analyzed:	5/20/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS-158568 1805A40-001BMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Surrogate Recovery									
Dibromofluoromethane	26.8	26.2	25		107	105	78-134	2.09	20
Toluene-d8	26.3	26.6	25		105	107	82-120	1.39	20
4-BFB	2.51	2.60	2.5		101	104	69-131	3.42	20

(Cont.)

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/21/18	**BatchID:**	158630
Date Analyzed:	5/21/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS-158630 1805A65-009BMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acetone	ND	144	10	200	-	72	47-122
tert-Amyl methyl ether (TAME)	ND	8.43	0.50	10	-	84	62-121
Benzene	ND	8.91	0.50	10	-	89	74-121
Bromobenzene	ND	9.22	0.50	10	-	92	63-127
Bromochloromethane	ND	8.43	0.50	10	-	84	70-126
Bromodichloromethane	ND	8.69	0.50	10	-	87	66-127
Bromoform	ND	8.16	0.50	10	-	82	60-119
Bromomethane	ND	11.5	0.50	10	-	115	32-155
2-Butanone (MEK)	ND	27.6	2.0	40	-	69	51-117
t-Butyl alcohol (TBA)	ND	29.5	2.0	40	-	74	41-122
n-Butyl benzene	ND	9.41	0.50	10	-	94	73-137
sec-Butyl benzene	ND	8.21	0.50	10	-	82	71-137
tert-Butyl benzene	ND	8.42	0.50	10	-	84	61-136
Carbon Disulfide	ND	8.65	0.50	10	-	86	61-139
Carbon Tetrachloride	ND	8.32	0.50	10	-	83	69-137
Chlorobenzene	ND	8.57	0.50	10	-	86	71-122
Chloroethane	ND	8.28	0.50	10	-	83	54-132
Chloroform	ND	8.80	0.50	10	-	88	73-122
Chloromethane	ND	9.00	0.50	10	-	90	48-136
2-Chlorotoluene	ND	8.77	0.50	10	-	88	65-134
4-Chlorotoluene	ND	8.79	0.50	10	-	88	65-130
Dibromochloromethane	ND	8.44	0.50	10	-	84	65-121
1,2-Dibromo-3-chloropropane	ND	3.03	0.20	4	-	76	41-132
1,2-Dibromoethane (EDB)	ND	8.41	0.50	10	-	84	67-125
Dibromomethane	ND	8.39	0.50	10	-	84	68-121
1,2-Dichlorobenzene	ND	8.54	0.50	10	-	85	69-128
1,3-Dichlorobenzene	ND	8.87	0.50	10	-	89	71-131
1,4-Dichlorobenzene	ND	8.62	0.50	10	-	86	70-128
Dichlorodifluoromethane	ND	7.04	0.50	10	-	70	21-158
1,1-Dichloroethane	ND	8.76	0.50	10	-	88	73-123
1,2-Dichloroethane (1,2-DCA)	ND	8.35	0.50	10	-	84	61-127
1,1-Dichloroethene	ND	8.78	0.50	10	-	88	68-130
cis-1,2-Dichloroethene	ND	9.04	0.50	10	-	90	72-123
trans-1,2-Dichloroethene	ND	8.84	0.50	10	-	88	64-138
1,2-Dichloropropane	ND	8.66	0.50	10	-	87	71-121
1,3-Dichloropropane	ND	8.39	0.50	10	-	84	69-120
2,2-Dichloropropane	ND	9.05	0.50	10	-	90	64-142

(Cont.)

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/21/18	**BatchID:**	158630
Date Analyzed:	5/21/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS-158630 1805A65-009BMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
1,1-Dichloropropene	ND	8.67	0.50	10	-	87	70-130
cis-1,3-Dichloropropene	ND	8.83	0.50	10	-	88	58-136
trans-1,3-Dichloropropene	ND	8.86	0.50	10	-	89	66-119
Diisopropyl ether (DIPE)	ND	8.45	0.50	10	-	85	66-123
Ethylbenzene	ND	8.78	0.50	10	-	88	71-125
Ethyl tert-butyl ether (ETBE)	ND	8.58	0.50	10	-	86	67-122
Freon 113	ND	8.35	0.50	10	-	84	68-132
Hexachlorobutadiene	ND	8.21	0.50	10	-	82	56-155
Hexachloroethane	ND	8.70	0.50	10	-	87	61-129
2-Hexanone	ND	7.20	0.50	10	-	72	51-115
Isopropylbenzene	ND	8.50	0.50	10	-	85	66-134
4-Isopropyl toluene	ND	8.75	0.50	10	-	88	70-136
Methyl-t-butyl ether (MTBE)	ND	8.19	0.50	10	-	82	64-118
Methylene chloride	0.603	8.80	0.50	10	-	88	62-121
4-Methyl-2-pentanone (MIBK)	ND	7.47	0.50	10	-	75	51-115
Naphthalene	ND	8.52	0.50	10	-	85	55-137
n-Propyl benzene	ND	8.50	0.50	10	-	85	63-140
Styrene	ND	8.42	0.50	10	-	84	62-133
1,1,1,2-Tetrachloroethane	ND	8.36	0.50	10	-	84	69-128
1,1,2,2-Tetrachloroethane	ND	8.92	0.50	10	-	89	60-118
Tetrachloroethene	ND	8.69	0.50	10	-	87	63-136
Toluene	ND	8.54	0.50	10	-	85	67-124
1,2,3-Trichlorobenzene	ND	8.53	0.50	10	-	85	57-145
1,2,4-Trichlorobenzene	ND	8.94	0.50	10	-	89	60-144
1,1,1-Trichloroethane	ND	8.76	0.50	10	-	88	70-133
1,1,2-Trichloroethane	ND	8.48	0.50	10	-	85	65-125
Trichloroethene	ND	8.78	0.50	10	-	88	67-133
Trichlorofluoromethane	ND	8.29	0.50	10	-	83	59-145
1,2,3-Trichloropropane	ND	9.13	0.50	10	-	91	65-115
1,2,4-Trimethylbenzene	ND	9.73	0.50	10	-	97	67-136
1,3,5-Trimethylbenzene	ND	9.55	0.50	10	-	95	68-135
Vinyl Chloride	ND	9.11	0.50	10	-	91	53-146
Xylenes, Total	ND	24.8	0.50	30	-	83	68-128

(Cont.)

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/21/18	**BatchID:**	158630
Date Analyzed:	5/21/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS-158630 1805A65-009BMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Surrogate Recovery							
Dibromofluoromethane	25.7	26.4		25	103	105	91-133
Toluene-d8	26.8	27.1		25	107	108	87-127
4-BFB	2.39	2.62		2.5	96	105	66-140

(Cont.)

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/21/18	**BatchID:**	158630
Date Analyzed:	5/21/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS-158630 1805A65-009BMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Acetone	173	177	200	ND	86	89	56-141	2.71	20
tert-Amyl methyl ether (TAME)	10.3	10.3	10	ND	103	103	78-120	0	20
Benzene	9.76	9.80	10	1.398	84	84	81-118	0	20
Bromobenzene	10.6	11.6	10	ND	106	116	71-119	8.98	20
Bromochloromethane	9.84	9.94	10	ND	98	99	80-124	1.07	20
Bromodichloromethane	10.0	10.1	10	ND	100	101	78-124	0.454	20
Bromoform	10.3	10.5	10	ND	103	105	65-127	1.23	20
Bromomethane	9.55	9.72	10	ND	96	97	22-175	1.71	20
2-Butanone (MEK)	34.9	36.0	40	ND	87	90	50-152	2.86	20
t-Butyl alcohol (TBA)	39.9	40.3	40	ND	97	98	49-141	0.840	20
n-Butyl benzene	10.0	10.4	10	ND	99	103	77-127	3.80	20
sec-Butyl benzene	7.74	7.31	10	ND	77	73,F1	74-123	5.72	20
tert-Butyl benzene	8.47	8.22	10	0.51	80	77	68-122	3.04	20
Carbon Disulfide	9.24	9.28	10	ND	92	92	74-123	0	20
Carbon Tetrachloride	9.30	9.35	10	ND	93	94	78-124	0.587	20
Chlorobenzene	9.49	9.49	10	ND	95	95	79-116	0	20
Chloroethane	7.83	7.73	10	ND	78	77	56-134	1.31	20
Chloroform	9.59	9.67	10	ND	96	97	82-119	0.812	20
Chloromethane	6.90	7.11	10	ND	69	71	39-147	3.05	20
2-Chlorotoluene	9.18	9.48	10	ND	92	95	69-124	3.28	20
4-Chlorotoluene	9.06	9.15	10	ND	91	92	71-121	0.988	20
Dibromochloromethane	10.1	10.1	10	ND	101	101	76-119	0	20
1,2-Dibromo-3-chloropropane	4.08	4.32	4	ND	102	108	48-138	5.83	20
1,2-Dibromoethane (EDB)	10.2	10.3	10	ND	102	103	81-122	0.839	20
Dibromomethane	10.1	10.1	10	ND	101	101	83-121	0	20
1,2-Dichlorobenzene	9.76	9.73	10	ND	98	97	77-122	0.257	20
1,3-Dichlorobenzene	9.71	9.75	10	ND	97	98	76-125	0.441	20
1,4-Dichlorobenzene	9.50	9.53	10	ND	95	95	78-120	0	20
Dichlorodifluoromethane	6.76	6.46	10	ND	68	65	38-135	4.39	20
1,1-Dichloroethane	9.33	9.47	10	ND	93	95	80-120	1.58	20
1,2-Dichloroethane (1,2-DCA)	9.34	9.42	10	ND	93	94	78-122	0.851	20
1,1-Dichloroethene	9.42	9.38	10	ND	94	94	77-120	0	20
cis-1,2-Dichloroethene	9.85	10.2	10	ND	99	102	79-123	3.53	20
trans-1,2-Dichloroethene	9.65	9.72	10	ND	97	97	77-125	0	20
1,2-Dichloropropane	9.73	9.82	10	ND	97	98	80-121	0.932	20
1,3-Dichloropropane	9.63	9.87	10	ND	96	99	80-120	2.39	20
2,2-Dichloropropane	9.54	9.42	10	ND	95	94	70-132	1.22	20

(Cont.)

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/21/18	**BatchID:**	158630
Date Analyzed:	5/21/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS-158630 1805A65-009BMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
1,1-Dichloropropene	9.34	9.40	10	ND	93	94	78-122	0.623	20
cis-1,3-Dichloropropene	9.82	9.93	10	ND	98	99	73-121	1.15	20
trans-1,3-Dichloropropene	9.77	9.99	10	ND	98	100	77-116	2.28	20
Diisopropyl ether (DIPE)	9.53	9.60	10	ND	95	96	77-125	0.771	20
Ethylbenzene	9.37	9.38	10	0.5034	89	89	77-119	0	20
Ethyl tert-butyl ether (ETBE)	9.92	10.0	10	ND	99	100	81-122	1.27	20
Freon 113	8.95	9.07	10	ND	90	91	77-120	1.28	20
Hexachlorobutadiene	8.74	8.27	10	ND	87	83	57-141	5.52	20
Hexachloroethane	10.3	11.0	10	ND	102	109	26-168	6.03	20
2-Hexanone	9.02	9.13	10	ND	90	91	58-135	1.21	20
Isopropylbenzene	8.70	8.33	10	ND	86	82	74-120	4.38	20
4-Isopropyl toluene	8.98	9.08	10	ND	89	90	75-124	1.07	20
Methyl-t-butyl ether (MTBE)	9.84	9.97	10	ND	98	100	74-128	1.31	20
Methylene chloride	9.00	8.96	10	ND	88	88	55-130	0	20
4-Methyl-2-pentanone (MIBK)	9.32	9.59	10	ND	93	96	59-131	2.88	20
Naphthalene	13.4	13.1	10	13.64	0,F1	0,F1	65-136	NA	20
n-Propyl benzene	8.31	8.21	10	ND	82	81	67-128	1.19	20
Styrene	8.79	8.59	10	ND	87	85	64-133	2.27	20
1,1,1,2-Tetrachloroethane	9.77	9.72	10	ND	98	97	78-122	0.528	20
1,1,2,2-Tetrachloroethane	11.5	12.6	10	ND	115	126,F1	72-123	9.04	20
Tetrachloroethene	9.60	9.56	10	ND	96	96	72-123	0	20
Toluene	9.26	9.30	10	ND	88	88	74-117	0	20
1,2,3-Trichlorobenzene	11.0	12.3	10	ND	110	123	61-141	10.5	20
1,2,4-Trichlorobenzene	10.9	12.1	10	ND	109	121	69-136	10.6	20
1,1,1-Trichloroethane	9.60	9.69	10	ND	96	97	78-122	0.945	20
1,1,2-Trichloroethane	10.0	10.2	10	ND	100	102	79-120	1.72	20
Trichloroethene	9.76	9.84	10	ND	98	98	76-122	0	20
Trichlorofluoromethane	8.76	8.86	10	ND	88	89	72-125	1.22	20
1,2,3-Trichloropropane	11.7	12.9	10	ND	117	129,F1	72-123	9.84	20
1,2,4-Trimethylbenzene	11.4	11.5	10	3.4	79	81	74-123	1.04	20
1,3,5-Trimethylbenzene	10.2	10.9	10	ND	98	105	73-123	6.34	20
Vinyl Chloride	8.58	8.62	10	ND	86	86	57-134	0	20
Xylenes, Total	26.3	25.0	30	3.330	77	72,F1	76-119	5.12	20

(Cont.)

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/21/18	**BatchID:**	158630
Date Analyzed:	5/21/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS-158630 1805A65-009BMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Surrogate Recovery									
Dibromofluoromethane	27.2	27.2	25		109	109	78-134	0	20
Toluene-d8	26.6	26.7	25		106	107	82-120	0.618	20
4-BFB	2.64	2.89	2.5		105	115	69-131	9.05	20

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/19/18	**BatchID:**	158601
Date Analyzed:	5/19/18	**Extraction Method:**	SW5030B
Instrument:	GC3	**Analytical Method:**	SW8021B/8015Bm
Matrix:	Water	**Unit:**	µg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS-158601 1805A40-001AMS/MSD

QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
TPH(g) (C6-C12)	ND	50	-	-	-
MTBE	ND	5.0	-	-	-
Benzene	ND	0.50	-	-	-
Toluene	ND	0.50	-	-	-
Ethylbenzene	ND	0.50	-	-	-
Xylenes	ND	0.50	-	-	-
Surrogate Recovery					
aaa-TFT	10.1		10	101	89-116

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH(btex)	61.5	-	60	103	-	78-116	-	-
MTBE	10.3	-	10	103	-	72-122	-	-
Benzene	10.8	-	10	108	-	81-123	-	-
Toluene	11.2	-	10	112	-	83-129	-	-
Ethylbenzene	11.0	-	10	110	-	88-126	-	-
Xylenes	33.4	-	30	111	-	87-131	-	-
Surrogate Recovery								
aaa-TFT	9.88	-	10	99	-	89-116	-	-

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	62.7	62.6	60	ND	105	104	63-133	0.254	20
MTBE	10.9	9.92	10	ND	109	99	69-122	9.58	20
Benzene	9.80	10.2	10	ND	98	102	84-125	3.95	20
Toluene	10.5	10.9	10	ND	101	105	87-131	3.59	20
Ethylbenzene	10.1	10.4	10	ND	101	104	92-126	2.81	20
Xylenes	30.6	31.1	30	ND	101	103	88-132	1.62	20
Surrogate Recovery									
aaa-TFT	9.61	9.73	10		96	97	90-117	1.23	20

(Cont.)

NELAP 4033ORELAP

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/21/18	**BatchID:**	158653
Date Analyzed:	5/21/18	**Extraction Method:**	SW5030B
Instrument:	GC3	**Analytical Method:**	SW8021B/8015Bm
Matrix:	Water	**Unit:**	µg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS-158653 1805A65-001AMS/MSD

QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
TPH(g) (C6-C12)	ND	50	-	-	-
MTBE	ND	5.0	-	-	-
Benzene	ND	0.50	-	-	-
Toluene	ND	0.50	-	-	-
Ethylbenzene	ND	0.50	-	-	-
Xylenes	ND	0.50	-	-	-
Surrogate Recovery					
aaa-TFT	10.3		10	103	89-116

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH(btex)	61.4	-	60	102	-	78-116	-	-
MTBE	9.81	-	10	98	-	72-122	-	-
Benzene	10.6	-	10	106	-	81-123	-	-
Toluene	11.0	-	10	110	-	83-129	-	-
Ethylbenzene	10.9	-	10	109	-	88-126	-	-
Xylenes	32.7	-	30	109	-	87-131	-	-
Surrogate Recovery								
aaa-TFT	9.68	-	10	97	-	89-116	-	-

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	66.0	66.2	60	ND	110	110	63-133	0	20
MTBE	9.40	9.87	10	ND	94	99	69-122	4.91	20
Benzene	10.3	11.0	10	ND	103	110	84-125	6.64	20
Toluene	10.7	11.5	10	ND	107	115	87-131	6.81	20
Ethylbenzene	10.8	11.4	10	ND	108	114	92-126	5.91	20
Xylenes	32.8	34.6	30	ND	109	115	88-132	5.25	20
Surrogate Recovery									
aaa-TFT	9.40	9.76	10		94	98	90-117	3.80	20

McCampbell Analytical, Inc.
"When Quality Counts"

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/18/18	**BatchID:**	158491
Date Analyzed:	5/18/18	**Extraction Method:**	SM4500-S^{-2} D-2000
Instrument:	SPECTROPHOTOMETER	**Analytical Method:**	SM4500 S^{-2} D
Matrix:	Water	**Unit:**	mg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS-158491 1805A65-001CMS/MSD

QC Summary Report For SM4500 S-2D

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Total Sulfide	ND	0.541	0.050	0.50	-	108	80-120

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Total Sulfide	0.518	0.518	0.50	ND	104	104	80-120	0	20

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

Quality Control Report

Client:	Langan	**WorkOrder:**	1805A65
Date Prepared:	5/17/18	**BatchID:**	158468
Date Analyzed:	5/17/18 - 5/18/18	**Extraction Method:**	SW3510C
Instrument:	GC9a	**Analytical Method:**	SW8015B
Matrix:	Water	**Unit:**	µg/L
Project:	731637001; 3093 Broadway	**Sample ID:**	MB/LCS/LCSD-158468

QC Report for SW8015D w/out SG Clean-Up

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
TPH-Diesel (C10-C23)	ND	50	-	-	-
TPH-Motor Oil (C18-C36)	ND	250	-	-	-
Surrogate Recovery					
C9	552		625	88	68-127

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	1120	1100	1000	112	110	86-142	1.96	30
Surrogate Recovery								
C9	550	553	625	88	88	68-127	0	30

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1805A65 **ClientCode: TWRF**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☑ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag
☑ Detection Summary ☑ Dry-Weight

Report to:
Christina Rain
Langan
555 Montgomery St., Suite 1300
San Francisco, CA 94111
(415) 955-5244 FAX: (415) 955-9041

Email: crain@Langan.com
cc/3rd Party:
PO: 731637001
Project: 731637001; 3093 Broadway

Bill to:
Accounts Payable
Langan
555 Montgomery St., Suite 1300
San Francisco, CA 94111
Langan_InvoiceCapture@concursolutio

Requested TAT: 5 days;

Date Received: 05/17/2018
Date Logged: 05/17/2018

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
1805A65-001	MW-13-GW	Water	5/15/2018 11:36	☐	C	C	B	A	C	A						
1805A65-002	MW-27-GW	Water	5/15/2018 13:01	☐	C	C	B	A	C	A						
1805A65-003	MW-26-GW	Water	5/15/2018 13:58	☐	C	C	B	A	C	A						
1805A65-004	MW-25-Gw	Water	5/15/2018 14:59	☐	C	C	B	A	C	A						
1805A65-005	MW-24-GW	Water	5/16/2018 08:16	☐	C	C	B	A	C	A						
1805A65-006	MW-23-GW	Water	5/16/2018 09:21	☐	C	C	B	A	C	A						
1805A65-007	MW-21-GW	Water	5/16/2018 10:07	☐	C	C	B	A	C	A						
1805A65-008	MW20-GW	Water	5/16/2018 10:59	☐	C	C	B	A	C	A						
1805A65-009	Dup-GW	Water	5/15/2018 00:00	☐	C	C	B	A	C	A						

Test Legend:

1	300_1_Sulfite_W	2	300_1_W	3	8260VOC_W	4	G-MBTEX_W
5	SULFIDE_W	6	TPH(D)_W	7		8	
9		10		11		12	

Prepared by: Kena Ponce

The following SampIDs: 001A, 002A, 003A, 004A, 005A, 006A, 007A, 008A, 009A contain testgroup Multi Range_W.

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.

McCampbell Analytical, Inc.
"When Quality Counts"

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

WORK ORDER SUMMARY

Client Name: LANGAN
Client Contact: Christina Rain
Contact's Email: crain@Langan.com

Project: 731637001; 3093 Broadway
Comments:

Work Order: 1805A65
QC Level: LEVEL 2
Date Logged: 5/17/2018

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1805A65-001A	MW-13-GW	Water	Multi-Range TPH(g,d,mo)	4	2 VOAs w/HCL + 2-aVOAs (multi-range)	☐	5/15/2018 11:36	5 days	None	☐	
1805A65-001B	MW-13-GW	Water	SW8260B (VOCs) <1,2-Dichloroethane (1,2-DCA), Benzene, Ethylbenzene, Methyl-t-butyl ether (MTBE), Naphthalene, Toluene, Xylenes, Total>	2	VOA w/ HCl	☐	5/15/2018 11:36	5 days	None	☐	
1805A65-001C	MW-13-GW	Water	SM4500S2D (Total Sulfide)	1	125mL HDPE, unprsv.	☐	5/15/2018 11:36	5 days	None	☐	
			E300.1 (Inorganic Anions) <Sulfate>			☐		5 days	None	☐	
			E300.1 (Sulfite)			☐		5 days	None	☐	
1805A65-002A	MW-27-GW	Water	Multi-Range TPH(g,d,mo)	4	2 VOAs w/HCL + 2-aVOAs (multi-range)	☐	5/15/2018 13:01	5 days	None	☐	
1805A65-002B	MW-27-GW	Water	SW8260B (VOCs) <1,2-Dichloroethane (1,2-DCA), Benzene, Ethylbenzene, Methyl-t-butyl ether (MTBE), Naphthalene, Toluene, Xylenes, Total>	2	VOA w/ HCl	☐	5/15/2018 13:01	5 days	None	☐	
1805A65-002C	MW-27-GW	Water	SM4500S2D (Total Sulfide)	1	125mL HDPE, unprsv.	☐	5/15/2018 13:01	5 days	None	☐	
			E300.1 (Inorganic Anions) <Sulfate>			☐		5 days	None	☐	
			E300.1 (Sulfite)			☐		5 days	None	☐	
1805A65-003A	MW-26-GW	Water	Multi-Range TPH(g,d,mo)	4	2 VOAs w/HCL + 2-aVOAs (multi-range)	☐	5/15/2018 13:58	5 days	None	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

McCampbell Analytical, Inc.
"When Quality Counts"

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

WORK ORDER SUMMARY

Client Name: LANGAN
Client Contact: Christina Rain
Contact's Email: crain@Langan.com

Project: 731637001; 3093 Broadway
Comments:

Work Order: 1805A65
QC Level: LEVEL 2
Date Logged: 5/17/2018

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1805A65-003B	MW-26-GW	Water	SW8260B (VOCs) <1,2-Dichloroethane (1,2-DCA), Benzene, Ethylbenzene, Methyl-t-butyl ether (MTBE), Naphthalene, Toluene, Xylenes, Total>	2	VOA w/ HCl	☐	5/15/2018 13:58	5 days	None	☐	
1805A65-003C	MW-26-GW	Water	SM4500S2D (Total Sulfide)	1	125mL HDPE, unprsv.	☐	5/15/2018 13:58	5 days	None	☐	
			E300.1 (Inorganic Anions) <Sulfate>			☐		5 days	None	☐	
			E300.1 (Sulfite)			☐		5 days	None	☐	
1805A65-004A	MW-25-Gw	Water	Multi-Range TPH(g,d,mo)	4	2 VOAs w/HCL + 2-aVOAs (multi-range)	☐	5/15/2018 14:59	5 days	None	☐	
1805A65-004B	MW-25-Gw	Water	SW8260B (VOCs) <1,2-Dichloroethane (1,2-DCA), Benzene, Ethylbenzene, Methyl-t-butyl ether (MTBE), Naphthalene, Toluene, Xylenes, Total>	2	VOA w/ HCl	☐	5/15/2018 14:59	5 days	None	☐	
1805A65-004C	MW-25-Gw	Water	SM4500S2D (Total Sulfide)	1	125mL HDPE, unprsv.	☐	5/15/2018 14:59	5 days	None	☐	
			E300.1 (Inorganic Anions) <Sulfate>			☐		5 days	None	☐	
			E300.1 (Sulfite)			☐		5 days	None	☐	
1805A65-005A	MW-24-GW	Water	Multi-Range TPH(g,d,mo)	4	2 VOAs w/HCL + 2-aVOAs (multi-range)	☐	5/16/2018 8:16	5 days	None	☐	
1805A65-005B	MW-24-GW	Water	SW8260B (VOCs) <1,2-Dichloroethane (1,2-DCA), Benzene, Ethylbenzene, Methyl-t-butyl ether (MTBE), Naphthalene, Toluene, Xylenes, Total>	2	VOA w/ HCl	☐	5/16/2018 8:16	5 days	None	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

McCampbell Analytical, Inc.
"When Quality Counts"

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

WORK ORDER SUMMARY

Client Name: LANGAN **Project:** 731637001; 3093 Broadway **Work Order:** 1805A65
Client Contact: Christina Rain **QC Level:** LEVEL 2
Contact's Email: crain@Langan.com **Comments:** **Date Logged:** 5/17/2018

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1805A65-005C	MW-24-GW	Water	SM4500S2D (Total Sulfide)	1	125mL HDPE, unprsv.	☐	5/16/2018 8:16	5 days	None	☐	
			E300.1 (Inorganic Anions) <Sulfate>			☐		5 days	None	☐	
			E300.1 (Sulfite)			☐		5 days	None	☐	
1805A65-006A	MW-23-GW	Water	Multi-Range TPH(g,d,mo)	4	2 VOAs w/HCL + 2-aVOAs (multi-range)	☐	5/16/2018 9:21	5 days	None	☐	
1805A65-006B	MW-23-GW	Water	SW8260B (VOCs) <1,2-Dichloroethane (1,2-DCA), Benzene, Ethylbenzene, Methyl-t-butyl ether (MTBE), Naphthalene, Toluene, Xylenes, Total>	2	VOA w/ HCl	☐	5/16/2018 9:21	5 days	None	☐	
1805A65-006C	MW-23-GW	Water	SM4500S2D (Total Sulfide)	1	125mL HDPE, unprsv.	☐	5/16/2018 9:21	5 days	None	☐	
			E300.1 (Inorganic Anions) <Sulfate>			☐		5 days	None	☐	
			E300.1 (Sulfite)			☐		5 days	None	☐	
1805A65-007A	MW-21-GW	Water	Multi-Range TPH(g,d,mo)	4	2 VOAs w/HCL + 2-aVOAs (multi-range)	☐	5/16/2018 10:07	5 days	None	☐	
1805A65-007B	MW-21-GW	Water	SW8260B (VOCs) <1,2-Dichloroethane (1,2-DCA), Benzene, Ethylbenzene, Methyl-t-butyl ether (MTBE), Naphthalene, Toluene, Xylenes, Total>	2	VOA w/ HCl	☐	5/16/2018 10:07	5 days	None	☐	
1805A65-007C	MW-21-GW	Water	SM4500S2D (Total Sulfide)	1	125mL HDPE, unprsv.	☐	5/16/2018 10:07	5 days	None	☐	
			E300.1 (Inorganic Anions) <Sulfate>			☐		5 days	None	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

McCampbell Analytical, Inc.
"When Quality Counts"

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

WORK ORDER SUMMARY

Client Name: LANGAN **Project:** 731637001; 3093 Broadway **Work Order:** 1805A65
Client Contact: Christina Rain **QC Level:** LEVEL 2
Contact's Email: crain@Langan.com **Comments:** **Date Logged:** 5/17/2018

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1805A65-007C	MW-21-GW	Water	E300.1 (Sulfite)	1	125mL HDPE, unprsv.	☐	5/16/2018 10:07	5 days	None	☐	
1805A65-008A	MW20-GW	Water	Multi-Range TPH(g,d,mo)	4	2 VOAs w/HCL + 2-aVOAs (multi-range)	☐	5/16/2018 10:59	5 days	None	☐	
1805A65-008B	MW20-GW	Water	SW8260B (VOCs) <1,2-Dichloroethane (1,2-DCA), Benzene, Ethylbenzene, Methyl-t-butyl ether (MTBE), Naphthalene, Toluene, Xylenes, Total>	2	VOA w/ HCl	☐	5/16/2018 10:59	5 days	None	☐	
1805A65-008C	MW20-GW	Water	SM4500S2D (Total Sulfide)	1	125mL HDPE, unprsv.	☐	5/16/2018 10:59	5 days	None	☐	
			E300.1 (Inorganic Anions) <Sulfate>			☐		5 days	None	☐	
			E300.1 (Sulfite)			☐		5 days	None	☐	
1805A65-009A	Dup-GW	Water	Multi-Range TPH(g,d,mo)	4	2 VOAs w/HCL + 2-aVOAs (multi-range)	☐	5/15/2018	5 days	None	☐	
1805A65-009B	Dup-GW	Water	SW8260B (VOCs) <1,2-Dichloroethane (1,2-DCA), Benzene, Ethylbenzene, Methyl-t-butyl ether (MTBE), Naphthalene, Toluene, Xylenes, Total>	2	VOA w/ HCl	☐	5/15/2018	5 days	None	☐	
1805A65-009C	Dup-GW	Water	SM4500S2D (Total Sulfide)	1	125mL HDPE, unprsv.	☐	5/15/2018	5 days	None	☐	
			E300.1 (Inorganic Anions) <Sulfate>			☐		5 days	None	☐	
			E300.1 (Sulfite)			☐		5 days	None	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 1805A45

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701
Telephone: (877) 252-9262 / Fax: (925) 252-9269
www.mccampbell.com main@mccampbell.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush | 2 Day Rush | 3 Day Rush | STD | Quote #
J-Flag / MDL | ESL | Cleanup Approved | Bottle Order #
Delivery Format: PDF | GeoTracker EDF | EDD | Write On (DW) | EQuIS

Report To: Christina Rain Bill To: Langan
Company: Langan
Email: crain@Langan.com / THoughton@Langan.com
Alt Email: Tele: 415-955-5247
Project Name: 3093 Broadway Project #: 731639001
Project Location: 3093 Broadway, PO # 731639001
Sampler Signature:

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silica Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	TPH g & TPH d, 8015B	BTEX/MTBE/1,2-DCA Naphthalene 8260B	Sulfate, Sulfide E300.1
MW-13 -gw	5/15	1136		W																	X	X	X
MW-27 -gw	5/15	1301		W																			
MW-26 -gw	5/15	1358		W																			
MW-25 -gw	5/15	1459		W																			
MW-24 -gw	5/16	0816		W																			
MW-23 -gw	5/16	0921		W																			
MW-21 -gw	5/16	1007		W																			
MW-20 -gw.	5/16	1059		W																			
* DUP - gw	5/15	—		W																	X	X	X

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

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
JB / Langan	5/17	0950	LAP	5/17/18	0950
LAP	5/17/18	1615		5/17/18	1615

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 3.0 °C Initials

* sample was included and set up for same.

Page ___ of ___

McCampbell Analytical, Inc.
"When Quality Counts"

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

Sample Receipt Checklist

Client Name: **Langan**
Project: **731637001; 3093 Broadway**

WorkOrder №: **1805A65** Matrix: Water
Carrier: Lorenzo Perez (MAI Courier)

Date and Time Received **5/17/2018 16:15**
Date Logged: **5/17/2018**
Received by: Kena Ponce
Logged by: Kena Ponce

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	☐		
COC agrees with Quote?	Yes	☐	No	☐	NA	☑

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	☐	NA	☑
Samples Received on Ice?	Yes	☑	No	☐		
(Ice Type: WET ICE)						
Sample/Temp Blank temperature	Temp: 3.6°C				NA	☐
Water - VOA vials have zero headspace / no bubbles?	Yes	☐	No	☐	NA	☑
Sample labels checked for correct preservation?	Yes	☑	No	☐		
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes	☐	No	☐	NA	☑
UCMR Samples:						
pH tested and acceptable upon receipt (200.8: ≤2; 525.3: ≤4; 530: ≤7; 541: <3; 544: <6.5 & 7.5)?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L)?	Yes	☐	No	☐	NA	☑

Comments:

ATTACHMENT B
FIELD DOCUMENTATION

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Project Number: 731637001
Project Name: 3093 Broadway
Well ID: MW-13
Date: 5/15/18
Weather: overcast, 60°F
Field Personnel: JB and JS

Depth to Water: 22.28 ft TOC
Total Depth of Well: 41 ft.
Well Diameter: 2 inches
Depth to: 25 ft. (top)/ 40 ft. (bottom) of Screen
Purging Device: Peri Pump
Total Volume Purged: ~ 4L

TIME	WATER DEPTH	PUMP DIAL[1]	PURGE RATE (mL/min)	CUMUL VOL REMOVED mL	TEMP (°C)	COND ~~(uS/cm)~~ mS/cm	pH (units)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	REMARKS (color, turbidity, ~~sediment~~)
1106		56%.	~200.	0.9L.	20.14	0.646	7.42	150	2.87	0.7	
1111		35%.	~100	1000	20.29	0.650	6.61	180	1.27	0.0	
1119			~100	1500	20.41	0.644	6.21	205	0.94	0.0	
1124			~100	2300	20.48	0.637	6.17	214	0.83	0.0	
1129			~100	2800	20.57	0.633	6.16	221	0.84	0.0	
1134			~100	3300	20.59	0.631	6.17	230	0.80	0.0	
Stabilization Criteria					3%	3%	±0.1	± 10 mV	10%	10%	

Remarks:

1. Pump Dial Setting (e.g., hertz, cycles/min, etc)

LANGAN

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Project Number: 7316137001
Project Name: 3093 Broadway
Well ID: MW-20
Date: 5/16/18
Weather:
Field Personnel: JB and DS

Depth to Water: 10.12
Total Depth of Well: 20 ft.
Well Diameter: 2 inches
Depth to: 10 ft. (top)/ 20 ft. (bottom) of Screen
Purging Device: Peri pump
Total Volume Purged: ~ 4L

TIME	WATER DEPTH	PUMP DIAL[1]	PURGE RATE (mL/min)	CUMUL VOL REMOVED	TEMP (°C)	COND (µS/cm))	pH (units)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	REMARKS (color, turbidity, sediment)
1038			~100		16.87	1.46	6.98	-83	1.79	6.6	
1043			~100		16.97	1.49	6.74	-104	0.53	4.2	
1048			~100		17.01	1.58	6.67	-118	0.08	3.5	
1053			~100		17.02	1.62	6.64	-127	0.00	2.3	
1058			~100		17.00	1.64	6.61	-132	0.00	2.4	
Stabilization Criteria					3%	3%	±0.1	± 10 mV	10%	10%	

Remarks:

1. Pump Dial Setting (e.g., hertz, cycles/min, etc)

LANGAN

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Project Number: 731637001
Project Name: 3093 Broadway
Well ID: MW-21
Date: 5/16/18
Weather:
Field Personnel: JB and JS

Depth to Water: 10.50
Total Depth of Well: 20 ft.
Well Diameter: 2 inches
Depth to: 10 ft. (top)/ 20 ft. (bottom) of Screen
Purging Device: peri pump
Total Volume Purged: ~4L

TIME	WATER DEPTH	PUMP DIAL[1]	PURGE RATE (mL/min)	CUMUL VOL REMOVED	TEMP (°C)	COND (µS/cm))	pH (units)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	REMARKS (color, turbidity, sediment)
0946			~100		16.40	0.951	6.68	-17	1.85	14.0	mild odor and slight yellow tint
0951			~100		16.56	0.957	6.89	-111	1.20	13.0	
0956			~100		16.62	0.984	6.93	-128	0.24	10.6	
1001			~100		16.69	1.03	6.96	-136	0.14	10.2	
1006			~100		16.71	1.05	6.98	-143	0.09	9.5	
Stabilization Criteria					3%	3%	±0.1	± 10 mV	10%	10%	

Remarks:

1. Pump Dial Setting (e.g., hertz, cycles/min, etc)

LANGAN

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Project Number: 731637001
Project Name: 3093 Broadway
Well ID: MW-23
Date: 5/16/18
Weather:
Field Personnel: JB and JS

Depth to Water: 11.91
Total Depth of Well: 22 ft
Well Diameter: 2 inch
Depth to: 12 ft. (top)/ 22 ft. (bottom) of Screen
Purging Device: peri pump
Total Volume Purged: ~4L

TIME	WATER DEPTH	PUMP DIAL[1]	PURGE RATE (mL/min)	CUMUL VOL REMOVED (mL)	TEMP (°C)	COND (uS/cm))	pH (units)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	REMARKS (color, turbidity, sediment)
0849		~35%	~100	0	16.69	0.802	6.90	-96	4.25	0.0	strong petroleum odor
0854		↓	~100	500	16.83	0.797	6.85	-114	3.47	41.1	high turbidity
0859			~100	1000	16.94	0.793	6.82	-122	3.47	33.3	↓
0904			~100	1500	17.01	0.794	6.80	-125	2.84	21.8	
0909			~100	2000	17.08	0.798	6.75	-128	3.11	19.6	
0914			~100	2500	17.06	0.802	6.72	-132	1.18	14.8	
0919		↓	~100	3000	17.07	0.807	6.71	-136	2.76	13.5	↓
Stabilization Criteria					3%	3%	±0.1	± 10 mV	10%	10%	

Remarks:

1. Pump Dial Setting (e.g., hertz, cycles/min, etc)

LANGAN

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Project Number: 731639001
Project Name: 3093 Broadway
Well ID: MW-24
Date: 5/15/13
Weather: Overcast, 60°F
Field Personnel: JB / JS

Depth to Water: 12.21
Total Depth of Well: 21 ft.
Well Diameter: 2 inch
Depth to: 11 ft. (top)/ 21 ft. (bottom) of Screen
Purging Device: peri pump
Total Volume Purged: ~4L

TIME	WATER DEPTH	PUMP DIAL[1]	PURGE RATE (mL/min)	CUMUL VOL REMOVED	TEMP (°C)	COND (mS/cm))	pH (units)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	REMARKS (color, turbidity, sediment)
07 38			~100		16.33	1.13	7.00	-64	3.53	2.8	gasoline odor
07 44			~100		16.48	1.14	6.72	-76	0.86	0.7	
07 48			~100		16.56	1.14	6.66	-82	0.59	0.6	
0753			~100		16.65	1.14	6.63	-87	0.24	1.1	
0758			~100		16.72	1.13	6.58	-89	0.25	0.7	
0803			~100		16.90	1.13	6.55	-91	0.20	1.3	
0809			~100		16.96	1.12	6.54	-94	0.01	1.5	
0814			~100		17.02	1.12	6.53	-95	0.03	1.7	
Stabilization Criteria					3%	3%	±0.1	± 10 mV	10%	10%	

Remarks:

1. Pump Dial Setting (e.g., hertz, cycles/min, etc)

LANGAN

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Project Number: 731637001
Project Name: 3093 Broadway
Well ID: MW-25.
Date: 5/15/18
Weather: Sunny, 65 °F
Field Personnel: JB and JS

Depth to Water: 21.46
Total Depth of Well: 34 ft
Well Diameter: 2 inches
Depth to: 19 ft (top)/ 29 ft (bottom) of Screen
Purging Device: peri pump
Total Volume Purged: ~4L

TIME	WATER DEPTH	PUMP DIAL[1]	PURGE RATE (mL/min)	CUMUL VOL REMOVED	TEMP (°C)	COND (mS/cm))	pH (units)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	REMARKS (color, turbidity, sediment)
	1428		~100		21.70	0.898	6.68	28	4.54	2.9	very slight yellow color
	1433		~100		21.57	0.899	6.49	24	5.13	3.7	
	1438		~100		21.44	0.904	6.48	31	4.93	2.5	
	1443		~100		21.44	0.907	6.46	27	4.35	0.8	
	1449		~100		21.33	0.916	6.45	22	4.50	0.2	
	1453		~100		21.35	0.918	6.43	19	4.38	0.0	
	1458		~100		21.32	0.920	6.43	19	4.50	0.0	
Stabilization Criteria					3%	3%	±0.1	± 10 mV	10%	10%	

Remarks:

1. Pump Dial Setting (e.g., hertz, cycles/min, etc)

LANGAN

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Project Number: 731637001
Project Name: 3093 Broadway
Well ID: MW-26
Date: 5/15/18
Weather: Sunny, 65° F
Field Personnel: JB and JS

Depth to Water: 12.80 ft TOC
Total Depth of Well: 23 ft.
Well Diameter: 2 inches
Depth to: 12 ft (top)/ 22 ft. (bottom) of Screen
Purging Device: peri pump
Total Volume Purged: ~4 L

TIME	WATER DEPTH	PUMP DIAL[1]	PURGE RATE (mL/min)	CUMUL VOL REMOVED	TEMP (°C)	COND (µS/cm))	pH (units)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	REMARKS (color, turbidity, sediment)
1336			~100		21.74	0.493	6.93	226	12.77	0.2	
1341			~100		21.72	0.491	6.93	227	9.78	0	
1346			~100		21.80	0.493	6.90	227	9.43	0	
1351			~100		21.91	0.499	6.90	228	9.13	0.0	
1356			~100		21.94	0.509	6.91	229	9.03	0.	
Stabilization Criteria					3%	3%	±0.1	± 10 mV	10%	10%	

Remarks:

1. Pump Dial Setting (e.g., hertz, cycles/min, etc)

LANGAN

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Project Number: 731637001
Project Name: 3093 Broadway
Well ID: MW-27
Date: 5/15/18
Weather: Overcast 62°F
Field Personnel: JB/DS

Depth to Water: 14.60 ft TOC
Total Depth of Well: 31.5 ft
Well Diameter: 2 inches
Depth to: 21 ft. (top)/ 31 ft. (bottom) of Screen
Purging Device: peri pump
Total Volume Purged: ~4L

TIME	WATER DEPTH	PUMP DIAL[1]	PURGE RATE (mL/min)	CUMUL VOL REMOVED (mL)	TEMP (°C)	COND (µS/cm)) mS/cm	pH (units)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	REMARKS (color, turbidity, sediment)
1227			100	0	21.48	0.664	6.93	234	1.77	0.0	
1232			100	500	21.49	0.667	6.67	232	0.89	0.0	
1237			100	1000	21.69	0.669	6.63	229	0.56	0.0	
1242			100	1500	21.63	0.674	6.63	225	0.23	0.0	
1247			100	2000	21.64	0.677	6.63	221	0.17	0.0	
1252			100	2500	21.60	0.678	6.65	217	0.19	0.0	
1257			100	3000	21.69	0.680	6.63	214	0.21	0.0	
Stabilization Criteria					3%	3%	±0.1	± 10 mV	10%	10%	

Remarks:

1. Pump Dial Setting (e.g., hertz, cycles/min, etc)

LANGAN