Atlantic Richfield Company

Chuck Carmel

Remediation Management Project Manager

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RECEIVED

July 8, 2014

By Alameda County Environmental Health at 10:37 am, Aug 11, 2014

Re: Vapor Intrusion Report and Addendum to the Conceptual Site Model and Case Closure Request Atlantic Richfield Company Service Station #601 712 Lewelling Boulevard, San Leandro, California ACEH Case #RO0000309

"I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct.

Submitted by,

m

Chuck Carmel Remediation Management Project Manager

Attachment





July 8, 2014

Project No. 06-88-605

Atlantic Richfield Company P.O. Box 1257 San Ramon, CA 94583 Submitted via ENFOS

Attn.: Mr. Chuck Carmel

Re: Vapor Intrusion Report and Addendum to the Conceptual Site Model and Case Closure Request, Atlantic Richfield Company Station No.601, 712 Lewelling Boulevard, San Leandro, California; ACEH Case No. RO0000309

Dear Mr. Carmel

Broadbent & Associates, Inc. (Broadbent) is pleased to submit this *Vapor Intrusion Report and Addendum to the Conceptual Site Model and Case Closure Request* (Addendum) for Atlantic Richfield Company (ARC) Station No.601 located at 712 Lewelling Boulevard, San Leandro, California (Site). The preceding document entitled *Conceptual Site Model and Case Closure Request* (Closure Request) was submitted to the Alameda County Environmental Health Agency (ACEH) on January 31, 2013. This Closure Request was prepared in order to evaluate this Site for case closure under the *Low Threat Underground Storage Tank Case Closure Policy* (LTCP, 2012). In a letter dated December 9, 2013, Alameda County Environmental Health (ACEH) requested a further evaluation of the potential for vapor intrusion to the apartment building from the smear zone of petroleum hydrocarbons between depths of approximately 4.75 to 7.5 feet below ground surface (bgs) in the area of well MW-3. This Addendum is intended to evaluate the vapor intrusion potential and ultimately obtain approval for Site closure.

Vapor Intrusion Assessment Activities

The purpose of soil vapor installation and sampling activities discussed herein was to collect data in order to further evaluate the potential for vapor intrusion to the Chateau Manor Apartments adjacent to the Site to the west. Two soil vapor probes were installed adjacent to well MW-3 to evaluate the potential risk of the smear zone of petroleum hydrocarbons between depths of approximately 4.75 to 7.5 feet bgs. Additional soil vapor sampling of the existing soil vapor wells was also conducted during the sampling of the new soil vapor wells to assist in further evaluating the soil vapor intrusion risk and confirm previous sampling results.

The Site location is presented in Drawing 1. The locations of the newly installed soil vapor probes are presented on Drawing 2. Soil vapor sampling activities were performed in accordance with The California Department of Toxic Substances Control's (DTCS's) *Advisory – Active Soil Gas Investigations* (DTSC, 2012).

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Preliminary Activities, Local Permitting, and Notification

Necessary permits including drilling permits from the Alameda County Public Works Agency (ACPWA) were secured prior to carrying out the field investigation. Copies of these permits along with boring logs and field notes are included in Appendix A. Borings were marked and areas were outlined with white spray paint, and an Underground Service Alert (USA) ticket was secured to notify utility companies in the area of the upcoming activities. Additionally, boring locations were cleared for underground utilities by NorCal Geophysical (NorCal) on April 22, 2014. NorCal's utility locate report is included in Appendix B.

The Site-specific HASP was prepared for use by field personnel. The HASP addressed hazards associated with drilling activities. A copy of the HASP was available onsite during work. The subcontractor(s) performing field activities were provided with a copy of the HASP prior to initiating work, and daily safety tailgate meetings were conducted to review hazards and drilling safety associated with execution of the work.

Soil Vapor Probe Borings

Two soil vapor sampling locations, SG-15A and SG-15B, were installed near well MW-3 (Drawing 2) on April 24, 2014 by Gregg Drilling and Testing, Inc. (Gregg). An "A" soil vapor probe was constructed with the probe installed at 3.5 ft bgs, and a "B" soil vapor probe was constructed with the probe installed at 5.5 ft bgs. The two depth intervals were installed at each location to assess the potential vapor intrusion of the residual hydrocarbons and bio attenuation in the smear zone area around well MW-3. Specific bioattenuation indicator parameters (oxygen, argon, methane, and carbon dioxide; see Section 5.4 below) were measured in each interval to determine the presence and length of any zone of bioattenuation.

In lieu of nested multi-level wells, each soil vapor boring was constructed to a specific depth within its own boring, thus minimizing the potential for short-circuiting. Each probe is horizontally separated by at least three feet at the location.

Soil Vapor Probe Construction

Soil vapor probes were constructed by attaching a 6-inch long soil vapor probe tip to a 0.125-inch diameter Teflon tubing extending approximately two feet above the surface. The soil vapor probe tips were constructed of double-woven stainless steel wire screen with a 0.057-inch pore diameter, equipped with stainless-steel end fittings. Each soil vapor probe was embedded within the middle of a one-foot thick sand filter pack of #2/12 sorted sand, topped with one-half foot of dry powdered Bentonite clay below a minimum of one-half foot of hydrated powdered Bentonite clay, and completed with a traffic-rated well vault at the surface set with neat cement concrete surface seal to match the existing grade.

Soil Vapor Probe Sampling

Broadbent personnel conducted soil vapor sampling activities on May 22, 2014. No rainfall event of 0.5 inches or more had recently occurred within 24 hours of sampling. The reason for sampling occurring a month after installation was to allow the soil to dry from a previous minor rain event. Both soil vapor wells were constructed and installed when it ceased raining.

Page 3

Initially, the soil vapor probe was opened and slowly purged of one calculated interior volume using a calibrated syringe at the three-way valve that was connected at the tip of the soil vapor probe tubing. The calculated interior volume included the aboveground tubing, appurtenances, below-ground tubing, probe tip, but not the pore space within the filter pack.

Following the completion of purging, the soil vapor sampling train was assembled which consisted of an airtight chamber and a battery power pump that induced a vacuum within the airtight chamber. The chamber contained silicone tubing with a shutoff pinch valve, a gate valve, and quarter inch Teflon tubing. Both the silicone tubing and quarter inch Teflon tubing started within the chamber and then protruded on the top and side of the exterior of the chamber respectively. The soil vapor probe's tubing was connected at the silicone tubing on the exterior of chamber and the pump was connected at the quarter inch Teflon tubing on the exterior chamber as well. The tedlar bag was connected to the end of the silicone tubing within the chamber. Once the tedlar bag, the probe's tubing, and the pump were connected, the chamber was closed and the gate valve was twisted shut. A towel was dosed with isopropyl and then wrapped around the silicone tubing on the exterior as a leak tracer. The pump was then calibrated to a 200 mL/min flow rate and after calibration, the shutoff pinch valve that was attached on the exterior silicone tubing was released and the pump was turned on. The sample was considered collected once the tedlar bag is no more than 2/3 inflated or approximately 10-13 minutes has passed. After the sample was collected, the pump was turned off and the gate valve was twisted open to release the induced vacuum in the chamber. The collected sample was stored in closed cooler to prevent sample degradation from sunlight.

The original method of using a sampling train with a shroud and helium tracer was not used due to the constraints associated with using a tedlar bag instead of a suma canister. The suma canister induced a vacuum that allowed the suma canister sample the soil vapor probe through the train. The tedlar bag was not capable of supplying such a vacuum and would require a more complicated setup.

Laboratory Analysis of Soil Vapor Samples

Collected samples were submitted to Calscience under standard chain-of-custody protocol. At the laboratory, soil vapor samples will be analyzed for GRO by EPA Method TO-3 and for BTEX, Naphthalene and MTBE by EPA Method TO-15. Soil vapor samples will also be analyzed for Oxygen (O_2) and Carbon Dioxide (CO_2), Methane (CH_4) and Helium (tracer/leak-check compound) by Modified ASTM D-1946. Laboratory analyses for soil vapor samples were performed in accordance with EPA standard holding times for tedlar bags. Table 2 summarizes soil vapor sampling results. The Soil Vapor Laboratory Analytical Report can be found in Appendix C.

Soil Vapor Analytical Results and Evaluation

GRO was detected in three of the eight soil vapor points, SG-10, SG-12, and SG-13, and ethylbenzene and xylenes were detected in five of the eight soil vapor points, SG-12 thru SG-14 and SG-15 A/B. These concentrations were far below the Tier 1 Environmental Screening Levels (ESLs). Soil vapor analytical results are summarized in Table 2.

The soil vapor analytical results indicate that no concentrations are above ESLs. The data indicates minimal to no risk for the apartment buildings adjacent to the site. SG-15A and SG-15B resulted in non-detect concentrations of GRO, Benzene, and MTBE with very low resulting concentrations of ethylbenzene and Total xylenes. These results show that the smear zone of petroleum hydrocarbons within the vicinity of well MW-3 does not appear to be a potential vapor intrusion risk.

It should also be noted that the presence of considerable carbon dioxide concentrations and slightly depleted oxygen concentrations suggest that bioattenuation is occurring at the Site.

Closing

The data and Site evaluation presented in this Addendum as well as the Closure Request indicate that this Site meets the criteria of the Low Threat Closure UST Policy. Well decommissioning and final closure activities will be coordinated upon concurrence with the Closure Request and this Addendum from the ACEH.

Should you have questions or require additional information, please do not hesitate to contact us at (707) 455-7290.

Sincerely, BROADBENT & ASSOCIATES, INC.

Kristene Tidwell, P.G., C.Hg. Senior Geologist

<u>Attachment</u>

- Drawing 1: Site Location Map Drawing 2: Site Map with Soil Vapor Well Locations
- Table 1:
 Updated Conceptual Site Model
- Table 2:
 Soil Vapor Analytical Data
- Appendix A: Permits, Well Completion Report, and Field Notes
- Appendix B: Norcal Utility Locate Report
- Appendix C: Soil Vapor Laboratory Analytical Report
- cc: Jerry Wickham, PG, Alameda County Environmental Health (Submitted via ACEH ftp site) Electronic copy uploaded to GeoTracker

References

- State Water Resources Control Board (SWRCB), 2012. Low-Threat Underground Storage Tank Case Closure Policy, August 17.
- DTSC, LARWQCB, and SFRWQCB, April 2012. Advisory Active Soil Gas Investigations.



ATTACHMENTS

DRAWINGS





CONCEPTUAL SITE MODEL Atlantic Richfield Company Station 601

712 Lewelling Boulevard

CSM Element	CSM Sub- Flement	Description	Data Gap	How to Address
Geology and Hydrogeology	Regional	The Site is located within the San Leandro Sub-Area of the East Bay Plain of the San Francisco Basin. The San Leandro Sub-Area is primarily filled with alluvial fans, but unlike the Sub-Areas to the north, the Yerba-Buena Mid extends west into the San Leandro Sub-Area. It has been proposed that a clay layer forms an extensive east-west aquitard across the basin. Historically there were municipal supply wells in this Sub-Area that produced from the upper level Alameda gravels. The San Leandro Sub-Area is distinct from the Niles Cone basin to the south, in that the alluvial fans are much smaller and produce much less groundwater. Throughout most of the Alameda County portion of the East Bay Plain, from Hayward to Albany, groundwater level contours show that show that the general direction of groundwater flow is from the east to the west, from the Hayward Fault to the San Francisco Bay. Groundwater flow direction generally correlates to topography. Flow-direction and velocity are influenced by subsurface stream channels general oriented from east to west. However, near the San Leandro Sub-Area, limited regional data indicates that groundwater in the upper water-bearing zone flows to the south, with deeper groundwater flowing to the north.	None	NA
	Site	Sediments encountered during previous Site investigations generally consist of silty clays and silt which encase sand lenses of varying thickness. According to the cross sections presented in Drawing 11 and 12 show that a southwest-northwest trending sand layer is present at approximately 7 feet feet below ground surface (bgs) and varies in thickness from one to nine feet. As show in Drawing 12, this sand layer pinches out to the north and south of the Site, with lithology boreholes north (S-10) and south (B-10) of the Site containing only fine-grained soils. This lithology is consistent to a total explored depth of 58 feet bgs. Lithologic cross-sections of the Site can be found in the <i>Conceptual Site Model and Case Closure Request</i> (Broadbent 2013). The lithology represented in the cross-sections is consistent with the geologic environment of alluvial deposits, and consistent with the regional geologic environment.	None	NA

CONCEPTUAL SITE MODEL

Atlantic Richfield Company Station 601 712 Lewelling Boulevard San Leandro, California

CSM Element	CSM Sub- Element	Description	Data Gap	How to Address
Surface Water Bodies		The nearest natural drainage from the Site is the San Lorenzo Creek, located 600 feet south of the Site. This creek is an urban stream, which is concrete lined and containing very little water during the dry season. The great majority if water traveling in this creek is the result of stormwater runoff which accumulates during rain events. The concrete lining inhibits what little contact with groundwater that may actually occur with the creek.	None	NA
Nearby Wells		A Sensitive Receptor Survey was carried out in October 2011 to identify the presence of water wells within a ½-mile radius of the Site. Based on a review of well completion reports furnished by the Department of Water Resources, 16 wells were identified within a ½-mile radius in the downgradient and crossgradient groundwater flow direction. The closest of these is an irrigation well approximately 1,150 feet southwest (downgradient) of the Site. The closest identified domestic supply well is located approximately 2,400 feet west-northwest (crossgradient) from the Site.	None	NA
Constituents of Concern	Light-Non Aqueous Phase Liquids (LNAPL)	LNAPL was first detected at the Site in well MW-1 in 1990. The largest measurement of LNAPL historically recorded at the Site 1.08 feet in November 1990 in well MW-3 located in the western corner of the Site. LNAPL was also detected in onsite well MW-1 during the same time-frame. This well is located near the former waste oil tank. LNAPL was historically detected in well MW-5 on a couple of isolated occasions, but LNAPL has primarily been historically measured in wells MW-1 and MW-3. LNAPL removal by product bailing was carried out since these initial measurements, with a total of 3.45 gallons of product having been removed. Measurable LNAPL has not been observed in MW-1 since 2008 and in MW-3 since 1995.	None	NA

CONCEPTUAL SITE MODEL

Atlantic Richfield Company Station 601 712 Lewelling Boulevard San Leandro, California

CSM Element	CSM Sub- Element	Description	Data Gap	How to Address
Constituents of Concern	Gasoline Range Organics (GRO)	Concentrations of GRO have historically been detected in 10 of the 15 Site monitoring wells (MW-1 through MW-8, MW-11 and MW-15). In wells MW-7 and MW-15, only low and intermittent concentrations of GRO have been historically detected. Hisotical concentrations of GRO was reported in well MW-3 were above 400,000 micrograms per liter (µg/L) in the late 1990s. No GRO has been detected in offsite wells (MW-9, MW-10, MW-13, MW-14 and MW-15) with the exception of one detection of 97 µg/L in well MW-15 in 1997. These wells define the GRO plume to the northwest (MW-13), southeast (MW-14), south (MW-10), south-southwest (MW-9), and southwest (MW-15). Offsite wells associated with the adjacent former Shell Station within Lewelling Boulevard provide additional definition of the GRO groundwater plume. Isocentration contours of GRO (Drawing 4) for the most recent groundwater monitoring and sampling event (3Q12) and GRO concentration trend graphs (Appendix B) can be found in the <i>Conceptual Site Model and Case Closure Request</i> (Broadbent 2013). These graphs show a strong decreasing trend for GRO in all Site wells, indicating and shrinking plume.	None	NA
Constituents of Concern	Benzene	Benzene has historically been detected in the following Site wells: MW-1 through MW-9, MW- 11, MW-14 and MW-15). However, in wells MW-7 through MW-9, MW-11, MW-14 and MW-15 only low concentrations have been intermittently detected. The highest onsite concentration of benzene was detected in well MW-5 at 25,000 μ g/L in 1991. Current maximum benzene concentrations are under 100 μ g/L, indicating a strong decreasing benzene concentration trend over time. Isocentration contours for benzene (Drawing 5) for the most recent groundwater monitoring and sampling event (3Q12) and benzene concentration trend graphs (Appendix B) can be found in the <i>Conceptual Site Model and Case Closure Request</i> (Broadbent 2013). These graphs show a strong decreasing trend for benzene in all Site wells, indicating and shrinking plume.	None	NA

CONCEPTUAL SITE MODEL

Atlantic Richfield Company Station 601 712 Lewelling Boulevard San Leandro, California

CSM Element	CSM Sub- Element	Description	Data Gap	How to Address
Constituents of Concern	MTBE	Methyl tert butyl ether (MTBE) has been historically detected in 12 of the 15 wells present at the Site (MW-1 through MW-6, MW-8 through MW-11, MW-14, and MW-15). However, in wells MW-1, MW-3, MW-9, MW-11, MW-14, and MW-15 only low concentrations have been intermittently detected. The highest historic concentration of MTBE was reported in well MW-8 in 1997 at 1,300 μ g/L. Drawing 6 presents isoconcentration contours of MTBE in groundwater during the most recent groundwater monitoring event (3Q12). Isocentration contours of MTBE (Drawing 6) for the most recent groundwater monitoring and sampling event (3Q12) and MTBE concentration trend graphs (Appendix B) can be found in the <i>Conceptual Site Model and Case Closure Request</i> (Broadbent 2013). These graphs show a strong decreasing trend for MTBE in all Site wells, indicating a shrinking plume. Current concentrations of MTBE do not exceed 5 μ g/L, indicating that MTBE in groundwater has almost completely degraded over time.	None	NA
Potential Sources	Onsite	The exact release source and volume released at the Site is unknown. However, it is assumed that the source was the former UST complex located at the northern portion of the Site, and the former waste oil tank located near the southeast corner of the service station building. These assumptions are supported by historical data including proximity to historical free product and higher dissolved-phase petroleum hydrocarbon concentrations. Additional areas of documented soil contamination occurred beneath product pipelines and dispensers, particularly the northern end of the western dispenser island. An unknown amount of petroleum hydrocarbon contamination is presently bound within the soil matrix in these areas, and dissolved in groundwater beneath and downgradient of the Site. A fluctuating groundwater table has likely caused a contaminant smear zone where the residual hydrocarbon mass remains. However, the trends for the residual petroleum compounds in groundwater (Appendix B) indicate that the residual concentrations in this smear zone have degraded over time and are impacting the groundwater beneath the Site to a far lesser degree than in the past, and will likely continue to degrade over time. The removal and replacement of the storage and dispensing system was conducted to stop the release. The initial UST removal and replacement activities were documented in the <i>Tank Replacement Report, ARCO Service Station #601</i> (GeoStrategies, 1990). Later removal and replacement of dispensers and product lines were documented in the <i>Dispenser and Product Line Removal and Upgrade Soil Sampling Report, Arco Service Station No. 601</i> (URS, 2003).	None	NA

CONCEPTUAL SITE MODEL

Atlantic Richfield Company Station 601

712 Lewelling Boulevard

CSM Element	CSM Sub- Element	Description	Data Gap	How to Address
Potential Sources (continued)	Onsite (continued)	The Site is an active service station. Current USTs and dispensers are present. Data presented herein does not indicate that an ongoing hydrocarbon release is occurring, since hydrocarbon concentrations have steadily been decreasing since historical maximums in the early 1990s (Appendix B). The Site monitoring and sampling history indicate that hydrocarbon releases occurred from the former UST farm and waste oil tank, with no additional releases having occurred.	None	NA
Potential Sources	Offsite	A former Shell Service Station is located adjacent to the Site to the north. A petroleum release occurred at the Shell Station in 1985, and was stopped in 1987. Site investigation activities including well and boring installations initially occurred at the former Shell Station site in 1988. A total of 14 monitoring were installed at the Site and have since been monitored for over 20 years. In that time frame, concentrations have decreased to a level where Site closure was requested and is currently being reviewed. Concentrations of petroleum compounds in wells in between the Site and the former Shell Station site have historically and currently indicate that the two plumes do not connect. Due to the decreasing trends and overall low concentration associated with the adjacent former Shell Station site, it is not a likely hydrocarbon source.	None	NA
Nature and Extent of Environmental Impacts	Extent in Soil	Soil appears defined at the Site. Upon completion of an offsite soil boring investigation conducted by RESNA in 1993, GRO in soil was defined to less than 1.0 milligrams per kilogram (mg/kg), and less than 0.005 mg/Kg benzene in all directions. The highest concentration of GRO and benzene were historically detected at the Site where near the former UST complex and the former waste oil tank pit. The locations where the highest concentrations of petroleum compounds have been detected have since been removed during tank removal and overexcavation activities. Of the sample locations that have not been removed by excavation, the highest concentrations of benzene were detected near the former waste oil tank (after removal activities), and near well MW-3. The highest concentrations were consistently reported at approximately 6.5 to 10 feet bgs, which is consistent with the capillary fringe zone at the Site. Even at these high concentrations, soil was defined laterally to non-detect for all petroleum compounds to the south and east, and to 1.0 mg/Kg benzene to the north, and to 7.0 mg/Kg benzene to the presence of an adjacent Shell station in that area.	None	NA

CONCEPTUAL SITE MODEL

Atlantic Richfield Company Station 601 712 Lewelling Boulevard

				How to
CSM Element	CSM Sub- Element	Description	Gap	Address
Nature and Extent of Environmental Impacts (continued)	Extent in Soil (continued)	Since source areas have been removed and these concentrations were representative of overall groundwater concentrations at the time of sampling, it is likely that these concentrations have further attenuated over the last 20 years. In MW-3, where benzene concentrations in soil were 11 mg/Kg in 1991, petroleum impacts in groundwater have decreased by several orders of magnitude since that time. The adjacent offsite benzene concentration in soil (B-23; RESNA, 1993) was 7 mg/Kg. Both of these soil samples represented the capillary fringe zone, these concentrations have likely attenuated to near non-detect. Based on these data and the observation of current groundwater conditions, soil at this Site appears to be adequately defined.		
Nature and Extent of Environmental Impacts	Extent in Shallow Groundwater	The groundwater monitoring network at the Site includes source area wells (MW-1, MW-3, MW-16, MW-17, and MW-18); upgradient wells (MW-13, former Shell Station wells S-11, S-12, and S-14); crossgradient wells (MW-12, MW-14, and MW-19); and downgradient well (MW-8, MW-9, MW-10, and MW-15). Isoconcentration maps for the most recent groundwater monitoring and sampling event (3Q12) for GRO, benzene, and MTBE are included as Drawings 4 through 6 respectively. Although wells S-11, S-12, and S-14 have not been sampled since 2004, concentrations in nearby wells (MW-3, MW-17) have decreased significantly since that time. In 2004, these wells contained low to non-detect concentrations of petroleum compounds. Based on these drawings, the extent of petroleum compounds is well defined in all directions, and is predominately limited to onsite. The extent of petroleum compounds is small, and the plume is shrinking based on the observed decreasing trends found in the Appendix B of the <i>Conceptual Site Model and Case Closure Request</i> (Broadbent 2013) Although the screens of wells MW-1 and MW-3 are often submerged, the data is still assumed valid. This is because the other onsite wells do not have submerged screens and the concentrations are consistent with these older wells. The understanding of the Site is largely based on wells without	None	NA
		flooded screens, and the flooded screen data is consistent with this non-flooded-screen data. Additionally, free product is no longer present at this Site, and dissolved petroleum concentrations are decreasing. The data is adequate for understanding the SCM. Well MW-3 has consistently had submerged screen for the last several years. Adjacent newer well MW-16 is approximately 20 to 30 feet from well MW-3 and is between this well and the suspected source area. Well MW-16 has never contained free product, and dissolved-phase petroleum concentrations in this are not consistent with proximity to free-product. Therefore, the data from well MW-3 is considered valid.		

CONCEPTUAL SITE MODEL

Atlantic Richfield Company Station 601

712 Lewelling Boulevard

CSM ElementCSM Sub- ElementGapAddressNature and Extent ofExtent in DeeperOne deeper soil boring was advanced onsite in 2007 in order to define the vertical extent of petroleum hydrocarbons in groundwater. A Hydropunch™ groundwater sample was collected at a permeable zone at 55 to 58 feet bgs. No other permeable zones were encountered above that zone. No petroleum compounds other than low levels of diesel range organics (DRO) were encountered. Soil samples collected in this location at 15 feet bgs, 23 feet bgs, 39 feet bgs, 47 feet bgs, and 54 feet bgs did not contain any petroleum compounds other than two detections of DRO slightly greater than the detection limit of 1.0 mg/Kg. Based on the results of this investigation, petroleum compounds in groundwater are vertically defined, with only first-encountered groundwater impacted, which is largely related to residual petroleum being less dense than water and being more prevalent at the groundwater surface.NANature andExtent in SoilA soil vapor assessment was performed at the Site near the adjacent Chateau Manor Apartments in the other bit is bit
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Nature and Extent in Extent ofOne deeper soil boring was advanced onsite in 2007 in order to define the vertical extent of Deeper ImpactsNoneNAEnvironmental ImpactsGroundwaterpermeable zone at 55 to 58 feet bgs. No other permeable zones were encountered above that zone. No petroleum compounds other than low levels of diesel range organics (DRO) were encountered. Soil samples collected in this location at 15 feet bgs, 23 feet bgs, 31 feet bgs, 39 feet bgs, 47 feet bgs, and 54 feet bgs did not contain any petroleum compounds other than two detections of DRO slightly greater than the detection limit of 1.0 mg/Kg. Based on the results of this investigation, petroleum compounds in groundwater are vertically defined, with only first-encountered groundwater impacted, which is largely related to residual petroleum impacts in the capillary fringe. This observation is consistent with the nature of petroleum being less dense than water and being more prevalent at the groundwater surface.NANature and Extent in SoilExtent in SoilA soil vapor assessment was performed at the Site near the adjacent Chateau Manor Apartments in the vertice first in the vertical petroleum in a performed at the Site near the diagent Chateau Manor Apartments inNA
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Extent of Vapor 2009. The locations of the soil vapor samples (SG-9 through SG-14) are indicated in Drawing 2 of the
Environmental Conceptual Site Model and Case Closure Request (Broadbent 2013). Soil vapor samples were
Impacts collected at 3 to 3.5 foot-intervals in all locations. The samples were analyzed for petroleum
compounds including GRO, benzene, toluene, ethylbenzene, xylenes (BTEX) and gasoline additives.
Additionally, samples were analyzed for oxygen, argon, carbon dioxide, and methane. Analytical
results indicated that only one minor concentration of toluene slightly above reporting limits in the
sample from SG-11. Additionally, oxygen and carbon were detected in soil vapor samples, indicating
the possible occurrence of petroluem biodegradation in soil. It is possible that higher petroleum
Impacts are present near the former source areas; nowever, much of the soil in these areas has been
recentors, and are therefore adequately defined
A letter dated December 9, 2013, Alameda County Environmental Health (ACEH) requested a further
evaluation of the potential for vapor intrusion to the Chateau Manor Apartments of the smear zone
of petroleum hydrocarbons in the area of well MW-3. ACEH also requested sampling the existing soil
vapor wells to help further evaluate the vapor intrusion assessment. On April 24°, 2014, Broadbent
oversaw the installation of two soil vapor wells, SG-15B and SG-15B, within the vicinity of MW-3. The
iocations of these wells can be found on Drawing 2.

CONCEPTUAL SITE MODEL

Atlantic Richfield Company Station 601 712 Lewelling Boulevard

			Data	How to
CSM Element	CSM Sub- Element	Description	Gap	Address
Nature and Extent of Environmental Impacts (continued)	Extent in Soil Vapor (continued)	In May 22, 2014, Broadbert personnel sampled an existing soli vapor wens as well as the two hewly installed wells. Based on the analytical results, GRO was detected in wells SG-10, SG-12, and SG-13 t concentrations of 7,800 micrograms per cubic meter (μ g/m ³), 6,000 μ g/m ³ , 5,300 μ g/m ³ espectively. Ethyl benzene was detected in wells SG-12 thru SG-14, SG-15A, and SG-B at oncentrations of 3.0 μ g/m ³ , 2.6 μ g/m ³ , 2.8 μ g/m ³ , 2.3 μ g/m ³ , and 2.2 μ g/m ³ respectively. Total cylenes was detected in wells SG-12 thru SG-14, SG-15A, and SG-B at concentrations of 16 μ g/m ³ , 3 μ g/m ³ , 178 μ g/m ³ , 12 μ g/m ³ , and 3.12 μ g/m ³ respectively. These resulting concentrations are ar below the Tier 1 Environmental Screening Levels which indicates a minimal to no risk for the partments.		NA
		attenuation is quite possibly occurring. Tabulated analytical results can be found in Table 1.		
Migration Pathways	Potential Conduits	Historic maps of underground utilities including natural gas, storm drain and cable are included in Drawing 7 of the <i>Conceptual Site Model and Case Closure Request</i> (Broadbent 2013). The majority of the mapped underground utilities are believed to be relatively shallow (less than three feet bgs). Exceptions are the mapped sewer pipelines in the area. A six-inch diameter sanitary sewer lateral conveys wastewater from the Chateau Manor apartments to an eight-inch diameter sewer main within Lewelling Boulevard, which is approximately six to seven feet bgs in the Site vicinity. A 24-inch diameter sanitary sewer main pipeline also runs under Lewelling at approximately 9.5 to 10.5 feet bgs. Since depth to groundwater is typically measured as high as 5 feet bgs, there is a potential that the deeper sewer system conduits may be acting as preferential pathways for contaminant migration. In response to this potential conduit, three hand-auger borings were advanced in 2002 near the sewer main, and groundwater was collected in the trench backfill. The locations of these borings (HA-2 through HA-4) are included in Drawing 2 of the <i>Conceptual Site Model and Case</i> <i>Closure Request</i> (Broadbent 2013). The benzene concentrations reported in these samples were 640, 1,200, and 62 ug/L, respectively. The highest concentrations are typically detected. Since that time, benzene concentrations in MW-3 have decreased by over one order of magnitude.	None	NA

CONCEPTUAL SITE MODEL

Atlantic Richfield Company Station 601 712 Lewelling Boulevard

CSM Element	CSM Sub- Element	Description	Data Gap	How to Address
Migration Pathways	Potential Conduits	Benzene was most recently reported in this well at 19 ug/L. Due to the overall decrease in petroleum hydrocarbons in groundwater, and the fact that concentrations of benzene in the trench water samples decreased with distance from MW-3 and HA-3, and the sewer main is upgradient of the Site, the sewer mains near the Site are unlikely to be a conduit for contaminant migration.	None	NA
Potential Receptors	Onsite	No onsite water supply wells or surface water exists. The only potential onsite receptor would be onsite workers exposed to gasoline vapors. However, the exposure from current fueling operations represents a greater risk than any associated with potential groundwater or soil vapor exposure (SWRCB, 2012).	None	NA
Potential Receptors	Offsite	As discussed above, the Chateau Manor apartments are located downgradient of the Site. This receptor was considered in during the 2009 soil vapor investigation. Concentrations of petroleum compounds in samples collected adjacent to the apartment buildings contained no petroleum compounds with the exception of one detection of toluene slightly above reporting limits. Concentrations of benzene in groundwater indicate that impacts do not extend beneath these apartments.	None	NA
		As stated above, two new soil vapor wells, SG-15A and SG-15B, were installed within the vicinity of the smear zone of petroleum hydrocarbons near MW-3. Based on the analytical results, soil vapor intrusion to the Chateau Manor apartments is minimal to no risk. The tabulated analytical results can be found in Table 1.		
Potential Receptors	Offsite	A Sensitive Receptor Survey was performed in October 2011 to identify the presence of water wells within a ½-mile radius of the Site. Based on a review of well completion reports furnished by the Department of Water Resources, 16 wells were identified within a ½-mile radius in the downgradient and crossgradient groundwater flow direction. The closest of these is an irrigation well approximately 1,150 feet southwest (downgradient) of the Site. The closest identified domestic supply well is located approximately 2,400 feet west-northwest (crossgradient) from the Site.	None	NA

CONCEPTUAL SITE MODEL

Atlantic Richfield Company Station 601 712 Lewelling Boulevard San Leandro, California

CSM Element	CSM Sub- Element	Description	Data Gap	How to Address
Potential Receptors (continued)	Offsite (continued)	The nearest surface water body is an unnamed drainage ditch located approximately 450 feet south (downgradient) of the Site. The unnamed drainage ditch ultimately connects to the San Francisco Bay, which is located approximately 1.65 miles west-southwest (downgradient) of the Site. The nearest natural drainage is San Lorenzo Creek. located approximately 600 feet south (down-gradient)	None	NA
		of the Site. This portion of the San Lorenzo Creek is seasonal and concrete lined, with the majority of water transported in this part of the creek being attributed to seasonal surface runoff. The concrete lining inhibits contact with any area groundwater.		

Notes:

bgs = below ground surface GRO = Gasoline Range Organics DRO = Diesel Range Organics MTBE = Methyl tert-butyl Ether BTEX = benzene, toluene, ethylbenzene, xylenes µg/L = micrograms per liter

mg/Kg = milligrams per kilogram

All report references are included in Section 3 of the preceding report

Table 2 Soil Vapor Analytical Results May 22, 2014 ARC Station No. 601 6407 Telegraph Ave., Oakland, California

Soil Vapor Probe Identification	Probe Sample Depth (feet bgs)	Date Collected	GRO (µg/m³)	Benzene (µg/m³)	Toluene (μg/m³)	Ethylbenzene (μg/m3)	Total Xylenes* (μg/m³)	MTBE (µg/m³)	Naphthalene (µg/m ³)	Carbon Dioxide (%)	Methane (%)	Oxygen (%)
SG-9	3-3.5	5/22/2014	ND<3,800	ND<32	ND<380	ND<43	ND<43	ND<140	ND<520	8.21	ND<0.5	11.9
SG-10	3-3.5	5/22/2014	7,800	ND<100	ND<1200	ND<140	ND<140	ND<450	ND<1600	7.94	ND<0.5	15.1
SG-11	3-3.5	5/22/2014	ND<3,800	ND<32	ND<380	ND<43	ND<43	ND<140	ND<520	7.87	ND<0.5	12.6
SG-12	3-3.5	5/22/2014	6,000	ND<1.6	ND<19	3.0	16	ND<7.2	ND<26	6.15	ND<0.5	13.6
SG-13	3-3.5	5/22/2014	5,300	ND<1.6	ND<19	2.6	13	ND<7.2	ND<26	1.3	ND<0.5	19.7
SG-14	3-3.5	5/22/2014	ND<3,800	ND<1.6	ND<19	2.8	17	ND<7.2	ND<26	3.52	ND<0.5	17.2
SG-15A	3-3.5	5/22/2014	ND<3,800	ND<1.6	ND<19	2.3	12	ND<7.2	ND<26	1.57	ND<0.5	19.2
SG-15B	5-5.5	5/22/2014	ND<3,800	ND<1.6	ND<19	2.2	3.1	ND<7.2	ND<26	1.11	ND<0.5	20.2
ESLs			2,500,000	420.0	1,300,000	4,900	440,000	47,000	360	NA	NA	NA

Notes:

feet bgs = feet below ground surface μ g/m³ = micrograms per cubic meter GRO = gasoline range organics (C6-C12) MTBE = methyl tert-butyl ether ND<X.XX = not detected above reporting limit of X.XX μ g/m³

NA = not analyzed

ESLs - Tier 1 Environmental Screening Levels, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, California Regional Water Quality Control Board (CRWQCB), Interim Final, December 2013. Commercial/Industrical exposure scenario; Table E-2 APPENDIX A

Permits, Well Completion Report, and Field Notes

Alameda County Public Works Agency - Water Resources Well Permit



399 Elmhurst Street Hayward, CA 94544-1395 Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 04/21/2014 By jamesy

Permit Numbers: W2014-0394 Permits Valid from 04/25/2014 to 04/25/2014

Work Total: \$265.00

Application Id: Site Location: Project Start Date: Assigned Inspector:	1395960911767 712 Lewelling Blvd 04/25/2014 Contact Steve Miller at (510) 670-5517 or stevem	City of Project Site:San Leandro Completion Date:04/25/2014 @acpwa.org
Applicant:	Broadbent & Associates - James Ramos	Phone: 707-455-7290
Property Owner:	Chuck Carmel 4 Centerpoint Drive La Palma CA 90623	Phone:
Client: Contact:	** same as Property Owner ** Kristene Tidwell	Phone: 707-455-7290 Cell: 707-430-7133

	Total Due:	\$265.00
Receipt Number: WR2014-0149	Total Amount Paid:	\$265.00
Payer Name : Broadbent & Associates	Paid By: CHECK	PAID IN FULL

Works Requesting Permits:

Well Construction-Vapor monitoring well-Vapor monitoring well - 2 Wells Driller: Gregg Drilling - Lic #: 485165 - Method: Hand

Specifications

Permit #	Issued Date	Expire Date	Owner Well	Hole Diam.	Casing Diam	Seal Depth	Max. Depth
W2014-	04/21/2014	07/24/2014	SG-1A	3.00 in.	2.00 in.	1.00 ft	3.50 ft
0394							
W2014-	04/21/2014	07/24/2014	SG-1B	3.00 in.	2.00 in.	1.00 ft	5.50 ft
0394							

Specific Work Permit Conditions

1. Drilling Permit(s) can be voided/ cancelled only in writing. It is the applicant's responsibility to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.

2. Compliance with the above well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate state reporting-requirements related to well destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 60 days, including permit number and site map.

3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

4. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or

Alameda County Public Works Agency - Water Resources Well Permit

waterways or be allowed to move off the property where work is being completed.

5. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

6. No changes in construction procedures or well type shall change, as described on this permit application. This permit may be voided if it contains incorrect information.

7. Applicant shall submit the copies of the approved encroachment permit to this office within 60 days.

8. Applicant shall contact Steve Miller for an inspection time at (510) 670-5517 or email to stevem@acpwa.org at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

9. Wells shall have a Christy box or similar structure with a locking cap or cover. Well(s) shall be kept locked at all times. Well(s) that become damaged by traffic or construction shall be repaired in a timely manner or destroyed immediately (through permit process). No well(s) shall be left in a manner to act as a conduit at any time.

10. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.

11. Vapor monitoring wells above water level constructed with tubing maybe be backfilled with pancake-batter consistency bentonite. Minimum surface seal thickness is two inches of cement grout around well box.

Vapor monitoring wells above water level constructed with pvc pipe shall have a minimum seal depth (Neat Cement Seal) of 2 feet below ground surface (BGS). Minimum surface seal thickness is two inches of cement grout around well box. All other conditions for monitoring well construction shall apply.

7/9/2014

1321 x8

Message Number: 0153565 Received by USAN at 10:46 on 04/22/14 by BCD Work Begins: 04/25/14 at 07:30 Notice: 026 hrs Priority: 2 Night Work: N Weekend Work: N Expires: 05/20/14 at 23:59 Update By: 05/16/14 at 16:59 MORRIS RUUD Caller: Company: GREGG DRILLING & TESTING 950 HOWE RD Address: State: CA Zip: 94553 City: MARTINEZ Fax: 925-313-0302 Business Tel: 925-313-5800 Email Address: MRUUD@GREGGDRILLING.COM Nature of Work: VERTICAL BORING FOR WELL INSTALLATION BROADBAND & ASSOCIATES Explosives: N Done for: Foreman: JAMES RAMOS Field Tel: Cell Tel: 707-342-5669 Area Premarked: Y Premark Method: WHITE PAINT Permit Type: COUNTY Number: PENDING Vac / Pwr Equip Use In The Approx Location Of Member Facilities Requested: N Excavation Enters Into Street Or Sidewalk Area: N Location: Street Address: 712 LEWELLING BLVD Cross Street: WASHINGTON AVE WRK LOC ON NW/COR/O PROP (ON ALL/O THE PRIV DR WY AT THE NW ENTR) Place: SAN LEANDRO County: ALAMEDA State: CA Long/Lat Long: -122.139827 Lat: 37.685814 Long: -122.139153 Lat: 37.686355 Sent to: CTYSLE = CITY SAN LEANDRO COMHAY = COMCAST-HAYWARD COALAM = COUNTY ALAMEDA EBWCMS = EAST BAY WATER LAVWMA = LAVWMA OLOSAN = ORO LOMA SANITARY DIST PACBEL = PACIFIC BELL PGEHAY = PGE DISTR HAYWARD XOCOM2 = XO COMM SVCS DBA XO COMM XOCOMM = XO COMM SVCS DBA XO COMM (801) 364 -XO COMM SVCS DBA XO 1063 COMM (801) 364 -1063 XO COMM SVCS DBA XO (801) 680 -COMM 9654 (800) 743 -(800) 743 - 5000 24 (800) 743 -(800) 743 -PGE DISTR HAYWARD HRS 5000 5000 5000 x00 (800) 332 -(510) 645 - (510) 645 -(510) 645 - 2929 PACIFIC BELL

2929

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(925) 519 - 0557	(925) 570 - 4161	(925) 570 - 4161	(925) 570 - 4161	LAVWMA
	(510) 287 - 0600		(510) 287 - 0600	EAST BAY WATER
			(510) 670 - 5500	COUNTY ALAMEDA
			(510) 887 - 1300	COMCAST-HAYWARD
(510) 638 - 2123	(510) 577 - 3428		(510) 577 - 3497	CITY SAN LEANDRO
After Hours Contact#	Emergency Contact#	[#] Vacuum Contact#	Main Contact#	Member Utility

7/9/2014

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*The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.

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IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

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	(LEALE F)
<u>SG-154 (35')</u>	-6+5150300
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1-24	
2-51	clay
3-41	day
	Clar Clar
3-J.Mt Signed aft & left asta	CXY
Signature:	Revision: 1/24/2

BROADBENT	DAILY REPORT Page of
Project: BP 601 Project No.: 06-8	00-605
Field Representative(s): JP/SJ Day: Thursday	Date: 5/22/14
Time Onsite: From: To: To: To: To: 1300 To: 1300 To: To:	From: To:
Y Signed HASP 🔀 Safety Glasses 🔀 Hard Hat Y Steel To	e Boots 🗡 Safety Vest
\checkmark UST Emergency System Shut-off Switches Located \checkmark Proper (Gloves
Proper Level of Barricading <u>(</u> Other PPE (describe) <u>Con</u> <u>block</u>	<u> </u>
Weather: avercent/summin 75°F	
Equipment In Use: fector bac, Equipso pump)	Equipco tedlarbog
Chamber VIII.	· · · · · · · · · · · · · · · · · · ·
Visitors:	
TIME: WORK DESCRIPTION:	
1030 Arrived ansite proceeded w/so	Pety weeting
1050 Completed Safety meeting; proceeded SG-13	to set up at
1130 Serve at SG-14	
1147 Serip at SG-12	
1203 Setup et SE-11 & SE-10	
1223 Setup Gt SQ-15A & SQ-15B	
1240 Setup at sa-7	
1200 proceedent to claim & packs	
130 Sigher art & 12/1-SITE	
to say .	
10	
Signature:	
	Revision: 1/24/2012

APPENDIX B

Norcal Utility Locate Report



APPENDIX C

Soil Vapor Laboratory Analytical Report



Supplemental Report 1

WORK ORDER NUMBER: 14-05-1800

Calscience

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For Client: Broadbent & Associates, Inc Client Project Name: BP Facility No: 601 Attention: Kirstene Tidwell 875 Cotting Lane, Suite G Vacaville, CA 95688-9299

Umpor for

Approved for release on 06/12/2014 by: Richard Villafania Project Manager



ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.

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Contents

Client Project Name:	BP Facility No: 601
Work Order Number:	14-05-1800

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2	Client Sample Data	4 4 6 10 19
3	Quality Control Sample Data. 3.1 Sample Duplicate. 3.1 Sample Duplicate. 3.2 LCS/LCSD.	21 21 23
4	Sample Analysis Summary	30
5	Glossary of Terms and Qualifiers.	31
6	Chain-of-Custody/Sample Receipt Form	32

Work Order: 14-05-1800

Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 05/23/14. They were assigned to Work Order 14-05-1800.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

New York NELAP air certification does not certify for all reported methods and analytes, reference the accredited items here: http://www.calscience.com/PDF/New_York.pdf

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

Note - Calscience Laboratory is not an active participating BP LaMP laboratory and is not in compliance with BP Technical Requirements v10 or current version.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.



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Broadbent & Associates, Inc			Date Re	ceived:			05/23/14
875 Cotting Lane, Suite G			Work Or	der:			14-05-1800
Vacaville, CA 95688-9299			Preparat	tion:			N/A
			Method:				ASTM D-1946
			Units:				%v
Project: BP Facility No: 601						Pa	ge 1 of 2
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SG-9	14-05-1800-1-A	05/22/14 12:45	Air	GC 65	N/A	05/23/14 12:36	140523L01
Parameter		Result		RL	DF	Qua	lifiers
Methane		ND		0.500	1.00		
Carbon Dioxide		8.21		0.500	1.00		
Oxygen + Argon		11.9		0.500	1.00		
SG-10	14-05-1800-2-A	05/22/14 12:20	Air	GC 65	N/A	05/23/14 12:53	140523L01
Parameter		Result		RL	DF	Qua	lifiers
Methane		ND		0.500	1.00		
Carbon Dioxide		7.94		0.500	1.00		
Oxygen + Argon		15.1		0.500	1.00		
SG-11	14-05-1800-3-A	05/22/14 12:10	Air	GC 65	N/A	05/23/14 13:11	140523L01
SG-11 Parameter	14-05-1800-3-A	05/22/14 12:10 <u>Result</u>	Air	GC 65	N/A DF	05/23/14 13:11 Qua	140523L01
SG-11 Parameter Methane	14-05-1800-3-A	05/22/14 12:10 <u>Result</u> ND	Air	GC 65 <u>RL</u> 0.500	N/A <u>DF</u> 1.00	05/23/14 13:11 Qua	140523L01 lifiers
SG-11 Parameter Methane Carbon Dioxide	14-05-1800-3-A	05/22/14 12:10 <u>Result</u> ND 7.87	Air	GC 65 <u>RL</u> 0.500 0.500	N/A DF 1.00 1.00	05/23/14 13:11 Qua	140523L01 lifiers
SG-11 Parameter Methane Carbon Dioxide Oxygen + Argon	14-05-1800-3-A	05/22/14 12:10 <u>Result</u> ND 7.87 12.6	Air	GC 65 RL 0.500 0.500 0.500	N/A DF 1.00 1.00 1.00	05/23/14 13:11 <u>Qu</u> a	140523L01 lifiers
SG-11 Parameter Methane Carbon Dioxide Oxygen + Argon SG-12	14-05-1800-3-A 14-05-1800-4-A	05/22/14 12:10 Result ND 7.87 12.6 05/22/14 12:00	Air	GC 65 RL 0.500 0.500 0.500 GC 65	N/A <u>DF</u> 1.00 1.00 1.00 N/A	05/23/14 13:11 Qua 05/23/14 13:28	140523L01 lifiers 140523L01
SG-11 Parameter Methane Carbon Dioxide Oxygen + Argon SG-12 Parameter	14-05-1800-3-A 14-05-1800-4-A	05/22/14 12:10 Result ND 7.87 12.6 05/22/14 12:00 Result	Air Air	GC 65 RL 0.500 0.500 0.500 GC 65 RL	N/A <u>DF</u> 1.00 1.00 1.00 N/A <u>DF</u>	05/23/14 13:11 Qua 05/23/14 13:28 Qua	140523L01 lifiers 140523L01 lifiers
SG-11 Parameter Methane Carbon Dioxide Oxygen + Argon SG-12 Parameter Methane	14-05-1800-3-A 14-05-1800-4-A	05/22/14 12:10 <u>Result</u> ND 7.87 12.6 05/22/14 12:00 <u>Result</u> ND	Air	GC 65 RL 0.500 0.500 0.500 GC 65 RL 0.500	N/A <u>DF</u> 1.00 1.00 1.00 N/A <u>DF</u> 1.00	05/23/14 13:11 Qua 05/23/14 13:28 Qua	140523L01 lifiers 140523L01 lifiers
SG-11 Parameter Methane Carbon Dioxide Oxygen + Argon SG-12 Parameter Methane Carbon Dioxide	14-05-1800-3-A 14-05-1800-4-A	05/22/14 12:10 Result ND 7.87 12.6 05/22/14 12:00 Result ND 6.15	Air	GC 65 RL 0.500 0.500 0.500 GC 65 RL 0.500 0.50	N/A <u>DF</u> 1.00 1.00 1.00 N/A <u>DF</u> 1.00 1.00	05/23/14 13:11 Qua 05/23/14 13:28 Qua	140523L01 Ilifiers 140523L01 Ilifiers
SG-11 Parameter Methane Carbon Dioxide Oxygen + Argon SG-12 Parameter Methane Carbon Dioxide Oxygen + Argon	14-05-1800-3-A 14-05-1800-4-A	05/22/14 12:10 Result ND 7.87 12.6 05/22/14 12:00 Result ND 6.15 13.6	Air	GC 65 RL 0.500 0.500 0.500 0.500 GC 65 RL 0.500	N/A <u>DF</u> 1.00 1.00 1.00 N/A <u>DF</u> 1.00 1.00 1.00	05/23/14 13:11 Qua 05/23/14 13:28 Qua	140523L01 Ilifiers 140523L01 Ilifiers
SG-11 Parameter Methane Carbon Dioxide Oxygen + Argon SG-12 Parameter Methane Carbon Dioxide Oxygen + Argon SG-12 SG-13	14-05-1800-3-A	05/22/14 12:10 <u>Result</u> ND 7.87 12.6 05/22/14 12:00 <u>Result</u> ND 6.15 13.6 05/22/14 11:15	Air	GC 65 RL 0.500 0.500 0.500 GC 65 RL 0.500 0.500 0.500 0.500 0.500 0.500 0.500	N/A DF 1.00 1.00 1.00 N/A DF 1.00 N/A DF 1.00 N/A	05/23/14 13:11 Qua 05/23/14 13:28 Qua 05/23/14 13:46	140523L01 lifiers 140523L01 lifiers 140523L01
SG-11 Parameter Methane Carbon Dioxide Oxygen + Argon SG-12 Parameter Methane Carbon Dioxide Oxygen + Argon SG-13 Parameter Parameter	14-05-1800-3-A 14-05-1800-4-A 14-05-1800-5-A	05/22/14 12:10 Result ND 7.87 12.6 05/22/14 12:00 Result ND 6.15 13.6 05/22/14 11:15 Result	Air	GC 65 RL 0.500 0.500 0.500 GC 65 RL 0.500 0	N/A DF 1.00 1.00 N/A DF 1.00 N/A DF 1.00 N/A DF 1.00 N/A DF 1.00 1.00 1.00 DF DF DF DF	05/23/14 13:11 Qua 05/23/14 13:28 Qua 05/23/14 13:46 Qua	140523L01 lifiers 140523L01 lifiers 140523L01 lifiers
SG-11 Parameter Methane Carbon Dioxide Oxygen + Argon SG-12 Parameter Methane Carbon Dioxide Oxygen + Argon SG-13 Parameter Methane SG-13 Parameter Methane	14-05-1800-3-A 14-05-1800-4-A 14-05-1800-5-A	05/22/14 12:10 Result ND 7.87 12.6 05/22/14 12:00 Result ND 6.15 13.6 05/22/14 11:15 Result ND	Air Air Air	GC 65 RL 0.500 0.500 0.500 GC 65 RL 0.500	N/A DF 1.00 1.00 N/A DF 1.00 N/A DF 1.00 N/A	05/23/14 13:11 Qua 05/23/14 13:28 Qua 05/23/14 13:46 Qua	140523L01 lifiers 140523L01 lifiers 140523L01 lifiers
SG-11 Parameter Methane Carbon Dioxide Oxygen + Argon SG-12 Parameter Methane Carbon Dioxide Oxygen + Argon SG-13 Parameter Methane Carbon Dioxide Oxygen + Argon SG-13 Parameter Methane Carbon Dioxide	14-05-1800-3-A 14-05-1800-4-A 14-05-1800-5-A	05/22/14 12:10 Result ND 7.87 12.6 05/22/14 12:00 Result ND 6.15 13.6 05/22/14 11:15 Result ND 1.30	Air Air Air	GC 65 RL 0.500 0.500 0.500 GC 65 RL 0.500 0.500 0.500 0.500 0.500 0.500 0.500 RL 0.500 0.500 0.500 0.500 CC 65 CC 65	N/A DF 1.00 1.00 N/A DF 1.00 N/A DF 1.00 N/A	05/23/14 13:11 Qua 05/23/14 13:28 Qua 05/23/14 13:46	140523L01 lifiers 140523L01 lifiers 140523L01 lifiers
SG-11 Parameter Methane Carbon Dioxide Oxygen + Argon SG-12 Parameter Methane Carbon Dioxide Oxygen + Argon SG-13 Parameter Methane Carbon Dioxide Oxygen + Argon SG-13 Parameter Methane Carbon Dioxide Oxygen + Argon	14-05-1800-3-A 14-05-1800-4-A 14-05-1800-5-A	05/22/14 12:10 Result ND 7.87 12.6 05/22/14 12:00 Result ND 6.15 13.6 05/22/14 11:15 Result ND 1.30 19.7	Air Air	GC 65 RL 0.500 0.500 0.500 0.500 GC 65 RL 0.500	N/A DF 1.00 1.00 N/A DF 1.00 N/A DF 1.00 1.00 N/A	05/23/14 13:11 Qua 05/23/14 13:28 Qua 05/23/14 13:46 Qua	140523L01 difiers 140523L01 difiers 140523L01 difiers
SG-11 Parameter Methane Carbon Dioxide Oxygen + Argon SG-12 Parameter Methane Carbon Dioxide Oxygen + Argon SG-13 Parameter Methane Carbon Dioxide Oxygen + Argon SG-13 Parameter Methane Carbon Dioxide Oxygen + Argon	14-05-1800-3-A	05/22/14 12:10 Result ND 7.87 12.6 05/22/14 12:00 Result ND 6.15 13.6 05/22/14 11:15 Result ND 1.30 19.7	Air Air	GC 65 RL 0.500 0.500 0.500 GC 65 RL 0.500	N/A DF 1.00 1.00 N/A DF 1.00 N/A DF 1.00 1.00 N/A DF 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	05/23/14 13:11 Qua 05/23/14 13:28 Qua 05/23/14 13:46	140523L01 lifiers 140523L01 lifiers 140523L01 lifiers



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Broadbent & Associates, Inc			Date Re	ceived:			05/23/14
875 Cotting Lane, Suite G			Work O	rder:			14-05-1800
Vacaville, CA 95688-9299			Prepara	tion:			N/A
			Method:			,	ASTM D-1946
			Units:				%v
Project: BP Facility No: 601						Pa	ge 2 of 2
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SG-14	14-05-1800-6-A	05/22/14 11:45	Air	GC 65	N/A	05/23/14 14:04	140523L01
Parameter		Result		RL	DF	Qua	lifiers
Methane		ND		0.500	1.00		
Carbon Dioxide		3.52		0.500	1.00		
Oxygen + Argon		17.2		0.500	1.00		
SG-15A	14-05-1800-7-A	05/22/14 12:30	Air	GC 65	N/A	05/23/14 14:22	140523L01
Parameter		Result		RL	DF	Qua	lifiers
Methane		ND		0.500	1.00		
Carbon Dioxide		1.57		0.500	1.00		
Oxygen + Argon		19.2		0.500	1.00		
SG-15B	14-05-1800-8-A	05/22/14 12:25	Air	GC 65	N/A	05/23/14 14:40	140523L01
Parameter		Result		RL	DF	Qua	lifiers
Methane		ND		0.500	1.00		
Carbon Dioxide		1.11		0.500	1.00		
Oxygen + Argon		20.2		0.500	1.00		
Method Blank	099-03-002-2066	N/A	Air	GC 65	N/A	05/23/14 10:02	140523L01
Parameter		Result		RL	DF	Qua	lifiers
Methane		ND		0.500	1.00		
Carbon Dioxide		ND		0.500	1.00		
Oxygen + Argon		ND		0.500	1.00		



Broadbent & Associates, Inc			Date Re	ceived:			05/23/14
875 Cotting Lane, Suite G			Work Or	rder:			14-05-1800
Vacaville, CA 95688-9299		Prepara		N/A			
			Method:				EPA TO-15M
			Units:				ug/m3
Project: BP Facility No: 601						Pa	ige 1 of 4
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SG-9	14-05-1800-1-A	05/22/14 12:45	Air	GC/MS K	N/A	05/24/14 06:46	140523L04
Comment(s): - The method has been	modified to use Tedlar	Bags instead o	f Summa	canisters and is no	t NY NELAC acc	redited.	
Parameter		<u>Result</u>		<u>RL</u>	DF	Qua	alifiers
Naphthalene		ND		520	20.0		
Surrogate 1,4-Bromofluorobenzene		<u>Rec. (%)</u> 121		<u>Control Limits</u> 57-129	<u>Qualifiers</u>		
1,2-Dichloroethane-d4		96		47-137			
Toluene-d8		102		78-156			
SG-10	14-05-1800-2-A	05/22/14 12:20	Air	GC/MS K	N/A	05/24/14 18:25	140524L04
Comment(s): - The method has been	modified to use Tedlar	Bags instead o	f Summa	canisters and is no	t NY NELAC acc	redited.	
Parameter		<u>Result</u>		<u>RL</u>	DF	Qua	alifiers
Naphthalene		ND		1600	62.5		
Surrogate		<u>Rec. (%)</u>		Control Limits	<u>Qualifiers</u>		
1,4-Bromofluorobenzene		98		57-129			
1,2-Dichloroethane-d4		101		47-137			
Toluene-d8		96		78-156			
SG-11	14-05-1800-3-A	05/22/14 12:10	Air	GC/MS K	N/A	05/24/14 17:32	140524L04
Comment(s): - The method has been	modified to use Tedlar	Bags instead o	f Summa	canisters and is no	t NY NELAC acc	redited.	
Parameter		Result		<u>RL</u>	DF	Qua	alifiers
Naphthalene		ND		520	20.0		
Surrogate		<u>Rec. (%)</u>		Control Limits	<u>Qualifiers</u>		
1,4-Bromofluorobenzene		120		57-129			
1,2-Dichloroethane-d4		100		47-137			
Toluene-d8		97		78-156			



SG-14		14-05-1800-6-A	05/22/14 11:45	Air	GC/MS KKK	N/A	05/24/14 04:19	140523L04	
Toluene-d8			99		78-156				
1,2-Dichloroethan	e-d4		94		47-137				
1,4-Bromofluorob	enzene		96		57-129				
Surrogate			<u>Rec. (%)</u>		Control Limits	<u>Qualifiers</u>			
Naphthalene			ND		26	1.00			
Parameter			Result		<u>RL</u>	DF	Qua	lifiers	
Comment(s):	- The method has been n	nodified to use Tedlar	Bags instead o	of Summa of	canisters and is not	NY NELAC acc	redited.		
SG-13		14-05-1800-5-A	05/22/14 11:15	Air	GC/MS KKK	N/A	05/24/14 03:30	140523L04	
Toluene-d8			99		78-156				
1,2-Dichloroethan	e-d4		93		47-137				
1,4-Bromofluorob	enzene		93		57-129				
Surrogate			<u>Rec. (%)</u>		Control Limits	<u>Qualifiers</u>			
Naphthalene			ND		26	1.00			
Parameter A Parameter			<u>Result</u>		<u>RL</u>	DF	Qua	lifiers	
Comment(s):	- The method has been n	nodified to use Tedlar	Bags instead o	of Summa of	canisters and is not	NY NELAC acc	redited.		
SG-12		14-05-1800-4-A	05/22/14 12:00	Air	GC/MS K	N/A	05/24/14 05:58	140523L04	
Client Sample Nu	mber	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID	
Project: BP Fa	cility No: 601						Pa	ge 2 of 4	
				Units:				ug/m3	
				Method:				EPA TO-15M	
Vacaville, CA	95688-9299			Prepara	tion:			N/A	
875 Cotting La	ine, Suite G						14-05-1800		
								14 05 4000	
Proodboot 8				Data Po	coivod:			05/23/14	

Comment(s): - The method has been modified to use Ter	dlar Bags instead of Su	Imma canisters and is not	NY NELAC accredit	ed.
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>
Naphthalene	ND	26	1.00	
Surrogate	<u>Rec. (%)</u>	Control Limits	Qualifiers	
1,4-Bromofluorobenzene	97	57-129		
1,2-Dichloroethane-d4	95	47-137		
Toluene-d8	99	78-156		



Broadbent & Associates, Inc

05/23/14

875 Cotting Lane, Suite G			Work Or	der:			14-05-1800
Vacaville, CA 95688-9299			Preparat	tion:			N/A
			Method:				EPA TO-15M
			Units:				ug/m3
Project: BP Facility No: 601						Pa	age 3 of 4
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SG-15A	14-05-1800-7-A	05/22/14 12:30	Air	GC/MS KKK	N/A	05/24/14 05:09	140523L04
Comment(s): - The method has been me	odified to use Tedlar	Bags instead o	of Summa o	canisters and is not	NY NELAC acc	redited.	
Parameter		<u>Result</u>		RL	DF	<u>Qu</u>	alifiers
Naphthalene		ND		26	1.00		
Surrogate		<u>Rec. (%)</u>		Control Limits	<u>Qualifiers</u>		
1,4-Bromofluorobenzene		96		57-129			
1,2-Dichloroethane-d4		94		47-137			
Toluene-d8		98		78-156			
SG-15B	14-05-1800-8-A	05/22/14 12:25	Air	GC/MS KKK	N/A	05/24/14 05:58	140523L04
Comment(s): - The method has been mo	odified to use Tedlar	Bags instead c	of Summa o	canisters and is not	NY NELAC acc	redited.	
Parameter		<u>Result</u>		<u>RL</u>	DF	<u>Qu</u>	alifiers
Naphthalene		ND		26	1.00		
Surrogate		<u>Rec. (%)</u>		Control Limits	<u>Qualifiers</u>		
1,4-Bromofluorobenzene		97		57-129			
1,2-Dichloroethane-d4		96		47-137			
Toluene-d8		99		78-156			
Method Blank	099-12-983-3537	N/A	Air	GC/MS K	N/A	05/23/14 16:30	140523L04
Parameter		Result		RL	DF	Qu	alifiers
Naphthalene		ND		26	1.00		
Surrogate		<u>Rec. (%)</u>		Control Limits	<u>Qualifiers</u>		
1,4-Bromofluorobenzene		96		57-129			
1,2-Dichloroethane-d4		95		47-137			
Toluene-d8		95		78-156			

Analytical Report

Date Received:

RL: Reporting Limit. MDL: Method Detection Limit. DF: Dilution Factor.

Return to Cor





Broadbent & Associates, Inc			Date Re	ceived:			05/23/14
875 Cotting Lane, Suite G			Work Or	rder:			14-05-1800
Vacaville, CA 95688-9299			Prepara	tion:			N/A
			Method:				EPA TO-15M
			Units:				ua/m3
Project: BP Facility No: 601						Pa	age 4 of 4
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-983-3540	N/A	Air	GC/MS KKK	N/A	05/23/14 13:55	140523L04
Parameter		Result		RL	DF	Qua	alifiers
Naphthalene		ND		26	1.00		
Surrogate		<u>Rec. (%)</u>		Control Limits	<u>Qualifiers</u>		
1,4-Bromofluorobenzene		98		57-129			
1,2-Dichloroethane-d4		94		47-137			
Toluene-d8		98		78-156			
Method Blank	099-12-983-3539	N/A	Air	GC/MS K	N/A	05/24/14 14:57	140524L04
Parameter		<u>Result</u>		RL	DF	Qua	alifiers
Naphthalene		ND		26	1.00		
Surrogate		<u>Rec. (%)</u>		Control Limits	<u>Qualifiers</u>		
1,4-Bromofluorobenzene		97		57-129			
1,2-Dichloroethane-d4		97		47-137			
Toluene-d8		96		78-156			



Calscience

Broadbent & Associates, Inc	Date Received:					05/23/14		
875 Cotting Lane, Suite G			Work Or	der:			14-05-1800	
Vacaville, CA 95688-9299			Preparat	tion:			N/A	
			Method:				EPA TO-15M	
			Units:				ug/m3	
Project: BP Facility No: 601						Pa	ige 1 of 9	
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID	
SG-9	14-05-1800-1-A	05/22/14 12:45	Air	GC/MS K	N/A	05/24/14 06:46	140523L02	
Comment(s): - The method has been modified to use Tedlar Bags instead of Summa canisters and is not NY NELAC accredited.								
Parameter		Result		<u>RL</u>	DF	Qua	alifiers	
Benzene		ND		32	20.0			
Ethylbenzene		ND		43	20.0			
Methyl-t-Butyl Ether (MTBE)		ND		140	20.0			
o-Xylene		ND		43	20.0			
p/m-Xylene		ND		170	20.0			
Xylenes (total)		ND		43	1.00			
Toluene		ND		380	20.0			
Surrogate		<u>Rec. (%)</u>		Control Limits	<u>Qualifiers</u>			
1,4-Bromofluorobenzene		121		57-129				
1,2-Dichloroethane-d4		96		47-137				
Toluene-d8		102		78-156				
SG-9	14-05-1800-1-A	05/22/14 12:45	Air	GC/MS K	N/A	05/24/14 07:55	140523L02	

		12:45			7:55
Comment(s):	- The method has been modified to use Ted	lar Bags instead of Su	mma canisters and is not	NY NELAC accredi	ted.
Parameter		<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>
Isopropanol		57000	49000	400	
Surrogate		<u>Rec. (%)</u>	Control Limits	<u>Qualifiers</u>	
1,4-Bromofluor	bbenzene	103	57-129		
1,2-Dichloroetha	ane-d4	96	47-137		
Toluene-d8		95	78-156		



p/m-Xylene

Isopropanol

Surrogate

Toluene-d8

1,4-Bromofluorobenzene

1,2-Dichloroethane-d4

Toluene

Xylenes (total)

Broadbent & Associates, Inc			Date Rec	eived:		05/23/14		
875 Cotting Lane, Suite G			Work Ord	der:			14-05-1800	
Vacaville, CA 95688-9299			Preparati	on:			N/A	
<i>.</i>			Method:				EPA TO-15M	
			Units:				ua/m3	
Project: BP Facility No: 601			•			Pa	ae 2 of 9	
							9	
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID	
SG-10	14-05-1800-2-A	05/22/14 12:20	Air	GC/MS K	N/A	05/24/14 18:25	140524L02	
Comment(s): - The method has been m	nodified to use Tedlar	Bags instead	of Summa ca	anisters and is not	t NY NELAC acc	credited.		
Parameter		<u>Result</u>		<u>RL</u>	DF	Qua	lifiers	
Benzene		ND		100	62.5			
Ethylbenzene		ND		140	62.5			
Methyl-t-Butyl Ether (MTBE)		ND		450	62.5			
o-Xylene		ND		140	62.5			
p/m-Xylene		ND	2	540	62.5			
Xylenes (total)		ND		140	1.00			
Toluene		ND		1200	62.5			
Isopropanol		7900		7700	62.5			
Surrogate		<u>Rec. (%)</u>		Control Limits	<u>Qualifiers</u>			
1,4-Bromofluorobenzene		98		57-129				
1,2-Dichloroethane-d4		101		47-137				
Toluene-d8		96		78-156				
SG-11	14-05-1800-3-A	05/22/14 12:10	Air	GC/MS K	N/A	05/24/14 17:32	140524L02	
Comment(s): - The method has been m	nodified to use Tedlar	Bags instead	of Summa ca	anisters and is no	t NY NELAC acc	credited.		
Parameter		<u>Result</u>		<u>RL</u>	DF	Qua	<u>lifiers</u>	
Benzene		ND		32	20.0			
Ethylbenzene		ND		43	20.0			
Methyl-t-Butyl Ether (MTBE)		ND		140	20.0			
o-Xylene		ND		43	20.0			

ND

ND

ND

3800

120

100

97

Rec. (%)

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

170

43

380

2500

57-129

47-137

78-156

Control Limits

20.0

1.00

20.0

20.0

Qualifiers



0			
1 2	CCH	anco	
Jai	361	CILC	

Broadbent & Associates, Inc			Date Rec	eived:			05/23/14
875 Cotting Lane, Suite G			Work Ord	ler:			14-05-1800
Vacaville, CA 95688-9299			Preparati	on:			N/A
			Method:				EPA TO-15M
			Units:				ua/m3
Project: BP Facility No: 601			-			Pa	age 3 of 9
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SG-12	14-05-1800-4-A	05/22/14 12:00	Air	GC/MS K	N/A	05/24/14 05:58	140523L02
Comment(s): - The method has been me	odified to use Tedlar	Bags instead of	of Summa ca	anisters and is no	t NY NELAC acc	redited.	
Parameter		Result		<u>RL</u>	DF	Qua	alifiers
Benzene		ND		1.6	1.00		
Ethylbenzene		3.0		2.2	1.00		
Methyl-t-Butyl Ether (MTBE)		ND		7.2	1.00		
o-Xylene		4.1		2.2	1.00		
p/m-Xylene		11		8.7	1.00		
Xylenes (total)		16		2.2	1.00		
Toluene		ND		19	1.00		
Surrogate		<u>Rec. (%)</u>		Control Limits	<u>Qualifiers</u>		
1,4-Bromofluorobenzene		93		57-129			
1,2-Dichloroethane-d4		93		47-137			
Toluene-d8		99		78-156			
SG-12	14-05-1800-4-A	05/22/14	Air	GC/MS K	N/A	05/24/14	140524L02

	1:	2:00		19:15						
Comment(s): - The me	omment(s): - The method has been modified to use Tedlar Bags instead of Summa canisters and is not NY NELAC accredited.									
Parameter		<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qualifiers</u>					
Isopropanol		1800	1200	10.0						
Surrogate		<u>Rec. (%)</u>	Control Limits	<u>Qualifiers</u>						
1,4-Bromofluorobenzene		133	57-129	LH,AY						
1,2-Dichloroethane-d4		99	47-137							
Toluene-d8		97	78-156							



1,2-Dichloroethane-d4

Toluene-d8

Broadbent & Associates, Inc			Date Rece	ived:		05/23/14		
875 Cotting Lane, Suite G			Work Orde	er:			14-05-1800	
Vacaville, CA 95688-9299			Preparation	n:		N/A		
			Method:		EPA TO-15M			
Units:							ug/m3	
Project: BP Facility No: 601						Pa	ge 4 of 9	
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID	
SG-13	14-05-1800-5-A	05/22/14 11:15	Air	GC/MS KKK	N/A	05/24/14 03:30	140523L02	
Comment(s): - The method has been r	nodified to use Tedlar	Bags instead	of Summa can	isters and is not	NY NELAC ac	credited.		
Parameter		Result	<u>RI</u>	L	<u>DF</u>	Qua	alifiers	
Benzene		ND	1.	6	1.00			
Ethylbenzene		2.6	2.:	2	1.00			
Methyl-t-Butyl Ether (MTBE)		ND	7.	2	1.00			
o-Xylene		3.4	2.:	2	1.00			

raiameter		Result		<u>KL</u>			aimers
Benzene		ND		1.6	1.00		
Ethylbenzene		2.6		2.2	1.00		
Methyl-t-Butyl Ether (MTBE)		ND		7.2	1.00		
o-Xylene		3.4		2.2	1.00		
p/m-Xylene		9.9		8.7	1.00		
Xylenes (total)		13		2.2	1.00		
Toluene		ND		19	1.00		
Surrogate		<u>Rec. (%)</u>		Control Limits	<u>Qualifiers</u>		
1,4-Bromofluorobenzene		96		57-129			
1,2-Dichloroethane-d4		94		47-137			
Toluene-d8		99		78-156			
SG-13	14-05-1800-5-A	05/22/14	Air	GC/MS K	N/A	05/25/14	140524L02
		11:15				01:21	
Comment(s): - The method has been me	odified to use Tedlar	Bags instead o	f Summa	canisters and is no	t NY NELAC acc	redited.	
Parameter		<u>Result</u>		<u>RL</u>	DF	Qua	alifiers
Isopropanol		500		390	3.20		
Surrogate		Rec. (%)		Control Limits	Qualifiers		
1,4-Bromofluorobenzene		106		57-129			

100 101 47-137

78-156



Calscience

Broadbent & Associates, Inc			Date Rec	eived:		05/23/14		
875 Cotting Lane, Suite G			Work Ord	er:		14-05-1800		
Vacaville, CA 95688-9299			Preparation	on:			N/A	
			Method:				EPA TO-15M	
			Units:				ug/m3	
Project: BP Facility No: 601						Pa	ige 5 of 9	
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID	
SG-14	14-05-1800-6-A	05/22/14 11:45	Air	GC/MS KKK	N/A	05/24/14 04:19	140523L02	
Comment(s): - The method has been mo	dified to use Tedlar E	Bags instead c	of Summa ca	inisters and is not	NY NELAC acc	redited.		
Parameter		<u>Result</u>	<u> </u>	<u> </u>	<u>DF</u>	Qua	alifiers	
Benzene		ND		1.6	1.00			
Ethylbenzene		2.8	2	2.2	1.00			
Methyl-t-Butyl Ether (MTBE)		ND	7	7.2	1.00			
o-Xylene		4.5	2	2.2	1.00			
p/m-Xylene		12	8	3.7	1.00			
Xylenes (total)		17		2.2	1.00			
Toluene		ND		19	1.00			
Surrogate		<u>Rec. (%)</u>	<u>(</u>	Control Limits	<u>Qualifiers</u>			
1,4-Bromofluorobenzene		97	ţ	57-129				
1,2-Dichloroethane-d4		95	2	47-137				
Toluene-d8		99	-	78-156				

SG-14	14-05-1800-6-A	05/22/14 11:45	Air	GC/MS K	N/A	05/24/14 21:01	140524L02
Comment(s): - The method has been m	odified to use Tedlar B	ags instead o	f Summa ca	inisters and is not	t NY NELAC ac	credited.	
Parameter		<u>Result</u>	<u> </u>	<u> </u>	DF	<u>Qu</u>	alifiers
Isopropanol		510		390	3.20		
Surrogate		<u>Rec. (%)</u>	<u>(</u>	Control Limits	<u>Qualifiers</u>		
1,4-Bromofluorobenzene		102	į	57-129			
1,2-Dichloroethane-d4		100	4	47-137			
Toluene-d8		95	-	78-156			



1,2-Dichloroethane-d4

Toluene-d8

Broadbent & Associates, Inc			Date Recei	ived:		05/23/14		
875 Cotting Lane, Suite G			Work Orde	r:		14-05-1800		
Vacaville, CA 95688-9299		Preparation	า:		N/A			
			Method:				EPA TO-15M	
			Units:		ug/m3			
Project: BP Facility No: 601						Pa	ge 6 of 9	
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID	
SG-15A	14-05-1800-7-A	05/22/14 12:30	Air	GC/MS KKK	N/A	05/24/14 05:09	140523L02	
Comment(s): - The method has been mo	dified to use Tedlar	Bags instead	of Summa can	isters and is not	NY NELAC acc	redited.		
Parameter		Result	RL	=	<u>DF</u>	Qua	<u>llifiers</u>	
Benzene		ND	1.0	6	1.00			
Ethylbenzene		2.3	2.2	2	1.00			
Methyl-t-Butyl Ether (MTBE)		ND	7.2	2	1.00			
o-Xylene		3.5	2.2	2	1.00			

o-Xylene		3.5		2.2	1.00		
p/m-Xylene		8.9		8.7	1.00		
Xylenes (total)		12		2.2	1.00		
Toluene		ND		19	1.00		
Surrogate		<u>Rec. (%)</u>		Control Limits	<u>Qualifiers</u>		
1,4-Bromofluorobenzene		96		57-129			
1,2-Dichloroethane-d4		94		47-137			
Toluene-d8		98		78-156			
SG-15A 1	4-05-1800-7-A	05/22/14 12:30	Air	GC/MS K	N/A	05/24/14 21:54	140524L02
Comment(s): - The method has been modif	ied to use Tedlar	Bags instead of	Summa	canisters and is no	t NY NELAC acc	redited.	
Parameter		Result		<u>RL</u>	DF	Qual	ifiers
Isopropanol		14000		12000	100		
Surrogate		<u>Rec. (%)</u>		Control Limits	<u>Qualifiers</u>		

47-137

78-156

98

95



Calscience

Broadbent & Associates, Inc			Date Rec	eived:		05/23/14				
875 Cotting Lane, Suite G			Work Ord	er:		14-05-1800				
Vacaville, CA 95688-9299			Preparatio	on:		N/A				
			Method:				EPA TO-15M			
			Units:				ug/m3			
Project: BP Facility No: 601						Pa	age 7 of 9			
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID			
SG-15B	14-05-1800-8-A	05/22/14 12:25	Air	GC/MS KKK	N/A	05/24/14 05:58	140523L02			
Comment(s): - The method has been modified to use Tedlar Bags instead of Summa canisters and is not NY NELAC accredited.										
Parameter		Result	<u>F</u>	<u> </u>	DF	Qua	alifiers			
Benzene		ND	1	1.6	1.00					
Ethylbenzene		ND	2	2.2	1.00					
Methyl-t-Butyl Ether (MTBE)		ND	7	7.2	1.00					
o-Xylene		3.1	2	2.2	1.00					
p/m-Xylene		ND	8	3.7	1.00					
Xylenes (total)		3.1	2	2.2	1.00					
Toluene		ND	1	19	1.00					
Surrogate		<u>Rec. (%)</u>	<u>(</u>	Control Limits	<u>Qualifiers</u>					
1,4-Bromofluorobenzene		97	5	57-129						
1,2-Dichloroethane-d4		96	2	17-137						
Toluene-d8		99	7	78-156						

SG-15B	14-05-1800-8-A	05/22/14 12:25	Air	GC/MS KKK	N/A	05/27/14 17:24	140527L02				
Comment(s): - The method has	Comment(s): - The method has been modified to use Tedlar Bags instead of Summa canisters and is not NY NELAC accredited.										
Parameter		Result	<u> </u>	<u>RL</u>	DF	<u>Qua</u>	alifiers				
Isopropanol		7900		1900	40.0	CL,I	BU				
Surrogate		<u>Rec. (%)</u>	9	Control Limits	<u>Qualifiers</u>						
1,4-Bromofluorobenzene		102	:	57-129	CL						
1,2-Dichloroethane-d4		100		17-137	CL						
Toluene-d8		98		78-156	CL						



Calscience

Broadbent & Associates, Inc	Date Received:	05/23/14
875 Cotting Lane, Suite G	Work Order:	14-05-1800
Vacaville, CA 95688-9299	Preparation:	N/A
	Method:	EPA TO-15M
	Units:	ug/m3
Project: BP Facility No: 601		Page 8 of 9

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-981-4356	N/A	Air	GC/MS K	N/A	05/23/14 16:30	140523L02
Parameter		Result	Ē	<u>RL</u>	DF	Qua	lifiers
Benzene		ND	1	1.6	1.00		
Ethylbenzene		ND	2	2.2	1.00		
Methyl-t-Butyl Ether (MTBE)		ND	7	7.2	1.00		
o-Xylene		ND	2	2.2	1.00		
p/m-Xylene		ND	8	3.7	1.00		
Xylenes (total)		ND	2	2.2	1.00		
Toluene		ND	1	19	1.00		
Isopropanol		ND	1	120	1.00		
Surrogate		<u>Rec. (%)</u>	<u>(</u>	Control Limits	<u>Qualifiers</u>		
1,4-Bromofluorobenzene		96	5	57-129			
1,2-Dichloroethane-d4		95	2	47-137			
Toluene-d8		95	7	78-156			

Method Blank	099-12-981-4357	N/A	Air	GC/MS KKK	N/A	05/23/14 13:55	140523L02
Parameter		<u>Result</u>		RL	DF	<u>Qua</u>	lifiers
Benzene		ND		1.6	1.00		
Ethylbenzene		ND		2.2	1.00		
Methyl-t-Butyl Ether (MTBE)		ND		7.2	1.00		
o-Xylene		ND		2.2	1.00		
p/m-Xylene		ND		8.7	1.00		
Xylenes (total)		ND		2.2	1.00		
Toluene		ND		19	1.00		
Surrogate		<u>Rec. (%)</u>		Control Limits	<u>Qualifiers</u>		
1,4-Bromofluorobenzene		98		57-129			
1,2-Dichloroethane-d4		94		47-137			
Toluene-d8		98		78-156			



Broadbent & Associates, Inc		Date Received:				05/23/14				
875 Cotting Lane, Suite G			Work Ord	er:	14-05-1800					
Vacaville, CA 95688-9299		Preparation:					N/A			
			Method:	EPA TO-15M						
			Units:			ug/m3				
Project: BP Facility No: 601						Pa	ge 9 of 9			
Client Sample Number	Lab Sample	Date/Time	Matrix	Instrument	Date	Date/Time	QC Batch ID			

Analytical Report

	Number	Collected	Matrix	Instrument	Prepared	Analyzed	QC Batch ID
Method Blank	099-12-981-4361	N/A	Air	GC/MS K	N/A	05/24/14 14:57	140524L02
Parameter		<u>Result</u>	<u>F</u>	<u>RL</u>	DF	Qua	lifiers
Benzene		ND	1	.6	1.00		
Ethylbenzene		ND	2	2.2	1.00		
Methyl-t-Butyl Ether (MTBE)		ND	7	.2	1.00		
o-Xylene		ND	2	2.2	1.00		
p/m-Xylene		ND	8	3.7	1.00		
Xylenes (total)		ND	2	2.2	1.00		
Toluene		ND	1	9	1.00		
Isopropanol		ND	1	20	1.00		
Surrogate		<u>Rec. (%)</u>	C	Control Limits	<u>Qualifiers</u>		
1,4-Bromofluorobenzene		97	5	57-129			
1,2-Dichloroethane-d4		97	4	7-137			
Toluene-d8		96	7	8-156			

Method Blank	099-12-981-4364	N/A	Air	GC/MS KKK	N/A	05/27/14 11:17	140527L02
Parameter		<u>Result</u>		RL	DF	<u>Quali</u>	fiers
Isopropanol		ND		120	1.00		
Surrogate		<u>Rec. (%)</u>		Control Limits	Qualifiers		
1,4-Bromofluorobenzene		97		57-129			
1,2-Dichloroethane-d4		96		47-137			
Toluene-d8		97		78-156			



Calscience

Broadbent & Associates, Inc			Date Re	ceived:			05/23/14
875 Cotting Lane, Suite G			Work O	rder:			14-05-1800
Vacaville, CA 95688-9299			Prepara	tion:			N/A
			Method:	:			EPA TO-3M
			Units:				ug/m3
Project: BP Facility No: 601						Ра	ge 1 of 2
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SG-9	14-05-1800-1-A	05/22/14 12:45	Air	GC 38	N/A	05/23/14 15:30	140523L01
Parameter		Result		RL	DF	Qua	lifiers
Gasoline Range Organics (C6-C12)		ND		3800	1.00		
SG-10	14-05-1800-2-A	05/22/14 12:20	Air	GC 38	N/A	05/23/14 12:48	140523L01
Parameter		Result		RL	DF	Qua	lifiers
Gasoline Range Organics (C6-C12)		7800		3800	1.00		
SG-11	14-05-1800-3-A	05/22/14 12:10	Air	GC 43	N/A	05/23/14 15:11	140523L01
Parameter	·	Result		RL	DF	Qua	lifiers
Gasoline Range Organics (C6-C12)		ND		3800	1.00		
SG-12	14-05-1800-4-A	05/22/14 12:00	Air	GC 38	N/A	05/23/14 18:41	140523L01
Parameter		<u>Result</u>		<u>RL</u>	DF	Qua	lifiers
Gasoline Range Organics (C6-C12)		6000		3800	1.00		
SG-13	14-05-1800-5-A	05/22/14 11:15	Air	GC 38	N/A	05/23/14 14:49	140523L01
Parameter		<u>Result</u>		<u>RL</u>	DF	Qua	lifiers
Gasoline Range Organics (C6-C12)		5300		3800	1.00		
SG-14	14-05-1800-6-A	05/22/14 11:45	Air	GC 38	N/A	05/23/14 14:07	140523L01
Parameter		<u>Result</u>		<u>RL</u>	DF	Qua	lifiers
Gasoline Range Organics (C6-C12)		ND		3800	1.00		
SG-15A	14-05-1800-7-A	05/22/14 12:30	Air	GC 43	N/A	05/23/14 16:54	140523L01
Parameter		<u>Result</u>		<u>RL</u>	DF	Qua	lifiers
Gasoline Range Organics (C6-C12)		ND		3800	1.00		
SG-15B	14-05-1800-8-A	05/22/14 12:25	Air	GC 43	N/A	05/23/14 18:02	140523L01
Parameter		<u>Result</u>		<u>RL</u>	DF	<u>Qua</u>	lifiers
Gasoline Range Organics (C6-C12)		ND		3800	1.00		



Broadbent & Associates, Inc			Date Re	ceived:			05/23/14
875 Cotting Lane, Suite G			Work Or	der:			14-05-1800
Vacaville, CA 95688-9299			Preparat	tion:			N/A
			Method:				EPA TO-3M
			Units:				ug/m3
Project: BP Facility No: 601						Ра	ge 2 of 2
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-14-431-330	N/A	Air	GC 38	N/A	05/23/14 11:30	140523L01
Parameter	·	<u>Result</u>		RL	DF	Qua	lifiers
Gasoline Range Organics (C6-C12)		ND		3800	1.00		
Method Blank	099-14-431-331	N/A	Air	GC 43	N/A	05/23/14 10:22	140523L01
Parameter		Result		RL	DF	Qua	lifiers
Gasoline Range Organics (C6-C12)		ND		3800	1.00		



Broadbent & Associates, Inc			Date Received	:		05/23/14
875 Cotting Lane, Suite G			Work Order:			14-05-1800
Vacaville, CA 95688-9299			Preparation:			N/A
			Method:			EPA TO-3M
Project: BP Facility No: 601						Page 1 of 2
Quality Control Sample ID	Туре	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
SG-13	Sample	Air	GC 38	N/A	05/23/14 14:49	140523D01
SG-13	Sample Duplicate	Air	GC 38	N/A	05/23/14 20:00	140523D01
Parameter		Sample Conc.	DUP Conc.	<u>RPD</u>	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)		5253	6303	18	0-20	

RPD: Relative Percent Difference. CL: Control Limits



Quality Control - Sample Duplicate

Broadbent & Associates, Inc			Date Received	:		05/23/14
875 Cotting Lane, Suite G			Work Order:			14-05-1800
Vacaville, CA 95688-9299			Preparation:			N/A
			Method:			EPA TO-3M
Project: BP Facility No: 601						Page 2 of 2
Quality Control Sample ID	Туре	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
SG-15A	Sample	Air	GC 43	N/A	05/23/14 16:54	140523D01
SG-15A	Sample Duplicate	Air	GC 43	N/A	05/23/14 17:28	140523D01
Parameter		Sample Conc.	DUP Conc.	RPD	RPD CL	<u>Qualifiers</u>
Gasoline Range Organics (C6-C12)		ND	ND	N/A	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Broadbent & Associates, Inc	Date Received:	05/23/14
875 Cotting Lane, Suite G	Work Order:	14-05-1800
vacaville, CA 95688-9299	Preparation:	N/A
	Method:	ASTM D-1946
Project: BP Facility No: 601		Page 1 of 7

Quality Control Sample ID	Туре	Mat	rix	Instrument	Date Pre	pared Date	Analyzed	LCS/LCSD Ba	atch Number
099-03-002-2066	LCS	Air		GC 65	N/A	05/23	3/14 09:25	140523L01	
099-03-002-2066	LCSD	Air		GC 65	N/A	05/23	3/14 09:43	140523L01	
Parameter	Spike Added	LCS Conc.	<u>LCS</u> <u>%Rec.</u>	LCSD Conc.	LCSD %Rec.	<u>%Rec. CL</u>	<u>RPD</u>	RPD CL	Qualifiers
Methane	4.500	4.354	97	4.368	97	80-120	0	0-30	
Carbon Dioxide	15.00	14.33	96	14.68	98	80-120	2	0-30	
Oxygen + Argon	4.010	4.048	101	4.044	101	80-120	0	0-30	



Broadbent & Associates, Inc	Date Received:	05/23/14
875 Cotting Lane, Suite G	Work Order:	14-05-1800
Vacaville, CA 95688-9299	Preparation:	N/A
	Method:	EPA TO-15M
Project: BP Facility No: 601		Page 2 of 7

Quality Control Sample ID	Туре	Mat	rix	Instrument	Date Pre	epared Date	Analyzed	LCS/LCSD B	atch Number
099-12-981-4356	LCS	Air		GC/MS K	N/A	05/23	3/14 13:54	140523L02	
099-12-981-4356	LCSD	Air		GC/MS K	N/A	05/23	3/14 14:45	140523L02	
Parameter	Spike Added	LCS Conc.	<u>LCS</u> <u>%Rec.</u>	LCSD Conc.	LCSD %Rec.	<u>%Rec. CL</u>	<u>RPD</u>	RPD CL	Qualifiers
Benzene	79.87	85.25	107	86.12	108	60-156	1	0-40	
Ethylbenzene	108.6	109.8	101	111.6	103	52-154	2	0-38	
Methyl-t-Butyl Ether (MTBE)	90.13	96.52	107	96.60	107	50-150	0	0-35	
o-Xylene	108.6	102.2	94	104.5	96	52-148	2	0-38	
p/m-Xylene	217.1	213.7	98	218.0	100	42-156	2	0-41	
Toluene	94.21	107.2	114	107.8	114	56-146	1	0-43	



Broadbent & Associates, Inc	Date Received:	05/23/14
375 Cotting Lane, Suite G	Work Order:	14-05-1800
/acaville, CA 95688-9299	Preparation:	N/A
	Method:	EPA TO-15M
Project: BP Facility No: 601		Page 3 of 7

Quality Control Sample ID	Туре	Mat	rix	Instrument	Date Pre	epared Date	Analyzed	LCS/LCSD Ba	atch Number
099-12-981-4361	LCS	Air		GC/MS K	N/A	05/24	4/14 12:19	140524L02	
099-12-981-4361	LCSD	Air		GC/MS K	N/A	05/24	4/14 13:15	140524L02	
Parameter	Spike Added	LCS Conc.	<u>LCS</u> <u>%Rec.</u>	LCSD Conc.	<u>LCSD</u> %Rec.	<u>%Rec. CL</u>	<u>RPD</u>	RPD CL	Qualifiers
Benzene	79.87	89.34	112	87.62	110	60-156	2	0-40	
Ethylbenzene	108.6	114.8	106	111.5	103	52-154	3	0-38	
Methyl-t-Butyl Ether (MTBE)	90.13	105.3	117	103.6	115	50-150	2	0-35	
o-Xylene	108.6	106.9	98	104.6	96	52-148	2	0-38	
p/m-Xylene	217.1	222.9	103	215.2	99	42-156	4	0-41	
Toluene	94.21	113.4	120	106.8	113	56-146	6	0-43	



Broadbent & Associates, Inc	Date Received:	05/23/14
375 Cotting Lane, Suite G	Work Order:	14-05-1800
/acaville, CA 95688-9299	Preparation:	N/A
	Method:	EPA TO-15M
Project: BP Facility No: 601		Page 4 of 7

Quality Control Sample ID	Туре	Mat	rix	Instrument	Date Pre	pared Dat	e Analyzed	LCS/LCSD B	atch Number
099-12-981-4357	LCS	Air		GC/MS KKK	N/A	05/2	23/14 11:21	140523L02	
099-12-981-4357	LCSD	Air		GC/MS KKK	N/A	05/2	23/14 12:11	140523L02	
Parameter	Spike Added	LCS Conc.	<u>LCS</u> <u>%Rec.</u>	LCSD Conc.	LCSD %Rec.	<u>%Rec. CL</u>	RPD	RPD CL	Qualifiers
Benzene	79.87	79.83	100	79.37	99	60-156	1	0-40	
Ethylbenzene	108.6	108.7	100	108.7	100	52-154	0	0-38	
Methyl-t-Butyl Ether (MTBE)	90.13	91.22	101	91.47	101	50-150	0	0-35	
o-Xylene	108.6	106.2	98	105.5	97	52-148	1	0-38	
p/m-Xylene	217.1	210.6	97	210.5	97	42-156	0	0-41	
Toluene	94.21	96.39	102	96.06	102	56-146	0	0-43	



Broadbent & Associates, Inc	Date Received:	05/23/14
875 Cotting Lane, Suite G	Work Order:	14-05-1800
Vacaville, CA 95688-9299	Preparation:	N/A
	Method:	EPA TO-15M
Project: BP Facility No: 601		Page 5 of 7

Quality Control Sample ID	Туре	Mat	rix	Instrument	Date Pre	epared Date	Analyzed	LCS/LCSD Ba	atch Number
099-12-981-4364	LCS	Air	Air		N/A	05/2	7/14 13:02	140527L02	
099-12-981-4364	LCSD	Air		GC/MS KKK	SKKK N/A		05/27/14 13:53		
Parameter	Spike Added	LCS Conc.	<u>LCS</u> <u>%Rec.</u>	LCSD Conc.	LCSD %Rec.	<u>%Rec. CL</u>	<u>RPD</u>	RPD CL	Qualifiers
Benzene	79.87	83.05	104	82.01	103	60-156	1	0-40	
Ethylbenzene	108.6	111.4	103	111.8	103	52-154	0	0-38	
Methyl-t-Butyl Ether (MTBE)	90.13	93.05	103	93.98	104	50-150	1	0-35	
o-Xylene	108.6	107.5	99	108.5	100	52-148	1	0-38	
p/m-Xylene	217.1	212.8	98	214.9	99	42-156	1	0-41	
Toluene	94.21	97.57	104	98.50	105	56-146	1	0-43	



Broadbent & Associates, Inc	;		Date Receive	ed:		05/23/14
875 Cotting Lane, Suite G			Work Order:			14-05-1800
Vacaville, CA 95688-9299			Preparation:			N/A
			Method:			EPA TO-3M
Project: BP Facility No: 601						Page 6 of 7
Quality Control Sample ID	Type	Matrix	Instrument	Date Prenared	Date Analyzed	LCS Batch Number

Quality Control Sample ID	Iype	Matrix	Instrument	Date	Prepared Date	Analyzed LCS B	atch Number
099-14-431-330	LCS	Air	GC 38	N/A	05/2	3/14 09:56 140523	3L01
Parameter		Spike Added	Conc. Recov	vered	LCS %Rec.	<u>%Rec. CL</u>	<u>Qualifiers</u>
Gasoline Range Organics (C6-C1	2)	382400	335800		88	80-120	

🔅 eurofins	
	Calscience

Broadbent & Associates, Inc			Date Receive	ed:		05/23/14
875 Cotting Lane, Suite G		,	Work Order:			14-05-1800
Vacaville, CA 95688-9299			Preparation:		N/A	
			Method:	EPA TO-3M		
Project: BP Facility No: 601						Page 7 of 7
Quality Control Sample ID	Туре	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number

Quality Control Sample ID	Туре	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Nu	umber
099-14-431-331	LCS	Air	GC 43	N/A	05/23/14 09:46	140523L01	
Parameter		Spike Added	Conc. Recover	ed LCS %Re	ec. <u>%Rec</u>	<u>. CL</u> <u>C</u>	Jualifiers
Gasoline Range Organics (C6-C12)		382400	324800	85	80-12	D	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



Calscience

Sample Analysis Summary Report

Work Order: 14-05-1800				Page 1 of 1
Method	Extraction	Chemist ID	<u>Instrument</u>	Analytical Location
ASTM D-1946	N/A	888	GC 65	2
ASTM D-1946	N/A	896	GC 65	2
EPA TO-15M	N/A	858	GC/MS K	2
EPA TO-15M	N/A	858	GC/MS KKK	2
EPA TO-3M	N/A	884	GC 38	2
EPA TO-3M	N/A	884	GC 43	2
EPA TO-3M	N/A	888	GC 43	2
EPA TO-3M	N/A	896	GC 38	2
EPA TO-3M	N/A	896	GC 43	2

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Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841

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Calscience

Work Order: 14-05-1800

Vork Order:	14-05-1800	Page 1 of 1
<u>Qualifiers</u>	Definition	
AX	Sample too dilute to quantify surrogate.	
BA	Relative percent difference out of control.	
BA,AY	BA = Relative percent difference out of control. AY = Matrix interference suspected.	
BB	Sample > 4x spike concentration.	
BF	Reporting limits raised due to high hydrocarbon background.	
BH	Reporting limits raised due to high level of non-target analytes.	
BU	Sample analyzed after holding time expired.	
BV	Sample received after holding time expired.	
BY	Sample received at improper temperature.	
BZ	Sample preserved improperly.	
CL	Initial analysis within holding time but required dilution.	
CQ	Analyte concentration greater than 10 times the blank concentration.	
CU	Surrogate concentration diluted to not detectable during analysis.	
DF	Reporting limits elevated due to matrix interferences.	
DU	Insufficient sample quantity for matrix spike/dup matrix spike.	
ET	Sample was extracted past end of recommended maximum holding time.	
EY	Result exceeds normal dynamic range; reported as a min est.	
GR	Internal standard recovery is outside method recovery limit.	
IB	CCV recovery abovelimit; analyte not detected.	
IH	Calibration verification recovery is above the control limit for this analyte.	
IJ	Calibration verification recovery is below the control limit for this analyte.	
J,DX	J=EPA Flag -Estimated value; DX= Value < lowest standard (MQL), but > than MDL.	
JA	Analyte positively identified but quantitation is an estimate.	
LA	Confirmatory analysis was past holding time.	
LG,AY	LG= Surrogate recovery below the acceptance limit. AY= Matrix interference suspected.	
LH,AY	LH= Surrogate recovery above the acceptance limit. AY= Matrix interference suspected.	
LM,AY	LM= MS and/or MSD above acceptance limits. See Blank Spike (LCS). AY= Matrix interference suspected.	
LN,AY	LN= MS and/or MSD below acceptance limits. See Blank Spike (LCS). AY= Matrix interference suspected.	
LQ	LCS recovery above method control limits.	
LR	LCS recovery below method control limits.	
LW	Quantitation of unknown hydrocarbon(s) in sample based on gasoline.	
LX	Quantitation of unknown hydrocarbon(s) in sample based on diesel.	
MB	Analyte present in the method blank.	
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).	
PC	Sample taken from VOA vial with air bubble > 6mm diameter.	
PI	Primary and confirm results varied by > than 40% RPD.	
RB	RPD exceeded method control limit; % recoveries within limits.	
SG	A silica gel cleanup procedure was performed.	
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture reported on a wet weight basis.	All QC results are
	Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding tim (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being rece stated holding time unless received at the laboratory within 15 minutes of the collection time.	e of <= 15 minutes ived outside of the
	A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J"	flags are reported.

Glossary of Terms and Qualifiers

estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

	bp ******	Labora BP Si	tory Mari te Node Path:	nag	em	ent	PI	rog ARC	rar :0 60	n L.	aM	P CI	haiı	n of	fC	ust	od: R	y Re eq Du	e Date	d (mm/dd/yy):		-40	-	Rush TAT:	Page Yes	of No
Ą	WARE IN THE REAL PROPERTY OF	B	P Facility No:		*******			6	601								Ł	Lab W	ork Or	der Number:	<u> </u>	<u> </u>	U	U	******	
Lab Nar	ne: Cal Science			Faci	lity Ac	ddress	:	•	712 L	ewellir	ıg Blv	d							Consi	or:		Broadbent & Associates				
Lab Add	iress: 7440 Lincoln Way, Garden Gr	ove, CA		City,	State	e, ZIP (Code	е: 4	San L	.eandr	o, CA	94579							Consi	ultant/Contracto	or Project No:			06-88-605		******
Lab PM	Richard Villafania	24308892941994198441800892877777		Lea	d Reg	julatory	/ Age	ency:		ACEH	1								Addre	ess:	875 Cotting Lane, SL	iite G , Vaca	aville,	CA		
Lab Pho	ne: 714-895-5494 / 714-895-7501	(fax)		Cali	California Global ID No.: T0600100108										Consi	ultant/Contracto	or PM:		Kriste	ene Tidwell						
Lab Shi	oping Accnt: 9255			Enfo	os Pro	posal	No:			005ZE	3-000	4 / WR:	27392	8						Phone:	: 707-455-7290			Email: <u>ktidwell</u>	@broadbe	entinc.com
Lab Bot	le Order No:			Acc	ountir	ng Mod	e:		Prov	vision	<u>x</u>	000	-BU		000	-RM		-	Email	EDD To:	ktidwell@	broadber	ntinc	.com and to lat	o.enfosdoc@	bp.com
Other In	fo:			Stag	je:	execu	te(4(D)	Ac	tivity:	Proj	ect Sp	pend	(80)					Invoic	e To:		BP	<u>x</u>	Contractor		
BP Proj	ect Manager (PM): Chuck Carmel	****			Ma	trix	Т	No	. Cor	ntaine	ers /	Prese	rvativ	e						Requested Ar	nalyses			Report T	ype & QC	Level
ВР РМ	Phone: 925-275-3804			Γ			T	Π						T					100					Sta	ndard	
вр рм	Email: <u>charles.carmel@bp.con</u>	<u>n</u>		1															20	\downarrow				Full Data Pa	.ckage ——	
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	is this location a well?	Total Number of Containers	Unpreserved	H2SO4	HNO3	HCI	Methanol		GRO by TO-3	BTEX & MTBE by TO-15	Naphthalene by TO-15	Oxygen & Argon by Modified ASTM-D-1946	Methame by Modified OK	ASTM D-1946				Cc Note: If sample no Sample" in comme and initial any prej	omments It collected, ind ents and singli printed sample	ilicate "No s-strike out e description.
	561-9	5/22/10	FILLS			X		1	¥						×	*	X	X	X	×						
2	SG-10		1220					1							Ì											
3	SG-11		1210					2																		
4	SG1-12		1200					1	-								سنيميريون									
5	Sa-B		1115	ľ				1										and the second second								
6	SG-14		1145	Ι	1	ΠΤ	Τ	1	1																	
7	SG-1SA		1230					1																		
8	SG-15B	<u> </u>	1225			X		١	+					•	¥	K	×	×	¥	*						
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Sample	r's Name: Joures	Ramos	>	Γ		Re	eling	quist	ned E	By / A	ffilia	tion		Τ	Da	ite	٦	Time	\Box	$\overline{}$	Accepted By /	Affiliation	1		Date	Time
Sample	r's Company: Brach	bent a	Assicie	*			Ic.		$\overline{\lambda}$	$\overline{}$						世	R	reC	′	Ha	inte		Ċŧ	a	05/23/14	103,09
Shipme	nt Method: 650	Ship Date:	5/22/14	1		1			<i>v</i>						47	UR								· · · · ·		
Shipme	nt Tracking No:		1 1 1						0.00000000						******	1	L									
Speci	al Instructions:						NUMBER OF STREET							****		****			0751070111110111027							ں ا
BR Bo	THIS LINE - LAB US	SE ONLY: Cu	stody Seals In Pl	ace: `	Yes /	No		Temp	Blan	nk: Yes	s / No		Coole	er Ten	np on	Rece	eipt: _		°F/	C Trip E	Blank: Yes / No	MS/MSD S	Sampl	le Submitted: Yes / I		7 Aug 23 201

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http://app.gso.com/Shipping/applabeldetail.aspx?x=Vgu50Kkw110r... Page 33 of 34



Ship From: JAMES RAMOS BROADBENT & ASSOCIATES, INC. 1370 RIDGEWOOD DR. SUITE 5 CHICO, CA 95973

Ship To: SAMPLE CONTROL CAL SCIENCE 7440 LINCOLN WAY GARDEN GROVE, CA 92841

COD: \$0.00

Reference: RV/TEDLAR REQUEST

Delivery Instructions:

Signature Type: SIGNATURE REQUIRED



800-322-5555 www.gso.com

Tracking #: 524683412

NPS



GARDEN GROVE

ORC



24572697

Print Date : 05/19/14 11:33 AM

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Send Label To Printer	Edit Shipment	Finish

#### LABEL INSTRUCTIONS:

Do not copy or reprint this label for additional shipments - each package must have a unique barcode.

STEP 1 - Use the "Send Label to Printer" button on this page to print the shipping label on a laser or inkjet printer.

STEP 2 - Fold this page in half.

STEP 3 - Securely attach this label to your package, do not cover the barcode.

STEP 4 - Request an on-call pickup for your package, if you do not have scheduled daily pickup service or Drop-off your package at the nearest GSO drop box. Locate nearest GSO dropbox locations using this link.

# ADDITIONAL OPTIONS:

Send Label Via Email

#### **TERMS AND CONDITIONS:**

By giving us your shipment to deliver, you agree to all the service terms and conditions described in this section. Our liability for loss or damage to any package is limited to your actual damages or \$100 whichever is less, unless you pay for and declare a higher authorized value. If you declare a higher value and pay the additional charge, our liability will be the lesser of your declared value or the actual value of your loss or damage. In any event, we will not be liable for any damage, whether direct, incidental, special or consequential, in excess of the declared value of a shipment whether or not we had knowledge that such damage might be incurred including but not limited to loss of income or profit. We will not be liable for your acts or omissions, including but not limited to agreement. We will not be liable for loss, damage or delay caused by events we cannot control, including but not limited to acts of God, perils of the air, weather conditions, act of public enemies, war, strikes, or civil commotion. The highest declared value for our GSO Priority Letter or GSO Priority Package is \$500. For other shipments the highest declared value is \$10,000 unless your package contains items of "extraordinary value", in which case the highest declared value is \$500. Items of "extraordinary value" include, but or not limited to, artwork, jewelry, furs, precious metals, tickets, negotiable instruments and other items with intrinsic value. Return to Contents

			Page 34	4 of 34
Environmental	WORK ORDER #	#: <b>14-</b> (	)5- 🛛 🛛	300
Laboratories, Inc.		3 N A		- (
SAMPLE R	ECEIPTFOR	KIM.	Box _ (	of
CLIENT: Broadbent + Assoc	· .	DATE:	05/23	/ 14
TEMPERATURE: Thermometer ID: SC2 (Criteria:	0.0 °C – 6.0 °C, not froze	n except se	diment/tissu	e)
Temperature • °C - 0.3 °C (CF) =	°C [	Blank	Sample	e
□ Sample(s) outside temperature criteria (PM/APM c	ontacted by:).		-	
☐ Sample(s) outside temperature criteria but received	d on ice/chilled on same c	lay of sampl	ing.	
□ Received at ambient temperature, placed on i	ce for transport by Co	ourier.	-	
Ambient Temperature: Air D Filter			Checked b	y: 370
		7 - 17 		
CUSTODY SEALS INTACT:				25
Box   No (Not Inta	.ct) □ Not Present	□ N/A	Checked by	y: <u>-20</u>
□ Sample □ □ No (Not Inta	ict) 2 Not Present	- initia	Checked by	y: <u>300</u>
SAMPLE CONDITION:		Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with	ו samples			
COC document(s) received complete	·	. 🗖		
Collection date/time, matrix, and/or # of containers logged	d in based on sample labels.			
□ No analysis requested. □ Not relinquished. □ No o	date/time relinquished.	/		
Sampler's name indicated on COC	·····			
Sample container label(s) consistent with COC		đ		
Sample container(s) intact and good condition	······································			
Proper containers and sufficient volume for analyse	s requested			
Analyses received within holding time				
Aqueous samples received within 15-minute hole	ding time	• •		
□ pH □ Residual Chlorine □ Dissolved Sulfides □	Dissolved Oxygen	. 🗆		B
Proper preservation noted on COC or sample conta	iner	. 🗆		
Unpreserved vials received for Volatiles analysis		-		R
Todar bag(s) free of condensation	,			
CONTAINER TYPE:		./[_]	<u>ш</u>	њ
Solid:	eve () □EnCore	s [®] ⊡Terra	Cores [®] □_	
Aqueous: □VOA □VOAh □VOAna₂ □125AGB □	I125AGBh □125AGBp	□1AGB [	∃1AGB <b>na₂</b> [	∃1AGB <b>s</b>
□500AGB □500AGJ □500AGJs □250AGB □	]250CGB □250CGBs	s □1PB	□1PB <b>na</b> □	1500PB
□250PB □250PBn □125PB □125PBznna □10	0PJ □100PJ <b>na₂</b> □	0		
Air: DTedlar [®] Canister Other: D Trip E Container: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z Preservative: h: HCL n: HNO ₃ na ₂ :Na ₂ S ₂ O ₃ na: NaOH p: H ₃ PO ₄ s: H ₂ S	<b>3lank Lot#:</b> : Ziploc/Resealable Bag E: Er O₄ u: Ultra-pure <b>znna</b> : ZnAc₂+Nε	Labeled	/Checked by: Reviewed by: Scanned by	500 736 300

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