



HARGIS + ASSOCIATES, INC.

HYDROGEOLOGY • ENGINEERING

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November 8, 2019

VIA FEDERAL EXPRESS STANDARD

Mr. Steve Rounds
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Southern California Region
9211 Oakdale Avenue
Chatsworth, CA 91311-6520

Re: Data Submittal for Groundwater Monitoring and Groundwater Extraction
and Treatment Pilot Testing, Third Quarter 2019, Raytheon Company (Former
Hughes Aircraft Company) Facility, 1901 West Malvern Avenue, Fullerton, California

Dear Mr. Rounds:

This letter has been prepared for the submittal of groundwater monitoring and groundwater treatment pilot testing data collected during the third quarter 2019 for the former Raytheon Company site located at 1901 West Malvern Avenue, Fullerton, California (the Site) (Figure 1). Groundwater monitoring activities were completed in general accordance with the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC)-approved Groundwater Monitoring Work Plan and Sampling and Analysis Plan (GMWPSAP) and subsequent addenda (DTSC, 2003 and 2011; Hargis + Associates, Inc. [H+A], 2003, 2011a, and 2011b). Groundwater treatment pilot testing continued throughout the third quarter 2019 in general accordance with the DTSC-approved Groundwater Extraction and Treatment System (GETS) Pilot Testing, Corrective Measures Study Work Plan Addendum No. 6 (DTSC, 2013; H+A, 2013). The results of the third quarter 2019 groundwater monitoring and pilot GETS operation from June through August 2019 are included in this data submittal.

GROUNDWATER MONITORING

Groundwater monitoring consists of measuring groundwater levels and collecting groundwater samples from monitor wells and piezometers at the Site (Figure 2). Quarterly water level measurements were taken at all wells and piezometers, and groundwater samples were collected from extraction wells and select monitor wells in August 2019 in general accordance with the GMWPSAP and Addendum No.1 (H+A, 2003 and 2011a) (Table 1).

Water Level Measurement and Groundwater Sample Collection

Groundwater monitoring included water level measurements in all Site monitor wells, piezometers, and extraction wells (Figures 2 and 3). Quarterly groundwater levels were measured in all wells on August 12, 2019 (Table 2). Groundwater samples were collected during the period from August 13 through August 19, 2019 (Appendix A). Analytical results are summarized in Table 3 and provided in Appendix B. Additional groundwater monitoring was conducted as part of routine operation and monitoring of the pilot GETS. A summary of the pilot GETS operation and monitoring is provided below.

Other Offices:
Folsom, CA
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Original and field-duplicate groundwater samples were analyzed by Advanced Technology Laboratories, Inc., Signal Hill, California (ATL) (Appendix B). Laboratory split groundwater samples were analyzed by Eurofins Calscience, Garden Grove, California (Appendix B). Chain-of-custody documentation was enclosed with each sample shipment. Results of groundwater sample volatile organic compound (VOC) and 1,4-dioxane analyses have been summarized (Table 3).

Additionally, samples also were collected after two-screen volumes were purged from three of the large-volume monitor wells during this event; these additional samples were collected to compare results between the two-screen-volume purge method to the conventional three-screen-volume purge method which has been used historically at the Site for the large-volume monitor wells. Groundwater samples were collected after both two- and three-screen volumes had been purged from monitor wells MW-32B, MW-33, and MW-36 (Table 3; Appendix B).

New replacement submersible pumps were installed at two monitor wells, MW-35C and MW-40, during third quarter 2019 in order to resolve well pump operation issues. A new replacement submersible pump was installed in monitor well MW-40 at 960 feet below ground surface on June 20, 2019. While conducting the pump replacement at monitor well MW-35C, biofouling was observed on the well pump after its removal. Chlorine treatment was performed at monitor well MW-35C on June 21, 2019 to disinfect the monitor well and remove any biochemical growth within the well. Following chlorine treatment, well development consisting of bailing, swabbing, and pumping was performed at monitor well MW-35C on June 25, 2019 using a new replacement submersible pump installed the same day to 560 feet below ground surface. Pumping at monitor well MW-35C continued until water quality parameters stabilized, with a total of 2100 gallons or 7.4 casing volumes being removed. Field documentation generated as part of these monitor well pump replacement activities are provided in Appendix A.

Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) samples collected during the August 2019 groundwater sampling event consisted of trip blanks, field duplicates, equipment rinsate blanks, and laboratory split samples. Trip blanks were provided by ATL. Field duplicate and laboratory split groundwater samples were collected for analysis of VOCs and 1,4-dioxane from monitor wells MW-31 and MW-34B in August 2019 (Table 3). The relative percent difference (RPD) was calculated between the results of each field duplicate and each laboratory split sample with its corresponding original sample. The RPD between the original and laboratory split results for 1,4-dioxane, cis-1,2-dichloroethene, and tetrachloroethylene in groundwater samples collected from monitor well MW-31 and 1,1-dichloroethane in groundwater samples from monitor well MW-34B were outside of acceptable limits, therefore these results were qualified as estimated. All other results for groundwater samples collected from monitor wells MW-31 and MW-34B in August 2019 are within quality control criteria.

There were no detections of 1,4-dioxane and VOCs in the trip blanks and/or laboratory method blanks analyzed with groundwater samples collected during the August 2019 groundwater monitoring event (Table 3; Appendix B). Additionally, there were no detections of 1,4-dioxane or VOCs in the equipment rinsate blanks analyzed with groundwater samples collected during the August 2019 groundwater monitoring event.

The data quality assessment also included review of laboratory QA/QC results. Laboratory QA/QC results are within acceptable criteria.

GROUNDWATER EXTRACTION AND TREATMENT PILOT STUDY

This section summarizes the pilot GETS operation within the three-month period of monitoring conducted June to August 2019. The pilot GETS consists of four groundwater extraction wells, the treatment system, and the

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disposal system; however, the current phase of pilot testing is operating using only two extraction wells, EW-02 and MW-29. Current extraction rates are nominally 40 gallons per minute (gpm) from extraction well EW-02 and nominally 10 gpm from extraction well MW-29. The treatment system processes extracted groundwater through an advanced oxidation unit that utilizes ultraviolet (UV) light and hydrogen peroxide (UV Ox), followed by a granular activated carbon polish prior to disposal to the sanitary sewer.

Initial startup of the pilot GETS took place in July 2008. From July 2008 through November 2009, the pilot GETS was operated with extraction wells EW-01 and MW-21 operating at approximately 10 gpm each. Pilot GETS expansion took place between November 2009 and March 2010 in order to incorporate extraction well EW-02 into the extraction well network. The system maximum flowrate was also increased from 20 gpm to 50 gpm. Beginning in March 2010, the pilot GETS was operated at 50 gpm, entirely from extraction well EW-02. During December 2011, a synthetic media pilot test was started. The purpose of the synthetic media pilot test was to evaluate the efficacy of treating water collected from extraction well MW-21 (a relatively high-concentration extraction well) using a synthetic media for contaminant removal. In order to conduct the synthetic media pilot test, extraction wells EW-02 and MW-21 were operated at approximately 40 gpm and 10 gpm, respectively. The synthetic media pilot test was completed in March 2012, and operation of the pilot GETS was restored to 50 gpm entirely from extraction well EW-02. A second phase of pilot GETS expansion took place between March 2014 and August 2014 in order to incorporate extraction well MW-29 into the extraction well network as well as replacing an advanced oxidation unit that used ozone and hydrogen peroxide with a UV Ox system. Extraction wells EW-01 and MW-21 are on standby for the current phase of pilot testing, but are planned to be used as part of a full scale pump-and-treat system.

During the third quarter of 2019, the pilot GETS was operational approximately 99 percent of the available runtime and approximately 5.2 million gallons of groundwater were treated and discharged to the sanitary sewer (Table 4). Downtime during the third quarter of 2019 was associated with operations and maintenance activities. The average operational monthly discharge flowrate to the sanitary sewer from June to August 2019 was approximately 40 gpm. Since startup of the pilot GETS, approximately 183 million gallons of groundwater was treated at an average operational flowrate of 41 gpm through the end of August 2019 (Table 4).

Current monthly and quarterly pilot GETS monitoring activities include collecting groundwater samples from extraction wells EW-02 and MW-29 in addition to collecting samples at treatment system sampling ports: Influent, Post Particulate Filter, Post UV Ox, Carbon Breakthrough, and Carbon Effluent (Tables 5 and 6; Figures 4 and 5). Samples collected during these activities were sent to ATL for analysis. Analytical results of the extraction wells and treatment system sampling have been summarized (Table 6; Appendix B).

The UV Ox advanced oxidation treatment unit is designed to remove 1,4-dioxane and most VOCs in groundwater. The carbon adsorption units provide a polish following the UV Ox treatment and remove possible low-level VOCs remaining in groundwater post UV Ox (principally low-level ethanes). The UV Ox advanced oxidation and carbon adsorption treatment units effectively removed VOCs and 1,4-dioxane from extracted groundwater in the third quarter 2019. The samples collected from the effluent of the UV Ox treatment unit (Post UV Ox) were analyzed for VOCs and 1,4-dioxane, and resulted in non-detect values for VOCs, and a single low-level detection of 1,4-dioxane at 1.2 micrograms per liter (ug/l) on July 3 2019 (Table 6). The concentration of 1,4-dioxane in the samples collected from carbon breakthrough and carbon effluent on July 3, 2019 were reduced to less than the 1 ug/l California Notification Level. Samples collected from the carbon breakthrough and carbon effluent remained non-detect for VOCs throughout the third quarter 2019.

The previous oxidation treatment unit that used an ozone-peroxide technology was shown to create bromate as a treatment byproduct which occasionally exceeded the drinking water maximum contaminant level (MCL) (Figure 6). The levels of bromate previously generated as a treatment byproduct were not an issue while discharging to the sewer, but would preclude injection of treated groundwater back into the aquifer as part of future

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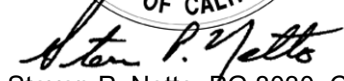
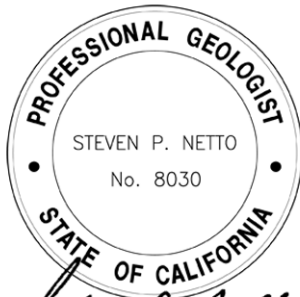
groundwater corrective measures. The current UV Ox oxidation treatment unit has not generated bromate above the MCL, and bromate was not detected in the Post UV Ox samples collected during the third quarter 2019.

The pilot GETS continues to remove VOCs and 1,4-dioxane from extracted groundwater. During the third quarter of 2019, the pilot GETS removed approximately 2.4 pounds of VOCs and 1.3 pounds of 1,4-dioxane from extracted groundwater. Since startup of the pilot GETS in July 2008, approximately 173 pounds of VOCs and 42 pounds of 1,4-dioxane have been removed from groundwater through August 2019 (Figure 7). Operation of the pilot GETS continues to be optimized to maximize the treatment of 1,4-dioxane and VOCs in extracted groundwater.

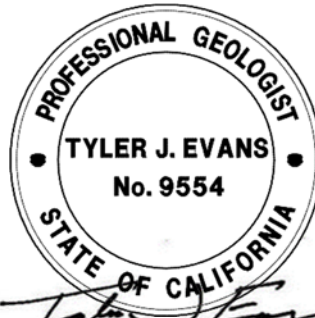
If you have any questions or require additional information, please contact us at 858-455-6500.

Sincerely,

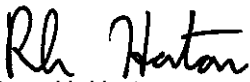
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A handwritten signature of Steven P. Netto in black ink.

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Tyler J. Evans, PG 9554
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Ross H. Horton
Engineer

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REFERENCES

- California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), 2003. Letter to P. Brewer, Raytheon Systems Company, from A. Plaza, DTSC, re: Review of Additional Groundwater Assessment Workplan and Groundwater Monitoring Workplan and Sampling and Analysis Plan. May 20, 2003.
- _____, 2011. Email from W. Jeffers, DTSC, re: Conditional Approval of Addendum No. 1 to the Ground Water Monitoring Work Plan, Raytheon Fullerton, dated June 7, 2011.
- _____, 2013. Email from W. Jeffers, DTSC, re: Groundwater Extraction and Treatment System Pilot Testing Corrective Measures Study Workplan, Addendum #6, dated April 16, 2013.
- Hargis + Associates, Inc. (H+A), 2003. Groundwater Monitoring Work Plan and Sampling and Analysis Plan (Revision 1.0). Raytheon Company (former Hughes Aircraft Company), 1901 West Malvern Avenue, Fullerton, California. April 25, 2003.
- _____, 2011a. Letter to W. Jeffers, DTSC, re: Addendum No. 1 to the *Groundwater Monitoring Work Plan and Sampling and Analysis Plan (Revision 1.0)*, by Hargis + Associates, Inc., dated April 25, 2003, for the Raytheon Company, (Former Hughes Aircraft Company), 1901 West Malvern Avenue, Fullerton, California. February 11, 2011.
- _____, 2011b. Letter to W. Jeffers, DTSC, re: Amendment A, Addendum No. 1 to the *Groundwater Monitoring Work Plan and Sampling and Analysis Plan (Revision 1.0)*, by Hargis + Associates, Inc., dated April 25, 2003, for the Raytheon Company, (Former Hughes Aircraft Company), 1901 West Malvern Avenue, Fullerton, California. June 16, 2011.
- _____, 2013. Groundwater Extraction and Treatment System Pilot Testing, Corrective Measures Study Workplan Addendum No. 6, Raytheon Company (former Hughes Aircraft Company), 1901 West Malvern Avenue, Fullerton, California. February 27, 2013.
- _____, 2019. Monitor Well Construction Report, Monitor Wells MW-42 and MW-43, Raytheon Company (former Hughes Aircraft Company), 1901 West Malvern Avenue, Fullerton, California (in press).

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Appendices

Appendix A	Groundwater Sampling Field Forms (Provided on CD only)
Appendix B	Laboratory Analytical Reports (Provided on CD only)

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cc w/encl: (1 copy w-CD)

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Mr. Paul E. Brewer, Raytheon Company
Mr. Dave Mark, Orange County Water District
Mr. Eric Silvers, Regency Centers

(2 copies w-CD)

Mr. Louis Gonzales, City of Fullerton

(via CD)

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Mr. Carl Bernhardt, California Regional Water Quality Control Board, Santa Ana Region
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Mr. Nabil Henein, City of Buena Park
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Mr. Paul Rodolf, Hydraflow
Mr. Robinson Sioson, Hydraflow

TABLE 1
GROUNDWATER MONITORING PROGRAM

WELL IDENTIFIER	HYDROGEOLOGIC ZONE	SAMPLED AUG 2019	SAMPLING FREQUENCY			
			QUARTERLY	SEMIANNUAL	ANNUAL	BIENNIAL
			FEB, MAY, AUG, NOV	FEBRUARY, AUGUST	FEBRUARY	FEB (EVEN YEARS)
P-07	Perched				VOCs; 1,4-Dioxane	
P-09	Perched				VOCs; 1,4-Dioxane	
MW-35A	Other					VOCs; 1,4-Dioxane
MW-17	A		PIEZOMETER - WATER LEVEL MEASUREMENT ONLY			
MW-18	A	✗		VOCs; 1,4-Dioxane		
MW-19	A					VOCs
MW-22	A					VOCs; 1,4-Dioxane
MW-23	A					VOCs
MW-34A	A	✗		VOCs; 1,4-Dioxane		
MW-35B	A					VOCs; 1,4-Dioxane
MW-38	A				VOCs; 1,4-Dioxane	
MW-13	AB				VOCs; 1,4-Dioxane	
MW-15	AB	✗		VOCs		
MW-26A	AB		PIEZOMETER - WATER LEVEL MEASUREMENT ONLY			
MW-26B	AB		PIEZOMETER - WATER LEVEL MEASUREMENT ONLY			
MW-32A	AB	✗		VOCs; 1,4-Dioxane		
EW-01	B	✗	VOCs; 1,4-Dioxane			
EW-02*	B	✗	VOCs; 1,4-Dioxane			
MW-16	B	✗		VOCs; 1,4-Dioxane		
MW-26C	B	✗	VOCs; 1,4-Dioxane			
MW-27	B				VOCs; 1,4-Dioxane	
MW-28	B	✗	VOCs; 1,4-Dioxane			
MW-29*	B	✗	VOCs; 1,4-Dioxane			
MW-30A	B	✗	VOCs; 1,4-Dioxane			
MW-31	B	✗	VOCs; 1,4-Dioxane			
MW-32B	B	✗	VOCs; 1,4-Dioxane			
MW-33	B	✗	VOCs; 1,4-Dioxane			
MW-34B	B	✗	VOCs; 1,4-Dioxane			
MW-35C	B	✗	VOCs; 1,4-Dioxane			
MW-36	B	✗	VOCs; 1,4-Dioxane			
MW-39	B	✗	VOCs; 1,4-Dioxane			
MW-40	B	✗	VOCs; 1,4-Dioxane			
MW-41	B	✗	VOCs; 1,4-Dioxane			
MW-42	B	✗	VOCs; 1,4-Dioxane			
MW-43	B	✗	VOCs; 1,4-Dioxane			
MW-21	BC	✗	VOCs; 1,4-Dioxane			
MW-08	BC	✗	VOCs; 1,4-Dioxane			
MW-30B	BC	✗	VOCs; 1,4-Dioxane			
MW-34C	BC	✗		VOCs; 1,4-Dioxane		
MW-09	C	✗		VOCs; 1,4-Dioxane		
MW-24	C				VOCs; 1,4-Dioxane	
MW-32C	C	✗		VOCs; 1,4-Dioxane		
MW-06	D				VOCs	
MW-20	D	✗		VOCs; 1,4-Dioxane		
MW-25	D		WATER LEVEL MEASUREMENT ONLY			
MW-37	D				VOCs; 1,4-Dioxane	

FOOTNOTES

Groundwater Monitoring Program 2014/2015 Letter (Hargis + Associates, Inc., 2015)

* = Extraction well monitored monthly as part of the Groundwater Extraction and Treatment System Pilot Testing

VOCs = volatile organic compounds

TABLE 2
GROUNDWATER LEVELS
THIRD QUARTER 2019

Well Identifier	Date Measured	Reference Point Elevation ^(a) (feet msl)	Depth to Water (feet btoc)	Water Level Elevation (feet msl)	Remediation System On
<u>Regional Groundwater System Monitor and Extraction Wells</u>					
MW-06	08/12/19	184.70	158.29	26.41	
MW-08	08/12/19	155.91	131.47	24.44	
MW-09	08/12/19	180.10	156.39	23.71	
MW-13	08/12/19	141.84	125.94	15.90	
MW-15	08/12/19	144.95	127.92	17.03	
MW-16	08/12/19	142.40	125.70	16.70	
MW-17	08/12/19	142.70	127.29	15.41	
MW-18	08/12/19	142.32	127.79	14.53	
MW-19	08/12/19	142.06	127.47	14.59	
MW-20	08/12/19	184.19	153.42	30.77	
MW-21	08/12/19	141.18	116.91	24.27	
MW-22	08/12/19	138.65	124.05	14.60	
MW-23	08/12/19	137.33	124.19	13.14	
MW-24	08/12/19	142.83	119.38	23.45	
MW-25	08/12/19	142.64	119.87	22.77	
MW-26A	08/12/19	137.04	119.47	17.57	
MW-26B	08/12/19	137.05	119.84	17.21	
MW-26C	08/12/19	137.22	122.34	14.88	
MW-27	08/12/19	137.16	121.91	15.25	
MW-28	08/12/19	140.77	125.83	14.94	
MW-29	06/06/19	139.81	176.06	-36.25	Pilot GETS
MW-29	06/20/19	139.81	171.20	-31.39	Pilot GETS
MW-29	07/03/19	139.81	176.61	-36.80	Pilot GETS
MW-29	07/18/19	139.81	176.52	-36.71	Pilot GETS
MW-29	08/01/19	139.81	177.58	-37.77	Pilot GETS
MW-29	08/12/19	139.81	178.13	-38.32	Pilot GETS
MW-29	08/15/19	139.81	176.04	-36.23	Pilot GETS
MW-30A	08/12/19	129.44	115.56	13.88	
MW-30B	08/12/19	129.39	112.75	16.64	
MW-31	08/12/19	119.60	105.28	14.32	
MW-32A	08/12/19	92.88	80.66	12.22	
MW-32B	08/12/19	92.89	79.84	13.05	

**TABLE 2
GROUNDWATER LEVELS
THIRD QUARTER 2019**

Well Identifier	Date Measured	Reference Point Elevation ^(a) (feet msl)	Depth to Water (feet btoc)	Water Level Elevation (feet msl)	Remediation System On
<u>Reginal Groundwater System Monitor and Extraction Wells (continued)</u>					
MW-32C	08/12/19	92.88	73.45	19.43	
MW-33	08/12/19	83.19	71.79	11.40	
MW-34A	08/12/19	153.25	145.11	8.14	
MW-34B	08/12/19	153.11	139.32	13.79	
MW-34C	08/12/19	153.29	138.94	14.35	
MW-35A	08/12/19	93.57	80.12	13.45	
MW-35B	08/12/19	93.56	84.54	9.02	
MW-35C	08/12/19	93.55	81.68	11.87	
MW-36	08/12/19	86.65	75.50	11.15	
MW-37	08/12/19	155.60	139.05	16.55	
MW-38	08/12/19	154.90	148.61	6.29	
MW-39	08/12/19	84.25	73.78	10.47	
MW-40	08/12/19	123.40	107.80	15.60	
MW-41	08/12/19	155.60	141.60	14.00	
MW-42	08/12/19	82.80	72.59	10.21	
MW-43	08/12/19	76.64	66.77	9.87	
EW-01	08/12/19	141.07	124.12	16.95	
EW-02	06/06/19	132.97	116.79	16.18	Pilot GETS
EW-02	06/20/19	132.97	118.08	14.89	Pilot GETS
EW-02	07/03/19	132.97	119.53	13.44	Pilot GETS
EW-02	07/18/19	132.97	118.93	14.04	Pilot GETS
EW-02	08/01/19	132.97	122.24	10.73	Pilot GETS
EW-02	08/12/19	132.97	123.08	9.89	Pilot GETS
EW-02	08/15/19	132.97	123.12	9.85	Pilot GETS
<u>Perched Zone Water Levels</u>					
P-07	08/12/19	142.31	111.81	30.50	
P-09	08/12/19	183.86	120.73	63.13	

FOOTNOTES

^(a) Reference point elevations are relative to City of Fullerton datum.

btoc = Below top of casing

msl = Mean sea level

Pilot GETS = Pilot Groundwater Extraction and Treatment System On

TABLE 3
PREVALENT VOLATILE ORGANIC COMPOUNDS AND 1,4-DIOXANE IN GROUNDWATER
THIRD QUARTER 2019

Concentration (micrograms per liter)																
VOLATILE ORGANIC COMPOUNDS (FEDERAL MCL/CALIFORNIA MCL)																Semi-VOCs
Well Identifier / Sample Identifier	Date Sampled	QA Code	Benzene (5/1)	Carbon Tetrachloride (5/0.5)	Chloroform (80/80)	1,1-DCA (~5)	1,2-DCA (5/0.5)	1,1-DCE (7/6)	cis-1,2-DCE (70/6)	PCE (5/5)	1,1,1-TCA (200/200)	1,1,2-TCA (5/5)	TCE (5/5)	TCFPM (~150)	Toulene (1,000/150)	1,4-Dioxane (37/1**)
Regional Groundwater System Monitor and Extraction Wells																
MW-08	08/15/19	ORG	<0.50	<0.50	0.52	0.56	0.22 J	59	5.6	<0.50	<0.50	<0.50	85	0.19 J	<0.50	3.6
MW-08 Historical Range***			< 0.50 - 0.95	< 0.50 - 0.50	< 0.50 - 0.86	< 0.50 - 5.1	< 0.50 - 0.99	< 0.50 - 500	< 0.50 - 13	< 0.50 - 1.3	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - 480	< 0.50 - 1.0	< 0.50 - 2.3	< 0.20 - 130
MW-09	08/15/19	ORG	<0.50	<0.50	<0.50	<0.50	<0.50	0.78	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.34
MW-09 Historical Range***			< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - 0.79	< 0.50 - < 5.0	< 0.50 - 4.9	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - 0.96	< 0.50 - 5.3	< 0.50 - < 5.0	< 0.20 - 52 E
MW-15	08/16/19	ORG	< 0.50	< 0.50	0.17 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.3	11	< 0.50	NA
MW-15 Historical Range***			< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - 0.22 J	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - 12	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - 7.8	< 0.50 - 20	< 0.50 - < 5.0	< 0.50 - < 2.0
MW-16	08/19/19	ORG	< 2.5	< 2.5	< 2.5	11	< 2.5	1,400	< 2.5	< 2.5	< 2.5	< 2.5	7.8	< 2.5	< 2.5	89
Historical High/Low MW-16 Historical Range***			< 0.50 - < 5.0	< 0.50 - 0.58	< 0.50 - 1.1	< 0.50 - 18	< 0.50 - 4.5	49 - 1,900	< 0.50 - 0.57	< 0.50 - 2.9	< 0.50 - 28 E	< 0.50 - 10	< 0.50 - 7.1	< 0.50 - < 5.0	< 0.50 - < 5.0	< 2.0 - 440
MW-18	08/15/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-18 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 - 0.51	< 0.50 - 1.2	< 0.50 - 0.12 J	< 0.50	< 0.50	< 0.50	< 0.50 - 6.3	< 0.50 - 0.82	< 0.20 - 7.7 E
MW-20	08/19/19	ORG	< 0.50	< 0.50	1.1	< 0.50	< 0.50	2.2	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.09 J
Historical High/Low MW-20 Historical Range***			< 0.50	< 0.50	< 0.50 - 0.85	< 0.50	< 0.50	< 0.50 - 82	< 0.50	< 0.50 - 0.14 J	< 0.50 - 0.63	< 0.50	< 0.50	< 0.50 - 0.58	< 0.50 - 0.22 J	< 0.20 - 3.9
MW-21	08/15/19	ORG	< 0.50	< 0.50	1.6	19	3.4	970	2.2	2.7	< 0.50	8.5	20	0.47 J	< 0.50	510
MW-21 Historical Range***			< 0.50 - < 25	< 0.50 - 1.9	< 0.50 - 4.6	< 0.50 - 71	< 0.50 - 8.9	200 - 4,900	< 0.50 - 2.4	< 0.50 - 12	< 0.50 - 2.0	< 0.50 - 27	0.96 - 46	< 0.50 - 0.53	< 0.50 - < 10	11 - 1,100
MW-26C	08/14/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-26C Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 1.7	< 0.50	< 0.50 - 120	< 0.50	< 0.50 - 0.79	< 0.50	< 0.50 - 0.77	< 0.50	< 0.50	< 0.50 - 22	< 0.20 - 57
MW-28	08/15/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.90	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.21
MW-28 Historical Range***			< 0.50	< 0.50	< 0.50 - 0.20 J	< 0.50 - 0.94	< 0.50	< 0.50 - 76 E	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20 - 19
MW-29	06/06/19	ORG	< 0.50	< 0.50	< 0.50	1.5	< 0.50	130	< 0.50	< 0.50	< 0.50	< 0.50	1.5	< 0.50	< 0.50	100
MW-29	06/20/19	ORG	< 0.50	< 0.50	< 0.50	1.3	< 0.50	150	< 0.50	0.50	< 0.50	0.64	1.8	< 0.50	< 0.50	92
MW-29	07/03/19	ORG	< 0.50	< 0.50	< 0.50	1.6	< 0.50	99	< 0.50	< 0.50	< 0.50	< 0.50	1.7	< 0.50	< 0.50	100
MW-29	07/18/19	ORG	< 0.50	< 0.50	< 0.50	1.4	< 0.50	100	< 0.50	0.54	< 0.50	< 0.50	2.1	0.82	< 0.50	110
MW-29	08/01/19	ORG	< 0.50	< 0.50	< 0.50	3.0	< 0.50	160	< 0.50	< 0.50	< 0.50	1.7	< 0.50	< 0.50	< 0.50	110
MW-29	08/15/19	ORG	< 0.50	< 0.50	< 0.50	2.7	< 0.50	170	< 0.50	0.69	< 0.50	0.64	2.3	1.2	< 0.50	120
Historical High/Low MW-29 Historical Range***			< 0.50 - 0.57	< 0.50 - < 5.0	< 0.50 - 0.80	< 0.50 - 9.2	< 0.50 - 1.4	99 - 900 E	< 0.50 - 0.61	< 0.50 - 6.6	< 0.50 - < 5.0	< 0.50 - 2.3	0.58 - 8.3	< 0.50 - 2.2	< 0.50 - < 5.0	26 BE - 301
MW-30A	08/13/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.06 J
MW-30A Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 2.9	< 0.50 - 0.67	< 0.50 - 270	< 0.50	< 0.50 - 0.58	< 0.50	< 0.50 - 1.1	< 0.50 - 1.9	< 0.50	< 0.50	< 0.20 - 95
MW-30B	08/13/19	ORG	< 0.50	< 0.50	0.77	< 0.50	< 0.50	28	8.2	< 0.50	< 0.50	< 0.50	87	< 0.50	< 0.50	0.92
Historical High/Low MW-30B Historical Range***			< 0.50	< 0.50	< 0.50 - 0.43 J	< 0.50	< 0.50	< 0.50 - 22	< 0.50 - 6.9	< 0.50	< 0.50	< 0.50	< 0.50 - 110	< 0.50	< 0.50 - 4.5	< 0.20 - 28 E
MW-31	08/13/19	ORG	< 0.50	< 0.50	0.58	5.0	0.51	330	3.0 E	2.4 E	< 0.50	< 0.50	14	< 0.50	< 0.50	11 E
MW-3100	08/13/19	FD	< 0.50	< 0.50	0.55	5.2	< 0.50	290	3.0 E	2.4 E	< 0.50	< 0.50	14	< 0.50	< 0.50	11 E
MW-31 ⁽¹⁾	08/13/19	SPT	< 0.50	0.15 J	0.44 J	3.0	0.27 J	290	0.81 E	0.53 E	< 0.50	0.55	13	< 0.50	0.22 J	17 E
Historical High/Low MW-31 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 3.7	< 0.50	25 - 430	< 0.50 - 1.2	< 0.50 - 2.5	< 0.50	< 0.50 - 1.2	0.50 - 21	< 0.50	< 0.50 - 1.0	< 0.20 - 16

TABLE 3
PREVALENT VOLATILE ORGANIC COMPOUNDS AND 1,4-DIOXANE IN GROUNDWATER
THIRD QUARTER 2019

Concentration (micrograms per liter)																
VOLATILE ORGANIC COMPOUNDS (FEDERAL MCL/CALIFORNIA MCL)																
Well Identifier / Sample Identifier	Date Sampled	QA Code	Benzene (5/1)	Carbon Tetrachloride (5/0.5)	Chloroform (80/80)	1,1-DCA (~5)	1,2-DCA (5/0.5)	1,1-DCE (7/6)	cis-1,2-DCE (70/6)	PCE (5/5)	1,1,1-TCA (200/200)	1,1,2-TCA (5/5)	TCE (5/5)	TCFM (~150)	Toluene (1,000/150)	1,4-Dioxane (37/1**)
Regional Groundwater System Monitor and Extraction Wells (cont'd)																
MW-32A	08/13/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-32A Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20 - 1.6
MW-32B_2SV	08/13/19	ORG	< 0.50	< 0.50	< 0.50	3.9	< 0.50	230	8.5	< 0.50	< 0.50	< 0.50	55	< 0.50	< 0.50	7.6
MW-32B	08/13/19	ORG	< 0.50	< 0.50	< 0.50	3.6	< 0.50	230	7.9	< 0.50	< 0.50	< 0.50	52	< 0.50	< 0.50	7.6
Historical High/Low						High		High	High							High
MW-32B Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 1.4	< 0.50	16 - 180	1.9 - 5.9	< 0.50	< 0.50	< 0.50	20 - 75	< 0.50	< 0.50	< 2.0 - 6.9
MW-32C	08/13/19	ORG	< 0.50	< 0.50	0.24 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
Historical High/Low					High											
MW-32C Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 - 0.56	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20 - 1.0
MW-33_2SV	08/14/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-33	08/14/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
Historical High/Low								Low								
MW-33 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.7 - 12	< 0.50	< 0.50 - 0.32 J	< 0.50	< 0.50	< 0.50 - 2.0	< 0.50	< 0.50 - 1.4	< 0.20 - < 2.0
MW-34A	08/13/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-34A Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 - 2.3	< 0.50 - 2.8	< 0.20 - < 2.0
MW-34B	08/13/19	ORG	< 0.50	< 0.50	< 0.50	2.4 E	< 0.50	58	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	22
MW-3400B	08/13/19	FD	< 0.50	< 0.50	< 0.50	2.3 E	< 0.50	70	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	21
MW-34B ⁽²⁾	08/13/19	SPT	< 0.50	< 0.50	0.12 J	0.68 E	0.11 J	57	< 0.50	< 0.50	< 0.50	0.23 J	0.22 J	< 0.50	< 0.50	26
MW-34B Historical Range***			< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - 0.50	< 0.50 - 9.8	< 0.50 - 1.4	20 E - 1,100	< 0.50 - < 5.0	< 0.50 - 1.1	< 0.50 - 1.0	< 0.50 - 2.6	< 0.50 - 2.1	< 0.50 - < 5.0	< 0.50 - 2.6	< 2.0 E - 196
MW-34C	08/13/2019	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-34C Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 - 9.6	< 0.20 - < 2.0
MW-35C	08/16/19	ORG	< 0.50	< 0.50	1.8	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-35C Historical Range***			< 0.50	< 0.50	< 0.50 - 120	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20 - < 2.0
MW-36_2SV	08/14/19	ORG	< 0.50	< 0.50	< 0.50	0.99	< 0.50	66	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	6.0
MW-36	08/14/19	ORG	< 0.50	< 0.50	< 0.50	1.1	< 0.50	73	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	6.7
MW-36 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 1.9	< 0.50	2.9 - 220	< 0.50	< 0.50	< 0.50	< 0.50 - 0.24 J	< 0.50	< 0.50	< 0.50 - 5.9	< 0.20 - 15
MW-39	08/15/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-39 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 - 1.4	< 0.20 - < 2.0
MW-40	08/15/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-40 Historical Range***			< 0.50	< 0.50	< 0.50 - 0.60	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20 - < 2.0
MW-41	08/14/19	ORG	< 0.50	< 0.50	0.62	< 0.50	< 0.50	4.2	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.84
MW-41 Historical Range***			< 0.50	< 0.50	< 0.50 - 0.86	< 0.50 - 1.3	< 0.50	< 0.50 - 130	< 0.50	< 0.50 - 0.20 J	< 0.50	< 0.50 - 0.39 J	< 0.50 - 110	< 0.50	< 0.50	< 0.20 - 18
MW-42	08/14/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	4.6	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.25
Historical High/Low								High								High
MW-42 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.41 J - 2.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20 - 0.10 J
MW-43	08/14/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-43 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20

TABLE 3
PREVALENT VOLATILE ORGANIC COMPOUNDS AND 1,4-DIOXANE IN GROUNDWATER
THIRD QUARTER 2019

Concentration (micrograms per liter)																
VOLATILE ORGANIC COMPOUNDS (FEDERAL MCL/CALIFORNIA MCL)																
Well Identifier / Sample Identifier	Date Sampled	QA Code	Benzene (5/1)	Carbon Tetrachloride (5/0.5)	Chloroform (80/80)	1,1-DCA (~5)	1,2-DCA (5/0.5)	1,1-DCE (7/6)	cis-1,2-DCE (70/6)	PCE (5/5)	1,1,1-TCA (200/200)	1,1,2-TCA (5/5)	TCE (5/5)	TCFM (~150)	Toulene (1,000/150)	1,4-Dioxane (3*/1**)
Regional Groundwater System Monitor and Extraction Wells (cont'd)																
EW-01	08/15/19	ORG	< 0.50	< 0.50	< 0.50	1.4	0.43 J	85	< 0.50	0.33 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	42
EW-01 Historical Range***			< 0.50 - 2.0	< 0.50 - 0.55	< 0.50 - 1.2	< 0.50 - 16	< 0.50 - 4.0	< 0.50 - 1,600 E	< 0.50 - 0.52	< 0.50 - 4.3	< 0.50 - < 2.5	< 0.50 - 10	< 0.50 - 3.3	< 0.50 - 0.61	< 0.50 - 4.6	< 2.0 - 990 E
EW-02	06/06/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	14	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	7.2
EW-02	06/20/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	13	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	13
EW-02	07/03/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	9.8	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	8.0
EW-02	07/18/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	12	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	9.4
EW-02	08/01/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	18	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	8.3
EW-02	08/15/19	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	19	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	12
EW-02 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 1.5	< 0.50	2.3 - 160	< 0.50	< 0.50	< 0.50	< 0.50 - 0.59	< 0.50	< 0.50	< 0.50 - 0.85	< 2.0 - 48
QUALITY ASSURANCE/QUALITY CONTROL SAMPLES																
TB-060619	06/06/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-062019	06/20/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-070319	07/03/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-071819	07/18/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-080119	08/01/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-081319A	08/13/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-081319B ⁽¹⁾	08/13/19	TB-SPT	< 0.50	< 0.50	0.10 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-081419	08/14/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
RB-081419	08/14/19	RB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
TB-081519 ⁽⁴⁾	08/15/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-081619	08/16/19	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA

NOTE: Detections are shown in **BOLD** type.

- ⁽¹⁾ Methylene Chloride was detected at a concentration of 0.14 J ug/l in the split sample for monitor well MW-31 on 08/13/19
⁽²⁾ Methylene Chloride was detected at a concentration of 0.064 J ug/l in the split sample for monitor well MW-34B on 08/13/19
⁽³⁾ Methylene Chloride was detected at a concentration of 0.39 J ug/l in the split trip blank sample TB-081319B on 08/13/19
⁽⁴⁾ Methylene Chloride was detected at a concentration of 0.87 J.B ug/l in the trip blank sample TB-081519 on 08/15/19

FOOTNOTES

1,1-DCA = 1,1-Dichloroethane
 1,2-DCA = 1,2-Dichloroethane
 1,1-DCE = 1,1-Dichloroethene
 cis-1,2-DCE = cis-1,2-Dichloroethene
 PCE = Tetrachloroethene
 1,1,1-TCA = 1,1,1-Trichloroethane
 1,1,2-TCA = 1,1,2-Trichloroethane

TCE = Trichloroethene
 TCFM = Trichlorofluoromethane
 (<) = Less than; the value is the Limit of Detection for that compound
 * = 1,4-Dioxane Action Level of 3 ug/l
 ** = California Notification Level for 1,4-Dioxane of 1 ug/l
 *** = Historical Range determined using original samples exclusively
 Semi-VOCs = Semivolatile organic compounds

NA = Not analyzed for constituent
 FD = Field duplicate sample
 ORG = Original sample
 E = Data qualified as Estimated in accordance with quality control criteria.
 TB = Trip blank sample
 RB = Rinsate blank sample
 ug/l = Micrograms per liter
 MCL = Maximum Contaminant Level
 QA = Quality Assurance
 SPT = Split sample
 ug/l = micrograms per liter

TABLE 4
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM OPERATIONAL SUMMARY

OPERATIONAL PERIOD (MONTH/QUARTER/YEAR)	WELLFIELD PRODUCTION ^(a) (gallons)	AVERAGE DISCHARGE RATE ^(b) (gpm)	AVERAGE OPERATIONAL DISCHARGE RATE ^(c) (gpm)	OPERATIONAL HOURS DURING OPERATIONAL PERIOD	HOURS IN OPERATIONAL PERIOD	% OPERATIONAL
2008^(d)	3,659,562	13.8	18.2	3,358	4,416	76%
2009	5,787,848	11.0	18.1	5,319	8,760	61%
2010	14,295,261	27.2	46.4	5,131	8,760	59%
2011	20,456,899	38.9	45.8	7,442	8,760	85%
2012^(e)	19,378,122	40.2	47.2	6,850	8,040	85%
2013^(f)	21,148,029	40.2	45.7	7,713	8,760	88%
2014^(g)	7,690,471	14.6	46.8	2,740	8,760	31%
2015^(h)	18,019,312	34.3	47.9	6,275	8,760	72%
2016⁽ⁱ⁾	21,977,404	41.8	44.2	8,284	8,736	95%
2017⁽ⁱ⁾	18,364,603	34.6	39.8	7,684	8,835	87%
2018^(k)	18,144,835	34.5	38.3	7,889	8,760	90%
Dec-18	1,691,132	39.1	40.5	696	721	97%
Jan-19	1,071,270	21.2	40.7	439	840	52%
Feb-19	1,139,085	30.6	41.8	454	621	73%
1Q2019	3,901,487	29.8	40.9	1,589	2,183	73%
Mar-19	1,433,449	33.1	42.2	567	721	79%
Apr-19	1,677,379	41.8	41.9	668	669	100%
May-19	2,045,093	40.5	41.5	822	841	98%
2Q2019	5,155,921	38.5	41.8	2,057	2,232	92%
June 2019	1,497,093	38.5	39.3	635	649	98%
July 2019	1,675,835	40.0	40.1	696	698	100%
August 2019	2,004,100	39.9	39.9	836	837	100%
3Q 2019	5,177,028	39.5	39.8	2,167	2,183	99%
SINCE INCEPTION	183,156,782	31.2	41.0	74,498	97,944	76%

Notes:

- (a) Based on Effluent totalizer readings from CEFF, which also includes relatively small amounts of monitor well purge water from quarterly sampling events, well installations, and aquifer testing.
- (b) Total volume of water treated during the operational period divided by the total number of minutes in that operational period.
- (c) Total volume of water treated during the operational period divided by the minutes of operation in that operational period.
- (d) Operational period beginning 7/1/2008 (first month of system operation).
- (e) 2012 Calendar year is from 1/1/2012 through 11/30/2012.
- (f) 2013 Calendar year is from 12/1/2012 through 11/30/2013.
- (g) 2014 Calendar year is from 12/1/2013 through 11/30/2014.
- (h) 2015 Calendar year is from 12/1/2014 through 11/30/2015
- (i) 2016 Calendar year is from 12/1/2014 through 11/30/2015

TABLE 4
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM OPERATIONAL SUMMARY

OPERATIONAL PERIOD (MONTH/QUARTER/YEAR)	WELLFIELD PRODUCTION ^(a) (gallons)	AVERAGE DISCHARGE RATE ^(b) (gpm)	AVERAGE OPERATIONAL DISCHARGE RATE ^(c) (gpm)	OPERATIONAL HOURS DURING OPERATIONAL PERIOD	HOURS IN OPERATIONAL PERIOD	% OPERATIONAL

Notes (cont'd):

(j) 2017 Calendar year is from 12/1/2014 through 11/30/2015

(k) 2018 Calendar year is from 12/1/2017 through 11/30/2018

gpm = gallons per minute

Refer to previous quarterly reports for detail of 2008 thru 2014 operational summary

Treatment of groundwater from EW-02 initiated in 2010

Treatment of groundwater from MW-29 initiated in 2014

CEFF = Carbon effluent

TABLE 5
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM SAMPLING SCHEDULE

COMPOUND(S) / CONSITITUENT				ANALYTICAL METHOD				SAMPLE CONTAINER				REPORTING DETECTION LIMITS (milligrams per liter)				SAMPLE FREQUENCY AND LOCATION																			
																Daily Samples ¹ : Days 1-5					Weekly Samples ¹ : Weeks 1-4					Monthly Samples: Week 5+					Quarterly Samples: Week 1+				
																System Influent (INF)	Post-Filter (PF)	Post-Oxidation (POX)	Carbon Breakthrough (CBT) ³	Post-Carbon (CEFF)	System Influent (INF)	Post-Filter (PF)	Post-Oxidation (POX)	Carbon Breakthrough (CBT) ³	Post-Carbon (CEFF)	Extraction Wells (Well ID) ²	System Influent (INF)	Post-Filter (PF)	Post-Oxidation (POX)	Carbon Breakthrough (CBT) ³	Post-Carbon (CEFF)	Extraction Wells (Well ID) ²	System Influent (INF)	Post-Oxidation (POX)	Post-Carbon (CEFF)
COMPOUNDS/CONSTITUENTS NORMALLY REQUIRED AS PART OF NPDES OR WDR PERMITS, PURSUANT TO CRWQCB REGION 8 ORDER NO. R8-2003-0085																																			
Volatile Organic Compounds	EPA 8260B	3 - 40 mL VOA, HCl	QAPP ⁴	X		X	X	X		X		X	X	X		X	X		X	X	X														
1,4-Dioxane	EPA 8270 Modified	1 L Amber	0.002	X						X						X	X																		
1,4-Dioxane	EPA 8270 SIM	1 L Amber	0.0002			X						X						X																	
Total Suspended Solids	SM2540D	250 mL poly	10														X																		
Total Dissolved Solids	SM2540C	250 mL poly	10																				X	X	X	X									
SELECTED METALS																																			
Dissolved Metals (Iron, Manganese, Calcium, Sodium, Magnesium)	EPA 6010B	500 mL poly	QAPP ⁴	(a)																			X	X											
Selenium	EPA 6010B	500 mL poly, HNO ₃	QAPP ⁴																				X	X											
SELECTED INORGANIC CONSTITUENTS																																			
Hydroxide Alkalinity	SM2320B	250 mL poly	2.0	(a)														X	X				X	X											
Bicarbonate Alkalinity	SM2320B	250 mL poly	2.0	(a)														X	X				X	X											
Carbonate Alkalinity	SM2320B	250 mL poly	2.0	(a)														X	X				X	X											
Total Alkalinity	SM2320B	250 mL poly	2.0	(a)														X	X				X	X											
BROMATE EVALUATION																																			
Bromate	EPA 317.0	125 mL poly	0.0005			X						X							X																
Bromide	EPA 300.0	125 mL poly	0.05	(a)						(a)							X	X																	
OTHER CONSTITUENTS/COMPOUNDS																																			
Total Organic Carbon	SM5310B	3 - 40 mL VOA, HCl	3.0	(a)														X	X				X	X	X										
Anions (Chloride, Sulfate, Nitrate, Nitrite, and Phosphate)	EPA 300.0	500 mL poly	Varies	(a)																			X	X	X										
Chemical Oxygen Demand	EPA 410.4	125 mL poly, H ₂ SO ₄	5.0	(a)																			X	X	X										
UV Absorption (UVA) @254nm	EPA 415.3	250 mL Amber	N/A		(a)													X					X	X	X										
Field Parameters																																			
Dissolve Oxygen (DO)	N/A	N/A	N/A	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X														
Electrical Conductance (EC)	N/A	N/A	N/A	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X														
Redox Potential	N/A	N/A	N/A	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X														
Temperature	N/A	N/A	N/A	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X														
pH	N/A	N/A	N/A	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X														
Turbidity	N/A	N/A	N/A	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X														
Flow-Meter	N/A	N/A	N/A	X				X		X				X		X	X																		
Residual Hydrogen Peroxide	N/A	N/A	N/A			(a)	(a)	(a)				X	X	X					X	X	X														

TABLE 5
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM SAMPLING SCHEDULE

FOOTNOTES

- (a) Only one sample to be collected during sampling period.
- 1 Daily and weekly samples collected during the first month of operation will be repeated after major modifications to system equipment or operating parameters, as detailed in the Workplan.
- 2 If more than one extraction well is in operation, combined influent samples will be collected in addition to extraction wellhead samples, with the same sampling schedule as the extraction wellheads.
- 3 Carbon breakthrough will be collected from the effluent of the first carbon unit in series; when breakthrough of the first unit is detected, the breakthrough sample will be collected from the effluent of the second carbon unit in series.
- 4 QAPP, Quality Assurance Project Plan, Appendix B of Additional Groundwater Assessment Workplan, Hargis + Associates, Inc., April 25, 2003.
- CRWQCB = California Regional Water Quality Control Board, Santa Ana Region 8 nm = Nanometers
- NPDES = National Pollutant Discharge Elimination System EPA = U.S. Environmental Protection Agency
- WDR = Waste Discharge Requirement SIM = Selected ion monitoring
- N/A = Not applicable SM = Standard Method
- mL = Milliliter L = Liter
- VOA = Volatile organic analysis poly = High density polyethylene bottle
- HCl = Hydrochloric acid Amber = Amber glass bottle
- HNO₃ = Nitric acid
- H₂SO₄ = Sulfuric acid

TABLE 6
SELECT COMPOUNDS MONITORED IN
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM SAMPLES
THIRD QUARTER 2019

Compound	Date	Units	MW-21 ^(a)	MW-29	EW-01 ^(a)	EW-02	INF*	PF	POX	CBT	CEFF
Extraction Rate	06/11/19-08/31/19	GPM	--	33	--	10	--	--	--	--	--
1,1,2-Trichloroethane	06/06/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
(5 ug/L MCL)	06/20/19	ug/L	--	0.64	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	07/03/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	07/18/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	08/01/19	ug/L	--	1.7	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	08/15/19	ug/L	--	0.64	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
1,1-Dichloroethane	06/06/19	ug/L	--	1.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
(5 ug/L MCL)	06/20/19	ug/L	--	1.3	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	07/03/19	ug/L	--	1.6	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	07/18/19	ug/L	--	1.4	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	08/01/19	ug/L	--	3.0	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	08/15/19	ug/L	--	2.7	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
1,1-Dichloroethene	06/06/19	ug/L	--	130	--	14	55	--	<0.5	<0.5	<0.5
(6 ug/L MCL)	06/20/19	ug/L	--	150	--	13	54	--	<0.5	<0.5	<0.5
	07/03/19	ug/L	--	99	--	9.8	49	--	<0.5	<0.5	<0.5
	07/18/19	ug/L	--	100	--	12	45	--	<0.5	<0.5	<0.5
	08/01/19	ug/L	--	160	--	18	56	--	<0.5	<0.5	<0.5
	08/15/19	ug/L	--	170	--	19	63	--	<0.5	<0.5	<0.5
1,2-Dichloroethane	06/06/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
(0.5 ug/L MCL)	06/20/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	07/03/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	07/18/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	08/01/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	08/15/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
cis-1,2-Dichloroethene	06/06/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
(6 ug/L MCL)	06/20/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	07/03/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	07/18/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	08/01/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	08/15/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
Tetrachloroethene	06/06/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
(5 ug/L MCL)	06/20/19	ug/L	--	0.50	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	07/03/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	07/18/19	ug/L	--	0.54	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	08/01/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	08/15/19	ug/L	--	0.69	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
Trichloroethene	06/06/19	ug/L	--	1.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
(5 ug/L MCL)	06/20/19	ug/L	--	1.8	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	07/03/19	ug/L	--	1.7	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	07/18/19	ug/L	--	2.1	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	08/01/19	ug/L	--	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	<0.5
	08/15/19	ug/L	--	2.3	--	<0.5	0.74	--	<0.5	<0.5	<0.5
1,4-Dioxane	06/06/19	ug/L	--	100	--	7.2	19	--	<0.2	<0.2	<0.2
(1 ug/L California Notification Level)	06/20/19	ug/L	--	92	--	13	31	--	<0.2	<0.2	<0.2
	07/03/19	ug/L	--	100	--	8.0	32	--	1.2	0.97	0.82
	07/18/19	ug/L	--	110	--	9.4	30	--	<0.2	<0.2	<0.2
	08/01/19	ug/L	--	110	--	8.3	32	--	<0.2	<0.2	<0.2
	08/15/19	ug/L	--	120	--	12	35	--	<0.2	<0.2	<0.2
Bromide	06/06/19	mg/L	--	0.38	--	0.22	0.27	--	--	--	--
	07/03/19	mg/L	--	0.36	--	0.21	0.25	--	--	--	--
	08/01/19	mg/L	--	0.46	--	0.27	0.32	--	--	--	--
Bromate	06/06/19	ug/L	--	--	--	--	< 0.5	--	< 0.5	--	--
	07/03/19	ug/L	--	--	--	--	< 0.5	--	< 0.5	--	--
	08/01/19	ug/L	--	--	--	--	< 0.5	--	< 0.5	--	--
Total Non-Filterable-Residue	06/06/19	mg/L	--	--	--	--	--	< 3.3	--	--	--
(10 ug/L MCL)	07/03/19	mg/L	--	--	--	--	--	< 1.0	--	--	--
	08/01/19	mg/L	--	--	--	--	--	< 1.0	--	--	--
Total Filterable Residue	06/06/19	mg/L	--	780	--	630	670	--	670	--	660
(500 mg/L MCL)											

NOTE: Detections are shown in **BOLD** type.**FOOTNOTES:**^(a) = inactive extraction wells; extraction wells MW-21 and EW-01 operated from July 2008 to November 2009

MCL = Maximum Contaminant Level or Drinking Water Action Level, if applicable

ug/L = micrograms per liter

mg/L = milligrams per liter

gpm = gallon per minute

(--)= Not scheduled for performance monitoring

(<)= Less than; the numerical value is the Limit of Detection for that compound

INF* = Influent (extraction wells EW-02 and MW-29)

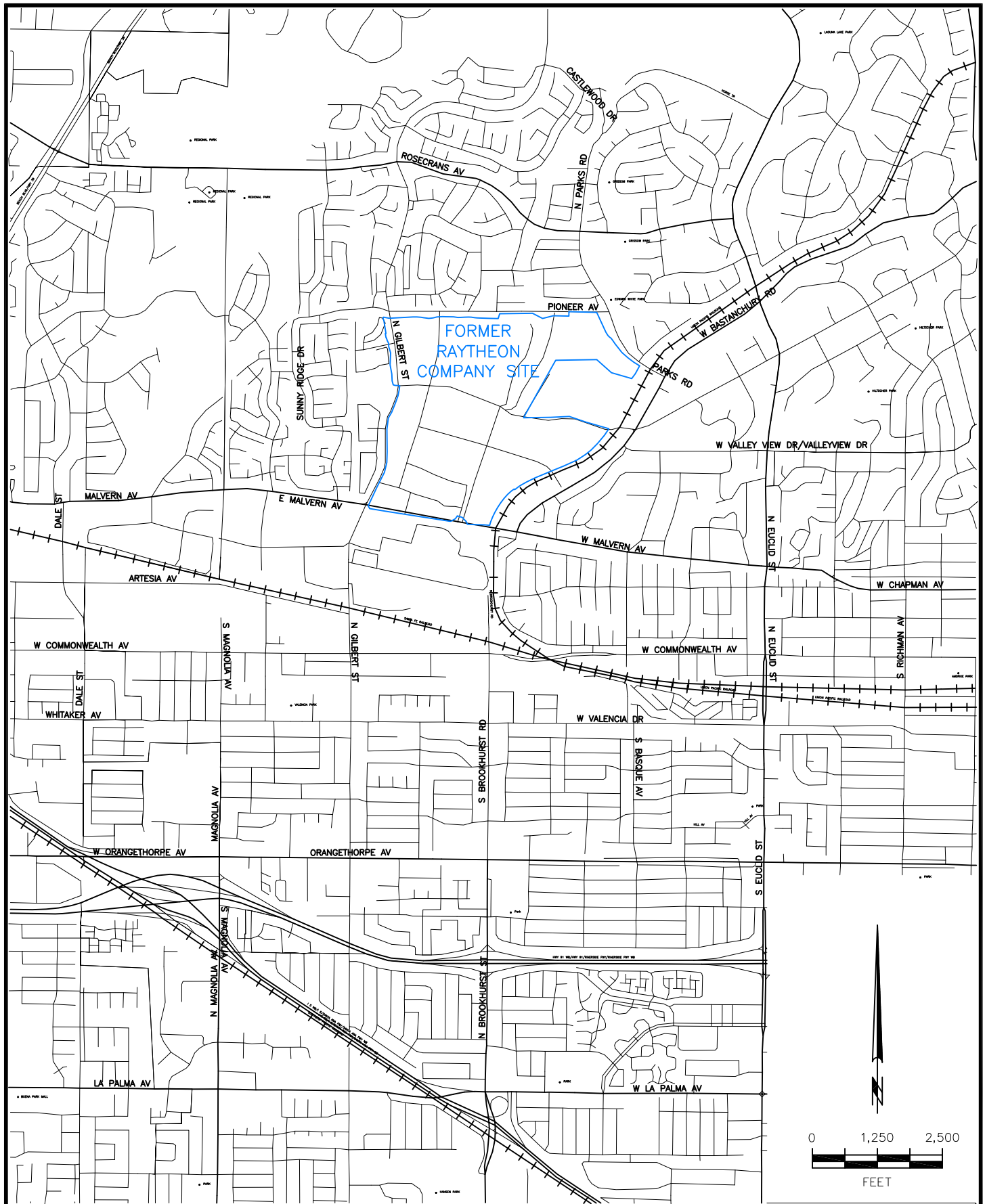
PF = Post Particulate Filter

POX = Post UV/Chem-Ox

CBT = Carbon Breakthrough

CEFF = Carbon Effluent

May 11, 2011 - 10:09am ADE - T: \2011\500-599\532 Raytheon\Hydrogeology\H+A Base\Maps\410-8281.dwg



HARGIS+ASSOCIATES, INC.
Hydrogeology/Engineering

5/11 | RPT NO. 532.31 | 410-8281 | A

FIGURE 1. SITE LOCATION

Jul 09, 2019 - 9:22am ESS - T:\2019\500-599\532 Raytheon\Hydrogeology\H+A Base\maps\410-10166.dwg

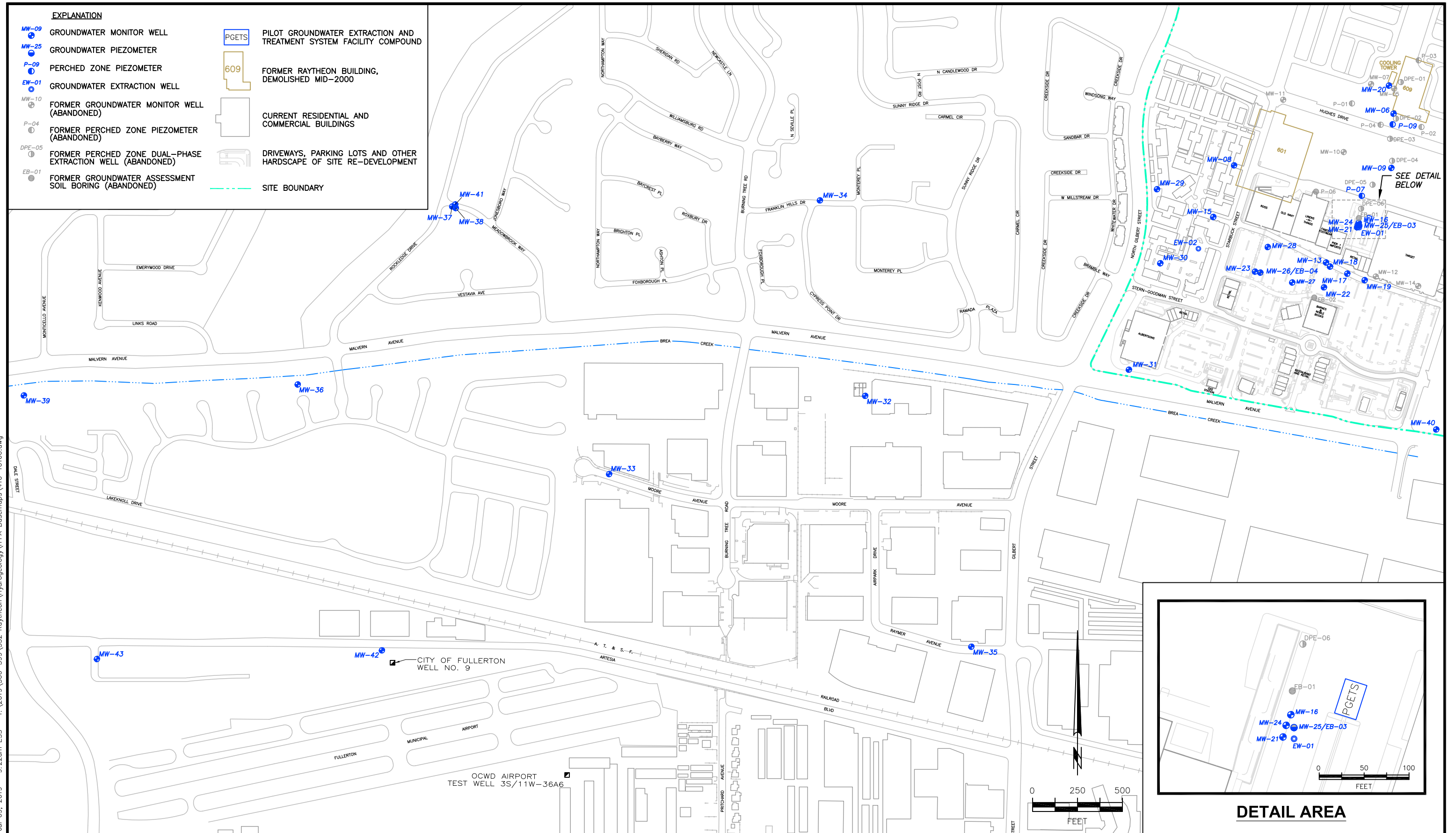


FIGURE 2.
WELL AND PIEZOMETER LOCATIONS

Sep 23, 2019 - 9:25am ESS - T: \2019\500-599-532 Raytheon\Hydrogeology\Water Lvl\220-2493.dwg

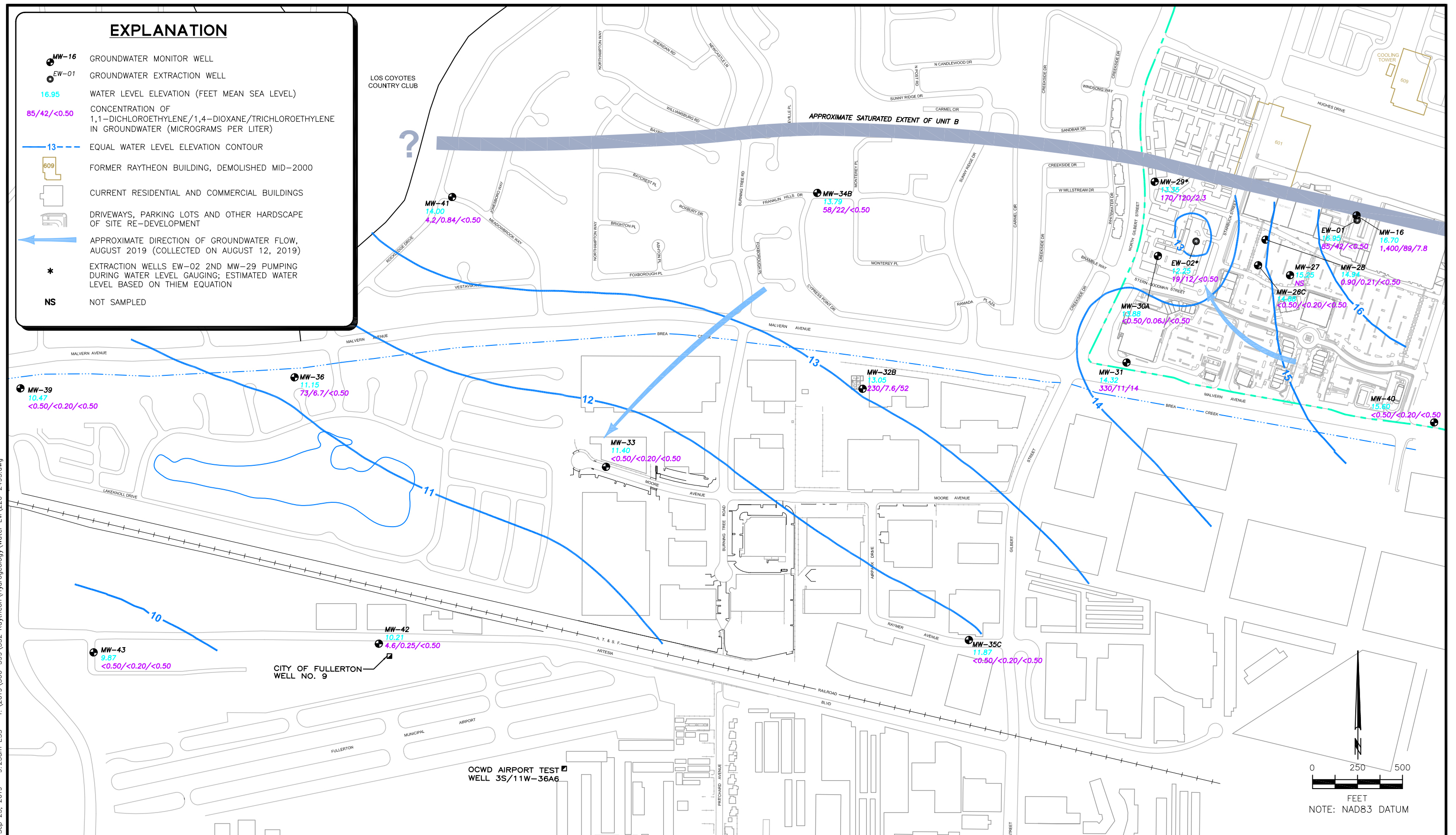


FIGURE 3.
WATER LEVEL AND WATER QUALITY UNIT B
AUGUST 2019

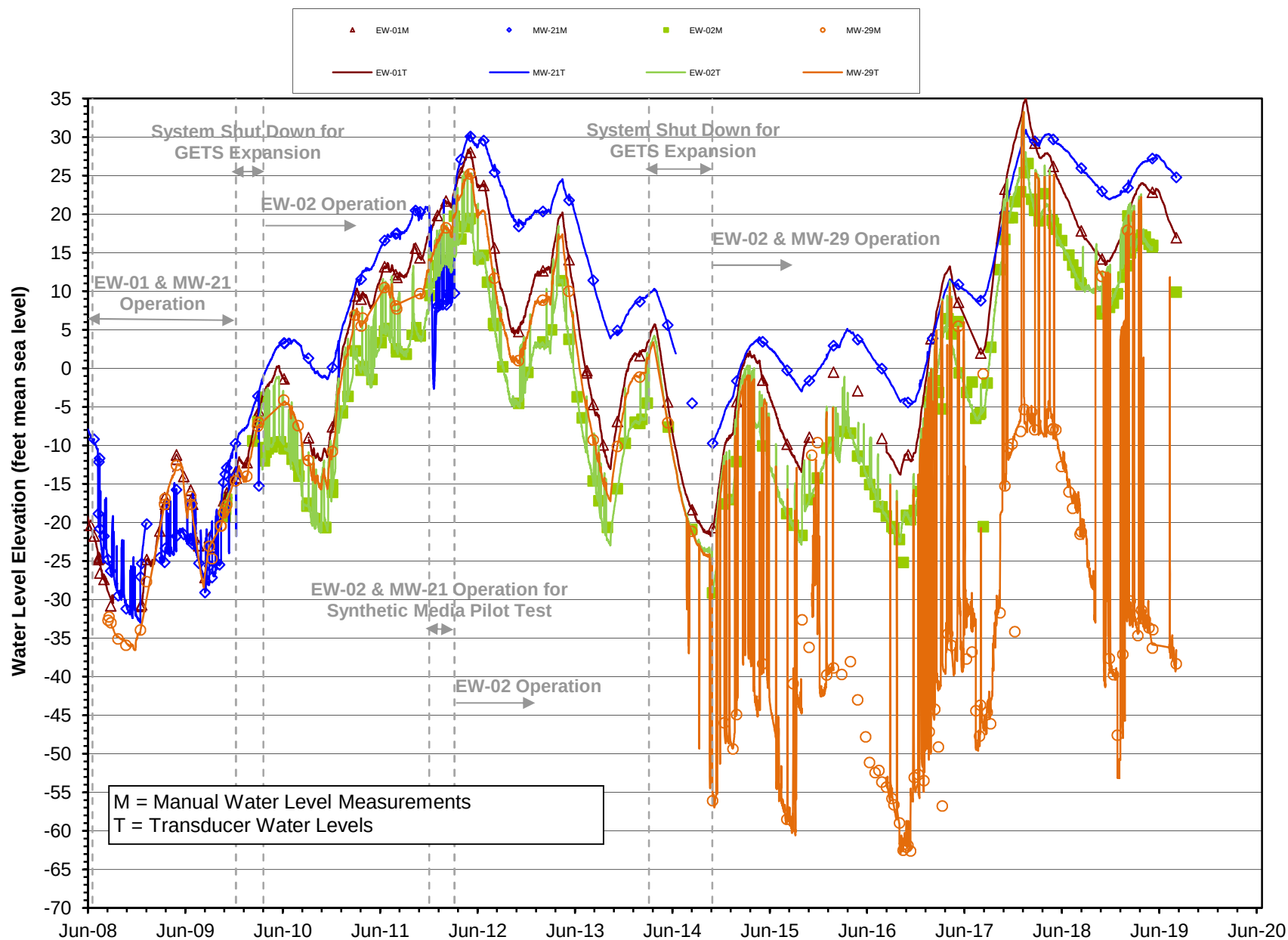


FIGURE 4.
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM OPERATION
AND EXTRACTION WELL WATER LEVELS

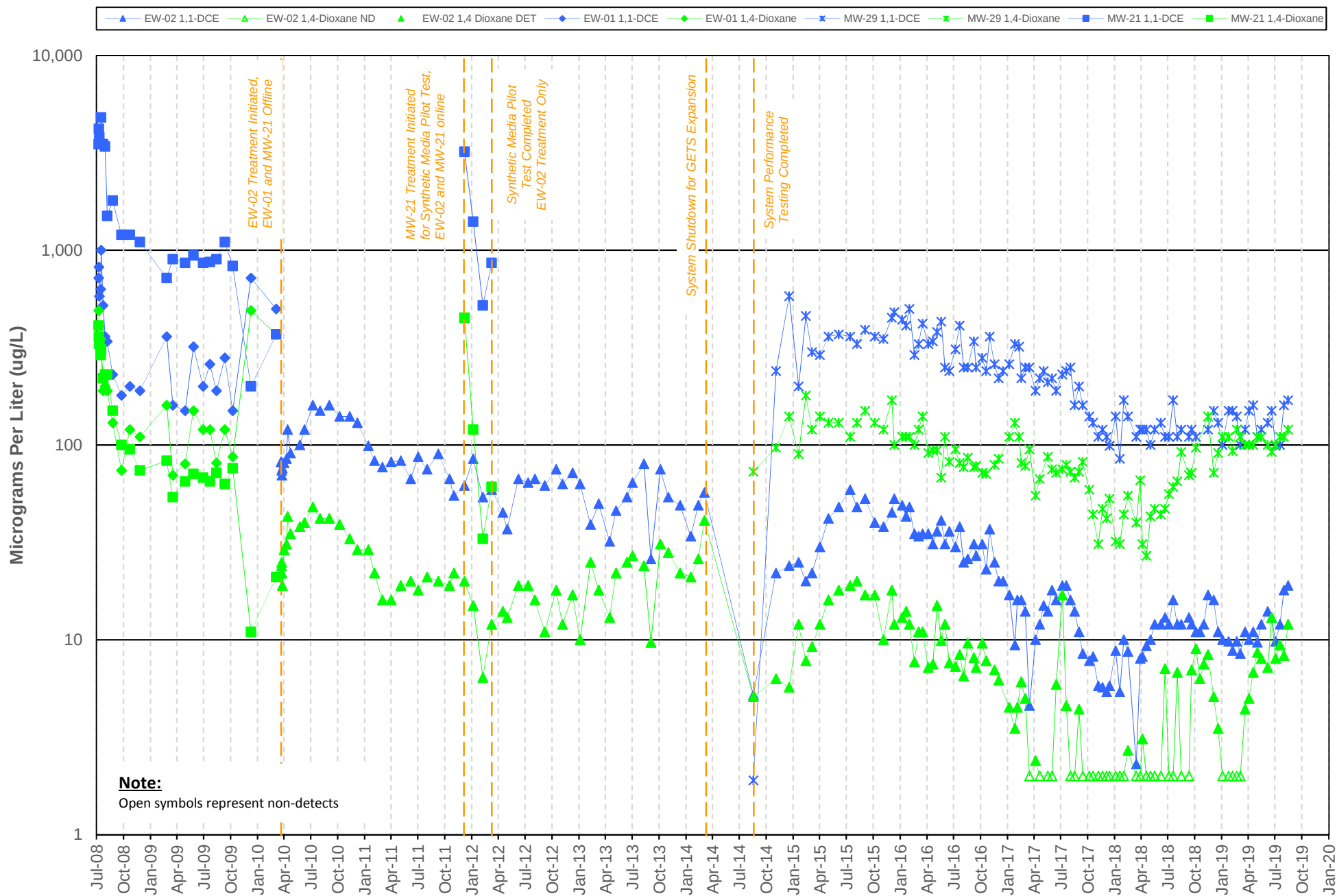


FIGURE 5.
1,1-DICHLOROETHYLENE AND 1,4-DIOXANE CONCENTRATIONS IN EXTRACTION WELLS

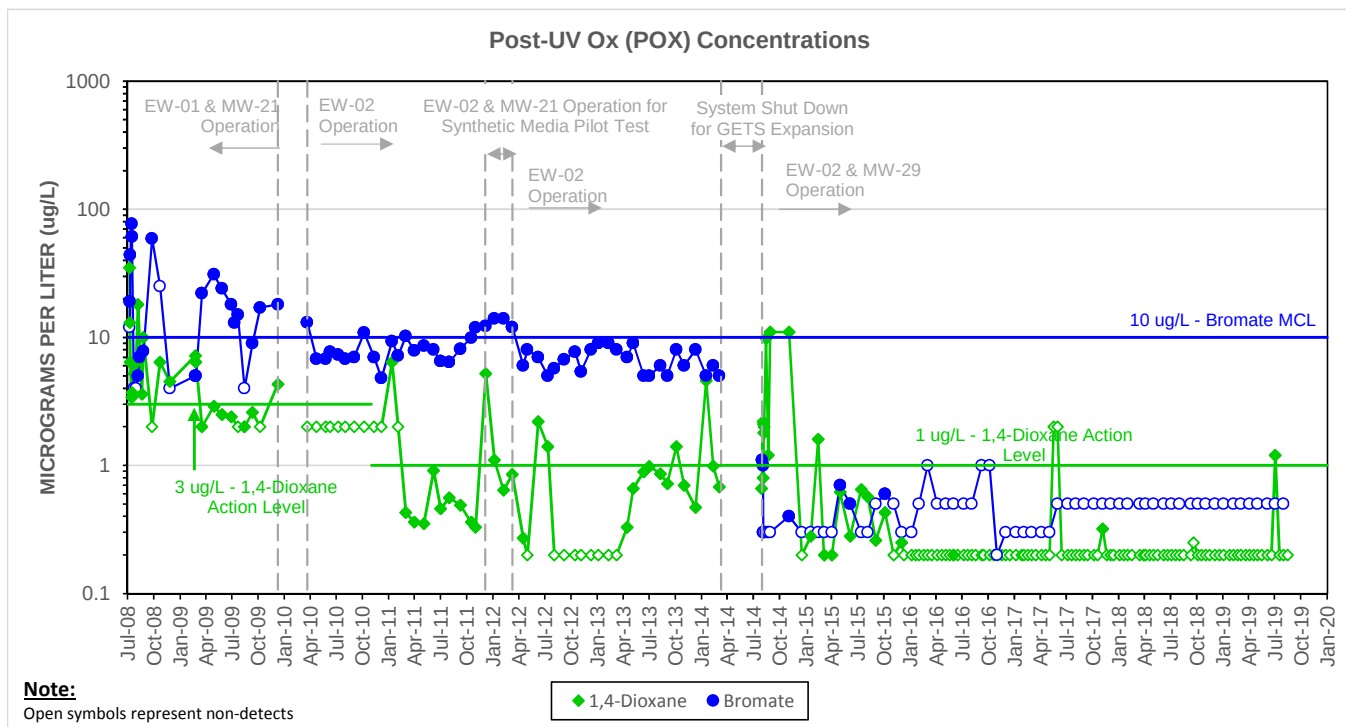
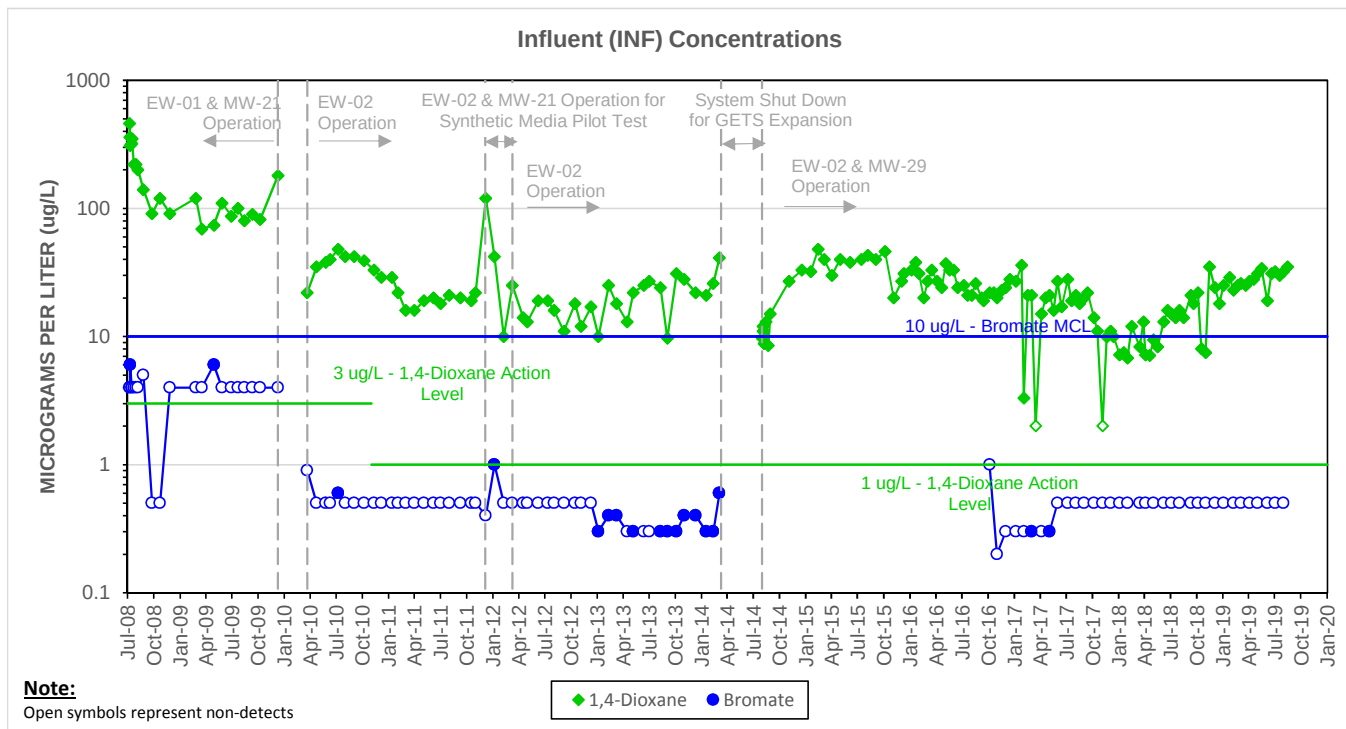


FIGURE 6.
1,4-DIOXANE AND BROMATE IN INFLUENT AND POST-OXIDATION SAMPLES

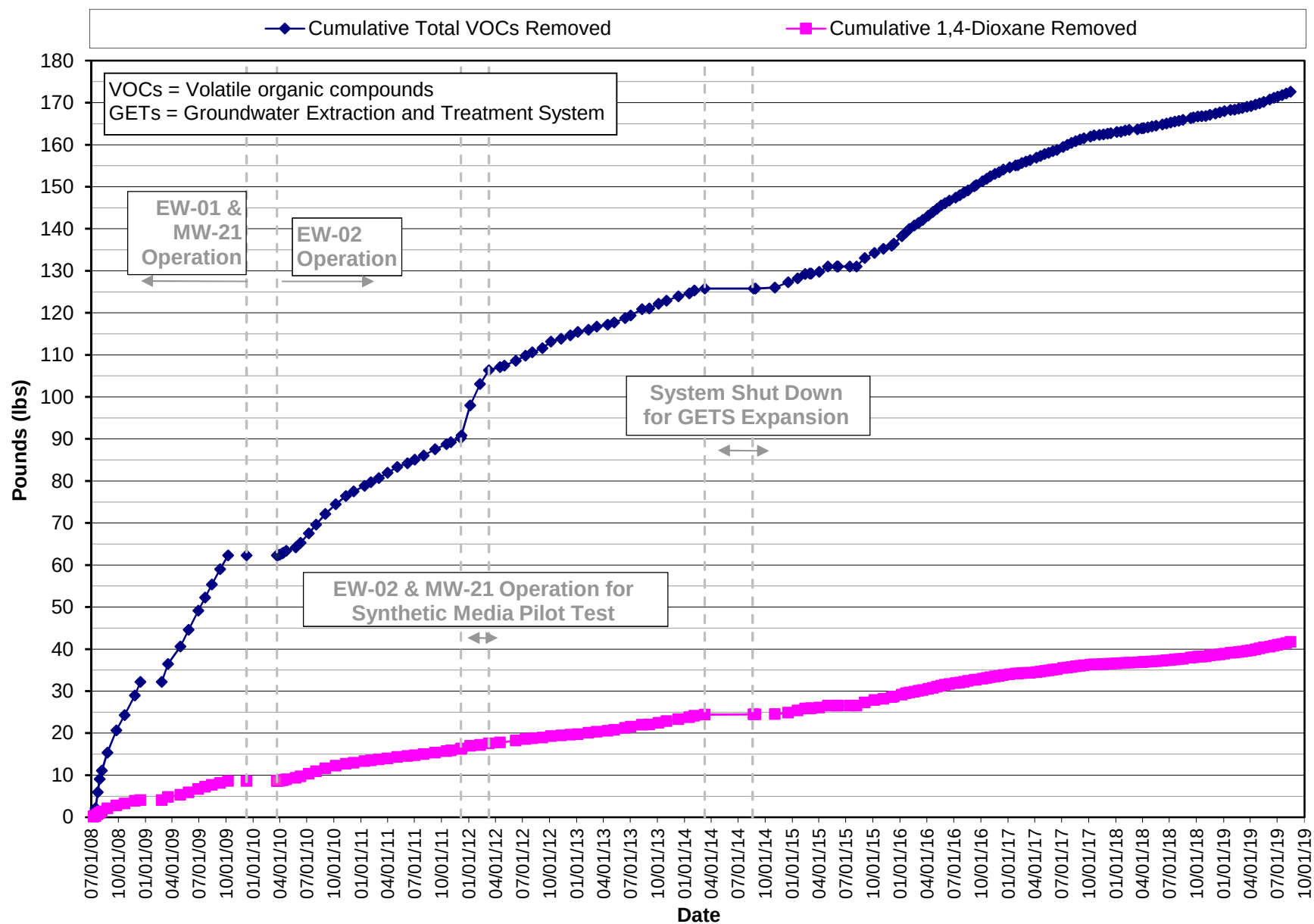


FIGURE 7.
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM MASS REMOVAL

APPENDIX A
GROUNDWATER SAMPLING FIELD FORMS

AUG 2019

QUARTERLY GROUNDWATER MONITORING
FIELD NOTEBOOK
LOW VOLUME MONITOR WELLS

RAYTHEON COMPANY

532.30

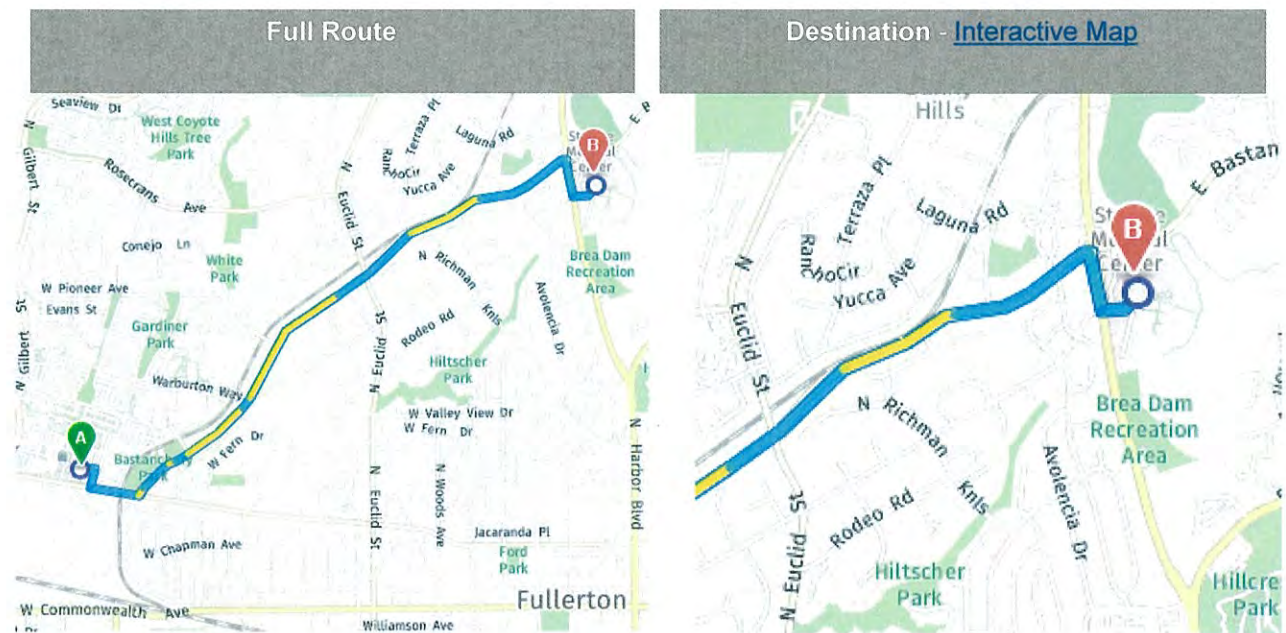
1901 MALVERN AVE.
FULLERTON, CALIFORNIA



HARGIS + ASSOCIATES, INC.
HYDROGEOLOGY • ENGINEERING

Driving Directions

Starting from:	1	Raytheon Site: 1901 W. Malvern Ave., Fullerton, California 92833-2177
Arriving at:	2	St. Jude Medical Center: 101 E. Valencia Mesa, Fullerton, California 92835-3809
Distance:	2.4 miles	Approximate Travel Time: 5 minutes



Directions		Miles	
1.	Start on MALVERN AVE	0.1	↑
2.	Turn Left on W BASTANCHURY RD	2.2	↶
3.	Turn Right on N HARBOR BLVD	0.2	↷
4.	Turn Left on E VALENCIA MESA DR	0.0	↶
Distance: 2.4 miles		Approximate Travel Time: 5 minutes	

FIGURE 7
ROUTE TO HOSPITAL



DAILY FIELD SAFETY BRIEFING ATTENDANCE SHEET

Date: 8/12/19

Location: FULLERTON, CA

Presented by: A. DONNELLY

A. GENERAL INTRODUCTION

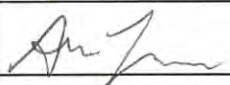
1. Location of site Health and Safety Plan (HSP) and ensure everyone has read the site HSP.
2. Primary hazards and controls (chemical, physical, and biological).
3. Sanitation and decontamination (potable water, nonpotable water, toilet, sink, shower).
4. General Site Rules.
5. Emergency Response Plan (location where emergency telephone numbers and hospital route posted, shower, first aid kit, fire extinguisher, alarm system, evacuation, meeting place, contingencies, upwind).
6. Establish buddy system.

B. SPECIFIC PRECAUTIONS FOR DAY'S ACTIVITIES Go over the hospital route daily; wear traffic vests, use safety cones, and be aware of traffic whenever in or near the roadways; wear sunscreen and hydrate well; wear gloves and take appropriate precautions when handling contaminated groundwater; watch for black widow spiders in vaults. Notify your supervisor and field partner of any issues.

C. ON-SITE ORGANIZATION AND COORDINATION

D. OTHER TOPICS:

ATTENDEE LIST

PRINT NAME	SIGNATURE	COMPANY	DATE
Andrew Donnelly		HARGIS + ASSOC., INC	8/12/19
Ruben Sanchez		HARGIS + ASSOC., INC	8/12/19
Amanda Janzon		HARGIS + ASSOC., INC	8/12/19
DJ Seaver		H-A	8/13/19

DAILY FIELD SAFETY BRIEFING ATTENDANCE SHEET

Date: 08/13/19

Location: FULLERTON, CA

Presented by: A. DONNELLY

A. GENERAL INTRODUCTION

1. Location of site Health and Safety Plan (HSP) and ensure everyone has read the site HSP.
2. Primary hazards and controls (chemical, physical, and biological).
3. Sanitation and decontamination (potable water, nonpotable water, toilet, sink, shower).
4. General Site Rules.
5. Emergency Response Plan (location where emergency telephone numbers and hospital route posted, shower, first aid kit, fire extinguisher, alarm system, evacuation, meeting place, contingencies, upwind).
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B. SPECIFIC PRECAUTIONS FOR DAY'S ACTIVITIES Go over the hospital route daily; wear traffic vests, use safety cones, and be aware of traffic whenever in or near the roadways; wear sunscreen and hydrate well; wear gloves and take appropriate precautions when handling contaminated groundwater; watch for black widow spiders in vaults. Notify your supervisor and field partner of any issues.

C. ON-SITE ORGANIZATION AND COORDINATION

D. OTHER TOPICS:

ATTENDEE LIST

PRINT NAME	SIGNATURE	COMPANY	DATE
Andrew Donnelly	<i>A Donnelly</i>	HARGIS + ASSOC., INC	8/13/19
DJ Seaton	<i>DJ Seaton</i>	HARGIS + ASSOC., INC	8/13/19
Amanda Janzen	<i>A Janzen</i>	HARGIS + ASSOC., INC	8/13/19
Christina Perez	<i>Christina Perez</i>	N/A	08/13/2019

DAILY FIELD SAFETY BRIEFING ATTENDANCE SHEET

Date: 8/19/19

Location: FULLERTON, CA

Presented by: A. DONNELLY

A. GENERAL INTRODUCTION

1. Location of site Health and Safety Plan (HSP) and ensure everyone has read the site HSP.
2. Primary hazards and controls (chemical, physical, and biological).
3. Sanitation and decontamination (potable water, nonpotable water, toilet, sink, shower).
4. General Site Rules.
5. Emergency Response Plan (location where emergency telephone numbers and hospital route posted, shower, first aid kit, fire extinguisher, alarm system, evacuation, meeting place, contingencies, upwind).
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B. SPECIFIC PRECAUTIONS FOR DAY'S ACTIVITIES Go over the hospital route daily; wear traffic vests, use safety cones, and be aware of traffic whenever in or near the roadways; wear sunscreen and hydrate well; wear gloves and take appropriate precautions when handling contaminated groundwater; watch for black widow spiders in vaults. Notify your supervisor and field partner of any issues.

C. ON-SITE ORGANIZATION AND COORDINATION

D. OTHER TOPICS:

ATTENDEE LIST

PRINT NAME	SIGNATURE	COMPANY	DATE
A. DONNELLY	A Donnelly	HARGIS + ASSOC., INC	8/19/19
DJ Scaler	DJ Scaler	HARGIS + ASSOC., INC	8/19/19
S. Rocha	S. Rocha	HARGIS + ASSOC., INC	8/19/19



FIELD OBSERVATIONS

PROJECT NAME / LOCATION: RAYTHEON / FULLERTON, CA

PROJECT NO.: 532.30 DATE: _____ INITIALS: _____

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#1: FA03788

INSTRUMENT CALIBRATION LOG FOR GROUNDWATER SAMPLING: Temp + pH + EC + DO + ORP

Quattro model

[illegible]

PROJECT NUMBER:532.30

[illegible]

STATIC WATER LEVEL DATA SHEET

MONTH/YEAR: AUG 2019

METHOD OF MEASUREMENT/SOUNDER IDENTIFIER: FLAT TAPE ELECTRIC SOUNDER # _____

PROJECT NUMBER: 532.30

WELL IDENTIFIER	DATE	TIME	MEASURING POINT	DEPTH TO WATER FROM REFERENCE POINT (+feet)	REFERENCE POINT ELEVATION (ft msl)	WATER LEVEL ELEVATION (ft msl)	MAY 2019 PREVIOUS DEPTH TO WATER (ft)	CHANGE IN WATER LEVEL (± ft)	COMMENTS	INITIALS
P-07	08/12/19	1332	TOC	111.81	142.31	30.50	111.28	-0.53		
P-09	08/12/19	0942	TOC	120.73	183.86	63.13	120.68	-0.05		AMD/RES
MW-06	08/12/19	0945	TOC	158.29	184.70	26.41	154.65	-3.64		L
MW-08	08/12/19	1225	TOC	131.47	155.91	24.44	129.57			
MW-09	08/12/19	0937	TOC	156.39	180.10	23.71	153.08	-3.31		AMD/RES
MW-13	08/12/19	0919	TOC	125.94	141.84	15.90	121.07	-4.87		↓
MW-15	08/12/19	1546	TOC	127.92	144.95		127.52			
MW-16	08/12/19	1351	TOC	125.70	142.40	16.70	119.89	-5.81		
MW-17	08/12/19	0923	TOC	127.29	142.70	15.41	121.06	-6.23		AMD/RES
MW-18	08/12/19	0915	TOC	127.79	142.32	~~125.79~~ 14.53	121.51	-6.28		↓
MW-19	08/12/19	0928	TOC	127.47	142.06	14.59	121.16	-6.31		↓
MW-20	08/12/19	0950	TOC	153.42	184.19	30.77	151.11	-2.31		↓
MW-21	08/12/19	1358	TOST	116.41	141.18	24.77	113.96	-2.45	Totalizer: Nm Pumping? NO	
MW-22	08/12/19	0823	TOST	124.05	138.65	14.60	117.72	-6.33		AMD/RES
MW-23	08/12/19	0900	TOST	124.19	137.33	13.14	117.83	-6.36		↓
MW-24	08/12/19	1341	TOST	119.38	142.83	23.45	115.89	-3.49		
MW-25	08/12/19	1343	TOC	119.87	142.64	22.77	116.45	-3.42		
MW-26A	08/12/19	0855	TOC	119.47	137.04	17.57	117.65	-1.82		AMD/RES
MW-26B	08/12/19	0856	TOC	119.84	137.05	17.21	119.43	-0.41		↓
MW-26C	08/12/19	0848	TOC	122.34	137.22	14.88	115.82	-6.52		↓

msl = Mean sea level

ft = feet

STATIC WATER LEVEL DATA SHEET

MONTH/YEAR: AUG 2019

METHOD OF MEASUREMENT/SOUNDER IDENTIFIER: FLAT TAPE ELECTRIC SOUNDER # _____

PROJECT NUMBER: 532.30

WELL IDENTIFIER	DATE	TIME	MEASURING POINT	DEPTH TO WATER FROM REFERENCE POINT (+feet)	REFERENCE POINT ELEVATION (ft msl)	WATER LEVEL ELEVATION (ft msl)	MAY 2019 PREVIOUS DEPTH TO WATER (ft)	CHANGE IN WATER LEVEL (± ft)	COMMENTS	INITIALS
MW-27	08/12/19	0830	TOST	121.91	137.16	15.25	115.33	-6.58		AMD/RES
MW-28	08/12/19	0910	TOST	125.83	140.77	14.94	119.64	-6.19		↓
MW-29	08/12/19	1239	TOST	178.13P	139.81	-38.32	176.10P	-2.03	Totalizer: 3825149.9 Pumping? yes	
MW-30A	08/12/19	1155	TOST	115.56	129.44	13.88	108.91	-6.65		
MW-30B	08/12/19	1202	TOST	112.75	129.39	16.64	106.79	-5.96		
MW-31	08/12/19	1048	TOST	105.28	119.60	14.32	97.91	-7.37		
MW-32A	08/12/19	0756	TOST	80.66	92.88	12.22	72.86	-7.80		
MW-32B	08/12/19	0809	TOST	79.84	92.89	13.05	72.48	-7.36		
MW-32C	08/12/19	0812	TOST	73.45	92.88	19.43	68.59	-4.86		
MW-33	08/12/19	1006	TOST	71.79	83.19	11.40	64.21	-7.58		
MW-34A	08/12/19	1200	TOST	145.11	153.25	8.14	138.72	-6.39		AMD/RES
MW-34B	08/12/19	1202	TOST	139.32	153.11	13.79	133.27	-6.05		↓
MW-34C	08/12/19	1154	TOST	138.94	153.29	14.35	132.67	-6.27		↓
MW-35A	08/12/19	938	TOST	80.12	93.57	13.45	74.51	-5.61		
MW-35B	08/12/19	942	TOST	84.54	93.56	9.02	78.06	-6.48		
MW-35C	08/12/19	944	TOST	81.68	93.55	11.87	73.24	-8.44		
MW-36	08/12/19	1027	TOST	75.50	86.65	11.15	68.45	-7.05		AMD/RES
MW-37	08/12/19	1238	TOST	139.05	155.60	16.55	133.85	-5.20		↓
MW-38	08/12/19	1242	TOST	148.61	154.90	6.29	142.71	-5.90		↓
MW-39	08/12/19	1042	TOST	73.78	84.25	10.47	66.48	-7.30		↓

msl = Mean sea level

ft = feet

STATIC WATER LEVEL DATA SHEET

MONTH/YEAR: AUG 2019

METHOD OF MEASUREMENT/SOUNDER IDENTIFIER: FLAT TAPE ELECTRIC SOUNDER # _____

PROJECT NUMBER: 532.30

WELL IDENTIFIER	DATE	TIME	MEASURING POINT	DEPTH TO WATER FROM REFERENCE POINT (+feet)	REFERENCE POINT ELEVATION (ft msl)	WATER LEVEL ELEVATION (ft msl)	MAY 2019 PREVIOUS DEPTH TO WATER (ft)	CHANGE IN WATER LEVEL (± ft)	COMMENTS	INITIALS
MW-40	08/12/19	1027	TOST	107.50	123.40	15.60	100.05	-7.75		
MW-41	08/12/19	1254	TOST	141.60	155.60	14.00	136.17	-5.43		AMD/RES
EW-01	08/12/19	1402	TOST	124.12	141.07	16.95	118.23	-5.89	SOUNDING TUBE TO 172.65 Totalizer: NM	Pumping? N
EW-02	08/12/19	1307	TOST	123.089	132.97	9.89	117.23P	-5.85	Totalizer: 481924.6	Pumping? Y
MW-42	08/12/19	0919	TOST	72.59						
MW-43	08/12/19	0904	TOST	66.77						

 msl = Mean sea level
 ft = feet

**AUGUST 2019 GROUNDWATER SAMPLE PLAN
TEAM 1**

QA/QC	Total VOC's	1,4-Dioxane	APROX. GALLONS	ESTIMATED TIME (minutes)	WELL IDENTIFIER	HYDROGEOLOGIC ZONE	AUGUST 2019 SAMPLING SCHEDULE	SAMPLE METHOD
	0	0	15	90	~~MW-09~~	✓ Water Table; C	VOCs; 1,4-Dioxane	Quik-E Bailer
	1.0	0	174	16	~~MW-34A~~	✓ Deep; A	VOCs; 1,4-Dioxane	Ded 240V
	0	0	224	16	~~MW-34C~~	✓ Deep; BC	VOCs; 1,4-Dioxane	Ded 240V
DUP/SPT	37	16	168	21	~~MW-34B~~	✓ Deep; B	VOCs; 1,4-Dioxane (8270 MOD)	Ded 240V
	0	0.1	115	12	~~MW-28~~	✓ Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0	0	252	21	~~MW-40~~	✓ Deep; B	VOCs; 1,4-Dioxane	Ded 240V
	0	0	152	76	~~MW-26C~~	✓ Deep; B	VOCs; 1,4-Dioxane	Redi-flo
	1	0	150	75	~~MW-18~~	✓ Deep; A	VOCs; 1,4-Dioxane	Redi-flo
	8	--	21	26	MW-15	✓ Water Table; AB	VOCs	Redi-flo
	6.2	0	96	32	MW-20	✓ Water Table; D	VOCs; 1,4-Dioxane	Redi-flo
	125	3.4	24	16	~~MW-08~~	✓ Water Table; BC	VOCs; 1,4-Dioxane	Redi-flo
	653	81	120	48	MW-16	Water Table; B	VOCs; 1,4-Dioxane (8270 MOD)	Redi-flo

NOTES

A **MS** and **MSD** (3x40ml VOA and 1L amber) should be collected every day/ alternating 1,4-Dioxane methods as indicated.

1,4-Dioxane analysis method is 8270 SIM unless specified otherwise (if historical detect is > 5.0 ug/l MOD is used).

1 = Day - # refers to the day scheduled to sample and the corresponding dedicated pipestand to use: ND=1; 0-10=2; 10 - 100=3; >100=4

Wells with dedicated pumps should follow concentration order when possible.

MW-36 and MW-39 Gate Access Code: 3252

RB = Rinsate blank taken on non-dedicated equipment each day- will vary with schedule and should be confirmed with both

AUGUST 2019 GROUNDWATER SAMPLE PLAN
TEAM 2

QA/QC	Total VOC's	1,4-Dioxane	APPROX. GALLONS	ESTIMATED TIME (minutes)	WELL IDENTIFIER	HYDROGEOLOGIC ZONE	AUGUST 2019 SAMPLING SCHEDULE	SAMPLE METHOD
	190	47	156	12	~~EW-01~~	Deep; B	VOCs; 1,4-Dioxane (8270 MOD)	Dedicated
	1238	800	300	12	~~MW-21~~	Water Table; BC	VOCs; 1,4-Dioxane (8270 MOD)	Dedicated
	0	0	~~1000~~ 1,179	60	MW-35C	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0	0	1000	45	~~MW-43~~	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	2.4	0.1	986	43	~~MW-42~~	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
✓ 2CV/ ✓ 3CV	2.1	0	909	51	~~MW-33~~	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	11	0	142	24	~~MW-41~~	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	72	3.8	276	23	~~MW-31~~	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0	0	61	14	~~MW-30A~~	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	97	0.6	135	22	~~MW-30B~~	Deep; BC	VOCs; 1,4-Dioxane	Ded.240V
	0	0	660	45	~~MW-32A~~	Deep; AB	VOCs; 1,4-Dioxane	Ded.240V
	0	0	966	80	~~MW-32C~~	Water Table; C	VOCs; 1,4-Dioxane	Ded.240V
✓ 2CV/ ✓ 3CV	143	3.4	827	66	~~MW-32B~~	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0	0	835	37	~~MW-39~~	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
✓ 2CV/ ✓ 3CV	52	6.2	973	74	~~MW-36~~	Deep; B	VOCs; 1,4-Dioxane	Ded.240V

NOTE

1 = Day - # refers to the day scheduled to sample and the corresponding dedicated pipestand to use: ND=1; 0-10=2; 10 - 100=3; >100=4

A **MS** and **MSD** (3x40ml VOA and 1L amber) should be collected every day/ alternating 1,4-Dioxane methods as indicated.

1,4-Dioxane analysis method is 8270 SIM unless specified otherwise (if historical detect is > 5.0 ug/l MOD is used).

Wells with dedicated pumps should follow concentration order when possible.

MW-36 and MW-39 Gate Access Code: 3252

RB = Rinsate blank taken on non-dedicated equipment each day- will vary with schedule and should be confirmed with both teams each morning.

GROUNDWATER SAMPLING INFORMATION

DATE: 8/13/19

TASK: 532.30

WELL ID:

MW-34A

Time 0917	Static DTW (ft below reference point) 145.30	Casing Volume (SV) (gallons) 53	3 CV (gallons) 159	Weather Conditions	Initials: AMJ/AMD
Casing Total Depth (ft below reference point) 280	Purging Device: 100' pump	Sampling Device: MD pipetrol	Time 0920	Temp. 75	Begin Purge 0935
Water Column (feet) 80	Pump: Depth (ft brp) 200	Type: gravel/s	Voltage: 240	HP: -	End Purge 0948
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow	Fast	X	Skies: clear	Gallons Purged 83 SV
				Wind (mph) -	From -
					DTW (ft brp) 137.35
					Time 0946

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0935											Pump on
0937	147.31	26.5	0.5	21.6	6.85	1.46	155.3	2.88	13.0	-	Q ≈ 14 GPM
0938	137.35	53	1.0	21.6	7.00	1.50	157.0	3.75	UTM	-	
0940	137.35	80	1.5	21.6	7.03	1.50	163.2	3.85	6.71	-	
0942	137.35	105	2.0	21.6	7.04	1.49	165.9	3.91	12.0	-	
0944	137.35	131.5	2.5	21.6	7.05	1.49	169.1	3.90	9.85	-	
0946	137.35	158	3.0	21.6	7.05	1.49	171.7	3.99	6.05	-	- collect sample
0948	NM	183	3.45								sample End purge

SAMPLE COLLECTION SAMPLE TIME 0946

ANALYSIS QUANTITY TYPE

8260B VOCs	3	40 ml VOA
8270 SIM 1,4 dioxane	1	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber

DUPLICATES / SPLITS / BLANKS?

Y

N

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA

BKGD NA

BREATHING ZONE NA

DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 08/13/19

TASK: S32.30

WELL ID: MW-34B

Time 1006	Static DTW (ft below reference point) 139.25	Screen SV	Casing Volume (SV) (gallons) 50	3 SV (gallons) 150	Weather Conditions	Initials: AMJ/AMD
Casing Total Depth (ft below reference point) 536	Purging Device ddd pump	Sampling Device 10-100 piston	Time 1020	Temp. 38	Begin Purge 1013	End Purge 1025
Water Column (feet) 76	Pump: Depth (ft brp) 465	Type grundfos	Voltage 40	HP -	Skies clear	Gallons Purged 178 SV
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) -	From -	DTW (ft brp) 140.44	Time 1032

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1013	139.25	0	0	21.8	7.12	0.95	126.4	2.00	3.80	-	Q ≈ 10 gpm
1017	140.39	28	0.56	22.2	7.23	0.98	125.2	2.08	7.04	-	
1019	140.46	50	1.0	22.2	7.26	0.98	128.7	2.16	1.53	-	
1023	140.41	75	1.5	22.2	7.26	0.98	131.9	2.24	0.97	-	
1026	140.44	100	2.0	22.2	7.26	0.98	133.4	2.23	1.11	-	
1029	140.44	125	2.5	22.2	7.26	0.98	136.2	2.25	NS	-	collect sample
1032	140.44	150	3.0	22.2	7.26	0.98				-	
1035	NM	178	3.56	End	purge					-	

SAMPLE COLLECTION SAMPLE TIME 1032			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA		
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)		
8260B VOCs	9	40 ml VOA X	MW-3400B collected @ 1023		
8270 SIM 1,4 dioxane	3	1 L Amber X	MW-34B collected @ 1032 (original)		
8270 MOD 1,4 dioxane	3	1 L Amber X	MW-34B collected @ 1034 (split)		
DUPLICATES SPLITS BLANKS? If yes, complete appropriate forms.					

GROUNDWATER SAMPLING INFORMATION

DATE: 8/13/19

TASK: 532-30

WELL ID: MW-34C

Time 1237 Static DTW (ft below reference point)	138.85	Screen Casing Volume (CV) (gallons) 64	3 CV (gallons) 192	Weather Conditions		Initials: AMO/AMJ
Casing Total Depth (ft below reference point)	576	Purging Device dead pump	Sampling Device MD pipetand	Time 1240	Temp 80	Begin Purge 1239 End Purge 1300
Water Column (feet)	442.35	Pump: Depth (ft brp) 470	Type groundwater	Skies clear		Gallons Purged 204 CVs Purged 3.19
Casing Capacity (Diameter 4" (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph)	From	DTW (ft brp) Time

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1239	138.85	0	0	~	Begin	purge	✓	✓	✓	✓	Q ≈ 8 GPM
1243	UTM	32	0.5	22.1	7.5	0.72	27.2	2.9	0.99	✓	Transducer set at 150' unable to
1247	UTM	64	1.0	22.3	7.56	0.76	29.9	0.62	1.71	✓	collect water level.
1250		96	1.5	22.3	7.49	0.87	27.3	0.42	3.57	✓	
1253		128	2.0	22.2	7.48	0.87	28.3	3.6	1.67	✓	
1256		160	2.5	22.2	7.45	0.89	24.0	0.22	2.04	✓	
1259		192	3.0	22.2	7.44	0.90	23.8	0.20	1.13	✓	-collect sample
1300	NM	204	3.19	~	End	purge	✓	✓	✓	✓	

SAMPLE COLLECTION SAMPLE TIME 1259			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	3	40 ml VOA X				
8270 SIM 1,4 dioxane	1	1 L Amber X				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y N						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/13/19

TASK: 532.30

WELL ID: MW-31

Time <u>B27</u> Static DTW (ft below reference point) <u>105.29</u>	Casing Volume (CV) (gallons) <u>81</u> 3 CV (gallons) <u>243</u>	Weather Conditions	Initials: <u>AMT/AMD</u>
Casing Total Depth (ft below reference point) <u>996</u>	Purging Device <u>ded. pump</u> Sampling Device <u>10-100' post</u>	Time <u>1320</u> Temp. <u>86</u>	Begin Purge <u>1330</u> End Purge <u>1359</u>
Water Column (feet) <u>54</u>	Pump: Depth (ft brp) <u>842</u> Type <u>Grundfos</u> Voltage <u>240</u> HP <u>✓</u>	Skies <u>clear</u>	Gallons Purged <u>264</u> CVs Purged <u>108.39</u>
Casing Capacity (Diameter <u>6</u> ") (gallons per foot) <u>1.5</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) _____ From _____	DTW (ft brp) <u>105.29</u> Time <u>1353</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1330	105.29	0	0	Begin purge							Q ≈ 9 GPM
1335	108.45	40.5	0.5	23.4	7.29	1.18	89.4	4.27	3.62	-	
1339	108.32	81	1.0	21.5	7.89	1.56	83.6	1.88	40.9	-	
1344	108.33	121.5	1.5	21.6	7.45	1.35	82.9	0.94	13.0	-	
1348	108.36	162	2.0	21.6	7.37	1.24	83.1	0.73	8.92	-	
1353	108.39	202.5	2.5	21.6	7.34	1.17	85.3	0.70	3.69	-	
1357	NM	243	3.0	21.2	7.34	1.4	87.1	0.73	2.41	-	collect sample
1359	NM	264		End purge							

SAMPLE COLLECTION SAMPLE TIME <u>1357</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>9</u>	40 ml VOA <u>x</u>	<u>MW-3100 collected @ 1358 (duplicate)</u>			
8270 SIM 1,4 dioxane	<u>3</u>	1 L Amber <u>x</u>	<u>MW-31 collected @ 1357 (original)</u>			
8270 MOD 1,4 dioxane		1 L Amber	<u>MW-31 collected @ 1359 (duplicate split)</u>			
DUPLICATES / SPLITS / BLANKS? If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/13/19

TASK: 832.30

WELL ID: MW-30A

Time 1135 Static DTW (ft below reference point)	115.00	Screen Casing Volume (CV) (gallons) 17.6	SV 52.8	3 CV (gallons)	Weather Conditions
Casing Total Depth (ft below reference point)	56.4	Purging Device	ded. pump	Sampling Device	ND pipet stand
Water Column (feet)	44	Pump: Depth (ft brp)	520	Type	grindles
Casing Capacity (Diameter 3" (gallons per foot)	0.39	Monitor Well Recharge Rate: Slow	Fast	X	
					Time 1435 Temp. 86
					Skies clear
					Wind (mph) — From —
					Initials: AMJ/AMD
					Begin Purge 1439 End Purge 1450
					Gallons Purged 59 SV CVs Purged 3.35
					DTW (ft brp) 117.71 Time 1449

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1439	115.60	0	0								Begin purge
1441	117.60	9	0.5	25.4	7.67	1.11	112.8	5.16	1.06	—	Q ≈ 6 GPM
1442	117.63	18	1.0	25.1	7.67	1.11	108.9	3.87	2.20	—	
1444	117.65	26.4	1.5	25.1	7.66	1.11	106.0	3.67	1.95	—	
1445	117.68	35.2	2.0	25.2	7.66	1.11	103.4	3.51	1.27	—	
1447	117.70	44	2.5	25.2	7.65	1.11	101.8	3.29	1.12	—	
1449	117.71	52.8	3.0	25.3	7.64	1.11	100.6	3.54	1.15	—	collect sample
1450	NM	59.0	3.35								End purge

SAMPLE COLLECTION SAMPLE TIME	1449
ANALYSIS	QUANTITY
8260B VOCs	3
8270 SIM 1,4 dioxane	1
8270 MOD 1,4 dioxane	1
DUPLICATES / SPLITS / BLANKS?	Y
If yes, complete appropriate forms.	N

AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			

GROUNDWATER SAMPLING INFORMATION

DATE: 8/13/19

TASK: 532.30

WELL ID: MW-303

Time 1459	Static DTW (ft below reference point) 112.92	Casing Volume (OV) (gallons) 40	3 OV (gallons) 120	Weather Conditions	Initials: AMS/AMD
Casing Total Depth (ft below reference point) 619	Purging Device 10-100 pipestem	Sampling Device	Time 1500	Temp. 86	Begin Purge 1502
Water Column (feet) 99	Pump: Depth (ft brp) 520	Type 9/16" x 1/2"	Voltage 240	HP 0.5	End Purge 1530
Casing Capacity (Diameter 3") (gallons per foot) 0.39	Monitor Well Recharge Rate: Slow	Fast X	Skies clear	Gallons Purged 129	CVs Purged 32
			Wind (mph) -	From -	DTW (ft brp) 135.69
					Time 1525

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	... FIELD PARAMETERS ...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (mS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1502	112.92	0	0	21.9	7.03	1.62	104.2	1.50	3.80	-	Q=5.4 GPM
1506	131.22	20	0.5	21.7	7.11	1.44	103.7	0.85	1.09	-	
1510	138.22	40	1.0	21.9	7.03	1.62	104.2	1.50	3.80	-	
1515	134.31	60	1.5	22.0	7.02	1.56	109.1	3.89	2.78	-	
1519	135.00	80	2.0	22.0	7.07	1.50	107.5	3.26	3.61	-	
1525	135.59	100	2.5	22.1	7.08	1.50	107.1	3.03	2.42	-	
1528	NM	120	3.0	22.1	7.07	1.50	107.2	2.99	1.31	-	collect sample
1530	NM	129	3.2							-	

SAMPLE COLLECTION SAMPLE TIME 1528		AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA	
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)
8260B VOCs	9	40 ml VOA	collected MS/MSD
8270 SIM 1,4 dioxane	3	1 L Amber	
8270 MOD 1,4 dioxane		1 L Amber	
DUPLICATES / SPLITS / BLANKS? Y		N	

GROUNDWATER SAMPLING INFORMATION

DATE: 8/14/19

TASK: 532.36

WELL ID: MW-26C

Time 0829	Static DTW (ft below reference point) 122.40	Screen Casing Volume (CV) (gallons) 49	3 CV (gallons) 147	Weather Conditions	Initials: AMS/AMD
Casing Total Depth (ft below reference point) 499	Purging Device Grundfos	Sampling Device ddd. tubing	Time 0855	Temp. 76	Begin Purge 0843
Water Column (feet) 376.60	Pump: Depth (ft brp) ~200	Type MPI	Voltage 115	HP 0.5	End Purge 0934
Casing Capacity (Diameter 2") (gallons per foot) 0.163	Monitor Well Recharge Rate: Slow	Fast	Skies clear & little cloudy	Gallons Purged 153	CVs Purged 3.12
			Wind (mph) -	From -	DTW (ft brp) 123.44
					Time 0932

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (mS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0843	122.40	0	0	~	Begin	purge				330	Q ≈ 3 GPM
0851	123.39	24.5	0.5	22.2	9.17	0.442	181.2	2.1	1.60	330	
0903	123.41	60	1.22	22.2	7.26	0.81	229.8	0.23	0.90	330	
0908	123.43	75	1.53	22.2	7.63	0.84	185.0	0.17	0.92	330	
0916	123.43	99	2.02	22.2	7.70	0.85	120.1	0.17	1.28	330	
0924	123.44	123	2.51	22.2	7.69	0.86	92.7	0.16	0.60	330	
0932	123.44	147	3.00	22.3	7.68	0.86	70.5	0.20	0.89	330	collect samples
0934	NM	153	3.12	~	End	purge					

SAMPLE COLLECTION SAMPLE TIME 0932	AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
ANALYSIS QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs 6 40 ml VOA x				
8270 SIM 1,4 dioxane 2 1 L Amber x				
8270 MOD 1,4 dioxane 1 1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y N	RB-08/14/19 collected @ 0940			
If yes, complete appropriate forms.				

GROUNDWATER SAMPLING INFORMATION

DATE: 8/15/19

TASK: 332.30

WELL ID: MW-18

Time 1434 Static DTW (ft below reference point) 127.99	Casing Volume (CV) (gallons) 43.6 3 CV (gallons) 131	Weather Conditions	Initials: AMS/AMD
Casing Total Depth (ft below reference point) 194.10	Purging Device groundfos Sampling Device ded. tubing	Time 1435 Temp. 86	Begin Purge 1444 End Purge 1554
Water Column (feet) 66.11	Pump: Depth (ft brp) 192 Type MP1 groundfos Voltage 115 HP 0.5	Skies clear w/ a little haze	Gallons Purged 140 CVs Purged 3.2
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast X	Wind (mph) - From -	DTW (ft brp) 146.41 Time 1550

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (mS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1444	127.99	0	0							305	Q ≈ 2 GPM
1455	142.31	22	0.5	23.0	7.33	0.93	147.0	3.07	4.35	305	
1506	145.11	44	1.0	23.2	7.25	1.12	149.1	4.26	2.42	305	
1517	145.60	66	1.5	23.3	7.25	1.18	153.6	4.42	1.99	305	
1528	145.61	88	2.0	23.3	7.23	1.22	159.6	4.87	1.56	305	
1539	145.53	110	2.5	23.4	7.23	1.25	163.8	4.86	0.95	305	
1550	145.41	132	3.0	23.5	7.23	1.28	167.8	5.14	1.21	305	
1554	NM	140	3.2								Pump off

SAMPLE COLLECTION SAMPLE TIME 1550			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	3	40 ml VOA X				
8270 SIM 1,4 dioxane	1	1 L Amber X				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y (N)						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/15/19

TASK: 532.30

WELL ID: MW-08

Time <u>1324</u> Static DTW (ft below reference point) <u>131.59</u>	Casing Volume (CV) (gallons) <u>5.6</u> 3 CV (gallons) <u>16.9</u>	Weather Conditions	Initials: <u>AMD/AMJ</u>
Casing Total Depth (ft below reference point) <u>166.10</u>	Purging Device <u>grundfos</u> Sampling Device <u>ded tubing</u>	Time <u>1324</u> Temp. <u>85</u>	Begin Purge <u>1328</u> End Purge <u>1353</u>
Water Column (feet) <u>34.51</u>	Pump: Depth (ft brp) <u>~164</u> Type <u>MP1</u> Voltage <u>115</u> HP <u>0.5</u>	Skies <u>clear</u>	Gallons Purged <u>18.8</u> CVs Purged <u>3.3</u>
Casing Capacity (Diameter <u>2</u> ") (gallons per foot) <u>0.163</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>132.97</u> Time <u>1351</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µm S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1328	131.59	0	0	PUMP ON							Q ≈ 0.75 GPM
1332	132.76	2.8	0.9	25.2	7.31	1.90	180.2	4.04	2.00	275	
1336	132.79	6	1.1	24.2	7.19	1.99	181.3	2.81	2.16	275	
1340	132.82	9	1.6	24.0	7.16	2.03	182.3	2.60	1.27	275	
1343	132.84	11.25	2.0	24.0	7.16	2.04	182.8	2.48	0.90	275	
1347	132.91	14.25	2.5	24.0	7.15	2.04	183.4	2.57	0.78	275	
1350	132.97	16.25	3.0	23.8	7.15	2.04	184.1	2.53	0.49	275	collect samples
1353	NM	18.75	3.3	pump off							

SAMPLE COLLECTION SAMPLE TIME <u>1351</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA <u>X</u>				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber <u>X</u>				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y <u>(N)</u>						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/14/19

TASK: 532.30

WELL ID: MW-41

Time 1319	Static DTW (ft below reference point) 141.78	Casing Volume (CV) (gallons) 39	3 CV (gallons) 48117	Weather Conditions	Initials: AUS/AMD
Casing Total Depth (ft below reference point) 425	Purging Device del. pump	Sampling Device 10-100 plastic	Time 1320	Temp. 85	Begin Purge 1324
Water Column (feet) 65	Pump: Depth (ft brp) 360	Type grinder Voltage 240 HP -	Skies clear		End Purge 1346
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) -	From -	Gallons Purged 149 CVs Purged 3.8
					DTW (ft brp) 146.57 Time 1341

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	... FIELD PARAMETERS ...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µm S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1324	141.78	0	0								Q ≈ 6 GPM
1327	146.35	19.5	0.5	22.1	6.99	2.22	132.1	2.59	5.82	-	
1329	146.44	39	1.0	22.4	6.78	2.22	133.6	3.29	17.6	-	
1332	146.54	58.5	1.5	22.4	6.97	2.22	136.9	3.47	17.4	-	
1336	146.53	78	2.0	22.4	6.96	2.22	140.4	3.48	12.4	-	
1339	146.54	97.5	2.5	22.5	6.96	2.22	142.6	3.45	6.9	-	
1341	146.57	117	3.0	22.5	6.96	2.22	144.5	3.48	4.93	-	collect sample
1346	NM	149	3.88							-	

SAMPLE COLLECTION SAMPLE TIME 1341			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	9	40 ml VOA	MS/MSD collected			
8270 SIM 1,4 dioxane	3	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y (N)						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/15/19

TASK: 532.30

WELL ID: MW-28

Time 0816 Static DTW (ft below reference point)	126.02	Casing Volume (CV) (gallons) 29.7 SV 89.1	Weather Conditions	Initials: AMS/AMD
Casing Total Depth (ft below reference point)	375	Purging Device ded pump Sampling Device NO p.p.d. and	Time 0815 Temp. 64	Begin Purge 0822 End Purge 0839
Water Column (feet)	45	Pump: Depth (ft brp) 330 Type grundfos Voltage 240 HP 0.5	Skies cloudy	Gallons Purged 98.6 SV CVs Purged 3.3
Casing Capacity (Diameter 4") (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow Fast X	Wind (mph) - From -	DTW (ft brp) 132.00 Time 0838

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (mS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0822	126.02	0	0			Pump on				-	Q ≈ 6 GPM
0825	131.88	15	0.5	21.6	7.31	1.09	206.3	1.90	5.53	-	
0827	132.59	30	1.0	21.7	7.40	1.09	200.8	3.34	3.81	-	
0830	132.00	45	1.5	21.7	7.42	1.08	200.1	3.39	2.49	-	
0832	132.00	60	2.0	21.7	7.44	1.07	201.4	3.19	3.13	-	
0835	132.00	75	2.5	21.7	7.45	1.07	203.0	3.18	1.31	-	
0838	132.00	89.1	3.0	21.7	7.46	1.07	204.7	3.15	1.74	-	collect samples
0839	NM	98.6	3.3			Pump off				-	

SAMPLE COLLECTION SAMPLE TIME 0838		AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA	
ANALYSIS	QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)	
8260B VOCs	3 40 ml VOA X		
8270 SIM 1,4 dioxane	1 1 L Amber X		
8270 MOD 1,4 dioxane	1 1 L Amber		
DUPLICATES / SPLITS / BLANKS? Y N			

GROUNDWATER SAMPLING INFORMATION

DATE: 08/15/19

TASK: 532.30

WELL ID: EW-01

Time 0938 Static DTW (ft below reference point)	124.49	Casing Volume (CV) (gallons) 46.9	3 CV (gallons) 125.7	Weather Conditions		Initials: AMS/AMD
Casing Total Depth (ft below reference point)	188	Purging Device ded. pump	Sampling Device ded. sample port	Time 0908	Temp. 65	Begin Purge 0941 End Purge 0956
Water Column (feet)	63.51	Pump: Depth (ft brp) -	Type -	Voltage -	HP -	Gallons Purged 150 CVs Purged 3.6
Casing Capacity (Diameter 4" (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow Fast X		Skies cloudy	Wind (mph) - From -	DTW (ft brp) 125.06 Time 0951

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0941	124.49	0	0			Pump on				-	Q ≈ 11 GPM
0943	124.96	22	0.5	24.0	7.55	1.51	166.0	5.13	0.82	-	
0945	125.01	44	1.1	23.8	7.42	1.42	170.2	6.31	1.06	-	
0947	125.04	66	1.6	23.8	7.41	1.42	172.4	6.61	1.34	-	
0949	125.06	88	2.1	24.5	7.35	1.42	172.8	5.67	0.65	-	
0951	125.06	110	2.6	24.3	7.35	1.42	173.2	6.02	0.67	-	
0953	NM	125.7	3.0	24.3	7.37	1.42	171.8	5.66	0.53	-	collect samples
0956	NM	150	3.6			Pump off				-	

SAMPLE COLLECTION SAMPLE TIME 0953		AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA	
ANALYSIS	QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)	
8260B VOCs	3 40 ml VOA X		
8270 SIM 1,4 dioxane	1 L Amber		
8270 MOD 1,4 dioxane	1 L Amber X		
DUPLICATES / SPLITS / BLANKS? Y N			
If yes, complete appropriate forms.			

GROUNDWATER SAMPLING INFORMATION

DATE: 08/15/19TASK: 532.30WELL ID: MW-21

Time <u>0921</u> Static DTW (ft below reference point)	<u>116.64</u>	Casing Volume (CV) (gallons) <u>76</u> 3 CV (gallons) <u>228</u>	Weather Conditions	Initials: <u>AMJ/AMD</u>
Casing Total Depth (ft below reference point)	<u>232</u>	Purging Device <u>ded. pump</u> Sampling Device <u>ded. sample port</u>	Time <u>0915</u> Temp. <u>65</u>	Begin Purge <u>0916</u> End Purge <u>0931</u>
Water Column (feet)	<u>115.36</u>	Pump: Depth (ft brp) <u>-</u> Type <u>-</u> Voltage <u>-</u> HP <u>-</u>	Skies <u>cloudy</u>	Gallons Purged <u>300</u> CVs Purged <u>395</u>
Casing Capacity (Diameter <u>4</u> ") (gallons per foot)	<u>0.66</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>133.39</u> Time <u>0928</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	... FIELD PARAMETERS ...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (mS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0916	116.64	0	0	PUMP ON							
0918	131.94	40	0.53	23.6	7.56	2.08	213.3	2.13	NM	-	Q = 20 gpm
0920	132.39	80	1.05	22.2	7.46	2.19	189.3	1.58	1.21	-	
0921	132.68	100	1.32	22.0	7.38	2.22	182.0	2.30	1.75	-	
0923	132.89	146	1.84	22.0	7.35	2.23	180.2	3.06	2.63	-	
0925	133.12	180	2.36	22.0	7.32	2.23	178.8	2.81	2.09	-	
0928	133.39	240	3.15	22.2	7.30	2.24	177.2	3.12	1.12	-	
0931	NM	300	3.95	PUMP OFF							

SAMPLE COLLECTION SAMPLE TIME <u>0928</u>		AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA	
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)
8260B VOCs	<u>69</u>	40 ml VOA	<u>MS/MSD collected</u>
8270 SIM 1,4 dioxane	<u>3</u>	1 L Amber	
8270 MOD 1,4 dioxane		1 L Amber	
DUPLICATES / SPLITS / BLANKS? Y <u>N</u>			
If yes, complete appropriate forms.			

GROUNDWATER SAMPLING INFORMATION

DATE: 08/16/19

TASK: 932.80

WELL ID: MW-15

Time 1114 Static DTW (ft below reference point)	128.17	Casing Volume (CV) (gallons) 6.95	3 CV (gallons) 20.8	Weather Conditions	Initials: AMS/AMD
Casing Total Depth (ft below reference point)	170.80	Purging Device groundfos	Sampling Device old tubing	Time 11 Temp. 80	Begin Purge 1138 End Purge 1207
Water Column (feet)	42.63	Pump: Depth (ft brp)	Type MPI Voltage 115 HP 0.5	Skies clear	Gallons Purged 21 CVs Purged 3
Casing Capacity (Diameter 2") (gallons per foot)	0.163	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) - From -	DTW (ft brp) 128.91 Time 1203

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1138	128.17	0	0				Pump on			279	Q ≈ 0.5 GPM
1144	128.94	3.5	0.5	24.2	7.07	2.14	-16.6	5.91	26.6	279	
1148	128.66	7.0	1.0	24.4	7.05	2.16	-11.0	5.79	20.8	279	
1152	128.87	10.5	1.5	23.8	7.05	2.13	-5.1	5.97	31.10	300	Q ≈ 1 GPM
1157	128.91	14.0	2.0	23.6	7.05	2.14	-8.8	5.51	15.60	300	
1159	128.21	17.5	2.5	23.6	7.05	2.13	-2.7	5.71	10.23	300	
1203	128.91	21	3.0	23.6	7.03	2.14	2.2	5.42	6.08	300	collect samples
1207	NM						Pump off				

SAMPLE COLLECTION SAMPLE TIME 1203			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	9	40 ml VOA X	MS/MSD collected			
8270 SIM 1,4 dioxane		1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y ☐ N ☒						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/19/19

TASK: 532.30

WELL ID: MW-20

Time <u>0919</u> Static DTW (ft below reference point) <u>153.73</u>	Casing Volume (CV) (gallons) <u>29.4</u> 3 CV (gallons) <u>88</u>	Weather Conditions	Initials: <u>AMD/DJS/SR</u>
Casing Total Depth (ft below reference point) <u>198.20</u>	Purging Device <u>groundfos</u> Sampling Device <u>ded tubing</u>	Time <u>0919</u> Temp. <u>70</u>	Begin Purge <u>0938</u> End Purge <u>1023</u>
Water Column (feet) <u>44.47</u>	Pump: Depth (ft brp) <u>195</u> Type <u>MPI</u> Voltage <u>115</u> HP <u>0.5</u>	Skies <u>clear</u>	Gallons Purged <u>90</u> CVs Purged <u>3.06</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>157.96</u> Time <u>1022</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (mS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0938	153.73	0	0	PUMP ON							
0945	158.80	14	0.48	23.0	7.17	1.22	76.3	5.52	4.61	325	Q = 2 gpm
0952	159.32	28	0.95	23.1	7.54	1.22	53.4	5.87	3.32	325	
0959	159.53	42	1.42	23.2	7.56	1.22	44.5	5.95	3.25	325	
1006	159.46	56	1.90	23.2	7.57	1.22	37.0	5.63	3.66	325	
1014	159.94	72	2.45	23.2	7.57	1.22	35.6	5.78	2.94	325	
1022	159.96	88	3.0	23.2	7.58	1.23	33.2	5.81	NM	325	
1023	NM	90	3.06	PUMP OFF							

SAMPLE COLLECTION SAMPLE TIME <u>1022</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane		1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>N</u> If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

4-1 mod

DATE: 8/19/19

TASK: 532.30

WELL ID: MW-16

Time 1200 Static DTW (ft below reference point)	126.46	Casing Volume (CV) (gallons) 34.3	3 CV (gallons) 103	Weather Conditions	Initials: AMP/DJS/RS
Casing Total Depth (ft below reference point)	178.50	Purging Device grundfos	Sampling Device ded tubing	Time 80 Temp 1203	Begin Purge 1216 End Purge 1302
Water Column (feet)	52.04	Pump: Depth (ft brp) 175	Type MP1 Voltage 115 HP 0.5	Skies clear	Gallons Purged 131 CVs Purged 327
Casing Capacity (Diameter 4") (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) - From -	DTW (ft brp) 126.46 Time 1200

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1216	126.46	0	0				PUMP ON				
1223	128.36	17.16	0.5	23.2	7.44	1.20	37.3	3.61	4.61	300	Q = 2.25 gpm
1230	128.40	34.33	1.0	23.3	7.41	1.15	30.3	3.35	3.64	300	
1237	128.42	51.49	1.5	23.2	7.43	1.21	28.3	3.27	2.00	300	
1244	128.45	68.65	2.0	23.3	7.44	1.23	25.7	3.29	2.02	300	
1251	128.42	85.81	2.5	23.3	7.44	1.24	22.1	3.22	2.75	300	
1258	128.40	103	3.0	23.3	7.42	1.24	28.6	3.78	3.73	300	
1302	-	131	3.27				End Purge				

SAMPLE COLLECTION SAMPLE TIME 1259			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	40 ml VOA	3				
8270 SIM 1,4 dioxane	1 L Amber					
8270 MOD 1,4 dioxane	1 L Amber	1				
DUPLICATES / SPLITS / BLANKS? Y N						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/15/19

TASK: 532.30

WELL ID: MW-09

Time <u>0751</u> Static DTW (ft below reference point) <u>156.29</u>	Casing Volume (CV) (gallons) <u>5.7</u> 3 CV (gallons) <u>17</u>	Weather Conditions	Initials: <u>AMP/cv0</u>
Casing Total Depth (ft below reference point) <u>191</u>	Purging Device <u>bailer</u> Sampling Device <u>bailer</u>	Time <u>0800</u> Temp. <u>65</u>	Begin Purge <u>0755</u> End Purge <u>0926</u>
Water Column (feet) <u>34.71</u>	Pump: Depth (ft brp) <u>-</u> Type <u>-</u> Voltage <u>-</u> HP <u>-</u>	Skies <u>clear</u>	Gallons Purged <u>15</u> CVs Purged <u>2.63</u>
Casing Capacity (Diameter <u>2"</u>) (gallons per foot) <u>0.163</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>-</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>156.43</u> Time <u>0910</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0755	156.29	0	0	Begin Purging						-	
0810	NM	2	0.35	20.0	7.00	3185	341.9	3.40	17.7	-	
0830	156.48	6	1.05	20.5	7.26	3250	312.0	3.70	NM	-	
0850	NM	9	1.57	21.0	7.19	3241	311.0	3.70	65.3	-	
0910	156.45	13	2.28	20.8	7.16	3238	310.6	3.59	20.3	-	
0925	NM	15	2.63	20.6	7.15	3235	308.8	3.61	19.3	-	COLLECT SAMPLE
0926	156.43	15	2.63	End Purging						-	

SAMPLE COLLECTION SAMPLE TIME <u>0925</u>	AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
ANALYSIS QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)
8260B VOCs <u>3</u> 40 ml VOA	
8270 SIM 1,4 dioxane <u>1</u> 1 L Amber	
8270 MOD 1,4 dioxane <u>1</u> 1 L Amber	
DUPLICATES / SPLITS / BLANKS? Y (N)	
If yes, complete appropriate forms.	

GROUNDWATER SAMPLING INFORMATION

DATE: 2/20/15

TASK: 532.30

WELL ID: MW-20

Time 1537 Static DTW (ft below reference point) 153.74	Casing Volume (CV) (gallons) 29.2 3 CV (gallons) 87.1	Weather Conditions	Initials: NES/PJS
Casing Total Depth (ft below reference point) 198.20	Purging Device grinder Sampling Device 2nd tube	Time 1530 Temp. 60	Begin Purge 1539 End Purge 1611
Water Column (feet) 44.26	Pump: Depth (ft brp) 196 Type MPI Voltage 115 HP 0.5	Skies cloudy	Gallons Purged 96 CVs Purged 3.3
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast X	Wind (mph) - From -	DTW (ft brp) 162.11 Time 1609

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1539	153.74	0	0	Begin pumping							Q ≈ 3 gpm
1544	159.56	15	0.5	20.3	7.43	1635	85.3	9.52	20.08	364	
1549	160.86	30	1.0	21.9	7.43	1655	84.7	5.54	21.0	364	
1554	161.19	45	1.5	21.8	7.45	1683	74.9	4.41	24.9	364	
1559	161.58	60	2.0	21.0	7.51	1695	76.2	4.29	29.4	364	
1604	161.89	75	2.5	22.0	7.47	1680	75.9	4.24	18.9	364	
1609	162.11	90	3.1	20.3	7.53	1693	73.9	4.27	17.5	364	
1611	NM	96	3.3	End pumping							

SAMPLE COLLECTION SAMPLE TIME 1610			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	3	40 ml VOA				
8270 SIM 1,4 dioxane	1	1 L Amber				
8270 MOD 1,4 dioxane	1	1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y (N)						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/19/19

TASK: 532.30

WELL ID: MW18

Time 1000 Static DTW (ft below reference point) 121.62	Casing Volume (CV) (gallons) 47.8 3 CV (gallons) 143.5	Weather Conditions	Initials: NES/DJS
Casing Total Depth (ft below reference point) 194.10	Purging Device grundfos Sampling Device ded. tubing	Time 1000 Temp. 60	Begin Purge 1450 End Purge 1605
Water Column (feet) 72.44	Pump: Depth (ft brp) 192 Type MP1 Voltage 115 HP 0.5	Skies cloudy	Gallons Purged 150 CVs Purged 3.1
Casing Capacity (Diameter 4" (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast X	Wind (mph) - From -	DTW (ft brp) 145.2 Time 1602

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1450	121.62	0	0	21.9							GPM ≈ 2 gpm
1502	140.85	24	0.5	21.9	7.21	860	62.7	6.05	14.7	328	
1514	142.90	48	1	22.1	7.22	1112	65.1	4.77	8.32	328	
1526	144.35	72	1.5	22.1	7.24	1365	66.5	4.72	5.07	328	
1538	144.71	96	2	22.0	7.20	1445	65.1	4.75	3.21	328	
1550	145.14	120	2.5	22.1	7.20	1523	65.5	5.40	2.47	328	
1602	145.21	144	3	22.0	7.21	1548	66.3	5.52	3.58	328	
1605	NM	150	3.1								Sampled at 16:05
											3x 8260B 40mL VOA's
											1x 1L 1,4-Dioxane Amber

SAMPLE COLLECTION SAMPLE TIME 1605		AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA	
ANALYSIS	QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)	
8260B VOCs	3 40 ml VOA		
8270 SIM 1,4 dioxane	1 1 L Amber		
8270 MOD 1,4 dioxane	1 1 L Amber		
DUPLICATES / SPLITS / BLANKS? Y (N)			
If yes, complete appropriate forms.			

GROUNDWATER SAMPLING INFORMATION

DATE: 2/12/19TASK: 532.30WELL ID: MW-34A

Time <u>1525</u> Static DTW (ft below reference point)	<u>138.70</u> Screen <u>SV</u> Casing Volume (CV) (gallons) <u>53</u> <u>SV</u> 3 CV (gallons) <u>159</u>	Weather Conditions Time <u>1527</u> Temp. <u>65</u>	Initials: <u>AMD/CVO/RES</u>
Casing Total Depth (ft below reference point)	<u>280</u> Purging Device <u>ded. pump</u> Sampling Device <u>NO pipetand</u>	Skies <u>cloudy</u>	Begin Purge <u>1548</u> End Purge <u>1556</u>
<u>pump to screen</u> Water Column (feet)	<u>80</u> Pump: Depth (ft brp) <u>200</u> Type <u>grundfor</u> Voltage <u>240</u> HP <u>-</u>	Wind (mph) <u>-</u> From <u>-</u>	Gallons Purged <u>174</u> CVs Purged <u>3.2</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.66</u> Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>		DTW (ft brp) <u>139.79</u> Time <u>1556</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1540	138.70	0	0								Q=18 gpm
1542	141.60	36	0.67	21.3	7.22	1368	175.6	6.53	38.5	-	
1545	141.59	90	1.69	21.4	7.17	204.9 ^{NM}	204.3	6.31	13.7	-	
1548	139.80	112.5	2.12	21.7	7.17	217.7 ^{NM}	214.6	5.17	6.94	-	Q=7.5 gpm
1550	139.78	127.5	2.40	21.8	7.15	137.4 ^{NM}	228.6	4.94	3.41	-	
1552	139.79	142.5	2.68	21.8	7.14	1378	232.6	4.81	2.86	-	
1554	139.79	159	3.0	21.8	7.14	1371	232.7	4.77	2.02	-	COLLECT SAMPLE
1556	NM	174	3.2								

SAMPLE COLLECTION SAMPLE TIME <u>1554</u>	AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
ANALYSIS QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs <u>3</u> 40 ml VOA				
8270 SIM 1,4 dioxane <u>1</u> 1 L Amber				
8270 MOD 1,4 dioxane <u>1</u> 1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u>				

GROUNDWATER SAMPLING INFORMATION

DATE: 2/13/19

TASK: 532.30

WELL ID: MW-34C

Time <u>1316</u> Static DTW (ft below reference point)	<u>133.65</u> Screen <u>SV</u> Gasing Volume (CV) (gallons) <u>64</u> <u>SV</u> 3 CV (gallons) <u>192</u>	Weather Conditions Time <u>1317</u> Temp. <u>60</u>	Initials: <u>AMD/CVD/RES</u>
Casing Total Depth (ft below reference point)	<u>576</u> Purging Device <u>ded pump</u> Sampling Device <u>ND pipestand</u>	Skies <u>overcast</u>	Begin Purge <u>1325</u> End Purge <u>1341</u>
<u>pump to screen</u> Water Column (feet)	<u>442.35</u> Pump: Depth (ft brp) <u>470</u> Type <u>grundfos</u> Voltage <u>240</u> HP <u>-</u>	Wind (mph) <u>2</u> From <u>W</u>	Gallons Purged <u>224</u> CVs Purged <u>3.5</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.66</u> Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>		DTW (ft brp) <u>153.21</u> Time <u>1339</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1325	133.65	0	0								
1327	150.90	28	0.4	21.3	7.56	816	191.0	0.67	0.5	-	Q = 14 gpm
1330	152.00	70	1.1	21.3	7.30	763	137.3	0.18	0.33	-	
1332	152.38	98	1.5	21.9	7.67	936	147.6	0.15	0.19	-	
1334	152.75	126	2.0	21.9	7.65	942	149.9	0.14	0.37	-	
1337	153.04	168	2.6	21.9	7.63	942	150.0	0.14	NM	-	
1339	153.21	196	3.0	21.9	7.62	942	149.8	0.14	0.46	-	COLLECT SAMPLE
1341	NM	224	3.5								

SAMPLE COLLECTION SAMPLE TIME <u>1339</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u> If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 5/16/19

TASK: 532.30

WELL ID: MW-34B

Time 1210 Static DTW (ft below reference point)	133.23	screen SV Casing Volume (CV) (gallons) 50 3 CV (gallons) 150	Weather Conditions
Casing Total Depth (ft below reference point)	536	Purging Device ded pump Sampling Device 10-100 piperstand	Time 1214 Temp. 65
Water Column (feet)	76	Pump: Depth (ft brp) 460 Type grundfos Voltage 240 HP -	Skies sunny
Casing Capacity (Diameter 4") (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow Fast X	Wind (mph) - From -
			Initials: AMD/RES
			Begin Purge 1218 End Purge 1239
			Gallons Purged 168 CVs Purged 3.4
			DTW (ft brp) 139.02 Time 1237

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1218	133.23	0	0				PUMP ON				
1223	134.02	40	0.80	21.5	7.83	801	179.0	3.11	46.6	-	Q = 8 gpm
1225	133.98	56	1.12	21.8	7.75	834	175.4	2.04	41.2	-	
1228	134.01	80	1.60	22.6	7.73	844	175.7	1.88	26.2	-	
1231	134.01	104	2.08	22.3	7.72	852	172.7	1.88	16.2	-	
1234	134.02	128	2.56	22.3	7.71	853	170.6	1.85	9.52	-	
1237	134.02	152	3.0	22.3	7.71	852	169.9	1.83	6.51	-	
1239	NM	168	3.4				PUMP OFF				

SAMPLE COLLECTION SAMPLE TIME 1237			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA		
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)		
8260B VOCs	3	40 ml VOA			
8270 SIM 1,4 dioxane		1 L Amber			
8270 MOD 1,4 dioxane	1	1 L Amber			
DUPLICATES / SPLITS / BLANKS? Y (N)					

GROUNDWATER SAMPLING INFORMATION

DATE: 2/13/19TASK: 532.30WELL ID: MW-15

Time <u>0809</u> Static DTW (ft below reference point) <u>130.44</u>	Casing Volume (CV) (gallons) <u>6.6</u> 3 CV (gallons) <u>19.8</u>	Weather Conditions	Initials: <u>AMD/CVP/REI</u>
Casing Total Depth (ft below reference point) <u>170.8</u>	Purging Device <u>grundfos</u> Sampling Device <u>ded. tubing</u>	Time <u>0810</u> Temp. <u>60</u>	Begin Purge <u>0858</u> End Purge <u>0924</u>
Water Column (feet) <u>40.36</u>	Pump: Depth (ft brp) <u>167</u> Type <u>MP1</u> Voltage <u>115</u> HP <u>0.5</u>	Skies <u>overcast</u>	Gallons Purged <u>21</u> CVs Purged <u>3.2</u>
Casing Capacity (Diameter <u>2"</u>) (gallons per foot) <u>0.163</u>	Monitor Well Recharge Rate: Slow <u>Fast</u> ☒	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>131.05</u> Time <u>0926</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0858	130.44	0	0				PUMP ON				
0902	130.95	3	0.45	19.4	7.20	1688	286.9	5.28	NM	380	Q = 0.75 gpm
0907	131.08	6.75	1.0	24.6	7.09	1885	279.5	3.90	24.2	380	
0911	131.05	9.74	1.48	24.5	7.09	1891	276.3	3.77	20.1	380	
0916	131.05	13.5	2.0	24.5	7.09	1890	274.6	3.63	9.42	380	
0920	131.05	16.5	2.5	24.4	7.09	1891	274.8	3.53	7.23	380	
0924	131.05	19.5	3.0	24.4	7.09	1890	274.9	3.43	6.0	380	COLLECT SAMPLE
0926	131.05	21	3.2				PUMP OFF				

SAMPLE COLLECTION SAMPLE TIME 0924

ANALYSIS QUANTITY TYPE

8260B VOCs	<u>3</u>	40 ml VOA
8270 SIM 1,4 dioxane		1 L Amber
8270 MOD 1,4 dioxane		1 L Amber

DUPLICATES / SPLITS / BLANKS?

Y

(N)

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19

TASK: 532.30

WELL ID: MW-08

Time <u>12:11</u> Static DTW (ft below reference point)	<u>129.32</u>	Casing Volume (CV) (gallons) <u>6</u> 3 CV (gallons) <u>18</u>	Weather Conditions
Casing Total Depth (ft below reference point)	<u>166.10</u>	Purging Device <u>grundfos</u> Sampling Device <u>ded. tubing</u>	Time <u>1207</u> Temp. <u>65</u>
Water Column (feet)	<u>36.78</u>	Pump: Depth (ft brp) <u>~163</u> Type <u>MP1</u> Voltage <u>115</u> HP <u>0.5</u>	Skies <u>cloudy</u>
Casing Capacity (Diameter ") (gallons per foot)	<u>0.163</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>
			Initials: <u>AMP/RES</u>
			Begin Purge <u>1226</u> End Purge <u>1242</u>
			Gallons Purged <u>24</u> CVs Purged <u>4.0</u>
			DTW (ft brp) <u>131.29</u> Time <u>1238</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1226	129.55	0	0	—	—	—	PV	MP	ON	—	
1228	131.07	3	0.5	21.5	7.33	1914	217.3	4.29	12.80	277	Q = 1.5 gpm
1230	NM	6	1.0	21.7	7.26	1938	216.4	3.47	16.12	277	
1232	131.21	9	1.5	21.7	7.28	1940	210.2	3.38	20.79	277	
1234	131.25	12	2.0	21.7	7.29	1942	206.3	3.71	14.68	277	
1236	131.27	15	2.5	21.7	7.25	1942	200.6	3.72	2.61	277	
1238	131.29	18	3.0	22.0	7.24	1938	199.6	3.68	1.32	277	SAMPLE
1242	NM	24	4.0	—	—	—	PV	MP	OFF	—	

SAMPLE COLLECTION SAMPLE TIME <u>1238</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>9</u>	40 ml VOA	<u>Duplicate Sample: MW-0800 @ 1240</u> <u>Split Sample: MW-08 @ 1239</u>			
8270 SIM 1,4 dioxane	<u>3</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES ☒ SPLITS ☐ BLANKS? ☒ N						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/20/19

TASK: 532.30

WELL ID: MW-16

Time <u>1326</u> Static DTW (ft below reference point)	<u>121.69</u>	Casing Volume (CV) (gallons) <u>37.5</u> 3 CV (gallons) <u>112.5</u>	Weather Conditions
Casing Total Depth (ft below reference point)	<u>178.50</u>	Purging Device <u>grindfor</u> Sampling Device <u>ded. tubing</u>	Time <u>1330</u> Temp. <u>60</u>
Water Column (feet)	<u>56.91</u>	Pump: Depth (ft brp) <u>176.5</u> Type <u>MDJ</u> Voltage <u>151</u> HP <u>0.5</u>	Skies <u>cloudy</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.66</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>
			Initials: <u>NES/DJS</u>
			Begin Purge <u>1327</u> End Purge <u>1415</u>
			Gallons Purged <u>120</u> CVs Purged <u>3.2</u>
			DTW (ft brp) <u>123.98</u> Time <u>1410</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1327	121.69	0	0	—	—	Begin	Purging	—	—	—	Q ≈ 2.5 gpm
1334	123.09	18	0.5	22.1	7.32	1701	70.1	6.53	4.16	329	
1341	123.95	37.5	1	22.1	7.26	1592	62.4	3.91	3.32	329	
1348	123.95	55	1.5	21.9	7.31	1626	61.0	3.38	5.21	329	
1355	123.96	74	2.0	21.8	7.31	1688	60.6	3.88	1.95	329	
1402	123.97	92	2.5	21.9	7.32	1783	58.8	4.11	1.62	329	
1410	123.98	113	3	21.8	7.32	1726	56.5	4.14	1.22	329	
1415	NM	120	3.2	—	—	End	Purging	—	—	—	

SAMPLE COLLECTION SAMPLE TIME <u>1420</u>		
ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>3</u>	40 ml VOA
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber
8270 MOD 1,4 dioxane	<u>1</u>	1 L Amber
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>0</u>		
If yes, complete appropriate forms.		

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)



HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15TASK: 532.30WELL ID: MW-28

Time <u>1333</u> Static DTW (ft below reference point) <u>119.56</u>	<u>Screen</u> SV Casing Volume (GV) (gallons) <u>29.7</u> SV 3 GV (gallons) <u>89.1</u>	Weather Conditions Time <u>1334</u> Temp. <u>70</u>	Initials: <u>AMD/RES</u>
Casing Total Depth (ft below reference point) <u>375</u>	Purging Device <u>ded pump</u> Sampling Device <u>ND pipette</u>	Begin Purge <u>1338</u> End Purge <u>1350</u>	
<u>pump to screen</u> Water Column (feet) <u>45</u>	Pump: Depth (ft brp) <u>330</u> Type <u>grundfos</u> Voltage <u>240</u> HP <u>0.5</u>	Gallons Purged <u>15</u> CVs Purged <u>3.8</u>	
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	DTW (ft brp) <u>130.05</u> Time <u>1347</u>	
		Skies <u>cloudy</u>	
		Wind (mph) <u>—</u> From <u>—</u>	

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C.)	pH	EC (MS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1338	119.56	0	0	—	—	—	PUMP ON	—	—	—	
1339	NM	10	0.33	21.5	7.59	1018	61.9	3.39	2.42	—	Q = 10 gpm
1340	121.82	20	0.66	21.5	7.58	1019	58.9	3.87	1.81	—	
1341	125.23	30	1.0	21.5	7.62	1020	53.0	4.40	1.32	—	
1343	130.02	50	1.66	21.5	7.63	1011	49.9	4.32	0.85	—	
1345	130.03	70	2.33	21.5	7.63	1012	49.4	4.32	0.61	—	
1347	130.05	90	3.0	21.5	7.63	1012	49.3	4.32	0.16	—	SAMPLE
1350	NM	115	3.8	—	—	—	PUMP OFF	—	—	—	

SAMPLE COLLECTION SAMPLE TIME <u>1347</u>		
ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>3</u>	40 ml VOA
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u>		
If yes, complete appropriate forms.		

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19

TASK: 532.30

WELL ID: MW-26C

Time 0907 Static DTW (ft below reference point)	115.75	Screen SV Casing Volume (GV) (gallons) 49	SV 3 CV (gallons) 147	Weather Conditions	Initials: AMD/RES
Casing Total Depth (ft below reference point)	499	Purging Device grundfos	Sampling Device ded tubing	Time 0907 Temp. 60	Begin Purge 0922 End Purge 1038
pump to screen Water Column (feet) 383.25	299	Pump: Depth (ft brp) ~200 Type MF 1 Voltage 115 HP 0.5		Skies cloudy	Gallons Purged 152 CVs Purged 3.0
Casing Capacity (Diameter 2") (gallons per foot)	0.163	Monitor Well Recharge Rate: Slow Fast X		Wind (mph) - From -	DTW (ft brp) 115.89 Time 1040

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0922	115.75	0	0				PUMP ON				
0935	UTM	26	0.53	22.5	9.41	450	-270.1	NM	3.57	330	Q ≈ 2.0 gpm
0948	UTM	52	1.06	22.1	8.03	788	-177.2	NM	0.81	330	Q ≈ 2.0 gpm
1001	UTM	78	1.59	22.0	7.93	797	-158.2	NM	0.25	330	Q ≈ 2.0 gpm
1014	UTM	104	2.12	22.0	7.88	798	-149.2	NM	0.06	330	
1025	UTM	126	2.57	22.0	7.87	798	-145.6	NM	0.02	330	
1036	UTM	148	3.0	22.0	7.88	797	-144.1	NM	0.02	330	SAMPLE
1038	UTM	152	3.0				PUMP OFF				
1046	115.89										

SAMPLE COLLECTION SAMPLE TIME	1036
ANALYSIS	QUANTITY TYPE
8260B VOCs	6 40 ml VOA
8270 SIM 1,4 dioxane	2 1 L Amber
8270 MOD 1,4 dioxane	1 L Amber
DUPLICATES / SPLITS / BLANKS?	(Y) N

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
Depth to water unable to measure. Meter unable to get passed pump.			
D.O. probe malfunction.			
Rinsante blank collected: RB-051519 @ 1100			

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING INFORMATION

DATE: 11/8/18TASK: 532-30WELL ID: MW-40

Time <u>0745</u> Static DTW (ft below reference point)	<u>110.01</u>	Screen SV Casing Volume (SV) (gallons)	<u>75</u>	SV 3 SV (gallons)	<u>225</u>	Weather Conditions	Initials: <u>AMD, DMS</u>
Casing Total Depth (ft below reference point)	<u>970</u>	Purging Device	<u>ded pump</u>	Sampling Device	<u>NO pipestand</u>	Time <u>0750</u> Temp. <u>69°F</u>	Begin Purge <u>0755</u> End Purge <u>0816</u>
Water Column (feet)	<u>50</u>	Pump: Depth (ft btp)	Type		<u>ground for Voltage 240 HP</u>	Skies <u>cloudy</u>	Gallons Purged <u>252</u> CVs Purged <u>3.36</u>
Casing Capacity (Diameter <u>6"</u>) (gallons per foot)	<u>1.5</u>	Monitor Well Recharge Rate: Slow	Fast	<u>X</u>		Wind (mph) <u>-</u> From <u>-</u>	DTW (ft btp) <u>110.98</u> Time <u>0814</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0755	110.01	0	0	—	Begin	Purge	—				Q ≈ 12 gpm
0758	110.80	36	0.48	20.5	7.59	732	-148.6	2.45	3.05		
0801	110.88	72	0.96	20.9	7.62	762	-112.1	1.91	2.59		
0804	110.92	108	1.44	21.0	7.64	761	-67.0	1.86	1.90		
0807	110.94	144	1.92	21.1	7.72	769	-45.3	3.19	2.10		
0810	110.98	180	2.4	21.0	7.64	760	-23.8	2.34	1.83		
0814	110.98	228	3.04	21.2	7.62	762	-20.7	2.46	2.08		Collected Sample
0816	N/A	252	3.36	—	End	Purge	—				

SAMPLE COLLECTION SAMPLE TIME <u>0814</u>		
ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>3</u>	40 ml VOA
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber
DUPLICATES / SPLITS / BLANKS? <u>Y</u> (N)		
If yes, complete appropriate forms.		

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
 NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

Sample collected @ 0814 MW-40 (org)

GROUNDWATER SAMPLING INFORMATION

DATE: 5/10/19

TASK: 572.30

WELL ID: MW41

Time <u>1530</u> Static DTW (ft below reference point) <u>136.18</u>	Casing Volume <u>SV</u> (gallons) <u>39</u> 3 <u>SV</u> (gallons) <u>118</u>	Weather Conditions	Initials: <u>NEC/DJS</u>
Casing Total Depth (ft below reference point) <u>425</u>	Purging Device <u>dept pump</u> Sampling Device <u>10-100 pipetted</u>	Time _____ Temp. _____	Begin Purge <u>1543</u> End Purge <u>1607</u>
<u>pump to screen</u> Water Column (feet) <u>65</u>	Pump: Depth (ft brp) <u>360</u> Type <u>Grinder</u> Voltage <u>240</u> HP	Skies _____	Gallons Purged <u>142</u> CVs Purged <u>3.65</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.6</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) _____ From _____	DTW (ft brp) <u>136-15</u> Time <u>1530</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1543	136.18	0	0	—	—	Begin Purge					Q ≈ 6
1546	139.32	19	0.5	22.3	7.11	1.910	-40.3	1.24	32.31		
1549	138.91	39	1	21.9	7.01	2.059	-40.9	1.76	34.02		
1553	138.89	58	1.5	22.1	6.99	2.089	-24.1	1.99	20.02		
1556	138.91	78	2	22.3	6.99	2.088	-26.1	2.09	15.14		
1559	138.90	97	2.5	22.5	7.00	2.087	-23.2	2.06	9.53		
1603	138.91	118	3	22.2	7.00	2.090	-26.4	2.03	8.61		
1607	—	142	3.65	—	—	End Purge					

SAMPLE COLLECTION SAMPLE TIME <u>1603</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA		
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)		
8260B VOCs	<u>3</u>	40 ml VOA			
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber			
8270 MOD 1,4 dioxane		1 L Amber			
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u> If yes, complete appropriate forms.					

GROUNDWATER SAMPLING INFORMATION

DATE: 06-03-19

TASK: 532.70

WELL ID: MW-42

Time 1030 Static DTW (ft below reference point) 83.52	Casing Volume (CV) (gallons) 321 3 CV (gallons) 964	Weather Conditions	Initials: DJJ, NES
Casing Total Depth (ft below reference point) 1057	Purging Device SAEZ ^{TEAD pump} Sampling Device Pipe Stone	Time 1030 Temp. 67°F	Begin Purge 1039 End Purge 1122
Pump to Screen Water Column (feet) 492	Pump: Depth (ft brp) 820 Type SAEZ Voltage HP	Skies Cloudy	Gallons Purged 986 CVs Purged 3.06
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast ☒	Wind (mph) ~ From ~	DTW (ft brp) 63.52 Time 1030

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
10:39	83.52	0	0.0	~	Begin		Purge	~			~ 23 GPM
10:46	72.10	161	0.5	21.1	7.82	0.529	-1030	1.53	19.1		
10:53	72.19	322	1.0	21.2	7.96	0.514	-1513	1.17	7.70		
11:00	72.27	483	1.5	21.3	7.99	0.508	-62.1	1.56	4.97		
11:07	72.29	644	2.0	21.3	8.02	0.508	-19.9	1.44	1.85		
11:14	72.35	815	2.5	21.4	8.03	0.507	-43.5	0.98	1.34		
11:21	72.44	964	3.0	21.7	8.02	0.507	-21.7	1.68	1.40		
11:24	-	986		~	End Purge						

SAMPLE COLLECTION SAMPLE TIME 1122	
ANALYSIS	QUANTITY TYPE
8260B VOCs	9 40 ml VOA
8270 SIM 1,4 dioxane	3 1 L Amber
8270 MOD 1,4 dioxane	1 L Amber
DUPLICATES / SPLITS / BLANKS? ☒ N	

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

MW-4200 Co 1124

MW-42 → calcareous / europium

GROUNDWATER SAMPLING INFORMATION

DATE: 5-24-19TASK: 532.71WELL ID: MW-42

Time <u>1300</u> Static DTW (ft below reference point) <u>67.63</u>	Casing Volume (CV) (gallons) <u>301</u> 3 CV (gallons) <u>903</u>	Weather Conditions	Initials: <u>DJS/TJE</u>
Casing Total Depth (ft below reference point) <u>1057</u>	Purging Device <u>ded pump</u> Sampling Device <u>0-10 sip</u>	Time <u>1300</u> Temp. <u>75</u>	Begin Purge <u>1306</u> End Purge <u>1346</u>
Water Column (feet) <u>497</u>	Pump: Depth (ft bfp) <u>560</u> Type <u>grad</u> Voltage <u>740</u> HP	Skies <u>partly sunny</u>	Gallons Purged <u>960</u> CVs Purged <u>3.2</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.69</u>	Monitor Well Recharge Rate: Slow Fast <u>X</u>	Wind (mph) <u>2-5</u> From <u>Near</u>	DTW (ft bfp) <u>67.63</u> Time <u>1300</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1306	67.63	0	0	—	—	—	—	—	—	—	Q _s 24 gpm
1312	76.11	144	0.5	20.6	7.38	0.492	-229.5	0.39	2.89	—	
1318	76.25	288	1.0	21.1	7.39	0.492	-216.0	0.39	2.83	—	
1324	76.35	432	1.4	21.5	7.51	0.493	-150.7	0.38	2.58	—	
1331	76.53	600	2.0	21.5	7.57	0.492	-125.6	0.60	2.76	—	
1337	76.60	744	2.5	21.5	7.62	0.493	-132.6	0.44	2.38	—	
1344	76.74	912	3.0	21.5	7.66	0.493	-130.0	0.43	2.32	—	
1346	NM	960	3.2	—	—	—	—	—	—	—	

SAMPLE COLLECTION SAMPLE TIME <u>#4 1345</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>1</u>	40 ml VOA	<u>Dup @ #4 1346</u>			
8270 SIM 1,4 dioxane	<u>5</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>(Y)</u> N						

GROUNDWATER SAMPLING INFORMATION

DATE: 6/24/19

TASK: 532.71

WELL ID: MW-43

Time 9:11	Static DTW (ft below reference point) 61.70	Screen 50 297 324 3 CV (gallons) 822 972	Weather Conditions	Initials: TJE/DJS
Casing Total Depth (ft below reference point) 98.9	Water Column (feet) 491	Purging Device dal pump	Time 9:00 Temp. 65	Begin Purge 10:00 End Purge 11:05
Casing Capacity (Diameter 4") (gallons per foot) 0.66		Pump: Depth (ft brp) 960 Type gr-dw see Voltage HP	Skies cloudy	Gallons Purged 972 CVs Purged 30
		Monitor Well Recharge Rate: Slow Fast X	Wind (mph) 25 From S	DTW (ft brp) 61.70 Time 9:11

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1018	61.70	0	0							-	Q ≈ 21 gpm
1025	68.81	147	0.44	20.8	7.46	0.913	-133.0	0.42	0.42	-	
1032	68.90	294	0.9	21.4	7.52	0.515	-111.2	0.39	0.40	-	Q ≈ 24 gpm
1039	69.02	462	1.4	21.5	7.61	0.504	-59.0	0.36	0.38	-	
1046	69.22	630	2.0	21.5	7.65	0.504	-32.0	0.36	0.33	-	
1053	69.31	798	2.5	21.5	7.65	0.506	-33.4	0.34	0.01	-	
1100	69.35	972	3.0	21.5	7.65	0.507	-38.4	0.34	0.04	-	
1105											

SAMPLE COLLECTION SAMPLE TIME 11:01		
ANALYSIS	QUANTITY	TYPE
8260B VOCs	9	40 ml VOA
8270 SIM 1,4 dioxane		1 L Amber
8270 MOD 1,4 dioxane	3	1 L Amber
DUPLICATES / SPLITS BLANKS? Y N If yes, complete appropriate forms.		

AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
MW-4300 @ 1106			
MW-43 to ECI			

GROUNDWATER SAMPLING INFORMATION

DATE: 06-03-2019

TASK: 532.71

WELL ID: MW-43

Time 1425 Static DTW (ft below reference point) 57.97	Casing Volume (CV) (gallons) 319 3 CV (gallons) 957	Weather Conditions	Initials: DJS, NES
Casing Total Depth (ft below reference point) 1051	Purging Device SOE 22 ^{temp Pump} Sampling Device P. Pestard	Time 1430 Temp. ~	Begin Purge 1430 End Purge 1515
Pump to Screen Water Column (feet) 534	Pump: Depth (ft brp) 520 Type SOE 22 Voltage HP	Skies overcast	Gallons Purged 1000 CVs Purged 3.125
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast X	Wind (mph) ~ From ~	DTW (ft brp) 57.97 Time 1425

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	... FIELD PARAMETERS ...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (mS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1430											~22 GPM
1437	65.63	160	0.5	21.9	7.91	0.54	-128.5	1.04	5.19		
1444	65.75	320	1.0	22.2	7.90	0.54	-148.3	1.07	6.81		
1451	65.65	480	1.5	22.8	7.95	0.53	-61.4	1.06	5.00		
1458	65.81	640	2.0	23.4	7.96	0.53	-35.0	0.91	2.79		
1505	65.71	800	2.5	22.3	7.95	0.53	-16.4	0.89	2.53		
1512	65.80	957	3.0	22.3	7.96	0.53	-12.4	1.25	1.70		
1518											~ Stop Purge ~

SAMPLE COLLECTION SAMPLE TIME 1511	AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
ANALYSIS QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)
8260B VOCs 9 40 ml VOA	MW-4300 @ 1518
8270 SIM 1,4 dioxane 3 1 L Amber	MW-43 → Cal Science / Eurochem
8270 MOD 1,4 dioxane 1 L Amber	
DUPLICATES / SPLITS / BLANKS? ② N	
If yes, complete appropriate forms.	

GROUNDWATER SAMPLING INFORMATION

DATE: 5/16/19TASK: 532.30WELL ID: EW-01

Time <u>0925</u> Static DTW (ft below reference point) <u>118.23</u>	Casing Volume (CV) (gallons) <u>46</u> 3 CV (gallons) <u>138</u>	Weather Conditions Time <u>0930</u> Temp. <u>60</u>	Initials: <u>AMD/RES/RHH</u>
Casing Total Depth (ft below reference point) <u>188</u>	Purging Device <u>ded pump</u> Sampling Device <u>ded sample port</u>	Skies <u>rain</u>	Begin Purge <u>0930</u> End Purge <u>0942</u>
Water Column (feet) <u>69.77</u>	Pump: Depth (ft brp) <u>-</u> Type <u>-</u> Voltage <u>-</u> HP <u>-</u>	Wind (mph) <u>-</u> From <u>-</u>	Gallons Purged <u>156</u> CVs Purged <u>3.3</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>		DTW (ft brp) <u>118.73</u> Time <u>0940</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0930	118.23	0	0	Begin Purge						-	
0932	118.70	26	0.56	20.5	7.59	1335	211.9	7.67	14.03	-	Q=13gpm
0934	118.74	52	1.13	20.9	7.54	1340	200.5	7.56	36.1	-	
0935	118.75	65	1.41	21.1	7.53	1343	194.7	7.40	31.75	-	
0937	118.75	91	1.97	21.0	7.57	1339	193.0	7.95	12.31	-	
0938	118.73	104	2.26	21.1	7.59	1344	197.4	7.84	10.6	-	
0940	118.73	130	2.9	21.0	7.56	1344	198.2	7.82	4.96	-	
0942	NM	156	3.3	End Purge						-	

SAMPLE COLLECTION SAMPLE TIME <u>0940</u>	AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
ANALYSIS QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)
8260B VOCs <u>3</u> 40 ml VOA	
8270 SIM 1,4 dioxane <u>1</u> 1 L Amber	
8270 MOD 1,4 dioxane <u>1</u> 1 L Amber	
DUPLICATES / SPLITS / BLANKS? Y <u>N</u>	
If yes, complete appropriate forms.	

GROUNDWATER SAMPLING INFORMATION

DATE: 5/16/19

TASK: 532.30

WELL ID: MW-21

Time <u>0949</u> Static DTW (ft below reference point)	<u>113.78</u>	Casing Volume (CV) (gallons) <u>78</u> 3 CV (gallons) <u>234</u>	Weather Conditions
Casing Total Depth (ft below reference point)	<u>232</u>	Purging Device <u>ded pump</u> Sampling Device <u>ded sample port</u>	Time <u>0945</u> Temp. <u>60</u>
Water Column (feet)	<u>118.72</u>	Pump: Depth (ft brp) <u>-</u> Type <u>-</u> Voltage <u>-</u> HP <u>-</u>	Skies <u>rain</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.66</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>
		Initials: <u>AMP/RES/RHA</u>	Begin Purge <u>0950</u> End Purge <u>1002</u>
		Gallons Purged <u>300</u> CVs Purged <u>3.8</u>	DTW (ft brp) <u>131.72</u> Time <u>1000</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>0950</u>	<u>113.78</u>	<u>0</u>	<u>0</u>	<u>Begin Purge</u>							
<u>0952</u>	<u>129.41</u>	<u>50</u>	<u>0.64</u>	<u>21.1</u>	<u>7.57</u>	<u>1561</u>	<u>64.1</u>	<u>3.60</u>	<u>17.0</u>	<u>-</u>	<u>Q = 25 gpm</u>
<u>0954</u>	<u>130.79</u>	<u>100</u>	<u>1.28</u>	<u>21.3</u>	<u>7.50</u>	<u>1989</u>	<u>34.0</u>	<u>5.03</u>	<u>16.3</u>	<u>-</u>	
<u>0955</u>	<u>131.13</u>	<u>125</u>	<u>1.60</u>	<u>21.3</u>	<u>7.49</u>	<u>2027</u>	<u>59.0</u>	<u>6.11</u>	<u>3.0</u>	<u>-</u>	
<u>0956</u>	<u>131.35</u>	<u>150</u>	<u>1.92</u>	<u>21.3</u>	<u>7.45</u>	<u>2045</u>	<u>78.0</u>	<u>5.52</u>	<u>2.91</u>	<u>-</u>	
<u>0958</u>	<u>131.53</u>	<u>200</u>	<u>2.56</u>	<u>21.3</u>	<u>7.46</u>	<u>2048</u>	<u>82.3</u>	<u>6.04</u>	<u>3.61</u>	<u>-</u>	
<u>1000</u>	<u>131.72</u>	<u>250</u>	<u>3.2</u>	<u>21.0</u>	<u>7.44</u>	<u>2052</u>	<u>92.3</u>	<u>5.96</u>	<u>5.32</u>	<u>-</u>	
<u>1002</u>	<u>NM</u>	<u>300</u>	<u>3.8</u>	<u>End Purge</u>							

SAMPLE COLLECTION SAMPLE TIME <u>1000</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane	<u>1</u>	1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y <u>(N)</u>						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/14/19

72.86

TASK: 532.30

WELL ID: MW-32A

Time 0834 Static DTW (ft below reference point)	72.86	Screen Casing Volume (GV) (gallons) 207	SV 3 GV (gallons) 621	Weather Conditions	Initials: NES/PJS
Casing Total Depth (ft below reference point)	905	Purging Device ded Pump	Sampling Device ND P. Postcard	Time 0830 Temp. 60	Begin Purge 855 End Purge 0920
Pump to Screen Water Column (feet)	345	Pump: Depth (ft brp) 560	Type groundfo Voltage 240 HP -	Skies rain	Gallons Purged 660 CVs Purged 3.2
Casing Capacity (Diameter 4") (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) - From -	DTW (ft brp) 74.73 Time 0917

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0834	72.86	0	0							-	Q ≈ 13 gpm
0842	74.54	104	0.5	19.8	7.52	1212	51.0	4.72	1.67	-	
0849	74.63	207	1.0	20.0	7.56	1215	45.8	3.46	1.82	-	
0856	74.70	311	1.5	20.2	7.56	1212	33.5	2.96	2.38	-	
0903	74.71	411	2.0	20.1	7.58	1208	35.7	3.31	1.96	-	
0910	74.72	518	2.5	20.2	7.60	1206	36.3	4.14	1.98	-	
0917	74.73	621	3.0	20.1	7.52	1209	33.1	3.04	1.45	-	
0920	NM	660	3.2				End Purge			-	

SAMPLE COLLECTION SAMPLE TIME 0920

ANALYSIS	QUANTITY	TYPE
8260B VOCs	3	40 ml VOA
8270 SIM 1,4 dioxane	1	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber

DUPLICATES / SPLITS / BLANKS? Y

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 2-13-19

TASK: 532.30

WELL ID: MW-32C

Time 1422 Static DTW (ft below reference point)	71.30	Screen Casing Volume (SV) (gallons) 318	SV 3 SV (gallons) 454	Weather Conditions	Initials: DJJ/NE
Casing Total Depth (ft below reference point)	1090	Purging Device Del pump	Sampling Device NA PIPETOR	Time 1415 Temp. 53°F	Begin Purge 1431 End Purge 1551
Pump to Water Column (feet)	930	Pump: Depth (ft brp) 560 Type GROUNDPS Voltage 240 HP -		Skies Cloudy	Gallons Purged 966 CVs Purged 3.1
Casing Capacity (Diameter 4") (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow Fast ✓		Wind (mph) ~ From ~	DTW (ft brp) NM Time -

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1431	71.30	0	0							-	Q ≈ 12 GPM
1444	NM	159	0.5	19.7	7.96	552.7	-173.1	2.21	1.26	-	* transducer blocking water column
1458	NM	318	1.0	20.2	7.98	545.7	-151.2	1.01	0.40	-	unable to obtain WL
1511	NM	477	1.5	20.3	8.02	544.8	-92.9	1.29	3.98	-	
1524	NM	636	2.0	19.7	8.04	548.3	-90.0	1.72	2.76	-	
1537	NM	795	2.5	20.0	8.03	547.9	-77.0	0.54	1.82	-	
1550	NM	954	3.0	19.6	7.93	548.1	-91.0	2.55	5.18	-	
1551	NM	966	3.1							-	End Purge

SAMPLE COLLECTION SAMPLE TIME 1550		AIR MONITORING PID/FID ppm: VAULT NA		BKGD NA		BREATHING ZONE NA		DISCHARGE WATER NA	
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)						
8260B VOCs	3	40 ml VOA							
8270 SIM 1,4 dioxane	1	1 L Amber							
8270 MOD 1,4 dioxane		1 L Amber							
DUPLICATES / SPLITS / BLANKS?		Y	M						
If yes, complete appropriate forms.									



GROUNDWATER SAMPLING INFORMATION

DATE:

TASK:

WELL ID: ~~M-32~~ MW-32B

Time <u>1319</u> Static DTW (ft below reference point)	<u>72.60</u>	<u>Screen SV</u> Casing Volume (CV) (gallons) <u>264</u> 3 CV (gallons) <u>711</u>	<u>Weather Conditions</u>	Initials: <u>NES/DK</u>
Casing Total Depth (ft below reference point)	<u>999</u>	Purging Device <u>ded pump</u> Sampling Device <u>>100 pipe stand</u>	Time <u>1318</u> Temp. <u>64</u>	Begin Purge <u>1323</u> End Purge <u>1434</u>
pump & screen Water Column (feet)	<u>436</u>	Pump: Depth (ft brp) <u>560</u> Type <u>gravel</u> Voltage <u>240</u> HP	Skies <u>Cloudy</u>	Gallons Purged <u>711</u> CVs Purged <u>309</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.66</u>	Monitor Well Recharge Rate: Slow Fast <u>X</u>	Wind (mph) <u>4</u> From	DTW (ft brp) <u>1319</u> Time <u>1319</u>

[illegible]

SAMPLE COLLECTION		SAMPLE TIME
ANALYSIS	QUANTITY	TYPE
8260B VOCs	12	40 ml VOA
8270 SIM 1,4 dioxane	3	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber
DUPLICATES / SPLITS / BLANKS? If yes, complete appropriate forms.		(Y) N

AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
<u>NOTES</u> (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
MW-32B-2-SV @ 1414			
MW-3200B @ 1437			
mw-32 @ 1434			

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19

TASK: 532.30

WELL ID: MW-33

Time 0915	Static DTW (ft below reference point) 64.04	Screen Casing Volume (CV) (gallons) 291	3 CV (gallons) 873	Weather Conditions	Initials: NEV/DJV
Casing Total Depth (ft below reference point) 1020	Purging Device ded pump	Sampling Device pipet/bnd	Time 0915	Temp. 62	Begin Purge 0920
Water Column (feet) 485	Pump: Depth (ft brp) 535	Type ground	Skies cloudy	Gallons Purged 909	CVs Purged 3.1
Casing Capacity (Diameter *) (gallons per foot) 0.4	Monitor Well Recharge Rate: Slow	Fast	Wind (mph) 4-6	From	DTW (ft brp) 64.04

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0920	64.04	0									Pump On
0928	98.61	146	0.5	20.4	7.78	0.591	-52.1	0.32	1.50	-	Q ≈ 18gpm
0936	98.56	291	1	20.7	7.74	0.676	-34.8	0.46	0.77	-	
0944	98.59	437	1.5	20.8	7.77	0.673	-8.6	0.50	0.14	-	
0952	98.63	582	2	20.8	7.75	0.681	-9.5	0.52	1.65	-	
1000	98.63	728	2.5	20.7	7.78	0.691	-9.4	0.56	0.39	-	
1009	98.65	873	3	20.8	7.73	0.679	-9.1	0.54	0.17	-	
1011		909	3.1								End Purge

SAMPLE COLLECTION SAMPLE TIME 1009

ANALYSIS	QUANTITY	TYPE
8260B VOCs	3	40 ml VOA
8270 SIM 1,4 dioxane	2	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber

DUPLICATES / SPLITS / BLANKS? Y ☒

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

MW-33 - 2 - JV @ 0958

MW-33 @ 1009

HARGIS + ASSOCIATES, INC.

DATE: 2/13/19

GROUNDWATER SAMPLING INFORMATION

TASK: 632.50

WELL ID: MW-3C

Time <u>0806</u> Static DTW (ft below reference point) <u>73.30</u>	Screen Casing Volume (CV) (gallons) <u>378</u> <u>SV</u> <u>3 CV</u> (gallons) <u>1134</u>	Weather Conditions Time <u>0805</u> Temp <u>65F</u> Skies <u>cloudy</u> Wind (mph) <u>4</u> From <u></u>	Initials: <u>NES/DJS</u> Begin Purge <u>0820</u> End Purge <u>0920</u> Gallons Purged <u>1179</u> CVs Purged <u>3.1</u> DTW (ft bwp) <u>76.85</u> Time <u>0918</u>
Casing Total Depth (ft below reference point) <u>1040</u>	Purging Device <u>dot pump</u> Sampling Device <u>ND pipette</u>		
Water Column (feet) <u>630</u>	Pump: Depth (ft bwp) <u>410</u> Type <u>gentle</u> Voltage <u>240</u> HP <u>-</u>		
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow <u></u> Fast <u>X</u>		

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0820	73.30	0	0			Begin Purge				-	~~Q = 22 gpm~~ ^{NES} 2/12/19
0829	76.83	189	0.5	18.9	7.24	857	116.5	4.58	7.31	-	Q = 20 gpm
0839	76.84	378	1	19.3	7.51	828	92.1	2.54	8.61	-	
0850	76.82	567	1.5	19.4	7.61	853	79.3	2.89	8.09	-	
0859	76.82	756	2	19.3	7.63	847	74.2	2.98	7.04	-	
0908	76.85	944	2.5	19.4	7.62	846	70.6	2.98	7.54	-	
0918	76.85	1134	3	19.3	7.61	852	69.5	3.00	7.12	-	
0920	NM	1179	3.1			End Purge				-	

SAMPLE COLLECTION SAMPLE TIME <u>0920</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>5</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>N</u> If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/12/19TASK: 532.30WELL ID: MW-39

Time <u>1419</u> Static DTW (ft below reference point) <u>66.88</u>	Screen SV <u>271</u> SV <u>813</u>	Weather Conditions	Initials: <u>NES/DJS</u>
Casing Total Depth (ft below reference point) <u>1012</u>	Purging Device <u>dep pump</u> Sampling Device <u>ND pipet</u>	Time <u>1428</u> Temp. <u>65</u>	Begin Purge <u>1429</u> End Purge <u>1504</u>
Water Column (feet) <u>452</u>	Pump: Depth (ft bpr) <u>566</u> Type <u>gan</u> Voltage <u>240</u> HP	Skies <u>cloudy</u>	Gallons Purged <u>871</u> CVs Purged <u>3.2</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow <u>Fast</u> <u>Fast</u>	Wind (mph) <u>0</u> From <u></u>	DTW (ft bpr) <u>82.40</u> Time <u>1506</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (MS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1429	66.88	0	0	Begin Purge							Q ≈ 22 gpm
1435	82.21	136	0.5	21.1	8.25	488.5	-221.3	4.96	1.50	-	
1441	82.24	271	1	21.4	8.43	436.8	-204.6	1.02	1.28	-	
1447	82.36	407	1.5	21.7	8.46	432.4	-157.4	1.03	1.34	-	
1453	82.33	542	2	21.8	8.34	439.5	-124.9	0.96	0.89	-	
1459	82.38	678	2.5	21.8	8.32	436.2	-123.5	0.94	1.66	-	
1506	82.40	813	3	21.8	8.32	440.7	-120.4	0.94	1.80	-	
1509	NM	871	3.23	End Purge							

SAMPLE COLLECTION SAMPLE TIME <u>1505</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u>						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 05-16-19

TASK: 532.30

WELL ID: MW-36

Time 1130 Static DTW (ft below reference point) 68.25	Screen Casing Volume (CV) (gallons) 320 SV 3 EV (gallons) 960	Weather Conditions	Initials: BJS/NES
Casing Total Depth (ft below reference point) 994	Purging Device del. Pump Sampling Device 10-100 Pipestone	Time 1130 Temp. 63°F	Begin Purge 1135 End Purge 1249
Pump to screen Water Column (feet) 925.75	Pump: Depth (ft brp) 1160 Type grandFOX Voltage 240 HP -	Skies Partly cloudy	Gallons Purged 973 CVs Purged 3.1
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast ☒	Wind (mph) - From -	DTW (ft brp) 71.90 Time 1249

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (mS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1135	68.25	0	0			Begin Purge					Q ≈ 13 Gpm
1147	71.84	160	0.5	21.2	8.07	1.201	39.3	3.89	0.34		
1159	71.90	320	1.0	21.6	7.70	1.201	10.6	1.97	7.20		
1211	71.90	480	1.5	21.5	7.62	1.282	12.0	3.02	0.18		
1223	71.90	640	2.0	21.8	7.67	1.294	14.3	2.90	0.30		
1235	71.90	800	2.5	21.8	7.71	1.295	22.0	2.56	0.10		
1249	71.90	960	3.0	22.4	7.66	1.299	21.8	2.09	0.62		
1250	-	-	3.1			End Purge					

SAMPLE COLLECTION SAMPLE TIME 1249			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
B260B VOCs	6	40 ml VOA	MW-36-2.05V @ 1223			
B270 SIM 1,4 dioxane	2	1 L Amber	MW-36 @ 1249			
B270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? 0 N						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19 108.96TASK: 532.30WELL ID: MW-30A

Time <u>1425</u> Static DTW (ft below reference point) <u>89.96</u>	Screen <u>SV</u> Casing Volume (GV) (gallons) <u>17.6</u> <u>SV</u> 3 GV (gallons) <u>52.8</u>	Weather Conditions Time <u>1425</u> Temp. <u>70</u> Skies <u>cloudy</u> Wind (mph) <u>-</u> From <u>-</u>	Initials: <u>AMD/RES</u> Begin Purge <u>1427</u> End Purge <u>1441</u> Gallons Purged <u>61</u> CVs Purged <u>3.5</u> DTW (ft brp) <u>110.03</u> Time <u>1439</u>
Casing Total Depth (ft below reference point) <u>564</u>	Purging Device <u>ded pump</u> Sampling Device <u>ND pipestand</u>		
Water Column (feet) <u>44</u>	Pump: Depth (ft brp) <u>520</u> Type <u>grundfor</u> Voltage <u>240</u> HP <u>0.5</u>		
Casing Capacity (Diameter <u>3"</u>) (gallons per foot) <u>0.39</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>		

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1427	<u>108.96</u>	<u>0</u>	<u>0</u>	<u>-</u>	<u>-</u>	<u>PUMP</u>	<u>ON</u>	<u>-</u>	<u>-</u>		
1429	<u>109.61</u>	<u>14</u>	<u>0.79</u>	<u>21.2</u>	<u>7.87</u>	<u>744</u>	<u>181.7</u>	<u>0.70</u>	<u>0.06</u>	<u>-</u> <u>Q = 7 gpm</u>	
1431	<u>110.11</u>	<u>1421</u>	<u>1.19</u>	<u>21.2</u>	<u>7.85</u>	<u>744</u>	<u>166.3</u>	<u>0.91</u>	<u>0.51</u>	<u>-</u>	
1434	<u>110.10</u>	<u>26³³</u>	<u>1.87</u>	<u>21.5</u>	<u>7.81</u>	<u>743</u>	<u>143.2</u>	<u>0.53</u>	<u>2.53</u>	<u>-</u> <u>Q = 4 gpm</u>	
1435	<u>110.04</u>	<u>37</u>	<u>2.10</u>	<u>21.5</u>	<u>7.78</u>	<u>743</u>	<u>126.9</u>	<u>0.49</u>	<u>7.07</u>	<u>-</u>	
1437	<u>110.03</u>	<u>45</u>	<u>2.56</u>	<u>21.6</u>	<u>7.75</u>	<u>743</u>	<u>120.3</u>	<u>0.51</u>	<u>6.83</u>	<u>-</u>	
1439	<u>110.03</u>	<u>53</u>	<u>3.0</u>	<u>21.6</u>	<u>7.74</u>	<u>742</u>	<u>116.6</u>	<u>0.52</u>	<u>5.16</u>	<u>-</u> <u>SAMPLE</u>	
1441	<u>NM</u>	<u>61</u>	<u>3.5</u>	<u>-</u>	<u>-</u>	<u>PUMP OFF</u>	<u>-</u>	<u>-</u>	<u>-</u>		

SAMPLE COLLECTION SAMPLE TIME 1439

ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>3</u>	40 ml VQA
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber

DUPLICATES / SPLITS / BLANKS? Y (N)

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19

TASK: 532.30

WELL ID: MW-30B

Time <u>1455</u> Static DTW (ft below reference point) <u>106.66</u>	Screen SV Casing Volume (GV) (gallons) <u>40</u> SV 3 GV (gallons) <u>120</u>	Weather Conditions	Initials: <u>AMD/RES</u>
Casing Total Depth (ft below reference point) <u>619</u>	Purging Device <u>ded pump</u> Sampling Device <u>>100 pipe stand</u>	Time <u>1455</u> Temp. <u>70</u>	Begin Purge <u>1458</u> End Purge <u>1520</u>
pump to Screen Water Column (feet) <u>99</u>	Pump: Depth (ft brp) <u>520</u> Type <u>groundwater</u> Voltage <u>240</u> HP <u>0.5</u>	Skies <u>cloudy</u>	Gallons Purged <u>135</u> CVs Purged <u>3.4</u>
Casing Capacity (Diameter <u>3"</u>) (gallons per foot) <u>0.39</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>132.88</u> Time <u>1520</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1458	106.66	0	0				PUMP ON				
1503	128.62	27.5	0.69	21.3	7.88	1006	-159.1	0.16	2.02	-	Q = 2.75 gpm 5.5 gpm
1506	129.96	44	1.10	21.5	7.51	1212	-102.6	0.72	1.25	-	
1510	130.84	66	1.65	21.5	7.38	1515	-30.2	3.17	5.13	-	
1513	132.02	82.5	2.06	21.6	7.46	1344	1.8	2.63	7.56	-	
1516	132.74	99	2.50	21.6	7.47	1339	11.1	2.60	6.59	-	
1520	132.88	121	3.0	21.6	7.47	1339	15.7	2.55	3.83	-	
1523	NM	135	3.4				PUMP OFF				

SAMPLE COLLECTION SAMPLE TIME <u>1520</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u> If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 5/16/19

TASK: 532.30

WELL ID: MW-31

Time <u>1317</u> Static DTW (ft below reference point) <u>97.86</u>	Screen Casing Volume (SV) (gallons) <u>81</u> SV <u>243</u>	Weather Conditions Time <u>1317</u> Temp. <u>70</u>	Initials: <u>AMD/RES</u>
Casing Total Depth (ft below reference point) <u>996</u>	Purging Device <u>ded pump</u> Sampling Device <u>10-100 pipe stand</u>	Skies <u>clear</u>	Begin Purge <u>1324</u> End Purge <u>1347</u>
pump to screen Water Column (feet) <u>54</u>	Pump: Depth (ft brp) <u>942</u> Type <u>grundfos</u> Voltage <u>240</u> HP <u>-</u>	Wind (mph) <u>-</u> From <u>-</u>	Gallons Purged <u>276</u> CVs Purged <u>3.4</u>
Casing Capacity (Diameter <u>6"</u>) (gallons per foot) <u>1.5</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>	DTW (ft brp) <u>101.84</u> Time <u>1346</u>	

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1324	97.86	0	0			PUMP	ON				
1327	101.75	36	0.44	20.9	7.72	1112	225.0	0.12	6.12	-	Q = 12 gpm
1330	101.79	72	0.88	21.2	8.80	1669	158.5	0.09	84.01	-	Q = 12 gpm
1333	101.82	108	1.33	21.3	8.06	1617	118.0	0.06	15.12	-	
1336	101.84	144	1.77	21.3	7.62	1420	93.7	0.14	6.29	-	
1340	101.84	192	2.37	21.4	7.62	1273	89.4	0.26	5.74	-	
1343	101.84	228	2.81	21.4	7.62	1200	86.2	0.37	2.30	-	
1346	101.84	264	3.25	21.4	7.63	1168	86.1	0.41	1.87	-	
1347	NM	276	3.4				PUMP	OFF			

SAMPLE COLLECTION SAMPLE TIME 1346

ANALYSIS QUANTITY TYPE

8260B VOCs 3 40 ml VOA

8270 SIM 1,4 dioxane 1 1 L Amber

8270 MOD 1,4 dioxane 1 1 L Amber

DUPLICATES / SPLITS / BLANKS? Y (N)

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

TABLE 2
WELL CONSTRUCTION SUMMARY

Well Identifier	Date Installed	Current Land Surface Elevation (feet msl)	Current Reference Point Elevation (feet msl)	Total Depth of Borehole (feet bls)	Perforated Interval (feet bls)	Screen Slot Size (inches)	Borehole Diameter (inches)	Casing Diameter (inches) (a)	Filter Pack Interval (feet bls)	Filter Pack Sand Size	Grout Filter/ Intermediate Seal Interval (feet bls) (b)	Annular Seal Interval (feet bls) (c)
<u>Regional Groundwater System Monitor Wells, Extraction Wells and Piezometers</u>												
MW-06	1/16/1997	185.0	184.70	190.9	149.6 - 189.6	0.010	8.5	2	145.4 - 190.9	#2/16	139.4 - 145.4 (d)	0 - 139.4
MW-08	1/22/1997	156.6	155.91	167.2	126.1 - 166.1	0.010	8.5	2	120.7 - 167.2	#2/16	115.7 - 120.7	0 - 115.7
MW-09	3/21/1997	180.5	180.10	194.2	152.2 - 192.2	0.010	8.5	2	146.2 - 194.2	#2/16	141.2 - 146.2	0 - 141.2
MW-13	4/16/1997	142.5	141.84	159.6	120.6 - 159.6	0.010	8.5	2	114.6 - 159.6	#2/16	109.6 - 114.6	0 - 109.6
MW-15	5/18/1998	145.6	144.95	174.8	120.8 - 170.8	0.010	8.5	2	115.8 - 174.8	#2/16	112.8 - 115.8	0 - 112.8
MW-16	11/20/1999	143.0	142.40	179.5	148.5 - 178.5	0.010	11.0	4	144.5 - 179.5	#2/16	134.5 - 144.5 (e)	0 - 134.5
MW-17	5/31/2000	142.8	142.70	203.7	173.1 - 193.1 (i)	0.020	10.0	4	159.7 - 193.1	#2/16	156.2 - 159.7 193.1 - 203.7 (j)	0 - 156.2
MW-18	5/24/2000	142.4	142.32	195.6	164.1 - 194.1	0.020	10.0	4	158.9 - 194.5	#2/16	154.2 - 158.9	0 - 154.2
MW-19	5/26/2000	142.7	142.06	205.5	164.9 - 204.9	0.020	10.0	4	177.0 - 205.3	#2/16	171.5 - 177.0	0 - 171.5
MW-20	6/26/2003	184.4	184.19	200.0	158.6 - 198.2	0.020	11.0	4 (f)	158.0 - 200.0	#2/12	151.0 - 158.0 (g)	0 - 151.1 (h)
MW-21	7/17/2003	143.3	141.18	238.3	212.1 - 232.1	0.010	8.0	4 (k)	205.0 - 234.5	#2/16	202.0 - 205.0 234.5 - 238 (j)	0 - 202.0 (h)
MW-22	8/13/2003	139.4	138.65	245.0	217.4 - 237.4	0.020	8.0	4 (l)	215.0 - 238.0	#2/12	208.0 - 215.0 (m)	0 - 208.0 (h)
MW-23	8/18/2003	137.8	137.33	235.6	215.2 - 235.2	0.020	8.0	4 (n)	209.4 - 235.6	#2/12	203.5 - 209.4 (m)	0 - 203.5 (h)
MW-24	9/15/2004	143.1	142.83	338.0	310.3 - 330.3	0.030	10.6	4 (o)	306 - 330	#3	301 - 306 (p)	0 - 301 (h)
MW-25	9/10/2004	143.0	142.64	805	449.4 - 479.8	0.010	8.5 (q)	2 (r)	429 - 485	#2/16	418 - 429	0 - 418 (h)
MW-26A (s)	10/1/2004	137.6	137.04	805	279 - 309	0.020	12.25 (q)	2 (t)	274 - 315	#2/12	266 - 274	0 - 266 (h)
MW-26B (s)	10/1/2004	137.6	137.05	805	339 - 379	0.020	12.25 (q)	2 (u)	334 - 387	#2/12	266 - 274	0 - 266 (h)
MW-26C (s)	10/1/2004	137.6	137.22	805	459 - 499	0.020	12.25 (q)	2 (v)	435 - 499	#2/12	387 - 435 (w)	0 - 266 (h)
MW-27	4/22/2008	137.6	137.16	550	475 - 505.2 (cc)	0.030	11.25 (q)	4 (z)	468 - 520	#3	457.5 - 468	0 - 457.5 (h)
MW-28	5/5/2008	141.4	140.77	425	335 - 375	0.040	12.25 (q)	4 (z)	325.4 - 377	#8	318 - 325.4	0 - 318 (h)
MW-29	8/15/2008	142.7	142.34	265.7	200 - 240	0.020	10.0 (aa)	4 (z)	185 - 246	#2/12	176 - 185	0 - 176 (h)
MW-30A(s)	11/26/2008	130.2	129.44	635 (j)	524-564	0.020	14.25	3 (y)	515.9-570.5	#2/12	495.5-515.9	0-495.5 (bb)
MW-30B(s)	11/26/2008	130.2	129.39	635 (j)	596-616	0.020	14.25	3 (y)	586.8-625	#2/12	586.8-570.5	0-495.5 (bb)
MW-31	10/2/2009	120.3	119.60	1,100 (jj)	946-996	0.020	13	6(kk)	922-1,006	#2/12	904-922	0-904
MW-32A(s)	12/10/2009	93.4	92.88	1,153 (gg)	890-905	0.020	18.5	4(dd)	880-910	#2/12	832-880	0-832
MW-32B(s)	12/10/2009	93.4	92.89	1,153 (gg)	969-999	0.020	18.5	4(dd)	960-1,004.5	#2/12	910-960	0-832
MW-32C(s)	12/10/2009	93.4	92.88	1,153 (gg)	1,070-1,090	0.020	18.5	4(dd)	1,054-1,100	#2/12	1,004.5-1,054	0-832
MW-33	7/2/2010	83.8	83.19	1,080 (hh)	980-1,020	0.020	11	4(dd)	970-1,025	#2/12	924-970	0-924 (ii)
MW-34A	2/3/2011	154.0	153.25	290	220 - 280	0.020	12.25	4(dd)	211 - 290	#2/12	175 - 211	0 - 175
MW-34B	2/1/2011	153.9	153.11	540	486 - 536	0.020	12.25	4(dd)	475 - 540	#2/12	449 - 475	0 - 449
MW-34C	1/19/2011	154.1	153.29	709 (ll)	556 - 576	0.020	12.25	4(dd)	551 - 582	#2/12	530 - 551	0 - 530
MW-35A	12/20/2010	94.3	93.57	1,101	420 - 470	0.020	18	4(dd)	401 - 482	#2/12	376 - 401	0 - 376
MW-35B	12/20/2010	94.3	93.56	1,101	745 - 805	0.020	18	4(dd)	725 - 816	#2/12	482 - 725	0 - 376
MW-35C	12/20/2010	94.3	93.55	1101 (ll)	990 - 1,040	0.020	12.25	4(dd)	980 - 1,048	#2/12	816 - 980	0 - 376
MW-36	1/3/2012	87.19	86.65	1030 (mm)	934 - 954 974 - 994	0.020	12.25	4(dd)	914 - 1,003	#2/12	95 - 853 (oo), 853 - 914 (pp)	0 - 95 (qq)
MW-37	10/17/2012	156.02	155.60	916	770-820	0.020	12.25	4(dd)	755-834	#2/12	229-724 (rr) 724-755 (pp)	0-229 (ss)
MW-38	7/29/2013	155.7	154.90	203	150-200	0.020	10	4(z)	140-203	#2/12	120-140 (pp)	0-120 (qq)
MW-39	7/25/2013	84.71	84.25	1,080 (ll)	982-1,012	0.020	12.25	4(dd)	974-1,017	#2/12	156 - 917 (rr) 917-974 (pp)	0-156 (qq)
MW-40	7/2/2013	124.09	123.40	1040 (ll)	930-970	0.030	12.25	6(dd)	916-975	#3	175 - 880 (rr) 880-916 (pp)	0-175 (qq)
EW-01	5/16/2005	143.3	141.07	195	138.1-188.1	0.020	7.6	4 (x)	134.1-195	#2/12	129-134.1 (m)	0-129 (h)
EW-02	10/20/2009	136.0	132.97	473 (ee)	410-460	0.030	17.0	8 (ff)	400-465	#3	384-400	0-384
<u>Perched Zone Piezometers</u>												
P-07	6/6/1997	142.7	142.31	116.8	107.7 - 117.7	0.010	8.5	2	104.7 - 117.7	#2/16	101.7 - 104.7	0 - 101.7
P-09	6/30/2003	184.3	183.86	130.0	109.6 - 129.6	0.010	11.0	4	114.0 - 130.0	#2/16	101.0 - 108.0 (g)	0 - 101.0 (h)

TABLE 2
WELL CONSTRUCTION SUMMARY

NOTE: Refer to page 2 of this table for footnotes.

FOOTNOTES

msl = Mean sea level, City of Fullerton datum

bls = Below current land surface (October 2004)

(a) = Schedule 40 polyvinyl chloride (PVC) screen and casing, unless otherwise indicated

(b) = Medium bentonite chip seal, unless otherwise indicated

(c) = Bentonite grout annular seal unless otherwise indicated, completed at surface with vault set in concrete

(d) = No. 60 silica sand

(e) = Includes 2.0 feet of No. 60 silica sand placed above filter pack

(f) = Schedule 80 polyvinyl chloride screen and casing

(g) = Includes 2.5 to 3.0 feet of No. 60 silica sand placed above bentonite chip seal

(h) = Cement/bentonite grout, Type I/II Portland, less than 5% bentonite

(i) = Well plug, approximately 0.5-foot length, set at bottom of perforated interval

(j) = Bottom of borehole backfilled with bentonite chips

(k) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 122.0 - 212.1 feet bls; Schedule 40 mild steel casing 0 - 122.0 feet bls

(l) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 112.4 - 217.4 feet bls; Schedule 40 mild steel casing 0 - 112.4 feet bls

(m) = 1/4-inch coated bentonite pellets

(n) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 110.1 - 215.2 feet bls; Schedule 40 mild steel casing 0 - 110.1 feet bls

(o) = Mild steel wire wrap screen and Schedule 40 mild steel well casing

(p) = Includes 1 to 2 feet of #2/16 sand placed above bentonite chip seal

(q) = Below filter pack, diameter of the original pilot borehole is 5 to 6.25 inches to total depth of boring. Lower borehole backfilled with cement/bentonite grout, Type I/II Portland, less than 5% bentonite

(r) = Stainless steel wire wrap screen, Schedule 10 stainless steel casing 429.4 - 449.4 feet bls, Schedule 80 polyvinylchloride casing 429.0 - 429.4 feet bls, Schedule 40 mild steel casing 0 - 429.0 feet bls

(s) = Nested wells MW-26A, MW-26B, MW-26C, and MW-32A, MW-32B, MW-32C are constructed with three separate well casings in a single borehole; nested well MW-30A and MW-30B is constructed with two separate casings in a single borehole.

(t) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 259 - 279 feet bls and 0 - 19 feet bls; Schedule 40 mild steel casing 19 - 259 feet bls

(u) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 319 - 339 feet bls; Schedule 40 mild steel casing 0 - 319 feet bls

(v) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 439 - 459 feet bls; Schedule 40 mild steel casing 0 - 439 feet bls

(w) = #8 granular bentonite with exception of heavy mud/formational caving filling annular interval from 417 to 428 feet bls

(x) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 118.1-138.1 feet bls; Schedule 40 mild steel casing 0-118.1 feet bls

(y) = Schedule 40 Stainless steel endcaps; Schedule 10 stainless steel casing; Stainless steel wire wrap screen

(z) = Schedule 80 PVC blank and screen casing

(aa) = Below filter pack, diameter of the original pilot borehole is 8 inches to total depth of boring. Lower borehole backfilled with cement/bentonite grout, Type I/II Portland, less than 5% bentonite

(bb) = Neat cement

(cc) = Depth of screen interval adjusted to account for loss at bottom of casing due to breakage in casing wall. Original casing (515 ft bls) was sealed at 505.2 ft bls

(dd) = Schedule 40 Stainless steel endcaps; Schedule 80 polyvinyl chloride casing; Stainless steel wire wrap screen

(ee) = Pilot borehole drilled to a total depth of 493 feet bls and backfilled with 5% bentonite-cement grout seal to 465 feet bls

(ff) = Schedule 40 Stainless steel endcaps; Schedule 40 stainless steel casing; Stainless steel wire wrap screen; 2.5-foot stainless steel sump

(gg) = Pilot borehole drilled to a total depth of 1,153 feet bls and backfilled with 5% bentonite-cement grout seal to 1,100 feet bls

(hh) = Pilot borehole drilled to a total depth of 1,080 feet bls and backfilled with 5% bentonite-cement grout seal to 1,025 feet bls

(ii) = Annular seal interval is composed of cement grout with approximately 5% bentonite from 720 to 924 feet bls and bentonite grout from near land surface to 720 feet bls

(jj) = Pilot borehole drilled to a total depth of 1,100 feet bls and backfilled with 5% bentonite-cement grout seal to 1,006 feet bls

(kk) = Schedule 40 Stainless steel endcaps; Schedule 40 stainless steel casing; Stainless steel wire wrap screen; 5-foot stainless steel sump

(ll) = Bottom of borehole backfilled with approximately 5% bentonite-cement grout

(mm) = Bottom of borehole backfilled with bentonite pellets

(oo) = High solids bentonite grout

(pp) = Bentonite chips

(qq) = Portland cement with approximately 5% bentonite

(rr) = Medium bentonite chips and #2/12 Sand; 1:1 dry volume mix

(ss) = Portland cement with approximately 2.5% bentonite

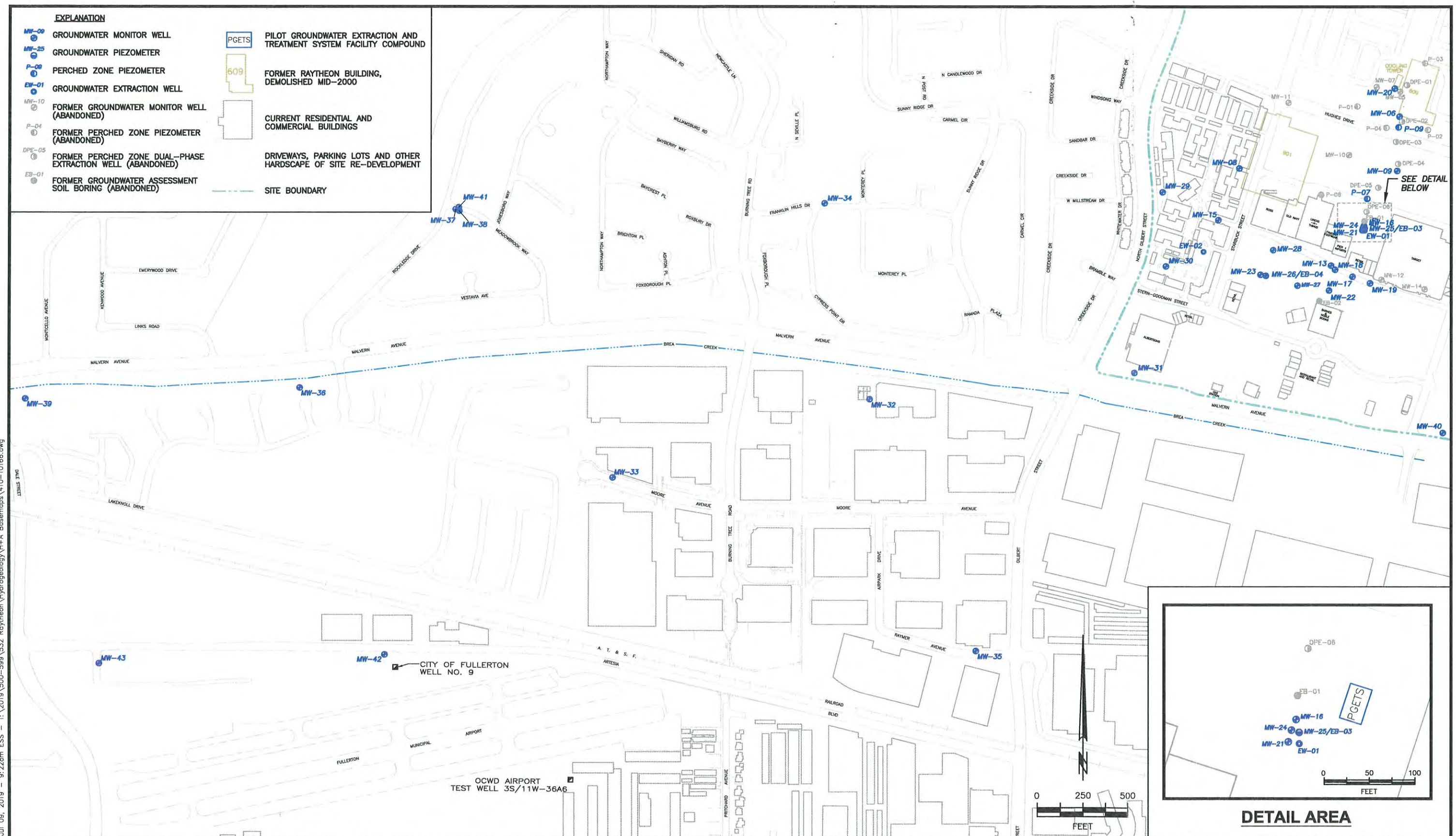
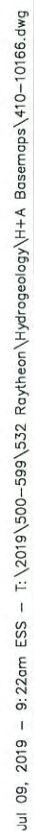


FIGURE 2.
WELL AND PIEZOMETER LOCATIONS

AUG 2019

QUARTERLY GROUNDWATER MONITORING
FIELD NOTEBOOK
LARGE VOLUME MONITOR WELLS

RAYTHEON COMPANY

532.30

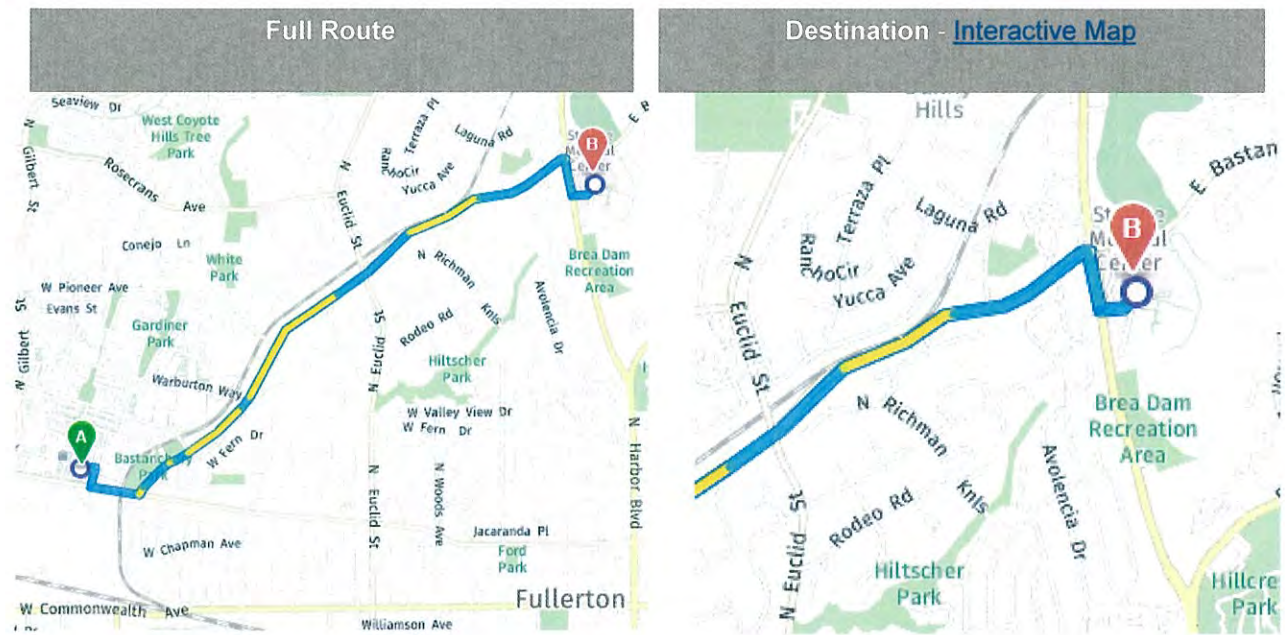
1901 MALVERN AVE.
FULLERTON, CALIFORNIA



HARGIS + ASSOCIATES, INC.
HYDROGEOLOGY • ENGINEERING

Driving Directions

Starting from:	1	Raytheon Site: 1901 W. Malvern Ave., Fullerton, California 92833-2177
Arriving at:	2	St. Jude Medical Center: 101 E. Valencia Mesa, Fullerton, California 92835-3809
Distance:	2.4 miles	Approximate Travel Time: 5 minutes



Directions		Miles	
1.	Start on MALVERN AVE	0.1	↑
2.	Turn Left on W BASTANCHURY RD	2.2	↶
3.	Turn Right on N HARBOR BLVD	0.2	↷
4.	Turn Left on E VALENCIA MESA DR	0.0	↶
Distance: 2.4 miles		Approximate Travel Time: 5 minutes	

FIGURE 7
ROUTE TO HOSPITAL



DAILY FIELD SAFETY BRIEFING ATTENDANCE SHEET

Date: 8/14/19

Location: FULLERTON, CA

Presented by: A. DONNELLY

A. GENERAL INTRODUCTION

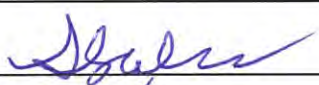
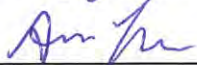
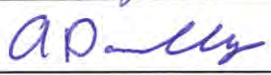
1. Location of site Health and Safety Plan (HSP) and ensure everyone has read the site HSP.
2. Primary hazards and controls (chemical, physical, and biological).
3. Sanitation and decontamination (potable water, nonpotable water, toilet, sink, shower).
4. General Site Rules.
5. Emergency Response Plan (location where emergency telephone numbers and hospital route posted, shower, first aid kit, fire extinguisher, alarm system, evacuation, meeting place, contingencies, upwind).
6. Establish buddy system.

B. SPECIFIC PRECAUTIONS FOR DAY'S ACTIVITIES Go over the hospital route daily; wear traffic vests, use safety cones, and be aware of traffic whenever in or near the roadways; wear sunscreen and hydrate well; wear gloves and take appropriate precautions when handling contaminated groundwater; watch for black widow spiders in vaults. Notify your supervisor and field partner of any issues.

C. ON-SITE ORGANIZATION AND COORDINATION

D. OTHER TOPICS:

ATTENDEE LIST

PRINT NAME	SIGNATURE	COMPANY	DATE
DJ Seaver		HARGIS + ASSOC., INC	8-14-19
Amenda Jaxon		HARGIS + ASSOC., INC	8/14/19
Jeremy Monroe		HARGIS + ASSOC., INC	8/14/19
Andrew Donnelly		H+A	8/14/19



DAILY FIELD SAFETY BRIEFING ATTENDANCE SHEET

Date: 08/13/2014

Location: FULLERTON, CA

Presented by:

A. GENERAL INTRODUCTION

1. Location of site Health and Safety Plan (HSP) and ensure everyone has read the site HSP.
2. Primary hazards and controls (chemical, physical, and biological).
3. Sanitation and decontamination (potable water, nonpotable water, toilet, sink, shower).
4. General Site Rules.
5. Emergency Response Plan (location where emergency telephone numbers and hospital route posted, shower, first aid kit, fire extinguisher, alarm system, evacuation, meeting place, contingencies, upwind).
6. Establish buddy system.

B. SPECIFIC PRECAUTIONS FOR DAY'S ACTIVITIES Go over the hospital route daily; wear traffic vests, use safety cones, and be aware of traffic whenever in or near the roadways; wear sunscreen and hydrate well; wear gloves and take appropriate precautions when handling contaminated groundwater; watch for black widow spiders in vaults. Notify your supervisor and field partner of any issues.

C. ON-SITE ORGANIZATION AND COORDINATION

D. OTHER TOPICS:

ATTENDEE LIST

PRINT NAME	SIGNATURE	COMPANY	DATE
Christian Diaz		HARGIS + ASSOC., INC	08/13/2014
		HARGIS + ASSOC., INC	
		HARGIS + ASSOC., INC	

INSTRUMENT CALIBRATION LOG FOR GROUNDWATER SAMPLING: Temp + pH + EC + DO + ORP

[illegible]

STATIC WATER LEVEL DATA SHEET

MONTH/YEAR: AUG 2019

METHOD OF MEASUREMENT/SOUNDER IDENTIFIER: FLAT TAPE ELECTRIC SOUNDER # _____

PROJECT NUMBER: 532.30

WELL IDENTIFIER	DATE	TIME	MEASURING POINT	DEPTH TO WATER FROM REFERENCE POINT (+feet)	REFERENCE POINT ELEVATION (ft msl)	WATER LEVEL ELEVATION (ft msl)	MAY 2019 PREVIOUS DEPTH TO WATER (ft)	CHANGE IN WATER LEVEL (± ft)	COMMENTS	INITIALS
P-07	08/12/19	1332	TOC	111.81	142.31	30.50	111.28	-0.53		AMS/DJS
P-09	08/ /19				183.86		120.68			
MW-06	08/ /19				184.70		154.65			
MW-08	08/12/19	1225	TOC	131.47	155.91	24.44	129.57	-1.90		AMS/DJS
MW-09	08/ /19				180.10		153.08			
MW-13	08/ /19				141.84		121.07			
MW-15	08/12/19	1546	TOC	127.92	144.95		127.52			
MW-16	08/12/19	1351	TOC	125.70	142.40	16.70	119.89	-5.81		AMS/DJS
MW-17	08/ /19				142.70		121.06			
MW-18	08/ /19				142.32		121.51			
MW-19	08/ /19				142.06		121.16			
MW-20	08/ /19				184.19		151.11			
MW-21	08/12/19	1358	TOST	116.41	141.18	24.77	113.96	-2.45	Totalizer: NM Pumping? No	AMS/DJS
MW-22	08/ /19				138.65		117.72			
MW-23	08/ /19				137.33		117.83			
MW-24	08/12/19	1341	TOST	119.38	142.83	23.45	115.89	-3.49		AMS/DJS
MW-25	08/12/19	1343	TOC	119.87	142.64	22.77	116.45	-3.42		↓
MW-26A	08/ /19				137.04		117.65			
MW-26B	08/ /19				137.05		119.43			
MW-26C	08/ /19				137.22		115.82			

msl = Mean sea level

ft = feet

STATIC WATER LEVEL DATA SHEET

MONTH/YEAR: AUG 2019

 METHOD OF MEASUREMENT/SOUNDER IDENTIFIER: FLAT TAPE ELECTRIC SOUNDER # 102

PROJECT NUMBER: 532.30

WELL IDENTIFIER	DATE	TIME	MEASURING POINT	DEPTH TO WATER FROM REFERENCE POINT (+feet)	REFERENCE POINT ELEVATION (ft msl)	WATER LEVEL ELEVATION (ft msl)	MAY 2019 PREVIOUS DEPTH TO WATER (ft)	CHANGE IN WATER LEVEL ($\pm$ ft)	COMMENTS	INITIALS
MW-27	08/ /19				137.16		115.33			
MW-28	08/ /19				140.77		119.64			
MW-29	08/12/19	1239	TOST	178.13P	139.81	-38.32	176.10P	-203	Totalizer: 3825149.9 Pumping? ~~No~~ Yes	AMJ/DJS
MW-30A	08/12/19	1155	TOST	115.56	129.44	13.88	108.91	-6.65		
MW-30B	08/12/19	1202	TOST	112.75	129.39	16.64	106.79	-5.96		
MW-31	08/12/19	1048	TOST	105.28	119.60	14.32	97.91	-7.37		
MW-32A	08/12/19	0756	TOST	80.66	92.88	12.22	72.86	-7.80		
MW-32B	08/12/19	0809	TOST	79.84	92.89	13.05	72.48	-7.36		
MW-32C	08/12/19	0812	TOST	73.45	92.88	19.43	68.59	-4.86		
MW-33	08/12/19	1006	TOST	71.74	83.19	11.40	64.21	-7.58		
MW-34A	08/ /19				153.25		138.72			
MW-34B	08/ /19				153.11		133.27			
MW-34C	08/ /19				153.29		132.67			
MW-35A	08/12/19	0938	TOST	80.12	93.57	13.45	74.51	-5.61		AMJ/DJS
MW-35B	08/12/19	0942	TOST	84.54	93.56	9.02	78.06	-6.48		
MW-35C	08/12/19	0944	TOST	81.68	93.55	11.87	73.24	-8.44		
MW-36	08/ /19				86.65		68.45			
MW-37	08/ /19				155.60		133.85			
MW-38	08/ /19				154.90		142.71			
MW-39	08/ /19				84.25		66.48			

msl = Mean sea level

ft = feet

STATIC WATER LEVEL DATA SHEET

MONTH/YEAR: AUG 2019

METHOD OF MEASUREMENT/SOUNDER IDENTIFIER: FLAT TAPE ELECTRIC SOUNDER # _____

PROJECT NUMBER: 532.30

WELL IDENTIFIER	DATE	TIME	MEASURING POINT	DEPTH TO WATER FROM REFERENCE POINT (+feet)	REFERENCE POINT ELEVATION (ft msl)	WATER LEVEL ELEVATION (ft msl)	MAY 2019 PREVIOUS DEPTH TO WATER (ft)	CHANGE IN WATER LEVEL (± ft)	COMMENTS	INITIALS
MW-40	08/12/19	1027	TOST	107.80	123.40	15.60	100.05	-7.75		AMS/DJS
MW-41	08/ /19				155.60		136.17			
EW-01	08/12/19	1402	TOST	124.12	141.07	16.95	118.23	-5.89	SOUNDING TUBE TO 172.65 Totalizer: NM Pumping? N	AMS/DJS
EW-02	08/12/19	1307	TOST	123.08P	132.97	9.89	117.23P	-5.85	Totalizer: 481924.6 Pumping? Y	AMS/DJS
MW-42	8/12/19	0919	TOST	72.59						A ↓
MW-43	8/12/19	0904	~~TOST~~ 66.77	66.77						↓

 msl = Mean sea level
 ft = feet

**AUGUST 2019 GROUNDWATER SAMPLE PLAN
TEAM 2**

QA/QC	Total VOC's	1,4-Dioxane	APPROX. GALLONS	ESTIMATED TIME (minutes)	WELL IDENTIFIER	HYDROGEOLOGIC ZONE	AUGUST 2019 SAMPLING SCHEDULE	SAMPLE METHOD
	190	47	156	12	EW-01	Deep; B	VOCs; 1,4-Dioxane (8270 MOD)	Dedicated
	1238	800	300	12	MW-21	Water Table; BC	VOCs; 1,4-Dioxane (8270 MOD)	Dedicated
	0	0	1,179	60	MW-35C	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0	0	1000	45	MW-43	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	2.4	0.1	986	43	MW-42	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
2CV/ 3CV	2.1	0	909	51	MW-33	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	11	0	142	24	MW-41	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	72	3.8	276	23	MW-31 ✓	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0	0	61	14	MW-30A ✓	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	97	0.6	135	22	MW-30B ✓	Deep; BC	VOCs; 1,4-Dioxane	Ded.240V
	0	0	660	45	MW-32A ✓	Deep; AB	VOCs; 1,4-Dioxane	Ded.240V
	0	0	966	80	MW-32C ✓	Water Table; C	VOCs; 1,4-Dioxane	Ded.240V
2CV/ 3CV	143	3.4	827	66	MW-32B ✓	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0	0	835	37	MW-39	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
2CV/ 3CV	52	6.2	973	74	MW-36 ✓	Deep; B	VOCs; 1,4-Dioxane	Ded.240V

NOTE

1 = Day - # refers to the day scheduled to sample and the corresponding dedicated pipestand to use: ND=1; 0-10=2; 10 - 100=3; >100=4

A **MS** and **MSD** (3x40ml VOA and 1L amber) should be collected every day/ alternating 1,4-Dioxane methods as indicated.

1,4-Dioxane analysis method is 8270 SIM unless specified otherwise (if historical detect is > 5.0 ug/l MOD is used).

Wells with dedicated pumps should follow concentration order when possible.

MW-36 and MW-39 Gate Access Code: 3252

RB = Rinsate blank taken on non-dedicated equipment each day- will vary with schedule and should be confirmed with both teams each morning.

**AUGUST 2019 GROUNDWATER SAMPLE PLAN
TEAM 1**

QA/QC	Total VOC's	1,4-Dioxane	APROX. GALLONS	ESTIMATED TIME (minutes)	WELL IDENTIFIER	HYDROGEOLOGIC ZONE	AUGUST 2019 SAMPLING SCHEDULE	SAMPLE METHOD
	0	0	15	90	MW-09	Water Table; C	VOCs; 1,4-Dioxane	Quik-E Bailer
	1.0	0	174	16	MW-34A ✓	Deep; A	VOCs; 1,4-Dioxane	Ded 240V
	0	0	224	16	MW-34C ✓	Deep; BC	VOCs; 1,4-Dioxane	Ded 240V
	37	16	168	21	MW-34B ✓	Deep; B	VOCs; 1,4-Dioxane (8270 MOD)	Ded 240V
	0	0.1	115	12	MW-28	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0	0	252	21	MW-40	Deep; B	VOCs; 1,4-Dioxane	Ded 240V
	0	0	152	76	MW-26C	Deep; B	VOCs; 1,4-Dioxane	Redi-flo
	1	0	150	75	MW-18	Deep; A	VOCs; 1,4-Dioxane	Redi-flo
	8	--	21	26	MW-15	Water Table; AB	VOCs	Redi-flo
	6.2	0	96	32	MW-20	Water Table; D	VOCs; 1,4-Dioxane	Redi-flo
	125	3.4	24	16	MW-08	Water Table; BC	VOCs; 1,4-Dioxane	Redi-flo
	653	81	120	48	MW-16	Water Table; B	VOCs; 1,4-Dioxane (8270 MOD)	Redi-flo

NOTES

A **MS** and **MSD** (3x40ml VOA and 1L amber) should be collected every day/ alternating 1,4-Dioxane methods as indicated.

1,4-Dioxane analysis method is 8270 SIM unless specified otherwise (if historical detect is > 5.0 ug/l MOD is used).

1 = Day - # refers to the day scheduled to sample and the corresponding dedicated pipestand to use: ND=1; 0-10=2; 10 - 100=3; >100=4

Wells with dedicated pumps should follow concentration order when possible.

MW-36 and MW-39 Gate Access Code: 3252

RB = Rinsate blank taken on non-dedicated equipment each day- will vary with schedule and should be confirmed with both

GROUNDWATER SAMPLING INFORMATION

DATE: 8-13-19

TASK: 532.30

WELL ID: MW-32A

Time <u>911</u> Static DTW (ft below reference point) <u>80.48</u>	Casing Volume (CV) (gallons) <u>207</u> <u>SV</u> <u>621</u>	Weather Conditions	Initials: <u>DJS, CVD</u>
Casing Total Depth (ft below reference point) <u>405</u>	Purging Device <u>ded Pump</u> Sampling Device <u>NO Piping</u>	Time <u>909</u> Temp. <u>70</u>	Begin Purge <u>939</u> End Purge <u>1032</u>
Pump to Screen Water Column (feet) <u>398</u>	Pump: Depth (ft brp) <u>560</u> Type <u>granite</u> Voltage <u>240HP</u>	Skies <u>Sunny</u>	Gallons Purged <u>621</u> CVs Purged <u>3</u>
Casing Capacity (Diameter <u>4</u> ") (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) <u>—</u> From <u>—</u>	DTW (ft brp) <u>82.34</u> Time <u>1029</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (C)	pH	EC (mS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>939</u>	<u>80.48</u>	<u>0</u>	<u>0</u>	<u>PUMP ON</u>							<u>Q2 136pm</u>
<u>946</u>	<u>82.17</u>	<u>103.5</u>	<u>0.5</u>	<u>20.9</u>	<u>7.38</u>	<u>0.99</u>	<u>-45.3</u>	<u>0.75</u>	<u>3.20</u>	<u>-</u>	
<u>954</u>	<u>82.24</u>	<u>207</u>	<u>1.0</u>	<u>21.0</u>	<u>7.41</u>	<u>1.00</u>	<u>-71.3</u>	<u>1.73</u>	<u>3.14</u>	<u>-</u>	
<u>1002</u>	<u>82.31</u>	<u>310.5</u>	<u>1.5</u>	<u>21.1</u>	<u>7.38</u>	<u>1.00</u>	<u>-71.5</u>	<u>1.48</u>	<u>4.29</u>	<u>-</u>	
<u>1010</u>	<u>82.34</u>	<u>414</u>	<u>2.0</u>	<u>21.1</u>	<u>7.38</u>	<u>1.00</u>	<u>-55.8</u>	<u>1.53</u>	<u>2.88</u>	<u>-</u>	
<u>1018</u>	<u>82.34</u>	<u>517.5</u>	<u>2.5</u>	<u>21.2</u>	<u>7.44</u>	<u>1.00</u>	<u>-49.1</u>	<u>1.64</u>	<u>3.27</u>	<u>-</u>	
<u>1029</u>	<u>82.34</u>	<u>621</u>	<u>3.0</u>	<u>22.3</u>	<u>7.47</u>	<u>1.00</u>	<u>-30.3</u>	<u>2.88</u>	<u>3.45</u>	<u>-</u>	
<u>1032</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>End Purge</u>						<u>-</u>	

SAMPLE COLLECTION SAMPLE TIME <u>1031</u>		AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA	
ANALYSIS	QUANTITY	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)	
8260B VOCs	<u>3</u>	40 ml VOA	
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber	
8270 MOD 1,4 dioxane		1 L Amber	
DUPLICATES / SPLITS / BLANKS? Y <u>N</u>		If yes, complete appropriate forms.	

GROUNDWATER SAMPLING INFORMATION

DATE: 8/13/19TASK: 532.30WELL ID: MW-32c

Time <u>1242</u> Static DTW (ft below reference point)	<u>73.53</u>	Casing Volume (CV) (gallons) <u>322</u>	3 CV (gallons) <u>966</u>	Weather Conditions	Initials: <u>DJS, CVP</u>
Casing Total Depth (ft below reference point)	<u>1090</u>	Purging Device <u>Red Pump</u>	Sampling Device <u>NP PPEstons</u>	Time <u>1240</u> Temp. <u>82</u>	Begin Purge <u>1244</u> End Purge <u>1408</u>
Pump Water Column (feet)	<u>1016.47</u>	Pump: Depth (ft brp) <u>561</u> Type <u>gpm pump</u>	Voltage <u>240</u> HP <u>-</u>	Skies <u>Clear, Sunny</u>	Gallons Purged <u>978</u> CVs Purged <u>3.04</u>
Casing Capacity (Diameter <u>4</u> ") (gallons per foot)	<u>0.66</u>	Monitor Well Recharge Rate: Slow	Fast ☒	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>13.89</u> Time <u>1242</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>1244</u>	<u>73.53</u>	<u>0</u>	<u>0</u>	<u>~</u>	<u>~</u>	<u>Begin Purge</u>	<u>~</u>				<u>Q ≈ 12 GPM</u>
<u>1259</u>	<u>134.80</u>	<u>161</u>	<u>0.5</u>	<u>23.1</u>	<u>7.99</u>	<u>6.57</u>	<u>290.8</u>	<u>1.25</u>	<u>3.43</u>		
<u>1312</u>	<u>141.74</u>	<u>322</u>	<u>1.0</u>	<u>22.9</u>	<u>8.10</u>	<u>0.54</u>	<u>-177.2</u>	<u>1.13</u>	<u>4.42</u>		
<u>1327</u>	<u>146.04</u>	<u>483</u>	<u>1.5</u>	<u>23.0</u>	<u>8.12</u>	<u>0.54</u>	<u>-194.3</u>	<u>0.76</u>	<u>15.4</u>		
<u>1340</u>	<u>150.26</u>	<u>644</u>	<u>2.0</u>	<u>22.9</u>	<u>8.16</u>	<u>0.55</u>	<u>-180</u>	<u>1.01</u>	<u>7.2</u>		
<u>1354</u>	<u>151.91</u>	<u>805</u>	<u>2.5</u>	<u>22.5</u>	<u>8.12</u>	<u>0.54</u>	<u>-170.9</u>	<u>1.69</u>	<u>9.11</u>		
<u>1407</u>	<u>153.26</u>	<u>966</u>	<u>3.0</u>	<u>23.4</u>	<u>8.17</u>	<u>0.55</u>	<u>-162.6</u>	<u>1.65</u>	<u>7.14</u>		
<u>1408</u>	<u>~</u>	<u>978</u>	<u>3.04</u>	<u>~</u>	<u>~</u>	<u>End Purge</u>	<u>~</u>				

SAMPLE COLLECTION SAMPLE TIME <u>1408</u>	
ANALYSIS	QUANTITY TYPE
8260B VOCs	<u>3</u> 40 ml VOA <u>3</u>
8270 SIM 1,4 dioxane	<u>1</u> 1 L Amber
8270 MOD 1,4 dioxane	<u>1</u> 1 L Amber
DUPLICATES / SPLITS / BLANKS?	<u>Y</u> <u>(N)</u>
If yes, complete appropriate forms.	

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 8-13-19

TASK: 53230

WELL ID: MW-32B

Time <u>1508</u> Static DTW (ft below reference point) <u>79.78</u>	Casing Volume (CV) (gallons) <u>264</u> 3 CV (gallons) <u>791</u>	Weather Conditions	Initials: <u>DTS, CVP</u>
Casing Total Depth (ft below reference point) <u>999</u>	Purging Device <u>des pump</u> Sampling Device <u>7100 pipestand</u>	Time <u>1500</u> Temp. <u>80</u>	Begin Purge <u>1519</u> End Purge <u>1622</u>
<u>Pump</u> Water Column (feet) <u>to 500</u>	Pump: Depth (ft brp) <u>560</u> Type <u>geopump</u> Voltage <u>240</u> HP <u>-</u>	Skies <u>Sunny</u>	Gallons Purged <u>803</u> CVs Purged <u>3.04</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>✓</u>	Wind (mph) <u>-</u> From <u>✓</u>	DTW (ft brp) <u>79.78</u> Time <u>1508</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1519	79.78	0	0	~	Begin		Purge				Q ≈ 126 Pn
1528	98.20	132	0.5	22.8	7.83	0.99	-226.1	1.24	4.12		
1539	98.70	264	1.0	22.3	7.80	0.93	-205.5	0.86	2.87		
1550	99.01	396	1.5	22.6	7.78	0.59	-147.8	1.66	3.40		
1600	99.20	528	2.0 ^{sample}	22.6	7.78	1.10	-144.9	1.07	3.60		
1611	99.35	660	2.5	22.7	7.73	1.07	-137.1	0.66	2.69		
1621	99.45	791	3.0	22.5	7.79	1.67	-155.1	1.43	4.5		
1622	-	803	3.04	~	End Purge						

SAMPLE COLLECTION SAMPLE TIME <u>1622</u>		AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA	
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)
8260B VOCs	<u>6</u>	40 ml VOA	<u>MW-32B-2-SU G 1603</u>
8270 SIM 1,4 dioxane	<u>2</u>	1 L Amber	
8270 MOD 1,4 dioxane		1 L Amber	
DUPLICATES / SPLITS / BLANKS? <u>Y</u> N			

GROUNDWATER SAMPLING INFORMATION

DATE: 8-14-19

TASK: 532-30

WELL ID: MW-43

Time 820	Static DTW (ft below reference point) 66.72	Casing Volume (CV) (gallons) 319	3 CV (gallons) 957	Weather Conditions		Initials: DJS, CVD
Casing Total Depth (ft below reference point) 1051	Purging Device ~~SAETZ~~ d/d PMP	Sampling Device MD PIPE STAND		Time 815	Temp. 71	Begin Purge 827 End Purge 913
Pure Water Column (feet) 40.50	Pump: Depth (ft brp) 580	Type granites	Voltage 240 HP -	Skies clear		Gallons Purged 957 CVs Purged 3.06
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast ☒			Wind (mph) ~	From ~	DTW (ft brp) 66.72 Time 820

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
827	65.72	0	0	~	Be	gm	Purge	~			Q ≈ 24
835	73.63	160	0.5	21.1	8.01	0.55	-240.9	1.26	3.18		
842	74.00	320	1.0	21.6	7.98	0.51	-126.9	1.31	2.48		
849	74.71	480	1.5	21.7	7.98	0.515	-83.1	0.82	1.91		
857	74.85	640	2.0	21.6	7.97	0.516	-63.3	1.40	1.92		
905	74.12	800	2.5	21.8	8.00	0.519	-51.4	0.82	1.22		
912	74.24	957	3.0	21.7	8.01	0.516	-53.7	0.94	1.19		
913	-	981	3.06	~			End	Purge	~		

SAMPLE COLLECTION SAMPLE TIME 913			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	40 ml VOA	3				
8270 SIM 1,4 dioxane	1 L Amber	1				
8270 MOD 1,4 dioxane	1 L Amber					
DUPLICATES / SPLITS / BLANKS? Y (N)						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 08/15/2019

TASK: 532.30

WELL ID: MW-09

Time 15:05	Static DTW (ft below reference point) 158.44	Casing Volume (CV) (gallons) 5.7	3 CV (gallons) 17	Weather Conditions		Initials: CVD, DTS
Casing Total Depth (ft below reference point) 191	Purging Device bailer	Sampling Device bailer	Time 15:00	Temp. 87°	Begin Purge 15:08	End Purge 16:40
Pump Water Column (feet) 34.56	Pump: Depth (ft brp) N/A	Type N/A	Voltage N/A	HP 24	Gallons Purged 4	CVs Purged 1.57
Casing Capacity (Diameter 2") (gallons per foot) 0.163	Monitor Well Recharge Rate: Slow ☒	Fast ☐	Wind (mph) 1	From E	DTW (ft brp) 158.44	Time 15:07

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1508	158.44	0	0	27.4	~	Begin	Purge				
1545	NM	2	0.35	27.5	7.13	2.64	2.4	3.55	57.7		
1610	157.48	6	1.05	24.8	7.14	2.78	48.3	4.52	45.7		
1640	158.22	4	1.57	24.6	7.44	2.79	54.0	3.99	52.9		
~	-	13	2.28	~	End	Purge	~				
		15	2.63								

SAMPLE COLLECTION SAMPLE TIME 1640

ANALYSIS	QUANTITY	TYPE
8260B VOCs	3	40 ml VOA
8270 SIM 1,4 dioxane	1	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber
DUPLICATES / SPLITS / BLANKS?	Y	(N)

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

Sampled @ 1640 on 8/15/19

GROUNDWATER SAMPLING INFORMATION

DATE: 8-14-14

TASK: 53230

WELL ID: MW-42

Time 1030 Static DTW (ft below reference point) 72.55	Casing Volume (CV) (gallons) 301 3 CV (gallons) 903	Weather Conditions	Initials: DJS, CUD
Casing Total Depth (ft below reference point) 1057	Purging Device 200 Pump Sampling Device 10 Pedestal	Time 1030 Temp. 76	Begin Purge 1034 End Purge 1122
Pump Water Column (feet) 105.00	Pump: Depth (ft brp) 560 Type 30 WRS Voltage 240 HP -	Skies Clear	Gallons Purged 926 CVs Purged 307
Casing Capacity (Diameter 4) (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast	Wind (mph) ~ From ~	DTW (ft brp) 72.55 Time 1030

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1034	72.55	0	0.0	~	Begin	Purge					
1047	81.00	180	0.5	22.3	7.98	0.515	-235.4	1.31	1.89		Q ≈ 23 gpm
1054	81.14	301	1.0	22.5	8.02	0.513	-191.9	1.40	1.67		
1101	80.21	452	1.5	22.5	8.05	0.52	-106.1	1.61	1.51		
1108	81.38	606	2.0	22.7	8.07	0.519	-113.7	1.59	1.50		
1144	81.41	754	2.5	23.0	8.07	0.52	-92.8	1.54	2.00		
1121	81.59	902	3.0	23.5	8.07	0.275	-103.8	2.10	2.11		
1122	-	926	3.07	~	End	Purge					

SAMPLE COLLECTION SAMPLE TIME 1122	AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
ANALYSIS QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)
8260B VOCs 3 40 ml VOA	
8270 SIM 1,4 dioxane 1 1 L Amber	
8270 MOD 1,4 dioxane 1 1 L Amber	
DUPLICATES / SPLITS / BLANKS? Y (N)	
If yes, complete appropriate forms.	

GROUNDWATER SAMPLING INFORMATION

DATE: 8-14-19

TASK: 532.38

WELL ID: Mw-33

Time 1258 Static DTW (ft below reference point) 71.72	Casing Volume (CV) (gallons) 291 3 CV (gallons) 873	Weather Conditions	Initials: DJS/KVD
Casing Total Depth (ft below reference point) 1020	Purging Device ded Pump Sampling Device 0-10. P Position	Time 1256 Temp. 82	Begin Purge 1304 End Purge 1350
Pump to Water Column (feet) 948.28	Pump: Depth (ft brp) 535 Type Grommet Voltage 240 HP	Skies clear	Gallons Purged 892 CVs Purged 3.06
Casing Capacity (Diameter 4") (gallons per foot) 0.62	Monitor Well Recharge Rate: Slow Fast ☒	Wind (mph) ~ From ~	DTW (ft brp) 71.72 Time 1258

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1304	71.72	0	0	~	Begin Purge	~	~	~	~		Q ≈ 14 gpm
1312	73.97	146	0.5	23.4	7.73	0.71	-55.9	1.77	1.71		
1319	74.03	291	1.0	22.9	7.77	0.35	-100.5	1.85	1.74		
1326	74.02	432	1.5	22.5	7.69	0.71	-52.3	1.31	1.36		
1334	74.13	582	2.0	22.3	7.71	0.68	-52.8	1.66	1.33		
1342	74.20	728	2.5	22.2	7.71	0.70	-23.9	1.75	1.14		
1349	74.15	873	3.0	22.4	7.65	0.71	-22.7	2.06	1.14		
1350	-	892	3.06	~	End Purge	~	~	~	~		

SAMPLE COLLECTION SAMPLE TIME 1350 ANALYSIS QUANTITY TYPE 8260B VOCs 40 ml VOA 6 8270 SIM 1,4 dioxane 1 L Amber 2 8270 MOD 1,4 dioxane 1 L Amber DUPLICATES / SPLITS / BLANKS? (8) N If yes, complete appropriate forms.	AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.) Mw-33-850- (G) 1334 Mw-33 (G) 1350



GROUNDWATER SAMPLING INFORMATION

TASK:

532.30

WELL ID: Mw-36

Time <u>1510</u> Static DTW (ft below reference point)	<u>71.40</u>	Casing Volume (CV) (gallons) <u>320</u> 3 CV (gallons) <u>960</u>	<u>Weather Conditions</u>	Initials: <u>DTS/cup/</u>
Casing Total Depth (ft below reference point)	<u>99.4</u>	Purging Device <u>shot pump</u> Sampling Device <u>10-100 p.p.s.s.</u>	Time <u>1505</u> Temp <u>83</u>	Begin Purge <u>1518</u> End Purge <u>1631</u>
<u>pump</u> to <u>screen</u> Casing Capacity (Diameter <u>4"</u>) (gallons per foot)		Pump: Depth (ft brp) <u>460</u> Type <u>grinder</u> Voltage <u>360</u> HP <u>✓</u>	Skies <u>clear</u>	Gallons Purged <u>973</u> CVs Purged <u>3cv</u>
	<u>0.66</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>✓</u>	Wind (mph) <u>~</u> From <u>✓</u>	DTW (ft brp) <u>71.40</u> Time <u>1510</u>

[illegible]

SAMPLE COLLECTION		SAMPLE TIME	AIR MONITORING PID/FID ppm:		VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)					
8260B VOCs	6	40 ml VOA	MW-36-250- G 16:00					
8270 SIM 1,4 dioxane	2	1 L Amber						
8270 MOD 1,4 dioxane		1 L Amber						
DUPLICATES / SPLITS / BLANKS? If yes, complete appropriate forms.			N					

GROUNDWATER SAMPLING INFORMATION

DATE: 8/15/14

TASK: 532.30

WELL ID: MW-3A

Time <u>0855</u> Static DTW (ft below reference point) <u>73.72</u>	Casing Volume (CV) (gallons) <u>271</u> ^{SU} <u>3</u> CV (gallons) <u>813</u> ^{SU}	Weather Conditions	Initials: <u>DJS, CUD</u>
Casing Total Depth (ft below reference point) <u>1612</u>	Purging Device <u>Jet Pump</u> Sampling Device <u>Pipe Stang</u>	Time <u>0850</u> Temp. <u>71</u>	Begin Purge <u>907</u> End Purge <u>945</u>
<u>Pump to screen</u> Water Column (feet)	Pump: Depth (ft brp) <u>560</u> Type <u>Grounding</u> Voltage <u>240</u> HP	Skies <u>Clear</u>	Gallons Purged <u>835</u> CVs Purged <u>3.08</u>
Casing Capacity (Diameter <u>4</u> ") (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow ☐ Fast ☒	Wind (mph) <u>~</u> From <u>~</u>	DTW (ft brp) <u>73.72</u> Time <u>855</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>907</u>	<u>73.72</u>	<u>0</u>	<u>0</u>	<u>~</u>	<u>Boehn</u>	<u>Purge</u>	<u>~</u>				<u>Q ≈ 22 GPM</u>
<u>913</u>	<u>88.99</u>	<u>136</u>	<u>0.5</u>	<u>23.4</u>	<u>8.56</u>	<u>0.445</u>	<u>-285.9</u>	<u>3.02</u>	<u>1.94</u>		
<u>919</u>	<u>89.21</u>	<u>271</u>	<u>1.0</u>	<u>23.1</u>	<u>8.70</u>	<u>0.424</u>	<u>-288.5</u>	<u>1.60</u>	<u>1.86</u>		
<u>925</u>	<u>89.24</u>	<u>407</u>	<u>1.5</u>	<u>23.2</u>	<u>8.62</u>	<u>0.432</u>	<u>-176.5</u>	<u>1.17</u>	<u>1.29</u>		
<u>931</u>	<u>89.43</u>	<u>542</u>	<u>2.0</u>	<u>23.3</u>	<u>8.57</u>	<u>0.431</u>	<u>-184.3</u>	<u>1.00</u>	<u>1.21</u>		
<u>937</u>	<u>89.62</u>	<u>678</u>	<u>2.5</u>	<u>23.1</u>	<u>8.55</u>	<u>0.436</u>	<u>-161.0</u>	<u>1.20</u>	<u>1.67</u>		
<u>944</u>	<u>89.84</u>	<u>813</u>	<u>3.0</u>	<u>23.3</u>	<u>8.48</u>	<u>0.438</u>	<u>-164.2</u>	<u>2.52</u>	<u>1.37</u>		
<u>945</u>	<u>-</u>	<u>835</u>	<u>3.08</u>	<u>~</u>	<u>Eng Purge</u>	<u>~</u>					

SAMPLE COLLECTION SAMPLE TIME <u>9:45</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	40 ml VOA	<u>3</u>				
8270 SIM 1,4 dioxane	1 L Amber					
8270 MOD 1,4 dioxane	1 L Amber					
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u>						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/15/19TASK: 532.30WELL ID: MW-410

Time <u>1235</u> Static DTW (ft below reference point) <u>107.81</u>	Casing Volume (CV) (gallons) <u>75</u> 3 CV (gallons) <u>225</u>	Weather Conditions	Initials: <u>DJS, CVD</u>
Casing Total Depth (ft below reference point) <u>970</u>	Purging Device <u>ded pump</u> Sampling Device <u>NO PIPES TONG</u>	Time <u>1230</u> Temp. <u>79</u>	Begin Purge <u>1239</u> End Purge <u>1259</u>
Pump <u>to 5000</u> Water Column (feet) <u>862.19</u>	Pump: Depth (ft brp) <u>510</u> Type <u>grinders</u> Voltage <u>240</u> HP <u></u>	Skies <u>clear sunny</u>	Gallons Purged <u>3.33</u> CVs Purged <u>12.75</u>
Casing Capacity (Diameter <u>6</u> ") (gallons per foot) <u>1.5</u>	Monitor Well Recharge Rate: Slow <u></u> Fast <u>✓</u>	Wind (mph) <u></u> From <u></u>	DTW (ft brp) <u>107.81</u> Time <u>1235</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1239	101.8	0	0								Qx 12 gpm
1242	108.81	36	0.5	24.0	1.55	0.73	-242.9	1.96	6.36		
1245	108.88	72	1.0	22.3	7.75	0.83	-154.5	1.66	8.09		
1248	108.89	108	1.5	22.3	7.69	0.81	-125.0	0.90	3.43		
1251	108.90	144	2.0	21.7	7.71	0.83	-123.4	0.84	2.29		
1254	108.9	180	2.5	21.9	7.70	0.83	-114.9	1.24	2.93		
1257	108.87	228	3.0	22.0	7.70	0.83	-113.1	1.89	2.04		
1258	-	240	3.33	~ End purge ~							

 SAMPLE COLLECTION SAMPLE TIME 1258
 ANALYSIS QUANTITY TYPE

 8260B VOCs 3 40 ml VOA
 8270 SIM 1,4 dioxane 1 1 L Amber
 8270 MOD 1,4 dioxane 1 1 L Amber

 DUPLICATES / SPLITS / BLANKS? Y (N)
 If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 8-16-19

TASK: 532.30

WELL ID: MW-35C

Time 1129 Static DTW (ft below reference point) 81.69	Casing Volume (CV) (gallons) 342	3 CV (gallons) 1026	Weather Conditions	Initials: DJS, CUD
Casing Total Depth (ft below reference point) 1040	Purging Device PDC102	Sampling Device ND PDC102	Time _____ Temp. _____	Begin Purge 1153 End Purge 1237
Pump is Water Column (feet) 1121.69	Pump: Depth (ft brp) 470	Type _____ Voltage _____ HP _____	Skies _____	Gallons Purged 1048 CVs Purged 306
Casing Capacity (Diameter 4") (gallons per foot) 0.60	Monitor Well Recharge Rate: Slow _____ Fast _____		Wind (mph) _____ From _____	DTW (ft brp) 81.69 Time 1129

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	... FIELD PARAMETERS ...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1153	81.69	0	0	~	Begin Purge	~					Q ≈ 32 gpm
1200	93.05	171	0.5	24.7	7.79	0.56	176.2	1.92	0.99		
1208	93.42	342	1.0	22.9	7.72	0.85	174.1	3.98	2.66		
1215	93.72	513	1.5	23.1	7.64	0.85	167.0	3.61	4.01		
1222	94.21	684	2.0	22.8	7.64	0.84	168.6	3.71	5.22		
1229	94.55	855	2.5	22.9	7.66	0.84	172.5	3.28	3.56		
1236	94.74	1026	3.0	22.8	7.56	0.84	172.7	6.89	1.80		
1237	—	1048	3.06	~	End Purge	~					

SAMPLE COLLECTION SAMPLE TIME 1237			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	40 ml VOA	3				
8270 SIM 1,4 dioxane	1 L Amber					
8270 MOD 1,4 dioxane	1 L Amber					
DUPLICATES / SPLITS / BLANKS? Y (N)						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/15/19

TASK: 532.30

WELL ID: MW-09

Time <u>0751</u> Static DTW (ft below reference point)	<u>156.29</u>	Casing Volume (CV) (gallons) <u>5.7</u> 3 CV (gallons) <u>17</u>	Weather Conditions
Casing Total Depth (ft below reference point)	<u>191</u>	Purging Device <u>bailer</u> Sampling Device <u>bailer</u>	Time <u>0800</u> Temp. <u>65</u>
Water Column (feet)	<u>34.71</u>	Pump: Depth (ft brp) <u>-</u> Type <u>-</u> Voltage <u>-</u> HP <u>-</u>	Skies <u>clear</u>
Casing Capacity (Diameter <u>2"</u>) (gallons per foot)	<u>0.163</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>-</u>	Wind (mph) <u>-</u> From <u>-</u>
		Initials: <u>AMD/CVD</u>	
		Begin Purge <u>0755</u> End Purge <u>0926</u>	
		Gallons Purged <u>15</u> CVs Purged <u>2.63</u>	
		DTW (ft brp) <u>156.45</u> Time <u>0910</u>	

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	... FIELD PARAMETERS ...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0755	156.29	0	0	Begin Purging						-	
0810	NM	2	0.35	20.0	7.00	3185	341.9	3.40	17.7	-	
0830	156.48	6	1.05	20.5	7.26	3250	312.0	3.70	NM	-	
0850	NM	9	1.57	21.0	7.19	3241	311.0	3.70	65.3	-	
0910	156.45	13	2.28	20.8	7.16	3238	310.6	3.59	20.3	-	
0925	NM	15	2.63	20.6	7.15	3235	308.8	3.61	19.3	-	COLLECT SAMPLE
0926	156.43	15	2.63	End Purging						-	

SAMPLE COLLECTION SAMPLE TIME <u>0925</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u> If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/20/15

TASK: 532.30

WELL ID: MW-20

Time <u>15:37</u> Static DTW (ft below reference point) <u>153.74</u>	Casing Volume (CV) (gallons) <u>29.2</u> 3 CV (gallons) <u>87.4</u>	Weather Conditions	Initials: <u>NES/pjs</u>
Casing Total Depth (ft below reference point) <u>198.20</u>	Purging Device <u>grinder</u> Sampling Device <u>ded. 6.6</u>	Time <u>1530</u> Temp. <u>60</u>	Begin Purge <u>1539</u> End Purge <u>1611</u>
Water Column (feet) <u>44.26</u>	Pump: Depth (ft brp) <u>194</u> Type <u>MPI</u> Voltage <u>115</u> HP <u>0.5</u>	Skies <u>cloudy</u>	Gallons Purged <u>96</u> CVs Purged <u>3.3</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>162.11</u> Time <u>1609</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1539	153.74	0	0	Begin pumping							Q ≈ 3 gpm
1544	159.56	15	0.5	20.3	7.43	1685	85.3	9.52	20.08	364	
1549	160.86	30	1.0	21.9	7.43	1655	84.7	5.54	21.0	364	
1554	161.19	45	1.5	21.8	7.45	1683	74.9	4.41	24.9	364	
1559	161.58	60	2.0	21.0	7.51	1695	76.2	4.29	27.4	364	
1604	161.89	75	2.5	22.0	7.47	1660	75.9	4.24	18.9	364	
1609	162.11	90	3.1	20.3	7.53	1693	73.9	4.27	17.5	364	
1611	NM	96	3.3	End pumping							

SAMPLE COLLECTION SAMPLE TIME <u>1610</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA		
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)		
8260B VOCs	<u>3</u>	40 ml VOA			
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber			
8270 MOD 1,4 dioxane		1 L Amber			
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u> If yes, complete appropriate forms.					

GROUNDWATER SAMPLING INFORMATION

DATE: 2/19/19

TASK: 592.30

WELL ID: MW19

Time <u>1000</u> Static DTW (ft below reference point) <u>121.62</u>	Casing Volume (CV) (gallons) <u>47.8</u> 3 CV (gallons) <u>143.5</u>	Weather Conditions Time <u>1000</u> Temp. <u>60</u>	Initials: <u>NES/DJS</u>
Casing Total Depth (ft below reference point) <u>194.10</u>	Purging Device <u>grundfos</u> Sampling Device <u>ded. tubing</u>	Skies <u>cloudy</u>	Begin Purge <u>1450</u> End Purge <u>1605</u>
Water Column (feet) <u>72.48</u>	Pump: Depth (ft brp) <u>192</u> Type <u>MP1</u> Voltage <u>115</u> HP <u>0.5</u>	Wind (mph) <u>-</u> From <u>-</u>	Gallons Purged <u>150</u> CVs Purged <u>3.1</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>		DTW (ft brp) <u>145.24</u> Time <u>1602</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>1450</u>	<u>121.62</u>	<u>0</u>	<u>0</u>	<u>21.9</u>	<u>7.21</u>	<u>860</u>	<u>62.7</u>	<u>6.05</u>	<u>14.7</u>	<u>328</u>	<u>GPM ≈ 2 gpm</u>
<u>1502</u>	<u>142.85</u>	<u>24</u>	<u>0.5</u>	<u>22.1</u>	<u>7.22</u>	<u>1112</u>	<u>65.1</u>	<u>4.77</u>	<u>8.32</u>	<u>328</u>	
<u>1514</u>	<u>142.90</u>	<u>48</u>	<u>1</u>	<u>22.1</u>	<u>7.24</u>	<u>1365</u>	<u>66.5</u>	<u>4.72</u>	<u>5.07</u>	<u>328</u>	
<u>1526</u>	<u>144.35</u>	<u>72</u>	<u>1.5</u>	<u>22.0</u>	<u>7.20</u>	<u>1425</u>	<u>65.1</u>	<u>4.75</u>	<u>7.21</u>	<u>328</u>	
<u>1538</u>	<u>144.71</u>	<u>96</u>	<u>2</u>	<u>22.1</u>	<u>7.20</u>	<u>1523</u>	<u>65.5</u>	<u>5.40</u>	<u>2.97</u>	<u>328</u>	
<u>1550</u>	<u>145.14</u>	<u>120</u>	<u>2.5</u>	<u>22.0</u>	<u>7.21</u>	<u>1548</u>	<u>66.3</u>	<u>5.52</u>	<u>2.58</u>	<u>328</u>	
<u>1602</u>	<u>145.21</u>	<u>144</u>	<u>3</u>								
<u>1605</u>	<u>NM</u>	<u>150</u>	<u>3.1</u>								<u>Sampled at 16:05</u>
											<u>3x 8260B 40mL VOA's</u>
											<u>1x 1L 1,4-Dioxane Amber</u>

SAMPLE COLLECTION SAMPLE TIME <u>1605</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	<u>40 ml VOA</u>				
8270 SIM 1,4 dioxane	<u>1</u>	<u>1 L Amber</u>				
8270 MOD 1,4 dioxane		<u>1 L Amber</u>				
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u>						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/12/19

TASK: 532.30

WELL ID: MW-34A

Time <u>1525</u> Static DTW (ft below reference point)	<u>138.70</u> Screen <u>SV</u> Casing Volume (<u>SV</u>) (gallons) <u>53</u> <u>SV</u> 3 CV (gallons) <u>159</u>	Weather Conditions	Initials: <u>AMD/CVO/RES</u>
Casing Total Depth (ft below reference point)	<u>280</u> Purging Device <u>ded. pump</u> Sampling Device <u>ND pipetand</u>	Time <u>1527</u> Temp. <u>65</u>	Begin Purge <u>1540</u> End Purge <u>1556</u>
<u>pump to screen</u> Water Column (feet)	<u>80</u> Pump: Depth (ft brp) <u>200</u> Type <u>grundfos</u> Voltage <u>240</u> HP <u>-</u>	Skies <u>cloudy</u>	Gallons Purged <u>174</u> CVs Purged <u>3.2</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.66</u> Monitor Well Recharge Rate: Slow Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>139.79</u> Time <u>1556</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (u S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1540	138.70	0	0								Q = 18 gpm
1542	141.60	36	0.67	21.3	7.22	1368	175.6	6.53	38.5	-	
1545	141.59	90	1.69	21.4	7.17	^{NM} ~~209.9~~	204.3	6.31	13.7	-	
1548	139.80	112.5	2.12	21.7	7.17	^{NM} ~~217.7~~	214.6	5.17	6.94	-	Q = 7.5 gpm
1550	139.78	127.5	2.40	21.8	7.15	¹³⁷⁴ ~~226.9~~	228.6	4.94	3.41	-	
1552	139.79	142.5	2.68	21.8	7.14	1378	232.6	^{4.81} ~~2.86~~	2.86	-	
1554	139.79	159	3.0	21.8	7.14	1371	232.7	4.77	2.02	-	COLLECT SAMPLE
1556	NM	174	3.2								

SAMPLE COLLECTION SAMPLE TIME <u>1554</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u>						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/13/19TASK: 532.30WELL ID: MW-34C

Time <u>1316</u> Static DTW (ft below reference point)	<u>133.65</u> Screen SV Casing Volume (CV) (gallons) <u>64</u> SV 3 GV (gallons) <u>192</u>	Weather Conditions Time <u>1317</u> Temp <u>60</u>	Initials: <u>AMD/CVD/RES</u>
Casing Total Depth (ft below reference point)	<u>576</u> Purging Device <u>ded pump</u> Sampling Device <u>ND pipetand</u>	Skies <u>overcast</u>	Begin Purge <u>1325</u> End Purge <u>1341</u>
Water Column (feet)	<u>442.35</u> Pump: Depth (ft brp) <u>470</u> Type <u>grundfos</u> Voltage <u>240</u> HP <u>-</u>	Wind (mph) <u>2</u> From <u>W</u>	Gallons Purged <u>224</u> CVs Purged <u>3.5</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.66</u> Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>		DTW (ft brp) <u>153.21</u> Time <u>1339</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1325	133.65	0	0	PUMP ON							
1327	150.90	28	0.4	21.3	7.56	816	191.0	0.67	0.5 45 AMD 2/13/19	-	Q = 14 gpm
1330	152.00	70	1.1	21.3	7.30	763	137.3	0.18	0.33	-	
1332	152.38	98	1.5	21.9	7.67	936	147.6	0.15	0.19	-	
1334	152.75	126	2.0	21.9	7.65	942	149.9	0.14	0.37	-	
1337	153.04	168	2.6	21.9	7.63	942	150.0	0.14	NM	-	
1339	153.21	196	3.0	21.9	7.62	942	149.8	0.14	0.46	-	COLLECT SAMPLE
1341	NM	224	3.5	PUMP OFF							

SAMPLE COLLECTION SAMPLE TIME <u>1339</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u>						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 5/16/19

TASK: 532.30

WELL ID: MW-34B

Time 1210 Static DTW (ft below reference point)	133.23	screen SV Casing Volume (CV) (gallons) 50	SV 3 CV (gallons) 150	Weather Conditions	Initials: AMD/RES
Casing Total Depth (ft below reference point)	536	Purging Device ded pump	Sampling Device 10-100 pipestand	Time 1214 Temp. 65	Begin Purge 1218 End Purge 1239
Water Column (feet)	76	Pump: Depth (ft brp) 460 Type grundfos	Voltage 240 HP -	Skies Sunny	Gallons Purged 168 CVs Purged 3.4
Casing Capacity (Diameter 4") (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) - From -	DTW (ft brp) 134.02 Time 1237

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1218	133.23	0	0				PUMP ON				
1223	134.02	40	0.80	21.5	7.83	801	179.0	3.11	46.6	-	Q = 8 gpm
1225	133.98	56	1.12	21.8	7.75	834	175.4	2.04	41.2	-	
1228	134.01	80	1.60	22.0	7.73	844	175.7	1.88	26.2	-	
1231	134.01	104	2.08	22.3	7.72	852	172.7	1.88	16.2	-	
1234	134.02	128	2.56	22.3	7.71	853	170.6	1.85	9.52	-	
1237	134.02	152	3.0	22.3	7.71	852	169.9	1.83	6.51	-	
1239	NM	168	3.4				PUMP OFF				

SAMPLE COLLECTION SAMPLE TIME 1237			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	3	40 ml VOA				
8270 SIM 1,4 dioxane		1 L Amber				
8270 MOD 1,4 dioxane	1	1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y (N)						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/13/19TASK: 532.30WELL ID: MW-15

Time <u>0809</u> Static DTW (ft below reference point)	<u>130.44</u>	Casing Volume (CV) (gallons) <u>6.6</u> 3 CV (gallons) <u>19.8</u>	Weather Conditions	Initials: <u>AMD/CVP/RES</u>
Casing Total Depth (ft below reference point)	<u>170.8</u>	Purging Device <u>grundfos</u> Sampling Device <u>ded. tubing</u>	Time <u>0810</u> Temp. <u>60</u>	Begin Purge <u>0858</u> End Purge <u>0924</u>
Water Column (feet)	<u>40.36</u>	Pump: Depth (ft bwp) <u>167</u> Type <u>MP1</u> Voltage <u>115</u> HP <u>0.5</u>	Skies <u>overcast</u>	Gallons Purged <u>21</u> CVs Purged <u>3.2</u>
Casing Capacity (Diameter <u>2"</u>) (gallons per foot)	<u>0.163</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft bwp) <u>131.05</u> Time <u>0926</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0858	130.44	0	0				PUMP ON				
0902	130.95	3	0.45	19.4	7.20	1688	286.9	5.28	NM	380	Q = 0.75 gpm
0907	131.08	6.75	1.0	24.6	7.09	1885	279.5	3.90	24.2	380	
0911	131.05	9.74	1.48	24.5	7.09	1891	276.3	3.77	20.1	380	
0916	131.05	13.5	2.0	24.5	7.09	1890	274.6	3.63	9.42	380	
0920	131.05	16.5	2.5	24.4	7.09	1891	274.8	3.53	7.23	380	
0924	131.05	19.5	3.0	24.4	7.09	1890	274.9	3.43	6.0	380	COLLECT SAMPLE
0926	131.05	21	3.2				PUMP OFF				

SAMPLE COLLECTION SAMPLE TIME <u>0924</u>		
ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>3</u>	40 ml VOA
8270 SIM 1,4 dioxane		1 L Amber
8270 MOD 1,4 dioxane		1 L Amber
DUPLICATES / SPLITS / BLANKS? <u>Y</u> (N)		
If yes, complete appropriate forms.		

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19

TASK: 532.30

WELL ID: MW-08

Time <u>12:11</u> Static DTW (ft below reference point)	<u>129.32</u>	Casing Volume (CV) (gallons) <u>6</u> 3 CV (gallons) <u>18</u>	Weather Conditions	Initials: <u>AMP/RES</u>
Casing Total Depth (ft below reference point)	<u>166.10</u>	Purging Device <u>grundfos</u> Sampling Device <u>ded. tubing</u>	Time <u>1207</u> Temp. <u>65</u>	Begin Purge <u>1226</u> End Purge <u>1242</u>
Water Column (feet)	<u>36.78</u>	Pump: Depth (ft brp) <u>~163</u> Type <u>MP1</u> Voltage <u>115</u> HP <u>0.5</u>	Skies <u>cloudy</u>	Gallons Purged <u>24</u> CVs Purged <u>4.0</u>
Casing Capacity (Diameter ") (gallons per foot)	<u>0.163</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) _____ From _____	DTW (ft brp) <u>131.29</u> Time <u>1238</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1226	129.55	0	0	—	—	—	PV MP ON	—	—	—	
1228	131.07	3	0.5	21.5	7.33	1914	217.3	4.29	12.80	277	Q = 1.5 gpm
1230	NM	6	1.0	21.7	7.26	1938	216.4	3.47	16.12	277	
1232	131.21	9	1.5	21.7	7.28	1940	210.2	3.38	20.79	277	
1234	131.25	12	2.0	21.7	7.29	1942	206.3	3.71	14.68	277	
1236	131.27	15	2.5	21.7	7.25	1942	200.6	3.72	2.61	277	
1238	131.29	18	3.0	22.0	7.24	1938	199.6	3.68	1.32	277	SAMPLE
1242	NM	24	4.0	—	—	—	PV MP OFF	—	—	—	

SAMPLE COLLECTION SAMPLE TIME <u>1238</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA		
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)		
8260B VOCs	<u>9</u>	40 ml VOA	<u>Duplicate Sample: MW-0800 @ 1240</u> <u>Split Sample: MW-08 @ 1239</u>		
8270 SIM 1,4 dioxane	<u>3</u>	1 L Amber			
8270 MOD 1,4 dioxane		1 L Amber			
DUPLICATES ☒ SPLITS ☒ BLANKS? ☒ N					

GROUNDWATER SAMPLING INFORMATION

DATE: 2/20/19TASK: 532.30WELL ID: MW-16

Time <u>1326</u> Static DTW (ft below reference point)	<u>121.69</u>	Casing Volume (CV) (gallons) <u>37.5</u> 3 CV (gallons) <u>112.5</u>	Weather Conditions	Initials: <u>NES/DJS</u>
Casing Total Depth (ft below reference point)	<u>178.56</u>	Purging Device <u>groutflow</u> Sampling Device <u>ded. tubing</u>	Time <u>1330</u> Temp. <u>60</u>	Begin Purge <u>1327</u> End Purge <u>1415</u>
Water Column (feet)	<u>56.81</u>	Pump: Depth (ft brp) <u>176.5</u> Type <u>MDI</u> Voltage <u>151</u> HP <u>0.5</u>	Skies <u>cloudy</u>	Gallons Purged <u>120</u> CVs Purged <u>3.2</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.66</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>123.98</u> Time <u>1410</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1327	121.69	0	0	—	—	Begin	Purging	—	—	—	Q ≈ 2.5 gpm
1334	123.09	18	0.5	22.1	7.32	1701	70.1	6.53	4.16	329	
1341	123.95	37.5	1	22.1	7.26	1592	62.4	3.91	3.32	329	
1348	123.95	55	1.5	21.9	7.31	1626	61.0	3.38	5.21	329	
1355	123.96	74	2.0	21.8	7.31	1688	60.6	3.88	1.95	329	
1402	123.97	92	2.5	21.9	7.32	1783	58.8	4.11	1.62	329	
1410	123.98	113	3	21.8	7.32	1726	56.5	4.14	1.22	329	
1415	NM	120	3.2	—	—	End	Purging	—	—	—	
SAMPLE COLLECTION SAMPLE TIME <u>1420</u>				AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA							
ANALYSIS QUANTITY TYPE				NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)							
8260B VOCs <u>3</u> 40 ml VOA											
8270 SIM 1,4 dioxane <u>1</u> 1 L Amber											
8270 MOD 1,4 dioxane <u>1</u> 1 L Amber											
DUPLICATES / SPLITS / BLANKS? Y <u>N</u>											
If yes, complete appropriate forms.											

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15

TASK: 532.30

WELL ID: MW-28

Time <u>1333</u> Static DTW (ft below reference point) <u>119.56</u>	Screen <u>SV</u> Casing Volume (CV) (gallons) <u>29.7</u> <u>SV</u> 3 CV (gallons) <u>89.1</u>	Weather Conditions Time <u>1334</u> Temp. <u>70</u>	Initials: <u>AMD/RES</u>
Casing Total Depth (ft below reference point) <u>375</u>	Purging Device <u>ded pump</u> Sampling Device <u>NO pipe stand</u>	Begin Purge <u>1338</u> End Purge <u>1350</u>	
<u>pump to screen</u> Water Column (feet) <u>45</u>	Pump: Depth (ft brp) <u>330</u> Type <u>grundfos</u> Voltage <u>240</u> HP <u>0.5</u>	Gallons Purged <u>115</u> CVs Purged <u>3.8</u>	
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) _____ From _____	DTW (ft brp) <u>130.05</u> Time <u>1347</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C.)	pH	EC (MS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1338	119.56	0	0								
1339	NM	10	0.33	21.5	7.59	1018	61.9	3.39	2.42	-	Q = 10 gpm
1340	121.82	20	0.66	21.5	7.58	1019	58.9	3.87	1.81	-	
1341	125.23	30	1.0	21.5	7.62	1020	53.0	4.40	1.32	-	
1343	130.02	50	1.66	21.5	7.63	1011	49.9	4.32	0.85	-	
1345	130.03	70	2.33	21.5	7.63	1012	49.4	4.32	0.61	-	
1347	130.05	90	3.0	21.5	7.63	1012	49.3	4.32	0.16	-	SAMPLE
1350	NM	115	3.8								

SAMPLE COLLECTION SAMPLE TIME <u>1347</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u> If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19TASK: 532.30WELL ID: MW-26C

Time <u>0907</u> Static DTW (ft below reference point)	<u>115.75</u>	Screen <u>SV</u> Casing Volume (<u>CV</u>) (gallons)	<u>49</u>	<u>SV</u> 3 CV (gallons)	<u>147</u>	Weather Conditions	Initials: <u>AMD/RES</u>
Casing Total Depth (ft below reference point)	<u>499</u>	Purging Device <u>grundfos</u>	Sampling Device <u>ded tubing</u>		Time <u>0907</u> Temp. <u>60</u>	Begin Purge <u>0922</u> End Purge <u>1038</u>	
pump to screen Water Column (feet) <u>383.25</u>	<u>299</u>	Pump: Depth (ft brp) <u>~200</u> Type <u>MP1</u> Voltage <u>115</u> HP <u>0.5</u>			Skies <u>cloudy</u>	Gallons Purged <u>152</u> CVs Purged <u>3.0</u>	
Casing Capacity (Diameter <u>2"</u>) (gallons per foot)	<u>0.163</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>			Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>115.89</u> Time <u>1040</u>	

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0922	115.75	0	0								PUMP ON
0935	UTM	26	0.53	22.5	9.41	450	-270.1	NM	3.57	330	Q ≈ 2.0 gpm
0948	UTM	52	1.06	22.1	8.03	788	-177.2	NM	0.81	330	Q ≈ 2.0 gpm
1001	UTM	78	1.59	22.0	7.93	797	-158.2	NM	0.25	330	Q ≈ 2.0 gpm
1014	UTM	104	2.12	22.0	7.88	798	-149.2	NM	0.06	330	
1025	UTM	126	2.57	22.0	7.87	798	-145.6	NM	0.02	330	
1036	UTM	148	3.0	22.0	7.88	797	-144.1	NM	0.02	330	SAMPLE
1038	UTM	152	3.0								PUMP OFF
1040	115.89										

SAMPLE COLLECTION SAMPLE TIME <u>1036</u>		
ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>6</u>	40 ml VOA
8270 SIM 1,4 dioxane	<u>2</u>	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber
DUPLICATES / SPLITS / (BLANKS?)	<u>(Y)</u>	N
If yes, complete appropriate forms.		

AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
<u>Depth to water unable to measure. Meter unable to get passed pump</u>			
<u>D.O. probe malfunction.</u>			
<u>Rinsante blank collected: RB-051519 @ 1100</u>			

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING INFORMATION

DATE: 11/8/18 TASK: 532-30 WELL ID: MW-40

Time <u>0745</u> Static DTW (ft below reference point)	<u>110.01</u>	Screen <u>SV</u> Casing Volume (GV) (gallons) <u>75</u> <u>SV</u> 3 GV (gallons) <u>225</u>	Weather Conditions	Initials: <u>AMD, OTS</u>
Casing Total Depth (ft below reference point)	<u>970</u>	Purging Device <u>ded pump</u> Sampling Device <u>NO pipestand</u>	Time <u>0750</u> Temp <u>69°F</u>	Begin Purge <u>0755</u> End Purge <u>0816</u>
pump to Water Column (feet)	<u>50</u>	Pump: Depth (ft bfp) Type <u>ground for</u> Voltage <u>240</u> HP	Skies <u>cloudy</u>	Gallons Purged <u>252</u> CVs Purged <u>3.36</u>
Casing Capacity (Diameter <u>6"</u>) (gallons per foot)	<u>1.5</u>	Monitor Well Recharge Rate: Slow Fast <u>X</u>	Wind (mph) <u>—</u> From <u>—</u>	DTW (ft bfp) <u>110.98</u> Time <u>0814</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0755	110.01	0	0	—	Begin	Purge	—				Q ≈ 12 gpm
0758	110.80	36	0.48	20.5	7.59	732	-148.6	2.45	3.05		
0801	110.88	72	0.96	20.9	7.62	762	-112.1	1.91	2.59		
0804	110.92	108	1.44	21.0	7.64	761	-67.0	1.86	1.90		
0807	110.94	144	1.92	21.1	7.72	769	-45.3	3.19	2.10		
0810	110.98	180	2.4	21.0	7.64	760	-23.8	2.34	1.83		
0814	110.98	228	3.04	21.2	7.67	762	-20.7	2.46	2.08		Collected Sample
0816	N/A	252	3.36	—	End	Purge	—				

SAMPLE COLLECTION SAMPLE TIME <u>0814</u>		
ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>3</u>	40 ml VOA
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u>		
If yes, complete appropriate forms.		

AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
<u>Sample collected @ 0814 MW-40 (org)</u>			

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19

TASK: 532.30

WELL ID: MW41

Time <u>1530</u> Static DTW (ft below reference point)	<u>136.18</u>	Casing Volume <u>SV</u> (gallons) <u>39</u> <u>SV</u> (gallons) <u>118</u>	Weather Conditions	Initials: <u>NEV/DJS</u>
Casing Total Depth (ft below reference point)	<u>425</u>	Purging Device <u>dept pump</u> Sampling Device <u>10-100 pipetted</u>	Time _____ Temp. _____	Begin Purge <u>1543</u> End Purge <u>1607</u>
<u>pump to screen</u> Water Column (feet)	<u>65</u>	Pump: Depth (ft brp) <u>360</u> Type <u>Grout</u> Voltage <u>240</u> HP	Skies _____	Gallons Purged <u>142</u> CVs Purged <u>3.65</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.6</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) _____ From _____	DTW (ft brp) <u>136.18</u> Time <u>1530</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1543	136.18	0	0	—	—	Begin Purge					Q ≈ 6
1546	139.32	19	0.5	22.3	7.11	1.910	-40.3	1.24	32.31		
1549	138.91	39	1	21.9	7.01	2.059	-40.9	1.76	34.02		
1553	138.89	58	1.5	22.1	6.99	2.089	-24.1	1.99	20.02		
1556	138.91	78	2	22.3	6.99	2.088	-26.1	2.09	15.14		
1559	138.90	97	2.5	22.5	7.00	2.087	-23.2	2.06	9.53		
1603	138.91	118	3	22.2	7.00	2.090	-26.4	2.03	8.61		
1607	—	142	3.65	—	—	End Purge					

SAMPLE COLLECTION SAMPLE TIME <u>1603</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane	<u>1</u>	1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u> If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 06-03-19

TASK: 532.74

WELL ID: MW-42

Time 1030 Static DTW (ft below reference point) 83.52	Casing Volume (CV) (gallons) 321 3 CV (gallons) 964	Weather Conditions	Initials: DJS, NES
Casing Total Depth (ft below reference point) 1057 Pump to screen Water Column (feet) 492	Purging Device SAE 22 7500 pump Sampling Device Pressure	Time 1030 Temp. 67°F	Begin Purge 1039 End Purge 1122
Casing Capacity (Diameter 4" (gallons per foot) 0.26	Pump: Depth (ft brp) 320 Type SAE 22 Voltage HP	Skies Cloudy	Gallons Purged 986 CVs Purged 3.00
	Monitor Well Recharge Rate: Slow Fast ☒	Wind (mph) ~ From ~	DTW (ft brp) 63.52 Time 1030

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
10:39	83.52	0	0.0	~	Begin		Purge	~			~ 23 GPM
10:46	72.10	161	0.5	21.1	7.82	0.529	-102.0	1.53	19.1		
10:53	72.19	322	1.0	21.2	7.96	0.514	-151.3	1.17	7.70		
11:00	72.27	483	1.5	21.3	7.99	0.508	-62.1	1.56	4.97		
11:07	72.29	644	2.0	21.3	8.02	0.508	-19.9	1.44	1.85		
11:14	72.35	805	2.5	21.4	8.03	0.507	-3.5	0.98	1.34		
11:21	72.44	966	3.0	21.7	8.02	0.507	-21.7	1.68	1.40		
11:24	-	986		~	End Purge						

SAMPLE COLLECTION SAMPLE TIME 1122	AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
ANALYSIS QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)
8260B VOCs 9 40 ml VOA	MW-4200 @ 1124
8270 SIM 1.4 dioxane 3 1 L Amber	MW-42 → calcareous / europium
8270 MOD 1.4 dioxane 1 L Amber	
DUPLICATES / SPLITS / BLANKS? ☒ N	
If yes, complete appropriate forms.	

GROUNDWATER SAMPLING INFORMATION

DATE: 5-24-19TASK: 532.71WELL ID: MW-42

Time <u>1300</u> Static DTW (ft below reference point) <u>67.63</u>	Casing Volume (CV) (gallons) <u>301</u> 3 CV (gallons) <u>903</u>	Weather Conditions	Initials: <u>DJS/TJE</u>
Casing Total Depth (ft below reference point) <u>1057</u>	Purging Device <u>ded pump</u> Sampling Device <u>0-10 pip</u>	Time <u>1300</u> Temp. <u>75</u>	Begin Purge <u>1306</u> End Purge <u>1346</u>
Water Column (feet) <u>497</u>	Pump: Depth (ft brp) <u>560</u> Type <u>peristaltic</u> Voltage <u>740</u> HP	Skies <u>partly sunny</u>	Gallons Purged <u>960</u> CVs Purged <u>3.2</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow Fast <u>X</u>	Wind (mph) <u>2-5</u> From <u>North</u>	DTW (ft brp) <u>67.63</u> Time <u>1300</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1306	67.63	0	0	—	—	—	—	—	—	—	Qs 24 gpm
1312	76.11	144	1.5	20.6	7.38	0.492	-229.5	0.39	2.89	—	
1318	76.25	288	1.0	21.1	7.39	0.492	-246.0	0.39	2.83	—	
1324	76.35	432	1.4	21.5	7.51	0.493	-150.7	0.38	2.58	—	
1331	76.57	600	2.0	21.5	7.57	0.492	-125.6	0.60	2.76	—	
1337	76.60	744	2.5	21.5	7.62	0.493	-132.6	0.44	2.38	—	
1344	76.74	912	3.0	21.5	7.66	0.493	-130.0	0.43	2.32	—	
1346	NM	960	3.2	—	—	—	—	—	—	—	

SAMPLE COLLECTION SAMPLE TIME <u>1345</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>1</u>	40 ml VOA	<u>Dup @ 1346</u>			
8270 SIM 1,4 dioxane	<u>5</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>(Y)</u> N						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 06-03-2019

TASK: 532.71

WELL ID: MW-43

Time 1425 Static DTW (ft below reference point) 57.97	Casing Volume (CV) (gallons) 297	3 CV (gallons) 892	Weather Conditions	Initials: DJS, NES
Casing Total Depth (ft below reference point) 1051	Purging Device SOE 22	Sampling Device P. Pesticide	Time 1430 Temp. ~	Begin Purge 1430 End Purge 1515
Pump to Screen Water Column (feet) 534	Pump: Depth (ft brp) 530	Type SOE 22 Voltage HP	Skies overcast	Gallons Purged 1000 CVs Purged 3.185
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) ~ From ~	DTW (ft brp) 57.97 Time 1425

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1430											~22 GPM
1437	65.63	160	0.5	21.9	7.91	0.54	-128.5	1.04	5.19		
1444	65.75	320	1.0	22.2	7.90	0.54	-148.3	1.07	6.91		
1451	65.25	480	1.5	22.8	7.95	0.53	-61.4	1.06	5.00		
1458	65.81	640	2.0	23.4	7.96	0.53	-35.0	0.91	2.79		
1505	65.71	800	2.5	22.3	7.95	0.53	-16.4	0.89	2.53		
1512	65.80	957	3.0	22.3	7.96	0.53	-12.4	1.25	1.70		
1518				~ Stop Purge ~							

SAMPLE COLLECTION	SAMPLE TIME 1511
ANALYSIS	QUANTITY TYPE
8280B VOCs	9 40 ml VOA
8270 SIM 1,4 dioxane	3 1 L Amber
8270 MOD 1,4 dioxane	1 L Amber
DUPLICATES / SPLITS / BLANKS?	0 N

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
MW-4300 @ 1518			
MW-43 → Cal Science / Europur			

GROUNDWATER SAMPLING INFORMATION

DATE: 6/24/19

TASK: 532.71

WELL ID: MW-43

Time 9:11	Static DTW (ft below reference point) 61.70	Casing Volume (gallons) 324	3 CV (gallons) 324	Weather Conditions	Initials: JSE/DJS
Casing Total Depth (ft below reference point) 1051	Purging Device dal pump	Sampling Device	Time 9:00	Temp. 65	Begin Purge 10:00
Water Column (feet) 491	Pump: Depth (ft brp) 560	Type	Skies cloudy		End Purge 11:05
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow	Fast	Wind (mph) 2-5	From S	Gallons Purged 972
					CVs Purged 30
					DTW (ft brp) 61.70
					Time 9:11

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1018	61.70	0	0							-	Q ≈ 21 gpm
1025	68.81	147	0.45	20.8	7.46	0.913	-133.0	0.42	0.42	-	
1032	68.90	294	0.9	21.4	7.52	0.515	-111.2	0.39	0.40	-	Q ≈ 24 gpm
1039	69.02	462	1.4	21.5	7.61	0.504	-59.0	0.36	0.38	-	
1046	69.22	630	1.9	21.5	7.65	0.504	-32.6	0.36	0.33	-	
1053	69.31	798	2.5	21.5	7.65	0.506	-33.4	0.34	0.01	-	
1100	69.35	972	3.0	21.5	7.65	0.507	-38.4	0.34	0.04	-	
1105											

SAMPLE COLLECTION SAMPLE TIME 11:01

ANALYSIS QUANTITY TYPE

8260B VOCs 9 40 ml VOA

8270 SIM 1,4 dioxane 1 L Amber

8270 MOD 1,4 dioxane 3 1 L Amber

DUPLICATES / SPLITS BLANKS? Y N

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

MW-4300 @ 1106

MW-43 to ECI

GROUNDWATER SAMPLING INFORMATION

DATE: 5/16/19TASK: 532.30WELL ID: EW-01

Time <u>0925</u> Static DTW (ft below reference point) <u>110.23</u>	Casing Volume (CV) (gallons) <u>46</u> 3 CV (gallons) <u>138</u>	Weather Conditions Time <u>0930</u> Temp. <u>60</u>	Initials: <u>AMD/RES/RHH</u>
Casing Total Depth (ft below reference point) <u>188</u>	Purging Device <u>ded pump</u> Sampling Device <u>ded sample port</u>	Skies <u>rain</u>	Begin Purge <u>0930</u> End Purge <u>0942</u>
Water Column (feet) <u>69.77</u>	Pump: Depth (ft brp) <u>-</u> Type <u>-</u> Voltage <u>-</u> HP <u>-</u>	Wind (mph) <u>-</u> From <u>-</u>	Gallons Purged <u>156</u> CVs Purged <u>3.3</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>		DTW (ft brp) <u>118.73</u> Time <u>0940</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0930	110.23	0	0	Begin Purge						-	
0932	118.70	26	0.56	20.5	7.59	1335	211.9	7.67	14.03	-	Q=13gpm
0934	118.74	52	1.13	20.9	7.54	1340	200.5	7.56	36.1	-	
0935	118.75	65	1.41	21.1	7.53	1343	194.7	7.40	31.75	-	
0937	118.75	91	1.97	21.0	7.57	1339	193.0	7.95	12.31	-	
0938	118.73	104	2.26	21.1	7.59	1344	197.4	7.84	10.6	-	
0940	118.73	130	2.9	21.0	7.56	1344	198.2	7.82	4.96	-	
0942	NM	156	3.3	End Purge						-	

SAMPLE COLLECTION SAMPLE TIME <u>0942</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane		1 L Amber				
8270 MOD 1,4 dioxane	<u>1</u>	1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y <u>N</u>						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 5/16/19

TASK: 532.30

WELL ID: MW-21

Time <u>0949</u> Static DTW (ft below reference point)	<u>113.78</u>	Casing Volume (CV) (gallons) <u>78</u> 3 CV (gallons) <u>234</u>	Weather Conditions	Initials: <u>AMP/RES/RHH</u>
Casing Total Depth (ft below reference point)	<u>232</u>	Purging Device <u>ded pump</u> Sampling Device <u>ded sample port</u>	Time <u>0945</u> Temp. <u>60</u>	Begin Purge <u>0950</u> End Purge <u>1002</u>
Water Column (feet)	<u>118.22</u>	Pump: Depth (ft brp) <u>-</u> Type <u>-</u> Voltage <u>-</u> HP <u>-</u>	Skies <u>rain</u>	Gallons Purged <u>300</u> CVs Purged <u>3.8</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.66</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>131.72</u> Time <u>1000</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>0950</u>	<u>113.78</u>	<u>0</u>	<u>0</u>	<u>Begin Purge</u>							
<u>0952</u>	<u>129.41</u>	<u>50</u>	<u>0.64</u>	<u>21.1</u>	<u>7.57</u>	<u>1561</u>	<u>64.1</u>	<u>3.60</u>	<u>17.0</u>	<u>-</u>	<u>Q = 25 gpm</u>
<u>0954</u>	<u>130.79</u>	<u>100</u>	<u>1.28</u>	<u>21.3</u>	<u>7.50</u>	<u>1989</u>	<u>34.0</u>	<u>5.03</u>	<u>16.3</u>	<u>-</u>	
<u>0955</u>	<u>131.13</u>	<u>125</u>	<u>1.60</u>	<u>21.3</u>	<u>7.49</u>	<u>2027</u>	<u>59.0</u>	<u>6.11</u>	<u>3.0</u>	<u>-</u>	
<u>0956</u>	<u>131.35</u>	<u>150</u>	<u>1.92</u>	<u>21.3</u>	<u>7.45</u>	<u>2045</u>	<u>78.0</u>	<u>5.52</u>	<u>2.91</u>	<u>-</u>	
<u>0958</u>	<u>131.53</u>	<u>200</u>	<u>2.56</u>	<u>21.3</u>	<u>7.46</u>	<u>2048</u>	<u>82.3</u>	<u>6.04</u>	<u>3.61</u>	<u>-</u>	
<u>1000</u>	<u>131.72</u>	<u>250</u>	<u>3.2</u>	<u>21.0</u>	<u>7.44</u>	<u>2052</u>	<u>92.3</u>	<u>5.96</u>	<u>5.32</u>	<u>-</u>	
<u>1002</u>	<u>NM</u>	<u>300</u>	<u>3.8</u>	<u>End Purge</u>							

SAMPLE COLLECTION SAMPLE TIME <u>1000</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane	<u>1</u>	1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u> If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/14/19

TASK: 532.30

WELL ID: MW-32A

Time 0832 Static DTW (ft below reference point) 72.86	Screen SV Gaging Volume (GV) (gallons) 207	SV 3 GV (gallons) 621	Weather Conditions
Casing Total Depth (ft below reference point) 905	Purging Device ded pump	Sampling Device ND P. Portland	Time 0830 Temp. 60
Pump to Screen Water Column (feet) 345	Pump: Depth (ft brp) 560	Type groundfo Voltage 240 HP -	Skies rain
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) - From -
			Initials: NES/pjs
			Begin Purge 855 End Purge 0920
			Gallons Purged 660 CVs Purged 3.2
			DTW (ft brp) 74.73 Time 0917

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0833	72.86	0	0							-	Q ≈ 13 gpm
0842	74.54	104	0.5	19.8	7.52	1212	51.0	4.72	1.67	-	
0849	74.63	207	1.0	20.0	7.56	1215	45.8	3.46	1.82	-	
0856	74.70	311	1.5	20.2	7.56	1212	33.5	2.96	2.38	-	
0903	74.71	411	2.0	20.1	7.58	1208	35.7	3.31	1.96	-	
0910	74.72	518	2.5	20.2	7.60	1206	36.3	4.14	1.98	-	
0917	74.73	621	3.0	20.1	7.52	1209	33.1	3.04	1.45	-	
0920	NM	660	3.2				End Purge			-	

SAMPLE COLLECTION SAMPLE TIME 0920

ANALYSIS	QUANTITY	TYPE
8260B VOCs	3	40 ml VOA
8270 SIM 1,4 dioxane	1	1 L Amber
8270 MOD 1,4 dioxane	1	1 L Amber
DUPLICATES / SPLITS / BLANKS? Y		

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 2-13-19TASK: 532.30WELL ID: MW-32C

Time <u>1422</u> Static DTW (ft below reference point)	<u>71.30</u> Screen <u>SU</u> Casing Volume (GV) (gallons)	<u>318</u> <u>SU</u> 3 GV (gallons)	<u>454</u>	Weather Conditions	Initials: <u>DJS/NE</u>
Casing Total Depth (ft below reference point)	<u>1090</u>	Purging Device <u>DEL pump</u>	Sampling Device <u>NO PIPETOR</u>	Time <u>1415</u> Temp. <u>53°F</u>	Begin Purge <u>1431</u> End Purge <u>1551</u>
Pump to Water Column (feet)	<u>930</u>	Pump: Depth (ft brp) <u>560</u> Type <u>GRANDS</u> Voltage <u>240</u> HP <u>-</u>		Skies <u>cloudy</u>	Gallons Purged <u>966</u> CVs Purged <u>3.1</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.66</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>✓</u>		Wind (mph) <u>~</u> From <u>~</u>	DTW (ft brp) <u>NM</u> Time <u>-</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1431	<u>71.30</u> <u>NM</u>	<u>0</u>	<u>0</u>	<u>~</u>		<u>Begin</u>	<u>Purge</u>	<u>~</u>		<u>-</u>	<u>Q ≈ 12 GPM</u>
1444	<u>NM</u>	<u>159</u>	<u>0.5</u>	<u>19.7</u>	<u>7.96</u>	<u>552.7</u>	<u>-173.1</u>	<u>2.21</u>	<u>1.26</u>	<u>-</u>	<u>* transducer blocking water column</u>
1458	<u>NM</u>	<u>318</u>	<u>1.0</u>	<u>20.2</u>	<u>7.98</u>	<u>545.7</u>	<u>-151.2</u>	<u>1.01</u>	<u>0.90</u>	<u>-</u>	<u>unable to obtain WL</u>
1511	<u>NM</u>	<u>477</u>	<u>1.5</u>	<u>20.3</u>	<u>8.02</u>	<u>544.8</u>	<u>-92.9</u>	<u>1.29</u>	<u>3.98</u>	<u>-</u>	
1524	<u>NM</u>	<u>636</u>	<u>2.0</u>	<u>19.7</u>	<u>8.04</u>	<u>548.3</u>	<u>-90.0</u>	<u>1.72</u>	<u>2.76</u>	<u>-</u>	
1537	<u>NM</u>	<u>795</u>	<u>2.5</u>	<u>20.0</u>	<u>8.03</u>	<u>547.9</u>	<u>-77.0</u>	<u>0.54</u>	<u>1.82</u>	<u>-</u>	
1550	<u>NM</u>	<u>954</u>	<u>3.0</u>	<u>19.6</u>	<u>7.93</u>	<u>548.1</u>	<u>-91.0</u>	<u>2.55</u>	<u>5.18</u>	<u>-</u>	
1551	<u>NM</u>	<u>966</u>	<u>3.1</u>	<u>~</u>		<u>End</u>	<u>Purge</u>	<u>~</u>		<u>-</u>	

SAMPLE COLLECTION SAMPLE TIME <u>1550</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u>						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19

TASK:

WELL ID: ~~4-32~~ MW-32B

Time 1319 Static DTW (ft below reference point)	72.60	Screen SV	264	3 CV (gallons)	791	Weather Conditions	Initials: NES/DJS
Casing Total Depth (ft below reference point)	99.9	Purging Device	dead pump	Sampling Device	pipe stand	Time 1318 Temp. 64	Begin Purge 1323 End Purge 1434
Water Column (feet)	436	Pump: Depth (ft brp)	560	Type	granite	Skies	Gallons Purged 791 CVs Purged 309
Casing Capacity (Diameter 4") (gallons per foot)	0.64	Monitor Well Recharge Rate: Slow		Fast	X	Wind (mph)	DTW (ft brp) 1319 Time 1319

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1328	72.60	0	0			Begin Purge				-	Q ≈ 12 gpm
1339	88.02	132	0.5	21.8	7.75	0.935	-98.2	1.35	76.43	-	
1350	88.50	264	1	21.4	7.79	0.838	-106.7	1.67	4.57	-	
1401	88.69	396	1.5	21.5	7.80	0.904	-58.2	1.97	6.24	-	
1412	88.84	528	2	21.7	7.83	0.923	-53.3	1.39	5.91	-	
1423	88.76	660	2.5	21.5	7.80	0.921	-51.6	1.32	8.58	-	
1434	88.90	791	3							-	
1437	-	-	2.05	End Purge						-	

SAMPLE COLLECTION TIME	1434
ANALYSIS	QUANTITY TYPE
8260B VOCs	12 40 ml VOA
8270 SIM 1,4 dioxane	3 1 L Amber
8270 MOD 1,4 dioxane	1 L Amber
DUPLICATES / SPLITS / BLANKS?	(Y) N

AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
MW-32B-2-SV @ 1414			
MW-3200B @ 1437			
mw-32 @ 1434			

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19

TASK: 532.30

WELL ID: MW-33

Time 0915 Static DTW (ft below reference point) 64.04	Screen Casing Volume (CV) (gallons) 291	3 CV (gallons) 873	Weather Conditions
Casing Total Depth (ft below reference point) 1020	Purging Device ded pump	Sampling Device pipelband	Time 0915 Temp 62
Water Column (feet) 485	Pump: Depth (ft bfp) 535	Type groundwater	Skies cloudy
Casing Capacity (Diameter *) (gallons per foot) 0.61	Monitor Well Recharge Rate: Slow	Fast	Wind (mph) 4-6 From
			Initials: NEV/DKV
			Begin Purge 0920 End Purge 1011
			Gallons Purged 909 CVs Purged 3.1
			DTW (ft bfp) 64.04 Time 0915

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0920	64.04	0									Pump On
0928	98.61	146	0.5	20.4	7.78	0.591	-52.1	0.82	1.50	-	Q ≈ 18 gpm
0936	98.56	291	1	20.7	7.74	0.676	-34.8	0.46	0.77	-	
0944	98.59	437	1.5	20.8	7.77	0.673	-8.6	0.58	0.14	-	
0952	98.63	582	2	20.8	7.75	0.681	-9.5	0.52	1.65	-	
1000	98.63	728	2.5	20.7	7.78	0.691	-8.4	0.56	0.39	-	
1009	98.65	873	3	20.1	7.73	0.679	-9.1	0.54	0.17	-	
1011		909	3.1								End Purge

SAMPLE COLLECTION SAMPLE TIME 1009

ANALYSIS QUANTITY TYPE

8260B VOCs 3 40 ml VOA

8270 SIM 1.4 dioxane 2 1 L Amber

8270 MOD 1.4 dioxane 2 1 L Amber

DUPLICATES / SPLITS / BLANKS? Y N

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

MW-33 - 2 - SV @ 0958

MW-33 @ 1009

DATE: 2/13/19

GROUNDWATER SAMPLING INFORMATION

TASK: 532.50

WELL ID: MW-35C

Time <u>0806</u> Static DTW (ft below reference point)	<u>73.30</u>	Screen Casing Volume (CV) (gallons) <u>378</u> ^{SV} 3 GV (gallons) <u>1134</u>	Weather Conditions	Initials: <u>NES/DJR</u>
Casing Total Depth (ft below reference point)	<u>1040</u>	Purging Device <u>ded pump</u> Sampling Device <u>ND pipette</u>	Time <u>0805</u> Temp. <u>45</u>	Begin Purge <u>0820</u> End Purge <u>0920</u>
Water Column (feet)	<u>630</u>	Pump: Depth (ft bsp) <u>410</u> Type <u>grndfo</u> Voltage <u>240</u> HP <u>-</u>	Skies <u>cloudy</u>	Gallons Purged <u>1179</u> CVs Purged <u>3.1</u>
Casing Capacity (Diameter <u>4</u> " (gallons per foot)	<u>0.66</u>	Monitor Well Recharge Rate: Slow Fast <u>X</u>	Wind (mph) <u>4</u> From	DTW (ft bsp) <u>76.85</u> Time <u>0928</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0820	73.30	0	0			Begin Purge				-	~~Q = 22 gpm~~ NES 2/12/19
0829	76.83	189	0.5	18.9	7.24	857	116.5	4.58	2.31	-	Q = 20 gpm
0839	76.84	378	1	19.3	7.51	828	92.1	2.54	8.61	-	
0850	76.82	567	1.5	19.4	7.61	853	79.3	2.89	8.09	-	
0859	76.82	756	2	19.3	7.63	847	74.2	2.98	7.04	-	
0908	76.85	944	2.5	19.4	7.62	846	70.6	2.98	7.54	-	
0918	76.85	1134	3	19.3	7.41	852	69.5	3.00	7.12	-	
0920	NM	1179	3.1			End Purge				-	

SAMPLE COLLECTION SAMPLE TIME <u>0920</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>5</u>	40 ml VOA				
8270 SEM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MQD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>N</u> If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/12/19

TASK: 532.30

WELL ID: MW-39

Time 1419 Static DTW (ft below reference point) 66.88	Screen SV Casing Volume (CV) (gallons) 271 3 CV (gallons) 813	Weather Conditions	Initials: NES/DJS
Casing Total Depth (ft below reference point) 1012	Purging Device dept pump Sampling Device ND piped	Time 1426 Temp 65	Begin Purge 1429 End Purge 1509
Water Column (feet) 452	Pump: Depth (ft brp) 566 Type gran Voltage 240 HP	Skies cloudy	Gallons Purged 871 CVs Purged 3.2
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast fast	Wind (mph) 0 From	DTW (ft brp) 8240 Time 1506

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1429	66.88	0	0								Q ≈ 22 gpm
1435	82.21	136	0.5	21.1	8.25	488.5	-221.3	4.96	1.50	-	
1441	82.24	271	1	21.4	8.43	436.8	-204.6	1.02	1.28	-	
1447	82.36	407	1.5	21.7	8.40	482.4	-157.4	1.03	1.34	-	
1453	82.33	542	2	21.8	8.34	439.5	-124.9	0.96	0.89	-	
1459	82.38	678	2.5	21.8	8.32	436.2	-123.5	0.94	1.66	-	
1506	82.40	813	3	21.8	8.32	440.7	-120.4	0.94	1.80	-	
1509	NM	871	3.23								End Purge

SAMPLE COLLECTION SAMPLE TIME 1505	
ANALYSIS QUANTITY TYPE	
8260B VOCs 3 40 ml VOA	
8270 SIM 1,4 dioxane 1 1 L Amber	
8270 MOD 1,4 dioxane 1 1 L Amber	
DUPLICATES / SPLITS / BLANKS? Y (N)	
If yes, complete appropriate forms.	

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 05-16-19

TASK: 532.30

WELL ID: MW-36

Time 1130 Static DTW (ft below reference point) 68.25	Screen Casing Volume (CV) (gallons) 320	SV 3 EV (gallons) 960	Weather Conditions	Initials: BJJ/NES
Casing Total Depth (ft below reference point) 994	Purging Device 202. Pump	Sampling Device 10-100 Pipestone	Time 1130 Temp. 53°F	Begin Purge 1130 End Purge 1249
Pump to Screen Water Column (feet) 925.75	Pump: Depth (ft brp) 1160 Type ground	Voltage 240 HP -	Skies Partly cloudy	Gallons Purged 973 CVs Purged 3.1
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow	Fast ✓	Wind (mph) - From -	DTW (ft brp) 71.90 Time 1249

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	... FIELD PARAMETERS ...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (mS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1135	68.25	0	0	~		Begin	Purge				Q ≈ 13 Gpm
1147	71.84	160	0.5	21.2	8.07	1.201	39.3	3.89	0.54		
1159	71.90	320	1.0	21.6	7.70	1.201	10.6	1.97	7.20		
1211	71.90	480	1.5	21.5	7.62	1.282	12.0	3.02	0.18		
1223	71.90	640	2.0	21.8	7.67	1.294	14.3	2.90	0.30		
1235	71.90	800	2.5	21.8	7.71	1.295	22.0	2.56	0.10		
1249	71.90	960	3.0	22.4	7.66	1.299	21.8	2.09	0.62		
1250	~	-	3.1	~		End	Purge				

SAMPLE COLLECTION SAMPLE TIME 1249	
ANALYSIS	QUANTITY TYPE
8260B VOCs	6 40 ml VOA
8270 SIM 1,4 dioxane	1 L Amber
8270 MOD 1,4 dioxane	1 L Amber
DUPLICATES / SPLITS / BLANKS? 0 N	
If yes, complete appropriate forms.	

AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
MW-36-2.05V G 1223			
MW-36 G 1249			

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19 108.96 TASK: 532.30 WELL ID: MW-30A

Time <u>1425</u> Static DTW (ft below reference point) <u>89.96</u>	Screen SV Casing Volume (GV) (gallons) <u>17.6</u> SV 3 GV (gallons) <u>52.8</u>	Weather Conditions	Initials: <u>AMD/RES</u>
Casing Total Depth (ft below reference point) <u>564</u>	Purging Device <u>ded pump</u> Sampling Device <u>ND pipestand</u>	Time <u>1425</u> Temp. <u>70</u>	Begin Purge <u>1427</u> End Purge <u>1441</u>
Water Column (feet) <u>44</u>	Pump: Depth (ft brp) <u>520</u> Type <u>grundfor</u> Voltage <u>240</u> HP <u>0.5</u>	Skies <u>cloudy</u>	Gallons Purged <u>61</u> CVs Purged <u>3.5</u>
Casing Capacity (Diameter <u>3"</u>) (gallons per foot) <u>0.39</u>	Monitor Well Recharge Rate: Slow Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>110.03</u> Time <u>1439</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1427	108.96	0	0	—	—	PUMP	ON	—	—	—	
1429	109.61	14	0.79	21.2	7.87	744	181.7	0.70	0.06	—	Q = 7 gpm
1431	110.11	1421	1.19	21.2	7.85	744	166.3	0.91	0.51	—	
1434	110.10	26 ³³	1.87	21.5	7.81	743	143.2	0.53	2.53	—	Q = 4 gpm
1435	110.04	37	2.10	21.5	7.78	743	126.9	0.49	7.07	—	
1437	110.03	45	2.56	21.6	7.75	743	120.3	0.51	6.83	—	
1439	110.03	53	3.0	21.6	7.74	742	116.6	0.52	5.16	—	SAMPLE
1441	NM	61	3.5	—	—	PUMP OFF	—	—	—	—	

SAMPLE COLLECTION SAMPLE TIME 1439

ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>3</u>	40 ml VOA
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber
8270 MOD 1,4 dioxane	<u>1</u>	1 L Amber

DUPLICATES / SPLITS / BLANKS? Y (N)

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19

TASK: 532.30

WELL ID: MW-30B

Time 1455 Static DTW (ft below reference point)	106.66	Screen SV Casing Volume (GV) (gallons) 40	SV 3 GV (gallons) 120	Weather Conditions	Initials: AMD/RES
Casing Total Depth (ft below reference point)	619	Purging Device ded pump	Sampling Device >100 pipe stand	Time 1455 Temp. 70	Begin Purge 1458 End Purge 1520
pump to Screen Water Column (feet)	99	Pump: Depth (ft brp) 520	Type grundfos Voltage 240 HP 0.5	Skies cloudy	Gallons Purged 135 CVs Purged 3.4
Casing Capacity (Diameter 3") (gallons per foot)	0.39	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) - From -	DTW (ft brp) 132.88 Time 1520

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (MS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1458	106.66	0	0				PUMP ON				
1503	128.62	27.5	0.69	21.3	7.88	1006	-159.1	0.16	2.02	-	Q = 2.75 gpm 5.5 gpm
1506	129.96	44	1.10	21.5	7.51	1212	-102.6	0.72	1.25	-	
1510	130.84	66	1.65	21.5	7.38	1515	-30.2	3.17	5.13	-	
1513	132.02	82.5	2.06	21.6	7.46	1344	1.8	2.63	7.56	-	
1516	132.74	99	2.50	21.6	7.47	1339	11.1	2.60	6.59	-	
1520	132.88	121	3.0	21.6	7.47	1339	15.7	2.55	3.83	-	
1523	NM	135	3.4				PUMP OFF				

SAMPLE COLLECTION SAMPLE TIME 1520			AIR MONITORING PID/FID ppm: VAULT NA			BKGD NA			BREATHING ZONE NA			DISCHARGE WATER NA		
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)											
8260B VOCs	3	40 ml VOA												
8270 SIM 1,4 dioxane	1	1 L Amber												
8270 MOD 1,4 dioxane		1 L Amber												
DUPLICATES / SPLITS / BLANKS? Y (N)														

GROUNDWATER SAMPLING INFORMATION

DATE: 5/16/19

TASK: 532.30

WELL ID: MW-31

Time 1317 Static DTW (ft below reference point)	97.86	Screen Casing Volume (CV) (gallons) 81	SV 3 CV (gallons) 243	Weather Conditions	Initials: AMP/RES
Casing Total Depth (ft below reference point)	996	Purging Device ded pump	Sampling Device 10-100 pipe stand	Time 1317 Temp. 70	Begin Purge 1324 End Purge 1347
pump to screen Water Column (feet)	54	Pump: Depth (ft brp) 942 Type grundfos Voltage 240 HP -		Skies clear	Gallons Purged 276 CVs Purged 3.4
Casing Capacity (Diameter 6" (gallons per foot)	1.5	Monitor Well Recharge Rate: Slow Fast X		Wind (mph) - From -	DTW (ft brp) 101.84 Time 1346

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1324	97.86	0	0			PUMP	ON				
1327	101.75	36	0.44	20.9	7.72	1112	225.0	0.12	6.12	-	Q = 12 gpm
1330	101.79	72	0.88	21.2	8.80	1669	158.5	0.09	84.01	-	Q = 12 gpm
1333	101.82	108	1.33	21.3	8.06	1617	118.0	0.06	15.12	-	
1336	101.84	144	1.77	21.3	7.62	1420	93.7	0.14	6.29	-	
1340	101.84	192	2.37	21.4	7.62	1273	89.4	0.26	5.74	-	
1343	101.84	228	2.81	21.4	7.62	1200	86.2	0.37	2.30	-	
1346	101.84	264	3.25	21.4	7.63	1168	86.1	0.41	1.87	-	
1347	NM	276	3.4				PUMP	OFF			

SAMPLE COLLECTION SAMPLE TIME 1346	
ANALYSIS	QUANTITY TYPE
8260B VOCs	3 40 ml VOA
8270 SIM 1,4 dioxane	1 1 L Amber
8270 MOD 1,4 dioxane	1 1 L Amber
DUPLICATES / SPLITS / BLANKS? Y (N)	
If yes, complete appropriate forms.	

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

TABLE 2
WELL CONSTRUCTION SUMMARY

Well Identifier	Date Installed	Current Land Surface Elevation (feet msl)	Current Reference Point Elevation (feet msl)	Total Depth of Borehole (feet bls)	Perforated Interval (feet bls)	Screen Slot Size (inches)	Borehole Diameter (inches)	Casing Diameter (inches) (a)	Filter Pack Interval (feet bls)	Filter Pack Sand Size	Grout Filter/ Intermediate Seal Interval (feet bls) (b)	Annular Seal Interval (feet bls) (c)
Regional Groundwater System Monitor Wells, Extraction Wells and Piezometers												
MW-06	1/16/1997	185.0	184.70	190.9	149.6 - 189.6	0.010	8.5	2	145.4 - 190.9	#2/16	139.4 - 145.4 (d)	0 - 139.4
MW-08	1/22/1997	156.6	155.91	167.2	126.1 - 166.1	0.010	8.5	2	120.7 - 167.2	#2/16	115.7 - 120.7	0 - 115.7
MW-09	3/21/1997	180.5	180.10	194.2	152.2 - 192.2	0.010	8.5	2	146.2 - 194.2	#2/16	141.2 - 146.2	0 - 141.2
MW-13	4/16/1997	142.5	141.84	159.6	120.6 - 159.6	0.010	8.5	2	114.6 - 159.6	#2/16	109.6 - 114.6	0 - 109.6
MW-15	5/18/1998	145.6	144.95	174.8	120.8 - 170.8	0.010	8.5	2	115.8 - 174.8	#2/16	112.8 - 115.8	0 - 112.8
MW-16	11/20/1999	143.0	142.40	179.5	148.5 - 178.5	0.010	11.0	4	144.5 - 179.5	#2/16	134.5 - 144.5 (e)	0 - 134.5
MW-17	5/31/2000	142.8	142.70	203.7	173.1 - 193.1 (f)	0.020	10.0	4	159.7 - 193.1	#2/16	156.2 - 159.7 193.1 - 203.7 (j)	0 - 156.2
MW-18	5/24/2000	142.4	142.32	195.6	164.1 - 194.1	0.020	10.0	4	158.9 - 194.5	#2/16	154.2 - 158.9	0 - 154.2
MW-19	5/26/2000	142.7	142.06	205.5	184.9 - 204.9	0.020	10.0	4	177.0 - 205.3	#2/16	171.5 - 177.0	0 - 171.5
MW-20	6/26/2003	184.4	184.19	200.0	158.6 - 198.2	0.020	11.0	4 (f)	158.0 - 200.0	#2/12	151.0 - 158.0 (g)	0 - 151.1 (h)
MW-21	7/17/2003	143.3	141.18	238.3	212.1 - 232.1	0.010	8.0	4 (k)	205.0 - 234.5	#2/16	202.0 - 205.0 234.5 - 238 (j)	0 - 202.0 (h)
MW-22	8/13/2003	139.4	138.65	245.0	217.4 - 237.4	0.020	8.0	4 (l)	215.0 - 238.0	#2/12	208.0 - 215.0 (m)	0 - 208.0 (h)
MW-23	8/18/2003	137.8	137.33	235.6	215.2 - 235.2	0.020	8.0	4 (n)	209.4 - 235.6	#2/12	203.5 - 209.4 (m)	0 - 203.5 (h)
MW-24	9/15/2004	143.1	142.83	338.0	310.3 - 330.3	0.030	10.6	4 (o)	306 - 330	#3	301 - 306 (p)	0 - 301 (h)
MW-25	9/10/2004	143.0	142.64	805	449.4 - 479.8	0.010	8.5 (q)	2 (r)	429 - 485	#2/16	418 - 429	0 - 418 (h)
MW-26A (s)	10/1/2004	137.6	137.04	805	279 - 309	0.020	12.25 (q)	2 (l)	274 - 315	#2/12	266 - 274	0 - 266 (h)
MW-26B (s)	10/1/2004	137.6	137.05	805	339 - 379	0.020	12.25 (q)	2 (u)	334 - 387	#2/12	266 - 274	0 - 266 (h)
MW-26C (s)	10/1/2004	137.6	137.22	805	459 - 499	0.020	12.25 (q)	2 (v)	435 - 499	#2/12	387 - 435 (w)	0 - 266 (h)
MW-27	4/22/2008	137.6	137.16	550	475 - 505.2 (cc)	0.030	11.25 (q)	4 (z)	468 - 520	#3	457.5 - 468	0 - 457.5 (h)
MW-28	5/5/2008	141.4	140.77	425	335 - 375	0.040	12.25 (q)	4 (z)	325.4 - 377	#8	318 - 325.4	0 - 318 (h)
MW-29	8/15/2008	142.7	142.34	265.7	200 - 240	0.020	10.0 (aa)	4 (z)	185 - 246	#2/12	176 - 185	0 - 176 (h)
MW-30A(s)	11/26/2008	130.2	129.44	635 (j)	524-584	0.020	14.25	3 (y)	515.9-570.5	#2/12	495.5-515.9	0-495.5 (bb)
MW-30B(s)	11/26/2008	130.2	129.39	635 (j)	596-616	0.020	14.25	3 (y)	586.8-625	#2/12	586.8-570.5	0-495.5 (bb)
MW-31	10/2/2009	120.3	119.60	1,100 (jj)	946-996	0.020	13	6(kk)	922-1,006	#2/12	904-922	0-904
MW-32A(s)	12/10/2009	93.4	92.88	1,153 (gg)	890-905	0.020	18.5	4(dd)	880-910	#2/12	832-880	0-832
MW-32B(s)	12/10/2009	93.4	92.89	1,153 (gg)	969-999	0.020	18.5	4(dd)	960-1,004.5	#2/12	910-960	0-832
MW-32C(s)	12/10/2009	93.4	92.88	1,153 (gg)	1,070-1,090	0.020	18.5	4(dd)	1,054-1,100	#2/12	1,004.5-1,054	0-832
MW-33	7/2/2010	83.8	83.19	1,080 (hh)	980-1,020	0.020	11	4(dd)	970-1,025	#2/12	924-970	0-924 (ii)
MW-34A	2/3/2011	154.0	153.25	290	220 - 280	0.020	12.25	4(dd)	211 - 290	#2/12	175 - 211	0 - 175
MW-34B	2/1/2011	153.9	153.11	540	486 - 536	0.020	12.25	4(dd)	475 - 540	#2/12	449 - 475	0 - 449
MW-34C	1/19/2011	154.1	153.29	709 (ll)	556 - 576	0.020	12.25	4(dd)	551 - 582	#2/12	530 - 551	0 - 530
MW-35A	12/20/2010	94.3	93.57	1,101	420 - 470	0.020	18	4(dd)	401 - 482	#2/12	376 - 401	0 - 376
MW-35B	12/20/2010	94.3	93.56	1,101	745 - 805	0.020	18	4(dd)	725 - 816	#2/12	482 - 725	0 - 376
MW-35C	12/20/2010	94.3	93.55	1101 (ll)	990 - 1,040	0.020	12.25	4(dd)	980 - 1,048	#2/12	816 - 980	0 - 376
MW-36	1/3/2012	87.19	86.65	1030 (mm)	934 - 954 974 - 994	0.020	12.25	4(dd)	914 - 1,003	#2/12	95 - 853 (oo), 853 - 914 (pp)	0 - 95 (qq)
MW-37	10/17/2012	156.02	155.60	916	770-820	0.020	12.25	4(dd)	755-834	#2/12	229-724 (rr) 724-755 (pp)	0-229 (ss)
MW-38	7/29/2013	155.7	154.90	203	150-200	0.020	10	4(z)	140-203	#2/12	120-140 (pp)	0-120 (qq)
MW-39	7/25/2013	84.71	84.25	1,080 (ll)	982-1,012	0.020	12.25	4(dd)	974-1,017	#2/12	156 - 917 (rr) 917-974 (pp)	0-156 (qq)
MW-40	7/2/2013	124.09	123.40	1040 (ll)	930-970	0.030	12.25	6(dd)	916-975	#3	175 - 880 (rr) 880-916 (pp)	0-175 (qq)
EW-01	5/16/2005	143.3	141.07	195	138.1-188.1	0.020	7.6	4 (x)	134.1-195	#2/12	129-134.1 (m)	0-129 (h)
EW-02	10/20/2009	136.0	132.97	473 (ee)	410-460	0.030	17.0	8 (ff)	400-465	#3	384-400	0-384
Perched Zone Piezometers												
P-07	6/6/1997	142.7	142.31	116.8	107.7 - 117.7	0.010	8.5	2	104.7 - 117.7	#2/16	101.7 - 104.7	0 - 101.7
P-09	6/30/2003	184.3	183.86	130.0	109.6 - 129.6	0.010	11.0	4	114.0 - 130.0	#2/16	101.0 - 108.0 (g)	0 - 101.0 (h)

TABLE 2

WELL CONSTRUCTION SUMMARY

NOTE: Refer to page 2 of this table for footnotes.

FOOTNOTES

- msl = Mean sea level, City of Fullerton datum
 bls = Below current land surface (October 2004)
- (a) = Schedule 40 polyvinyl chloride (PVC) screen and casing, unless otherwise indicated
 (b) = Medium bentonite chip seal, unless otherwise indicated
 (c) = Bentonite grout annular seal unless otherwise indicated, completed at surface with vault set in concrete
 (d) = No. 60 silica sand
 (e) = Includes 2.0 feet of No. 60 silica sand placed above filter pack
 (f) = Schedule 80 polyvinyl chloride screen and casing
 (g) = Includes 2.5 to 3.0 feet of No. 60 silica sand placed above bentonite chip seal
 (h) = Cement/bentonite grout, Type III Portland, less than 5% bentonite
 (i) = Well plug, approximately 0.5-foot length, set at bottom of perforated interval
 (j) = Bottom of borehole backfilled with bentonite chips
 (k) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 122.0 - 212.1 feet bls; Schedule 40 mild steel casing 0 - 122.0 feet bls
 (l) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 112.4 - 217.4 feet bls; Schedule 40 mild steel casing 0 - 112.4 feet bls
 (m) = 1/4-inch coated bentonite pellets
 (n) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 110.1 - 215.2 feet bls; Schedule 40 mild steel casing 0 - 110.1 feet bls
 (o) = Mild steel wire wrap screen and Schedule 40 mild steel well casing
 (p) = Includes 1 to 2 feet of #2/16 sand placed above bentonite chip seal
 (q) = Below filter pack, diameter of the original pilot borehole is 5 to 6.25 inches to total depth of boring. Lower borehole backfilled with cement/bentonite grout, Type III Portland, less than 5% bentonite
 (r) = Stainless steel wire wrap screen, Schedule 10 stainless steel casing 429.4 - 449.4 feet bls, Schedule 80 polyvinylchloride casing 429.0 - 429.4 feet bls, Schedule 40 mild steel casing 0 - 429.0 feet bls
 (s) = Nested wells MWV-26A, MWV-26B, MWV-26C, and MWV-32A, MWV-32B, MWV-32C are constructed with three separate well casings in a single borehole; nested well MWV-30A and MWV-30B is constructed with two separate casings in a single borehole.
 (t) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 259 - 279 feet bls and 0 - 19 feet bls; Schedule 40 mild steel casing 19 - 259 feet bls
 (u) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 319 - 339 feet bls; Schedule 40 mild steel casing 0 - 319 feet bls
 (v) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 439 - 459 feet bls; Schedule 40 mild steel casing 0 - 439 feet bls
 (w) = #8 granular bentonite with exception of heavy mud/formational caving filling annular interval from 417 to 428 feet bls
 (x) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 118.1-138.1 feet bls; Schedule 40 mild steel casing 0-118.1 feet bls
 (y) = Schedule 40 Stainless steel endcaps; Schedule 10 stainless steel casing; Stainless steel wire wrap screen
 (z) = Schedule 80 PVC blank and screen casing
 (aa) = Below filter pack, diameter of the original pilot borehole is 8 inches to total depth of boring. Lower borehole backfilled with cement/bentonite grout, Type III Portland, less than 5% bentonite
 (bb) = Neat cement
 (cc) = Depth of screen interval adjusted to account for loss at bottom of casing due to breakage in casing wall. Original casing (515 ft bls) was sealed at 505.2 ft bls
 (dd) = Schedule 40 Stainless steel endcaps; Schedule 80 polyvinyl chloride casing; Stainless steel wire wrap screen
 (ee) = Pilot borehole drilled to a total depth of 493 feet bls and backfilled with 5% bentonite-cement grout seal to 465 feet bls
 (ff) = Schedule 40 Stainless steel endcaps; Schedule 40 stainless steel casing; Stainless steel wire wrap screen; 2.5-foot stainless steel sump
 (gg) = Pilot borehole drilled to a total depth of 1,153 feet bls and backfilled with 5% bentonite-cement grout seal to 1,100 feet bls
 (hh) = Pilot borehole drilled to a total depth of 1,080 feet bls and backfilled with 5% bentonite-cement grout seal to 1,025 feet bls
 (ii) = Annular seal interval is composed of cement grout with approximately 5% bentonite from 720 to 924 feet bls and bentonite grout from near land surface to 720 feet bls
 (jj) = Pilot borehole drilled to a total depth of 1,100 feet bls and backfilled with 5% bentonite-cement grout seal to 1,005 feet bls
 (kk) = Schedule 40 Stainless steel endcaps; Schedule 40 stainless steel casing; Stainless steel wire wrap screen; 5-foot stainless steel sump
 (ll) = Bottom of borehole backfilled with approximately 5% bentonite-cement grout
 (mm) = Bottom of borehole backfilled with bentonite pellets
 (oo) = High solids bentonite grout
 (pp) = Bentonite chips
 (qq) = Portland cement with approximately 5% bentonite
 (rr) = Medium bentonite chips and #2/12 Sand; 1:1 dry volume mix
 (ss) = Portland cement with approximately 2.5% bentonite

AUG 2019

QUARTERLY GROUNDWATER MONITORING
FIELD NOTEBOOK
LARGE VOLUME MONITOR WELLS

RAYTHEON COMPANY

532.30

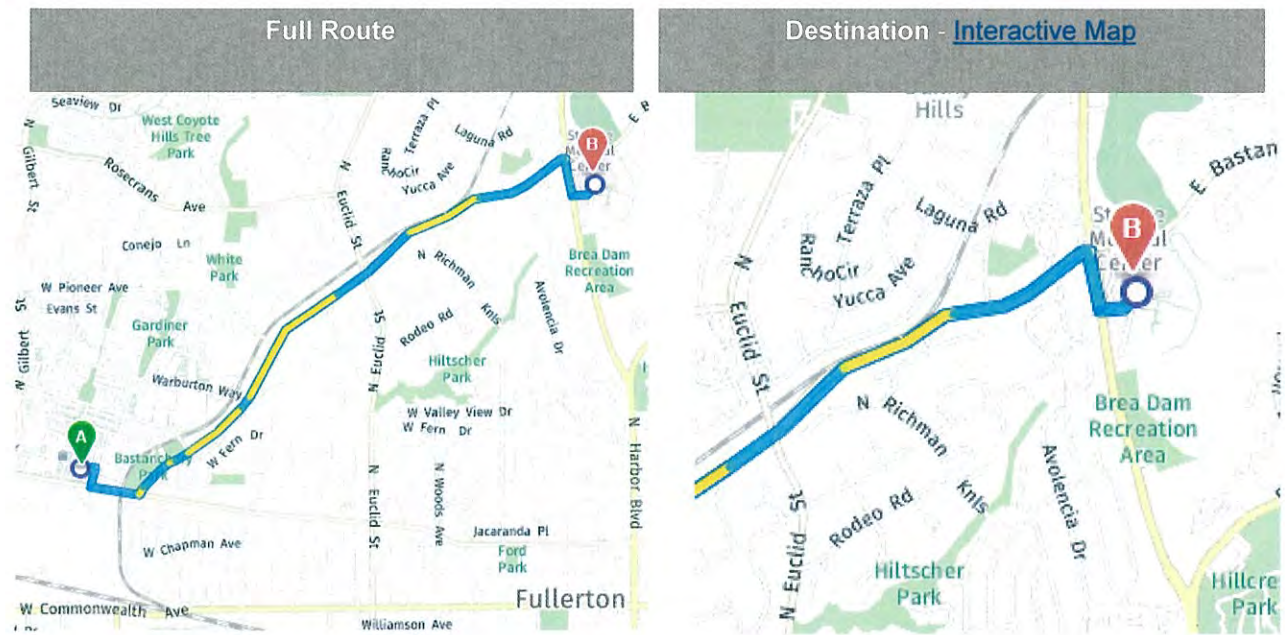
1901 MALVERN AVE.
FULLERTON, CALIFORNIA



HARGIS + ASSOCIATES, INC.
HYDROGEOLOGY • ENGINEERING

Driving Directions

Starting from:	1	Raytheon Site: 1901 W. Malvern Ave., Fullerton, California 92833-2177
Arriving at:	2	St. Jude Medical Center: 101 E. Valencia Mesa, Fullerton, California 92835-3809
Distance:	2.4 miles	Approximate Travel Time: 5 minutes



Directions		Miles	
1.	Start on MALVERN AVE	0.1	↑
2.	Turn Left on W BASTANCHURY RD	2.2	↶
3.	Turn Right on N HARBOR BLVD	0.2	↷
4.	Turn Left on E VALENCIA MESA DR	0.0	↶
Distance: 2.4 miles		Approximate Travel Time: 5 minutes	

FIGURE 7
ROUTE TO HOSPITAL



DAILY FIELD SAFETY BRIEFING ATTENDANCE SHEET

Date: 8/14/19

Location: FULLERTON, CA

Presented by: A. DONNELLY

A. GENERAL INTRODUCTION

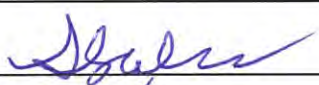
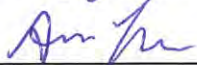
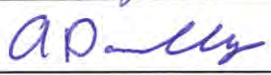
1. Location of site Health and Safety Plan (HSP) and ensure everyone has read the site HSP.
2. Primary hazards and controls (chemical, physical, and biological).
3. Sanitation and decontamination (potable water, nonpotable water, toilet, sink, shower).
4. General Site Rules.
5. Emergency Response Plan (location where emergency telephone numbers and hospital route posted, shower, first aid kit, fire extinguisher, alarm system, evacuation, meeting place, contingencies, upwind).
6. Establish buddy system.

B. SPECIFIC PRECAUTIONS FOR DAY'S ACTIVITIES Go over the hospital route daily; wear traffic vests, use safety cones, and be aware of traffic whenever in or near the roadways; wear sunscreen and hydrate well; wear gloves and take appropriate precautions when handling contaminated groundwater; watch for black widow spiders in vaults. Notify your supervisor and field partner of any issues.

C. ON-SITE ORGANIZATION AND COORDINATION

D. OTHER TOPICS:

ATTENDEE LIST

PRINT NAME	SIGNATURE	COMPANY	DATE
DJ Seaver		HARGIS + ASSOC., INC	8-14-19
Amenda Jaxon		HARGIS + ASSOC., INC	8/14/19
Jeremy Monroe		HARGIS + ASSOC., INC	8/14/19
Andrew Donnelly		H+A	8/14/19



DAILY FIELD SAFETY BRIEFING ATTENDANCE SHEET

Date: 08/13/2014

Location: FULLERTON, CA

Presented by:

A. GENERAL INTRODUCTION

1. Location of site Health and Safety Plan (HSP) and ensure everyone has read the site HSP.
2. Primary hazards and controls (chemical, physical, and biological).
3. Sanitation and decontamination (potable water, nonpotable water, toilet, sink, shower).
4. General Site Rules.
5. Emergency Response Plan (location where emergency telephone numbers and hospital route posted, shower, first aid kit, fire extinguisher, alarm system, evacuation, meeting place, contingencies, upwind).
6. Establish buddy system.

B. SPECIFIC PRECAUTIONS FOR DAY'S ACTIVITIES Go over the hospital route daily; wear traffic vests, use safety cones, and be aware of traffic whenever in or near the roadways; wear sunscreen and hydrate well; wear gloves and take appropriate precautions when handling contaminated groundwater; watch for black widow spiders in vaults. Notify your supervisor and field partner of any issues.

C. ON-SITE ORGANIZATION AND COORDINATION

D. OTHER TOPICS:

ATTENDEE LIST

PRINT NAME	SIGNATURE	COMPANY	DATE
Christian Diaz		HARGIS + ASSOC., INC	08/13/2014
		HARGIS + ASSOC., INC	
		HARGIS + ASSOC., INC	

INSTRUMENT CALIBRATION LOG FOR GROUNDWATER SAMPLING: Temp + pH + EC + DO + ORP

[illegible]

STATIC WATER LEVEL DATA SHEET

MONTH/YEAR: AUG 2019

METHOD OF MEASUREMENT/SOUNDER IDENTIFIER: FLAT TAPE ELECTRIC SOUNDER # _____

PROJECT NUMBER: 532.30

WELL IDENTIFIER	DATE	TIME	MEASURING POINT	DEPTH TO WATER FROM REFERENCE POINT (+feet)	REFERENCE POINT ELEVATION (ft msl)	WATER LEVEL ELEVATION (ft msl)	MAY 2019 PREVIOUS DEPTH TO WATER (ft)	CHANGE IN WATER LEVEL (± ft)	COMMENTS	INITIALS
P-07	08/12/19	1332	TOC	111.81	142.31	30.50	111.28	-0.53		AMS/DJS
P-09	08/ /19				183.86		120.68			
MW-06	08/ /19				184.70		154.65			
MW-08	08/12/19	1225	TOC	131.47	155.91	24.44	129.57	-1.90		AMS/DJS
MW-09	08/ /19				180.10		153.08			
MW-13	08/ /19				141.84		121.07			
MW-15	08/12/19	1546	TOC	127.92	144.95		127.52			
MW-16	08/12/19	1351	TOC	125.70	142.40	16.70	119.89	-5.81		AMS/DJS
MW-17	08/ /19				142.70		121.06			
MW-18	08/ /19				142.32		121.51			
MW-19	08/ /19				142.06		121.16			
MW-20	08/ /19				184.19		151.11			
MW-21	08/12/19	1358	TOST	116.41	141.18	24.77	113.96	-2.45	Totalizer: NM Pumping? No	AMS/DJS
MW-22	08/ /19				138.65		117.72			
MW-23	08/ /19				137.33		117.83			
MW-24	08/12/19	1341	TOST	119.38	142.83	23.45	115.89	-3.49		AMS/DJS
MW-25	08/12/19	1343	TOC	119.87	142.64	22.77	116.45	-3.42		↓
MW-26A	08/ /19				137.04		117.65			
MW-26B	08/ /19				137.05		119.43			
MW-26C	08/ /19				137.22		115.82			

msl = Mean sea level

ft = feet

STATIC WATER LEVEL DATA SHEET

MONTH/YEAR: AUG 2019

 METHOD OF MEASUREMENT/SOUNDER IDENTIFIER: FLAT TAPE ELECTRIC SOUNDER # 102

PROJECT NUMBER: 532.30

WELL IDENTIFIER	DATE	TIME	MEASURING POINT	DEPTH TO WATER FROM REFERENCE POINT (+feet)	REFERENCE POINT ELEVATION (ft msl)	WATER LEVEL ELEVATION (ft msl)	MAY 2019 PREVIOUS DEPTH TO WATER (ft)	CHANGE IN WATER LEVEL ($\pm$ ft)	COMMENTS	INITIALS
MW-27	08/ /19				137.16		115.33			
MW-28	08/ /19				140.77		119.64			
MW-29	08/12/19	1239	TOST	178.13P	139.81	-38.32	176.10P	-203	Totalizer: 3825149.9 Pumping? ~~No~~ Yes	AMJ/DJS
MW-30A	08/12/19	1155	TOST	115.56	129.44	13.88	108.91	-6.65		
MW-30B	08/12/19	1202	TOST	112.75	129.39	16.64	106.79	-5.96		
MW-31	08/12/19	1048	TOST	105.28	119.60	14.32	97.91	-7.37		
MW-32A	08/12/19	0756	TOST	80.66	92.88	12.22	72.86	-7.80		
MW-32B	08/12/19	0809	TOST	79.84	92.89	13.05	72.48	-7.36		
MW-32C	08/12/19	0812	TOST	73.45	92.88	19.43	68.59	-4.86		
MW-33	08/12/19	1006	TOST	71.79	83.19	11.40	64.21	-7.58		
MW-34A	08/ /19				153.25		138.72			
MW-34B	08/ /19				153.11		133.27			
MW-34C	08/ /19				153.29		132.67			
MW-35A	08/12/19	0938	TOST	80.12	93.57	13.45	74.51	-5.61		AMJ/DJS
MW-35B	08/12/19	0942	TOST	84.54	93.56	9.02	78.06	-6.48		
MW-35C	08/12/19	0944	TOST	81.68	93.55	11.87	73.24	-8.44		
MW-36	08/ /19				86.65		68.45			
MW-37	08/ /19				155.60		133.85			
MW-38	08/ /19				154.90		142.71			
MW-39	08/ /19				84.25		66.48			

msl = Mean sea level

ft = feet

STATIC WATER LEVEL DATA SHEET

MONTH/YEAR: AUG 2019

METHOD OF MEASUREMENT/SOUNDER IDENTIFIER: FLAT TAPE ELECTRIC SOUNDER # _____

PROJECT NUMBER: 532.30

WELL IDENTIFIER	DATE	TIME	MEASURING POINT	DEPTH TO WATER FROM REFERENCE POINT (+feet)	REFERENCE POINT ELEVATION (ft msl)	WATER LEVEL ELEVATION (ft msl)	MAY 2019 PREVIOUS DEPTH TO WATER (ft)	CHANGE IN WATER LEVEL (± ft)	COMMENTS	INITIALS
MW-40	08/12/19	1027	TOST	107.80	123.40	15.60	100.05	-7.75		AMS/DJS
MW-41	08/ /19				155.60		136.17			
EW-01	08/12/19	1402	TOST	124.12	141.07	16.95	118.23	-5.89	SOUNDING TUBE TO 172.65 Totalizer: NM Pumping? N	AMS/DJS
EW-02	08/12/19	1307	TOST	123.08P	132.97	9.89	117.23P	-5.85	Totalizer: 481924.6 Pumping? Y	AMS/DJS
MW-42	8/12/19	0919	TOST	72.59						A ↓
MW-43	8/12/19	0904	~~TOST~~ 66.77	66.77						↓

 msl = Mean sea level
 ft = feet

**AUGUST 2019 GROUNDWATER SAMPLE PLAN
TEAM 2**

QA/QC	Total VOC's	1,4-Dioxane	APPROX. GALLONS	ESTIMATED TIME (minutes)	WELL IDENTIFIER	HYDROGEOLOGIC ZONE	AUGUST 2019 SAMPLING SCHEDULE	SAMPLE METHOD
	190	47	156	12	EW-01	Deep; B	VOCs; 1,4-Dioxane (8270 MOD)	Dedicated
	1238	800	300	12	MW-21	Water Table; BC	VOCs; 1,4-Dioxane (8270 MOD)	Dedicated
	0	0	1,179	60	MW-35C	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0	0	1000	45	MW-43	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	2.4	0.1	986	43	MW-42	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
2CV/ 3CV	2.1	0	909	51	MW-33	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	11	0	142	24	MW-41	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	72	3.8	276	23	MW-31 ✓	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0	0	61	14	MW-30A ✓	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	97	0.6	135	22	MW-30B ✓	Deep; BC	VOCs; 1,4-Dioxane	Ded.240V
	0	0	660	45	MW-32A ✓	Deep; AB	VOCs; 1,4-Dioxane	Ded.240V
	0	0	966	80	MW-32C ✓	Water Table; C	VOCs; 1,4-Dioxane	Ded.240V
2CV/ 3CV	143	3.4	827	66	MW-32B ✓	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0	0	835	37	MW-39	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
2CV/ 3CV	52	6.2	973	74	MW-36 ✓	Deep; B	VOCs; 1,4-Dioxane	Ded.240V

NOTE

1 = Day - # refers to the day scheduled to sample and the corresponding dedicated pipestand to use: ND=1; 0-10=2; 10 - 100=3; >100=4

A **MS** and **MSD** (3x40ml VOA and 1L amber) should be collected every day/ alternating 1,4-Dioxane methods as indicated.

1,4-Dioxane analysis method is 8270 SIM unless specified otherwise (if historical detect is > 5.0 ug/l MOD is used).

Wells with dedicated pumps should follow concentration order when possible.

MW-36 and MW-39 Gate Access Code: 3252

RB = Rinsate blank taken on non-dedicated equipment each day- will vary with schedule and should be confirmed with both teams each morning.

**AUGUST 2019 GROUNDWATER SAMPLE PLAN
TEAM 1**

QA/QC	Total VOC's	1,4-Dioxane	APROX. GALLONS	ESTIMATED TIME (minutes)	WELL IDENTIFIER	HYDROGEOLOGIC ZONE	AUGUST 2019 SAMPLING SCHEDULE	SAMPLE METHOD
	0	0	15	90	MW-09	Water Table; C	VOCs; 1,4-Dioxane	Quik-E Bailer
	1.0	0	174	16	MW-34A ✓	Deep; A	VOCs; 1,4-Dioxane	Ded 240V
	0	0	224	16	MW-34C ✓	Deep; BC	VOCs; 1,4-Dioxane	Ded 240V
	37	16	168	21	MW-34B ✓	Deep; B	VOCs; 1,4-Dioxane (8270 MOD)	Ded 240V
	0	0.1	115	12	MW-28	Deep; B	VOCs; 1,4-Dioxane	Ded.240V
	0	0	252	21	MW-40	Deep; B	VOCs; 1,4-Dioxane	Ded 240V
	0	0	152	76	MW-26C	Deep; B	VOCs; 1,4-Dioxane	Redi-flo
	1	0	150	75	MW-18	Deep; A	VOCs; 1,4-Dioxane	Redi-flo
	8	--	21	26	MW-15	Water Table; AB	VOCs	Redi-flo
	6.2	0	96	32	MW-20	Water Table; D	VOCs; 1,4-Dioxane	Redi-flo
	125	3.4	24	16	MW-08	Water Table; BC	VOCs; 1,4-Dioxane	Redi-flo
	653	81	120	48	MW-16	Water Table; B	VOCs; 1,4-Dioxane (8270 MOD)	Redi-flo

NOTES

A **MS** and **MSD** (3x40ml VOA and 1L amber) should be collected every day/ alternating 1,4-Dioxane methods as indicated.

1,4-Dioxane analysis method is 8270 SIM unless specified otherwise (if historical detect is > 5.0 ug/l MOD is used).

1 = Day - # refers to the day scheduled to sample and the corresponding dedicated pipestand to use: ND=1; 0-10=2; 10 - 100=3; >100=4

Wells with dedicated pumps should follow concentration order when possible.

MW-36 and MW-39 Gate Access Code: 3252

RB = Rinsate blank taken on non-dedicated equipment each day- will vary with schedule and should be confirmed with both

GROUNDWATER SAMPLING INFORMATION

DATE: 8-13-19

TASK: 532.30

WELL ID: MW-32A

Time <u>911</u> Static DTW (ft below reference point) <u>80.48</u>	Casing Volume (CV) (gallons) <u>207</u> ^{SV} <u>3 CV</u> (gallons) <u>621</u>	Weather Conditions Time <u>909</u> Temp. <u>70</u> Skies <u>Sunny</u>	Initials: <u>DJS, CVD</u>
Casing Total Depth (ft below reference point) <u>405</u>	Purging Device <u>ded Pump</u> Sampling Device <u>NO Pipeless</u>	Begin Purge <u>939</u> End Purge <u>1032</u>	
Pump to Screen Water Column (feet) <u>398</u>	Pump: Depth (ft brp) <u>560</u> Type <u>granite</u> Voltage <u>240HP</u>	Gallons Purged <u>621</u> CVs Purged <u>3</u>	
Casing Capacity (Diameter <u>4</u> ") (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) <u>—</u> From <u>—</u>	DTW (ft brp) <u>82.34</u> Time <u>1029</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (C)	pH	EC (mS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>939</u>	<u>80.48</u>	<u>0</u>	<u>0</u>	<u>PUMP ON</u>							<u>Q2 136pm</u>
<u>946</u>	<u>82.17</u>	<u>103.5</u>	<u>0.5</u>	<u>20.9</u>	<u>7.38</u>	<u>0.99</u>	<u>-45.3</u>	<u>0.75</u>	<u>3.20</u>	<u>-</u>	
<u>954</u>	<u>82.24</u>	<u>207</u>	<u>1.0</u>	<u>21.0</u>	<u>7.41</u>	<u>1.00</u>	<u>-71.3</u>	<u>1.73</u>	<u>3.14</u>	<u>-</u>	
<u>1002</u>	<u>82.31</u>	<u>310.5</u>	<u>1.5</u>	<u>21.1</u>	<u>7.38</u>	<u>1.00</u>	<u>-71.5</u>	<u>1.48</u>	<u>4.29</u>	<u>-</u>	
<u>1010</u>	<u>82.34</u>	<u>414</u>	<u>2.0</u>	<u>21.1</u>	<u>7.38</u>	<u>1.00</u>	<u>-55.8</u>	<u>1.53</u>	<u>2.88</u>	<u>-</u>	
<u>1018</u>	<u>82.34</u>	<u>517.5</u>	<u>2.5</u>	<u>21.2</u>	<u>7.44</u>	<u>1.00</u>	<u>-49.1</u>	<u>1.64</u>	<u>3.27</u>	<u>-</u>	
<u>1029</u>	<u>82.34</u>	<u>621</u>	<u>3.0</u>	<u>22.3</u>	<u>7.47</u>	<u>1.00</u>	<u>-30.3</u>	<u>2.8</u>	<u>3.45</u>	<u>-</u>	
<u>1032</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>End Purge</u>						<u>-</u>	

SAMPLE COLLECTION SAMPLE TIME <u>1031</u>		AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA	
ANALYSIS	QUANTITY	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)	
8260B VOCs	<u>3</u>		
8270 SIM 1,4 dioxane	<u>1</u>		
8270 MOD 1,4 dioxane			
DUPLICATES / SPLITS / BLANKS?	Y <u>N</u>		
If yes, complete appropriate forms.			

GROUNDWATER SAMPLING INFORMATION

DATE: 8/13/19TASK: 532.30WELL ID: MW-32c

Time <u>1242</u> Static DTW (ft below reference point)	<u>73.53</u>	Casing Volume (CV) (gallons) <u>322</u>	3 CV (gallons) <u>966</u>	Weather Conditions	Initials: <u>DJS, CVP</u>
Casing Total Depth (ft below reference point)	<u>1090</u>	Purging Device <u>Red Pump</u>	Sampling Device <u>NP PPEstons</u>	Time <u>1240</u> Temp. <u>82</u>	Begin Purge <u>1244</u> End Purge <u>1408</u>
Pump Water Column (feet)	<u>1016.47</u>	Pump: Depth (ft brp) <u>561</u>	Type <u>gpm</u> Voltage <u>240</u> HP <u>-</u>	Skies <u>Clear, Sunny</u>	Gallons Purged <u>978</u> CVs Purged <u>3.04</u>
Casing Capacity (Diameter <u>4</u> ") (gallons per foot)	<u>0.66</u>	Monitor Well Recharge Rate: Slow	Fast ☒	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>13.53</u> Time <u>1242</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>1244</u>	<u>73.53</u>	<u>0</u>	<u>0</u>	<u>~</u>	<u>~</u>	<u>Begin</u>	<u>Purge</u>	<u>~</u>	<u>~</u>		<u>Q ≈ 12 GPM</u>
<u>1259</u>	<u>134.80</u>	<u>161</u>	<u>0.5</u>	<u>23.1</u>	<u>7.99</u>	<u>6.57</u>	<u>290.8</u>	<u>1.25</u>	<u>3.43</u>		
<u>1312</u>	<u>141.74</u>	<u>322</u>	<u>1.0</u>	<u>22.9</u>	<u>8.10</u>	<u>0.54</u>	<u>-177.2</u>	<u>1.13</u>	<u>4.42</u>		
<u>1327</u>	<u>146.04</u>	<u>483</u>	<u>1.5</u>	<u>23.0</u>	<u>8.12</u>	<u>0.54</u>	<u>-194.3</u>	<u>0.76</u>	<u>15.4</u>		
<u>1340</u>	<u>150.26</u>	<u>644</u>	<u>2.0</u>	<u>22.9</u>	<u>8.16</u>	<u>0.55</u>	<u>-180</u>	<u>1.01</u>	<u>7.2</u>		
<u>1354</u>	<u>151.91</u>	<u>805</u>	<u>2.5</u>	<u>22.5</u>	<u>8.12</u>	<u>0.54</u>	<u>-170.9</u>	<u>1.69</u>	<u>9.11</u>		
<u>1407</u>	<u>153.26</u>	<u>966</u>	<u>3.0</u>	<u>23.4</u>	<u>8.17</u>	<u>0.55</u>	<u>-162.6</u>	<u>1.65</u>	<u>7.14</u>		
<u>1408</u>	<u>~</u>	<u>978</u>	<u>3.04</u>	<u>~</u>	<u>~</u>	<u>End</u>	<u>Purge</u>	<u>~</u>	<u>~</u>		

SAMPLE COLLECTION SAMPLE TIME <u>1408</u>	
ANALYSIS	QUANTITY TYPE
8260B VOCs	<u>3</u> 40 ml VOA <u>3</u>
8270 SIM 1,4 dioxane	<u>1</u> 1 L Amber
8270 MOD 1,4 dioxane	<u>1</u> 1 L Amber
DUPLICATES / SPLITS / BLANKS?	<u>Y</u> <u>(N)</u>
If yes, complete appropriate forms.	

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 8-13-19

TASK: 53230

WELL ID: MW-32B

Time 1508 Static DTW (ft below reference point) 79.78	Casing Volume (CV) (gallons) 264 3 CV (gallons) 791	Weather Conditions	Initials: DTS, CVP
Casing Total Depth (ft below reference point) 99.9	Purging Device des pump Sampling Device 7100 Pipe stand	Time 1500 Temp. 80	Begin Purge 1519 End Purge 1622
Pump Water Column (feet) 419.22	Pump: Depth (ft brp) 560 Type geonics Voltage 240 HP -	Skies Sunny	Gallons Purged 803 CVs Purged 3.04
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast ☒	Wind (mph) - From ☒	DTW (ft brp) 79.78 Time 1508

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1519	79.78	0	0	~	Begin		Purge				Q ≈ 126 Pn
1528	98.24	132	0.5	22.8	7.83	0.99	-226.1	1.24	4.12		
1539	98.70	264	1.0	22.3	7.80	0.93	-205.5	0.86	2.87		
1550	99.01	396	1.5	22.6	7.78	0.59	-147.8	1.66	3.40		
1600	99.20	528	2.0	22.6	7.78	1.10	-144.9	1.07	3.60		
1611	99.35	660	2.5	22.7	7.73	1.07	-137.1	0.66	2.69		
1621	99.45	791	3.0	22.5	7.79	1.67	-155.1	1.43	4.5		
1622	-	803	3.04	~	End Purge						

SAMPLE COLLECTION SAMPLE TIME 1622		AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA	
ANALYSIS	QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)	
8260B VOCs	6 40 ml VOA	MW-32B-2-SU G 1603	
8270 SIM 1,4 dioxane	2 1 L Amber		
8270 MOD 1,4 dioxane	2 1 L Amber		
DUPLICATES / SPLITS / BLANKS? Y N			

GROUNDWATER SAMPLING INFORMATION

DATE: 8-14-19

TASK: 532-30

WELL ID: MW-43

Time 820	Static DTW (ft below reference point) 66.72	Casing Volume (CV) (gallons) 319	3 CV (gallons) 957	Weather Conditions		Initials: DJS, CVD
Casing Total Depth (ft below reference point) 1051	Purging Device ~~SAETZ~~ d/d PMP	Sampling Device MD PIPE STAND		Time 815	Temp. 71	Begin Purge 827 End Purge 913
Pure Water Column (feet) 40.50	Pump: Depth (ft brp) 580	Type granites	Voltage 240 HP -	Skies clear		Gallons Purged 957 CVs Purged 3.06
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow		Fast ☒	Wind (mph) ~	From ~	DTW (ft brp) 66.72 Time 820

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
827	65.72	0	0	~	Be	gm	Purge	~			Q ≈ 24
835	73.63	160	0.5	21.1	8.01	0.55	-240.9	1.26	3.18		
842	74.00	320	1.0	21.6	7.98	0.51	-126.9	1.31	2.48		
849	74.71	480	1.5	21.7	7.98	0.515	-83.1	0.82	1.91		
857	74.05	640	2.0	21.6	7.97	0.516	-63.3	1.40	1.92		
905	74.12	800	2.5	21.8	8.00	0.519	-51.4	0.82	1.22		
912	74.24	957	3.0	21.7	8.01	0.516	-53.7	0.94	1.19		
913	-	981	3.06	~			End Purge	~			

SAMPLE COLLECTION SAMPLE TIME 913			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	40 ml VOA	3				
8270 SIM 1,4 dioxane	1 L Amber	1				
8270 MOD 1,4 dioxane	1 L Amber					
DUPLICATES / SPLITS / BLANKS? Y (N)						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 08/15/2019

TASK: 532.30

WELL ID: MW-09

Time 15:05	Static DTW (ft below reference point) 158.44	Casing Volume (CV) (gallons) 5.7	3 CV (gallons) 17	Weather Conditions		Initials: CVD, DTS
Casing Total Depth (ft below reference point) 191	Purging Device bailer	Sampling Device bailer	Time 15:00	Temp. 87°	Begin Purge 15:08	End Purge 16:40
Pump Water Column (feet) 34.56	Pump: Depth (ft brp) N/A	Type N/A	Voltage N/A	HP 24	Gallons Purged 4	CVs Purged 1.57
Casing Capacity (Diameter 2") (gallons per foot) 0.163	Monitor Well Recharge Rate: Slow ☒	Fast	Wind (mph) 1	From E	DTW (ft brp) 158.44	Time 15:07

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1508	158.44	0	0	27.4	~	Begin	Purge				
1545	NM	2	0.35	27.5	7.13	2.64	2.4	3.55	57.7		
1610	157.48	6	1.05	24.8	7.14	2.78	48.3	4.52	45.7		
1640	158.22	4	1.57	24.6	7.44	2.79	54.0	3.99	52.9		
~	-	13	2.28	~	End	Purge	~				
		15	2.63								

SAMPLE COLLECTION SAMPLE TIME 1640		AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA	
ANALYSIS	QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)	
8260B VOCs	3 40 ml VOA	Sampled @ 1640 on	
8270 SIM 1,4 dioxane	1 L Amber		
8270 MOD 1,4 dioxane	1 L Amber		
DUPLICATES / SPLITS / BLANKS? Y (N)			
If yes, complete appropriate forms.			

GROUNDWATER SAMPLING INFORMATION

DATE: 8-14-14

TASK: 53230

WELL ID: MW-42

Time 1030 Static DTW (ft below reference point) 72.55	Casing Volume (CV) (gallons) 301 3 CV (gallons) 903	Weather Conditions	Initials: DJS, CUD
Casing Total Depth (ft below reference point) 1057	Purging Device 200 Pump Sampling Device 10 Pedestal	Time 1030 Temp. 76	Begin Purge 1034 End Purge 1122
Pump Water Column (feet) 105.00	Pump: Depth (ft brp) 560 Type 30 WRS Voltage 240 HP -	Skies Clear	Gallons Purged 926 CVs Purged 307
Casing Capacity (Diameter 4) (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow Fast	Wind (mph) ~ From ~	DTW (ft brp) 72.55 Time 1030

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1034	72.55	0	0.0	~	Begin	Purge					
1047	81.00	180	0.5	22.3	7.98	0.515	-235.4	1.31	1.89		Q ≈ 23 gpm
1054	81.14	301	1.0	22.5	8.02	0.513	-191.9	1.40	1.67		
1101	80.21	452	1.5	22.5	8.05	0.52	-106.1	1.61	1.51		
1108	81.38	606	2.0	22.7	8.07	0.519	-113.7	1.59	1.50		
1144	81.41	754	2.5	23.0	8.07	0.52	-92.8	1.54	2.00		
1121	81.59	902	3.0	23.5	8.07	0.275	-103.8	2.10	2.11		
1122	-	926	3.07	~	End	Purge					

SAMPLE COLLECTION SAMPLE TIME 1122	AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
ANALYSIS QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)
8260B VOCs 3 40 ml VOA	
8270 SIM 1,4 dioxane 1 1 L Amber	
8270 MOD 1,4 dioxane 1 1 L Amber	
DUPLICATES / SPLITS / BLANKS? Y (N)	
If yes, complete appropriate forms.	

GROUNDWATER SAMPLING INFORMATION

DATE: 8-14-19

TASK: 532.38

WELL ID: Mw-33

Time 1258 Static DTW (ft below reference point)	71.72	Casing Volume (CV) (gallons) 291	3 CV (gallons) 873	Weather Conditions	Initials: DJS/KVD
Casing Total Depth (ft below reference point)	1020	Purging Device ded Pump	Sampling Device 0-10. Ppositions	Time 1256 Temp. 82	Begin Purge 1304 End Purge 1350
Pump to Water Column (feet)	948.28	Pump: Depth (ft brp) 535	Type Grommet Voltage 240 HP	Skies clear	Gallons Purged 892 CVs Purged 3.06
Casing Capacity (Diameter 4") (gallons per foot)	0.62	Monitor Well Recharge Rate: Slow	Fast ☒	Wind (mph) ~ From ~	DTW (ft brp) 71.72 Time 1258

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1304	71.72	0	0	~	Begin	Purge	~	~	~		Q ≈ 14 gpm
1312	73.97	146	0.5	23.4	7.73	0.71	-55.9	1.77	1.71		
1319	74.03	291	1.0	22.9	7.77	0.35	-100.5	1.85	1.74		
1326	74.02	432	1.5	22.5	7.69	0.71	-52.3	1.31	1.36		
1334	74.13	582	2.0	22.3	7.71	0.68	-52.8	1.66	1.33		
1342	74.20	728	2.5	22.2	7.71	0.70	-23.9	1.75	1.14		
1349	74.15	873	3.0	22.4	7.65	0.71	-22.7	2.06	1.14		
1350	-	892	3.06	~	End	Purge	~	~	~		

SAMPLE COLLECTION SAMPLE TIME 1350	AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
ANALYSIS QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)
8260B VOCs 40 ml VOA 6	Mw-33-850-6 1334
8270 SIM 1,4 dioxane 1 L Amber 2	Mw-33 6 1350
8270 MOD 1,4 dioxane 1 L Amber	
DUPLICATES / SPLITS / BLANKS? (X) N	



GROUNDWATER SAMPLING INFORMATION

TASK:

532.30

WELL ID: Mw-36

Time <u>1510</u> Static DTW (ft below reference point)	<u>71.40</u>	Casing Volume (CV) (gallons) <u>320</u> 3 CV (gallons) <u>960</u>	<u>Weather Conditions</u>	Initials: <u>DTS/cup/</u>
Casing Total Depth (ft below reference point)	<u>99.4</u>	Purging Device <u>shot pump</u> Sampling Device <u>10-100 p.p.s.s.</u>	Time <u>1505</u> Temp <u>83</u>	Begin Purge <u>1518</u> End Purge <u>1631</u>
<u>pump</u> to <u>screen</u> Casing Capacity (Diameter <u>4"</u>) (gallons per foot)		Pump: Depth (ft brp) <u>460</u> Type <u>grinder</u> Voltage <u>360</u> HP <u>✓</u>	Skies <u>clear</u>	Gallons Purged <u>973</u> CVs Purged <u>3cv</u>
	<u>0.66</u>	Monitor Well Recharge Rate: Slow Fast <u>✓</u>	Wind (mph) <u>~</u> From <u>✓</u>	DTW (ft brp) <u>71.40</u> Time <u>1510</u>

[illegible]

SAMPLE COLLECTION		SAMPLE TIME	AIR MONITORING PID/FID ppm:		VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)					
8260B VOCs	6	40 ml VOA	MW-36-250- G 16:00 _____ _____ _____					
8270 SIM 1,4 dioxane	2	1 L Amber						
8270 MOD 1,4 dioxane		1 L Amber						
DUPLICATES / SPLITS / BLANKS? If yes, complete appropriate forms.			(Y) N					

GROUNDWATER SAMPLING INFORMATION

DATE: 8/15/14

TASK: 532.30

WELL ID: MW-3A

Time <u>0855</u> Static DTW (ft below reference point) <u>73.72</u>	Casing Volume (CV) (gallons) <u>271</u> ^{SU} <u>3</u> CV (gallons) <u>813</u> ^{SU}	Weather Conditions	Initials: <u>DJS, CUD</u>
Casing Total Depth (ft below reference point) <u>1612</u>	Purging Device <u>ded pump</u> Sampling Device <u>Pipestang</u>	Time <u>0850</u> Temp. <u>71</u>	Begin Purge <u>907</u> End Purge <u>945</u>
<u>Pump to screen</u> Water Column (feet)	Pump: Depth (ft brp) <u>560</u> Type <u>Grounding</u> Voltage <u>240</u> HP	Skies <u>Clear</u>	Gallons Purged <u>835</u> CVs Purged <u>3.08</u>
Casing Capacity (Diameter <u>4</u> ") (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow ☐ Fast ☒	Wind (mph) <u>~</u> From <u>~</u>	DTW (ft brp) <u>73.72</u> Time <u>855</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>907</u>	<u>73.72</u>	<u>0</u>	<u>0</u>	<u>~</u>	<u>Boehn</u>	<u>Purge</u>	<u>~</u>				<u>Q ≈ 22 GPM</u>
<u>913</u>	<u>88.99</u>	<u>136</u>	<u>0.5</u>	<u>23.4</u>	<u>8.56</u>	<u>0.445</u>	<u>-285.9</u>	<u>3.02</u>	<u>1.94</u>		
<u>919</u>	<u>89.21</u>	<u>271</u>	<u>1.0</u>	<u>23.1</u>	<u>8.70</u>	<u>0.424</u>	<u>-288.5</u>	<u>1.60</u>	<u>1.86</u>		
<u>925</u>	<u>89.24</u>	<u>407</u>	<u>1.5</u>	<u>23.2</u>	<u>8.62</u>	<u>0.432</u>	<u>-176.5</u>	<u>1.17</u>	<u>1.29</u>		
<u>931</u>	<u>89.43</u>	<u>542</u>	<u>2.0</u>	<u>23.3</u>	<u>8.57</u>	<u>0.431</u>	<u>-184.3</u>	<u>1.00</u>	<u>1.21</u>		
<u>937</u>	<u>89.62</u>	<u>678</u>	<u>2.5</u>	<u>23.1</u>	<u>8.55</u>	<u>0.436</u>	<u>-161.0</u>	<u>1.20</u>	<u>1.67</u>		
<u>944</u>	<u>89.84</u>	<u>813</u>	<u>3.0</u>	<u>23.3</u>	<u>8.48</u>	<u>0.438</u>	<u>-164.2</u>	<u>2.52</u>	<u>1.37</u>		
<u>945</u>	<u>-</u>	<u>835</u>	<u>3.08</u>	<u>~</u>	<u>End purge</u>	<u>~</u>					

SAMPLE COLLECTION SAMPLE TIME <u>9:45</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	40 ml VOA	<u>3</u>				
8270 SIM 1,4 dioxane	1 L Amber					
8270 MOD 1,4 dioxane	1 L Amber					
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u>						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 8/15/19

TASK: 532.30

WELL ID: MW-410

Time <u>1235</u> Static DTW (ft below reference point) <u>107.81</u>	Casing Volume (CV) (gallons) <u>75</u> 3 CV (gallons) <u>225</u>	Weather Conditions	Initials: <u>DJS, CVD</u>
Casing Total Depth (ft below reference point) <u>970</u>	Purging Device <u>ded pump</u> Sampling Device <u>NO PIPES TONG</u>	Time <u>1230</u> Temp. <u>79</u>	Begin Purge <u>1231</u> End Purge <u>1259</u>
Pump <u>to 5000</u> Water Column (feet) <u>862.19</u>	Pump: Depth (ft brp) <u>510</u> Type <u>grinders</u> Voltage <u>240</u> HP <u></u>	Skies <u>clear sunny</u>	Gallons Purged <u>3.33</u> CVs Purged <u>12.75</u>
Casing Capacity (Diameter <u>6</u> ") (gallons per foot) <u>1.5</u>	Monitor Well Recharge Rate: Slow <u></u> Fast <u>✓</u>	Wind (mph) <u></u> From <u></u>	DTW (ft brp) <u>107.81</u> Time <u>1235</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1239	101.8	0	0								Qx 12 gpm
1242	108.81	36	0.5	24.0	1.55	0.73	-242.9	1.96	6.36		
1245	108.88	72	1.0	22.3	7.75	0.83	-154.5	1.66	8.09		
1248	108.89	108	1.5	22.3	7.69	0.81	-125.0	0.90	3.43		
1251	108.90	144	2.0	21.7	7.71	0.83	-123.4	0.84	2.29		
1254	108.9	180	2.5	21.9	7.70	0.83	-114.9	1.24	2.93		
1257	108.87	228	3.0	22.0	7.70	0.83	-113.1	1.89	2.04		
1258	-	240	3.33	~ End purge ~							

SAMPLE COLLECTION SAMPLE TIME 1258
 ANALYSIS QUANTITY TYPE

8260B VOCs 3 40 ml VOA
 8270 SIM 1,4 dioxane 1 1 L Amber
 8270 MOD 1,4 dioxane 1 1 L Amber

DUPLICATES / SPLITS / BLANKS? Y (N)
 If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 8-16-19

TASK: 532.30

WELL ID: mw-35c

Time 1129 Static DTW (ft below reference point) 81.69	Casing Volume (CV) (gallons) 342	3 CV (gallons) 1026	Weather Conditions	Initials: DJS, CUD
Casing Total Depth (ft below reference point) 1040	Purging Device PDC102	Sampling Device ND PDC102	Time _____ Temp. _____	Begin Purge 1153 End Purge 1237
Pump is Water Column (feet) 1121.69	Pump: Depth (ft brp) 470	Type _____ Voltage _____ HP _____	Skies _____	Gallons Purged 1048 CVs Purged 306
Casing Capacity (Diameter 4") (gallons per foot) 0.60	Monitor Well Recharge Rate: Slow _____ Fast _____		Wind (mph) _____ From _____	DTW (ft brp) 81.69 Time 1129

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	... FIELD PARAMETERS ...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1153	81.69	0	0	~	Begin Purge	~					Q ≈ 32 gpm
1200	93.05	171	0.5	24.7	7.79	0.56	176.2	1.92	0.99		
1208	93.42	342	1.0	22.9	7.72	0.85	174.1	3.98	2.66		
1215	93.72	513	1.5	23.1	7.64	0.85	167.0	3.61	4.01		
1222	94.21	684	2.0	22.8	7.64	0.84	168.6	3.71	5.22		
1229	94.55	855	2.5	22.9	7.66	0.84	172.5	3.28	3.56		
1236	94.74	1026	3.0	22.8	7.56	0.84	172.7	6.89	1.80		
1237	—	1048	3.06	~	End Purge	~					

SAMPLE COLLECTION SAMPLE TIME 1237			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	40 ml VOA	3				
8270 SIM 1,4 dioxane	1 L Amber					
8270 MOD 1,4 dioxane	1 L Amber					
DUPLICATES / SPLITS / BLANKS? Y (N)						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/15/19

TASK: 532.30

WELL ID: MW-09

Time <u>0751</u> Static DTW (ft below reference point)	<u>156.29</u>	Casing Volume (CV) (gallons) <u>5.7</u> 3 CV (gallons) <u>17</u>	Weather Conditions
Casing Total Depth (ft below reference point)	<u>191</u>	Purging Device <u>bailer</u> Sampling Device <u>bailer</u>	Time <u>0800</u> Temp. <u>65</u>
Water Column (feet)	<u>34.71</u>	Pump: Depth (ft brp) <u>-</u> Type <u>-</u> Voltage <u>-</u> HP <u>-</u>	Skies <u>clear</u>
Casing Capacity (Diameter <u>2"</u>) (gallons per foot)	<u>0.163</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>-</u>	Wind (mph) <u>-</u> From <u>-</u>
		Initials: <u>AMD/CVD</u>	
		Begin Purge <u>0755</u> End Purge <u>0926</u>	
		Gallons Purged <u>15</u> CVs Purged <u>2.63</u>	
		DTW (ft brp) <u>156.45</u> Time <u>0910</u>	

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0755	156.29	0	0	Begin Purging						-	
0810	NM	2	0.35	20.0	7.00	3185	341.9	3.40	17.7	-	
0830	156.48	6	1.05	20.5	7.26	3250	312.0	3.70	NM	-	
0850	NM	9	1.57	21.0	7.19	3241	311.0	3.70	65.3	-	
0910	156.45	13	2.28	20.8	7.16	3238	310.6	3.59	20.3	-	
0925	NM	15	2.63	20.6	7.15	3235	308.8	3.61	19.3	-	COLLECT SAMPLE
0926	156.43	15	2.63	End Purging						-	

SAMPLE COLLECTION SAMPLE TIME <u>0925</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u> If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/20/15

TASK: 532.30

WELL ID: MW-20

Time <u>15:37</u> Static DTW (ft below reference point) <u>153.74</u>	Casing Volume (CV) (gallons) <u>29.2</u> 3 CV (gallons) <u>87.4</u>	Weather Conditions	Initials: <u>NES/pjs</u>
Casing Total Depth (ft below reference point) <u>198.20</u>	Purging Device <u>grinder</u> Sampling Device <u>ded. b. b.</u>	Time <u>1530</u> Temp. <u>60</u>	Begin Purge <u>1539</u> End Purge <u>1611</u>
Water Column (feet) <u>44.26</u>	Pump: Depth (ft brp) <u>194</u> Type <u>MPI</u> Voltage <u>115</u> HP <u>0.5</u>	Skies <u>cloudy</u>	Gallons Purged <u>96</u> CVs Purged <u>3.3</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>162.11</u> Time <u>1609</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1539	153.74	0	0	Begin pumping							Q ≈ 3 gpm
1544	159.56	15	0.5	20.3	7.43	1685	85.3	9.52	20.08	364	
1549	160.86	30	1.0	21.9	7.43	1655	84.7	5.54	21.0	364	
1554	161.19	45	1.5	21.8	7.45	1683	74.9	4.41	24.9	364	
1559	161.58	60	2.0	21.0	7.5	1695	76.2	4.29	27.4	364	
1604	161.89	75	2.5	22.0	7.47	1660	75.9	4.24	18.9	364	
1609	162.11	90	3.1	20.3	7.53	1693	73.9	4.27	17.5	364	
1611	NM	96	3.3	End pumping							

SAMPLE COLLECTION SAMPLE TIME <u>1610</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA		
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)		
8260B VOCs	<u>3</u>	40 ml VOA			
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber			
8270 MOD 1,4 dioxane		1 L Amber			
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u> If yes, complete appropriate forms.					

GROUNDWATER SAMPLING INFORMATION

DATE: 2/19/19

TASK: 592.30

WELL ID: MW19

Time 1000	Static DTW (ft below reference point) 121.62	Casing Volume (CV) (gallons) 47.8	3 CV (gallons) 143.5	Weather Conditions		Initials: NES/DJS
	Casing Total Depth (ft below reference point) 194.10	Purging Device grundfos	Sampling Device ded. tubing	Time 1000	Temp. 60	Begin Purge 1450 End Purge 1605
	Water Column (feet) 72.48	Pump: Depth (ft brp) 192	Type MP1	Skies cloudy		Gallons Purged 150 CVs Purged 3.1
	Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) -	From -	DTW (ft brp) 145.2 Time 1602

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1450	121.62	0	0	21.9	7.21	860	62.7	6.05	14.7	328	GPM ≈ 2 gpm
1502	142.85	24	0.5	22.1	7.22	1112	65.1	4.77	8.32	328	
1514	142.90	48	1	22.1	7.24	1365	66.5	4.72	5.07	328	
1526	144.35	72	1.5	22.0	7.20	1425	65.1	4.75	7.21	328	
1538	144.71	96	2	22.1	7.20	1523	65.5	5.40	2.97	328	
1550	145.14	120	2.5	22.0	7.21	1548	66.3	5.52	2.58	328	
1602	145.21	144	3								
1605	NM	150	3.1								Sampled at 16:05
											3x 8260B 40mL VOA's
											1x 1L 1,4-Dioxane Amber

SAMPLE COLLECTION SAMPLE TIME 1605			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	3	40 ml VOA				
8270 SIM 1,4 dioxane	1	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y (N)						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/12/19

TASK: 532.30

WELL ID: MW-34A

Time <u>1525</u> Static DTW (ft below reference point)	<u>138.70</u> Screen <u>SV</u> Casing Volume (<u>SV</u>) (gallons) <u>53</u> <u>SV</u> 3 CV (gallons) <u>159</u>	Weather Conditions	Initials: <u>AMD/CVO/RES</u>
Casing Total Depth (ft below reference point)	<u>280</u> Purging Device <u>ded. pump</u> Sampling Device <u>ND pipetand</u>	Time <u>1527</u> Temp. <u>65</u>	Begin Purge <u>1540</u> End Purge <u>1556</u>
<u>pump to screen</u> Water Column (feet)	<u>80</u> Pump: Depth (ft brp) <u>200</u> Type <u>grundfos</u> Voltage <u>240</u> HP <u>-</u>	Skies <u>cloudy</u>	Gallons Purged <u>174</u> CVs Purged <u>3.2</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.66</u> Monitor Well Recharge Rate: Slow Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>139.79</u> Time <u>1556</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (u S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1540	138.70	0	0								Q = 18 gpm
1542	141.60	36	0.67	21.3	7.22	1368	175.6	6.53	38.5	-	
1545	141.59	90	1.69	21.4	7.17	~~209.9~~ NM	204.3	6.31	13.7	-	
1548	139.80	112.5	2.12	21.7	7.17	~~217.7~~ NM	214.6	5.17	6.94	-	Q = 7.5 gpm
1550	139.78	127.5	2.40	21.8	7.15	~~226.9~~ 1374	228.6	4.94	3.41	-	
1552	139.79	142.5	2.68	21.8	7.14	1378	232.6	~~4.81~~ 2.86	2.86	-	
1554	139.79	159	3.0	21.8	7.14	1371	232.7	4.77	2.02	-	COLLECT SAMPLE
1556	NM	174	3.2								

SAMPLE COLLECTION SAMPLE TIME <u>1554</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u>						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/13/19TASK: 532.30WELL ID: MW-34C

Time <u>1316</u> Static DTW (ft below reference point)	<u>133.65</u> Screen SV Casing Volume (CV) (gallons) <u>64</u> SV 3 GV (gallons) <u>192</u>	Weather Conditions Time <u>1317</u> Temp <u>60</u>	Initials: <u>AMD/CVD/RES</u>
Casing Total Depth (ft below reference point)	<u>576</u> Purging Device <u>ded pump</u> Sampling Device <u>ND pipetand</u>	Skies <u>overcast</u>	Begin Purge <u>1325</u> End Purge <u>1341</u>
Water Column (feet)	<u>442.35</u> Pump: Depth (ft brp) <u>470</u> Type <u>grundfos</u> Voltage <u>240</u> HP <u>-</u>	Wind (mph) <u>2</u> From <u>W</u>	Gallons Purged <u>224</u> CVs Purged <u>3.5</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.66</u> Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>		DTW (ft brp) <u>153.21</u> Time <u>1339</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1325	133.65	0	0	PUMP ON							
1327	150.90	28	0.4	21.3	7.56	816	191.0	0.67	0.5	-	Q = 14 gpm
1330	152.00	70	1.1	21.3	7.30	763	137.3	0.18	0.33	-	
1332	152.38	98	1.5	21.9	7.67	936	147.6	0.15	0.19	-	
1334	152.75	126	2.0	21.9	7.65	942	149.9	0.14	0.37	-	
1337	153.04	168	2.6	21.9	7.63	942	150.0	0.14	NM	-	
1339	153.21	196	3.0	21.9	7.62	942	149.8	0.14	0.46	-	COLLECT SAMPLE
1341	NM	224	3.5	PUMP OFF							

SAMPLE COLLECTION SAMPLE TIME <u>1339</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u>						
If yes, complete appropriate forms.						



HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING INFORMATION

DATE: 5/16/19

TASK: 532.30

WELL ID: MW-34B

Time 1210 Static DTW (ft below reference point)	133.23	screen SV Casing Volume (CV) (gallons) 50	SV 3 CV (gallons) 150	Weather Conditions	Initials: AMD/RES
Casing Total Depth (ft below reference point)	536	Purging Device ded pump	Sampling Device 10-100 pipestand	Time 1214 Temp. 65	Begin Purge 1218 End Purge 1239
Water Column (feet)	76	Pump: Depth (ft brp) 460 Type grundfos	Voltage 240 HP -	Skies Sunny	Gallons Purged 168 CVs Purged 3.4
Casing Capacity (Diameter 4") (gallons per foot)	0.66	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) - From -	DTW (ft brp) 134.02 Time 1237

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1218	133.23	0	0				PUMP ON				
1223	134.02	40	0.80	21.5	7.83	801	179.0	3.11	46.6	-	Q = 8 gpm
1225	133.98	56	1.12	21.8	7.75	834	175.4	2.04	41.2	-	
1228	134.01	80	1.60	22.0	7.73	844	175.7	1.88	26.2	-	
1231	134.01	104	2.08	22.3	7.72	852	172.7	1.88	16.2	-	
1234	134.02	128	2.56	22.3	7.71	853	170.6	1.85	9.52	-	
1237	134.02	152	3.0	22.3	7.71	852	169.9	1.83	6.51	-	
1239	NM	168	3.4				PUMP OFF				

SAMPLE COLLECTION SAMPLE TIME 1237			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	3	40 ml VOA				
8270 SIM 1,4 dioxane		1 L Amber				
8270 MOD 1,4 dioxane	1	1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y (N)						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/13/19TASK: 532.30WELL ID: MW-15

Time <u>0809</u> Static DTW (ft below reference point)	<u>130.44</u>	Casing Volume (CV) (gallons) <u>6.6</u> 3 CV (gallons) <u>19.8</u>	Weather Conditions	Initials: <u>AMD/CVP/RES</u>
Casing Total Depth (ft below reference point)	<u>170.8</u>	Purging Device <u>grundfos</u> Sampling Device <u>ded. tubing</u>	Time <u>0810</u> Temp. <u>60</u>	Begin Purge <u>0858</u> End Purge <u>0924</u>
Water Column (feet)	<u>40.36</u>	Pump: Depth (ft brp) <u>167</u> Type <u>MP1</u> Voltage <u>115</u> HP <u>0.5</u>	Skies <u>overcast</u>	Gallons Purged <u>21</u> CVs Purged <u>3.2</u>
Casing Capacity (Diameter <u>2"</u>) (gallons per foot)	<u>0.163</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>131.05</u> Time <u>0926</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0858	130.44	0	0				PUMP ON				
0902	130.95	3	0.45	19.4	7.20	1688	286.9	5.28	NM	380	Q = 0.75 gpm
0907	131.08	6.75	1.0	24.6	7.09	1885	279.5	3.90	24.2	380	
0911	131.05	9.74	1.48	24.5	7.09	1891	276.3	3.77	20.1	380	
0916	131.05	13.5	2.0	24.5	7.09	1890	274.6	3.63	9.42	380	
0920	131.05	16.5	2.5	24.4	7.09	1891	274.8	3.53	7.23	380	
0924	131.05	19.5	3.0	24.4	7.09	1890	274.9	3.43	6.0	380	COLLECT SAMPLE
0926	131.05	21	3.2				PUMP OFF				

SAMPLE COLLECTION SAMPLE TIME <u>0924</u>		
ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>3</u>	40 ml VOA
8270 SIM 1,4 dioxane		1 L Amber
8270 MOD 1,4 dioxane		1 L Amber
DUPLICATES / SPLITS / BLANKS? <u>Y</u> (N)		
If yes, complete appropriate forms.		

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
 NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19

TASK: 532.30

WELL ID: MW-08

Time <u>12:11</u> Static DTW (ft below reference point)	<u>129.32</u>	Casing Volume (CV) (gallons) <u>6</u> 3 CV (gallons) <u>18</u>	Weather Conditions	Initials: <u>AMP/RES</u>
Casing Total Depth (ft below reference point)	<u>166.10</u>	Purging Device <u>grundfos</u> Sampling Device <u>ded. tubing</u>	Time <u>1207</u> Temp. <u>65</u>	Begin Purge <u>1226</u> End Purge <u>1242</u>
Water Column (feet)	<u>36.78</u>	Pump: Depth (ft brp) <u>~163</u> Type <u>MP1</u> Voltage <u>115</u> HP <u>0.5</u>	Skies <u>cloudy</u>	Gallons Purged <u>24</u> CVs Purged <u>4.0</u>
Casing Capacity (Diameter ") (gallons per foot)	<u>0.163</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) _____ From _____	DTW (ft brp) <u>131.29</u> Time <u>1238</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1226	129.55	0	0	—	—	—	PV MP ON	—	—	—	
1228	131.07	3	0.5	21.5	7.33	1914	217.3	4.29	12.80	277	Q = 1.5 gpm
1230	NM	6	1.0	21.7	7.26	1938	216.4	3.47	16.12	277	
1232	131.21	9	1.5	21.7	7.28	1940	210.2	3.38	20.79	277	
1234	131.25	12	2.0	21.7	7.29	1942	206.3	3.71	14.68	277	
1236	131.27	15	2.5	21.7	7.25	1942	200.6	3.72	2.61	277	
1238	131.29	18	3.0	22.0	7.24	1938	199.6	3.68	1.32	277	SAMPLE
1242	NM	24	4.0	—	—	—	PV MP OFF	—	—	—	

SAMPLE COLLECTION SAMPLE TIME <u>1238</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA		
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)		
8260B VOCs	<u>9</u>	40 ml VOA	<u>Duplicate Sample: MW-0800 @ 1240</u> <u>Split Sample: MW-08 @ 1239</u>		
8270 SIM 1,4 dioxane	<u>3</u>	1 L Amber			
8270 MOD 1,4 dioxane		1 L Amber			
DUPLICATES ☒ SPLITS ☒ BLANKS? ☒ N					

GROUNDWATER SAMPLING INFORMATION

DATE: 2/20/19TASK: 532.30WELL ID: MW-16

Time <u>1326</u> Static DTW (ft below reference point)	<u>121.69</u>	Casing Volume (CV) (gallons) <u>37.5</u> 3 CV (gallons) <u>112.5</u>	Weather Conditions	Initials: <u>NES/DJS</u>
Casing Total Depth (ft below reference point)	<u>178.56</u>	Purging Device <u>groutflow</u> Sampling Device <u>ded. tubing</u>	Time <u>1330</u> Temp. <u>60</u>	Begin Purge <u>1327</u> End Purge <u>1415</u>
Water Column (feet)	<u>56.87</u>	Pump: Depth (ft brp) <u>176.5</u> Type <u>MDI</u> Voltage <u>151</u> HP <u>0.5</u>	Skies <u>cloudy</u>	Gallons Purged <u>120</u> CVs Purged <u>3.2</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.66</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>123.98</u> Time <u>1410</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1327	121.69	0	0	—	—	Begin	Purging	—	—	—	Q ≈ 2.5 gpm
1334	123.09	18	0.5	22.1	7.32	1701	70.1	6.53	4.16	329	
1341	123.95	37.5	1	22.1	7.26	1592	62.4	3.91	3.32	329	
1348	123.95	55	1.5	21.9	7.31	1626	61.0	3.38	5.21	329	
1355	123.96	74	2.0	21.8	7.31	1688	60.6	3.88	1.95	329	
1402	123.97	92	2.5	21.9	7.32	1783	58.8	4.11	1.62	329	
1410	123.98	113	3	21.8	7.32	1726	56.5	4.14	1.22	329	
1415	NM	120	3.2	—	—	End	Purging	—	—	—	
SAMPLE COLLECTION SAMPLE TIME <u>1420</u>				AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA							
ANALYSIS QUANTITY TYPE				NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)							
8260B VOCs <u>3</u> 40 ml VOA											
8270 SIM 1,4 dioxane <u>1</u> 1 L Amber											
8270 MOD 1,4 dioxane <u>1</u> 1 L Amber											
DUPLICATES / SPLITS / BLANKS? Y <u>(N)</u>											
If yes, complete appropriate forms.											

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15

TASK: 532.30

WELL ID: MW-28

Time <u>1333</u> Static DTW (ft below reference point) <u>119.56</u>	Screen <u>SV</u> Casing Volume (CV) (gallons) <u>29.7</u> <u>SV</u> 3 CV (gallons) <u>89.1</u>	Weather Conditions Time <u>1334</u> Temp. <u>70</u>	Initials: <u>AMD/RES</u>
Casing Total Depth (ft below reference point) <u>375</u>	Purging Device <u>ded pump</u> Sampling Device <u>NO pipe stand</u>	Begin Purge <u>1338</u> End Purge <u>1350</u>	
<u>pump to screen</u> Water Column (feet) <u>45</u>	Pump: Depth (ft brp) <u>330</u> Type <u>grundfos</u> Voltage <u>240</u> HP <u>0.5</u>	Gallons Purged <u>115</u> CVs Purged <u>3.8</u>	
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>130.05</u> Time <u>1347</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C.)	pH	EC (MS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1338	119.56	0	0								
1339	NM	10	0.33	21.5	7.59	1018	61.9	3.39	2.42	-	Q = 10 gpm
1340	121.82	20	0.66	21.5	7.58	1019	58.9	3.87	1.81	-	
1341	125.23	30	1.0	21.5	7.62	1020	53.0	4.40	1.32	-	
1343	130.02	50	1.66	21.5	7.63	1011	49.9	4.32	0.85	-	
1345	130.03	70	2.33	21.5	7.63	1012	49.4	4.32	0.61	-	
1347	130.05	90	3.0	21.5	7.63	1012	49.3	4.32	0.16	-	SAMPLE
1350	NM	115	3.8								

SAMPLE COLLECTION SAMPLE TIME <u>1347</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u> If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19TASK: 532.30WELL ID: MW-26C

Time <u>0907</u> Static DTW (ft below reference point)	<u>115.75</u>	Screen <u>SV</u> Casing Volume (<u>CV</u>) (gallons)	<u>49</u>	<u>SV</u> 3 CV (gallons)	<u>147</u>	Weather Conditions	Initials: <u>AMD/RES</u>
Casing Total Depth (ft below reference point)	<u>499</u>	Purging Device <u>grundfos</u>	Sampling Device <u>ded tubing</u>		Time <u>0907</u> Temp. <u>60</u>	Begin Purge <u>0922</u> End Purge <u>1038</u>	
pump to screen Water Column (feet) <u>383.25</u>	<u>299</u>	Pump: Depth (ft brp) <u>~200</u> Type <u>MP1</u> Voltage <u>115</u> HP <u>0.5</u>			Skies <u>cloudy</u>	Gallons Purged <u>152</u> CVs Purged <u>3.0</u>	
Casing Capacity (Diameter <u>2"</u>) (gallons per foot)	<u>0.163</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>			Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>115.89</u> Time <u>1040</u>	

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0922	115.75	0	0								PUMP ON
0935	UTM	26	0.53	22.5	9.41	450	-270.1	NM	3.57	330	Q ≈ 2.0 gpm
0948	UTM	52	1.06	22.1	8.03	788	-177.2	NM	0.81	330	Q ≈ 2.0 gpm
1001	UTM	78	1.59	22.0	7.93	797	-158.2	NM	0.25	330	Q ≈ 2.0 gpm
1014	UTM	104	2.12	22.0	7.88	798	-149.2	NM	0.06	330	
1025	UTM	126	2.57	22.0	7.87	798	-145.6	NM	0.02	330	
1036	UTM	148	3.0	22.0	7.88	797	-144.1	NM	0.02	330	SAMPLE
1038	UTM	152	3.0								PUMP OFF
1040	115.89										

SAMPLE COLLECTION SAMPLE TIME <u>1036</u>	ANALYSIS		QUANTITY	TYPE
8260B VOCs	<u>6</u>	40 ml VOA		
8270 SIM 1,4 dioxane	<u>2</u>	1 L Amber		
8270 MOD 1,4 dioxane		1 L Amber		
DUPLICATES / SPLITS / (BLANKS?)	<u>(Y)</u>	N		

AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
<u>Depth to water unable to measure. Meter unable to get passed pump</u>			
<u>D.O. probe malfunction.</u>			
<u>Rinsante blank collected: RB-051519 @ 1100</u>			

HARGIS + ASSOCIATES, INC.

GROUNDWATER SAMPLING INFORMATION

DATE: 11/8/18

TASK: 532-30

WELL ID: MW-40

Time <u>0745</u> Static DTW (ft below reference point)	<u>110.01</u>	Screen <u>SV</u> Casing Volume (GV) (gallons) <u>75</u> <u>SV</u> 3 GV (gallons) <u>225</u>	Weather Conditions	Initials: <u>AMD, OTS</u>
Casing Total Depth (ft below reference point)	<u>970</u>	Purging Device <u>ded pump</u> Sampling Device <u>NO pipestand</u>	Time <u>0750</u> Temp <u>69°F</u>	Begin Purge <u>0755</u> End Purge <u>0816</u>
pump to Water Column (feet)	<u>50</u>	Pump: Depth (ft bfp) <u> </u> Type <u>groundfor</u> Voltage <u>240</u> HP	Skies <u>cloudy</u>	Gallons Purged <u>252</u> CVs Purged <u>3.36</u>
Casing Capacity (Diameter <u>6"</u> (gallons per foot)	<u>1.5</u>	Monitor Well Recharge Rate: Slow <u> </u> Fast <u>X</u>	Wind (mph) <u> </u> From <u> </u>	DTW (ft bfp) <u>110.98</u> Time <u>0814</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0755	110.01	0	0	—	Begin	Purge	—				Q ≈ 12 gpm
0758	110.80	36	0.48	20.5	7.59	732	-148.6	2.45	3.05		
0801	110.88	72	0.96	20.9	7.62	762	-112.1	1.91	2.59		
0804	110.92	108	1.44	21.0	7.64	761	-67.0	1.86	1.90		
0807	110.94	144	1.92	21.1	7.72	769	-45.3	3.19	2.10		
0810	110.98	180	2.4	21.0	7.64	760	-23.8	2.34	1.83		
0814	110.98	228	3.04	21.2	7.67	762	-20.7	2.46	2.08		Collected Sample
0816	N/A	252	3.36	—	End	Purge	—				

SAMPLE COLLECTION SAMPLE TIME <u>0814</u>		
ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>3</u>	40 ml VOA
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u>		
If yes, complete appropriate forms.		

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
 NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)
Sample collected @ 0814 MW-40 (org)

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19

TASK: 532.30

WELL ID: MW41

Time <u>1530</u> Static DTW (ft below reference point)	<u>136.18</u>	Casing Volume <u>SV</u> (gallons) <u>39</u> <u>SV</u> (gallons) <u>118</u>	Weather Conditions	Initials: <u>NEV/DJS</u>
Casing Total Depth (ft below reference point)	<u>425</u>	Purging Device <u>dept pump</u> Sampling Device <u>10-100 pipetted</u>	Time _____ Temp. _____	Begin Purge <u>1543</u> End Purge <u>1607</u>
<u>pump to screen</u> Water Column (feet)	<u>65</u>	Pump: Depth (ft brp) <u>360</u> Type <u>Grinder</u> Voltage <u>240</u> HP	Skies _____	Gallons Purged <u>142</u> CVs Purged <u>3.65</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.6</u>	Monitor Well Recharge Rate: Slow _____ Fast <u>X</u>	Wind (mph) _____ From _____	DTW (ft brp) <u>136.18</u> Time <u>1530</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1543	136.18	0	0	—	—	Begin Purge					Q ≈ 6
1546	139.32	19	0.5	22.3	7.11	1.910	-40.3	1.24	32.31		
1549	138.91	39	1	21.9	7.01	2.059	-40.9	1.76	34.02		
1553	138.89	58	1.5	22.1	6.99	2.089	-24.1	1.99	20.02		
1556	138.91	78	2	22.3	6.99	2.088	-26.1	2.09	15.14		
1559	138.90	97	2.5	22.5	7.00	2.087	-23.2	2.06	9.53		
1603	138.91	118	3	22.2	7.00	2.090	-26.4	2.03	8.61		
1607	—	142	3.65	—	—	End Purge					

SAMPLE COLLECTION SAMPLE TIME <u>1603</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane	<u>1</u>	1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u> If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 06-03-19

TASK: 532.74

WELL ID: MW-42

Time 1030 Static DTW (ft below reference point) 83.52	Casing Volume (CV) (gallons) 321 3 CV (gallons) 964	Weather Conditions	Initials: DJS, NES
Casing Total Depth (ft below reference point) 1057 Pump to screen Water Column (feet) 492	Purging Device SAE 22 7500 pump Sampling Device Pressure	Time 1030 Temp. 67°F	Begin Purge 1039 End Purge 1122
Casing Capacity (Diameter 4" (gallons per foot) 0.26	Pump: Depth (ft brp) 320 Type SAE 22 Voltage HP	Skies Cloudy	Gallons Purged 986 CVs Purged 3.00
	Monitor Well Recharge Rate: Slow Fast ☒	Wind (mph) ~ From ~	DTW (ft brp) 63.52 Time 1030

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
10:39	83.52	0	0.0	~	Begin		Purge	~			~ 23 GPM
10:46	72.10	161	0.5	21.1	7.82	0.529	-102.0	1.53	19.1		
10:53	72.19	322	1.0	21.2	7.96	0.514	-151.3	1.17	7.70		
11:00	72.27	483	1.5	21.3	7.99	0.508	-62.1	1.56	4.97		
11:07	72.29	644	2.0	21.3	8.02	0.508	-19.9	1.44	1.85		
11:14	72.35	815	2.5	21.4	8.03	0.507	-3.5	0.98	1.34		
11:21	72.44	964	3.0	21.7	8.02	0.507	-21.7	1.68	1.40		
11:24	-	986		~	End Purge						

SAMPLE COLLECTION SAMPLE TIME 1122	AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA
ANALYSIS QUANTITY TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)
8260B VOCs 9 40 ml VOA	MW-4200 @ 1124
8270 SIM 1.4 dioxane 3 1 L Amber	MW-42 → calcareous / europium
8270 MOD 1.4 dioxane 1 L Amber	
DUPLICATES / SPLITS / BLANKS? (Y) N	
If yes, complete appropriate forms.	

GROUNDWATER SAMPLING INFORMATION

DATE: 5-24-19TASK: 532.71WELL ID: MW-42

Time <u>1300</u> Static DTW (ft below reference point) <u>67.63</u>	Casing Volume (CV) (gallons) <u>301</u> 3 CV (gallons) <u>903</u>	Weather Conditions	Initials: <u>DJS/TJE</u>
Casing Total Depth (ft below reference point) <u>1057</u>	Purging Device <u>ded pump</u> Sampling Device <u>0-10 pip</u>	Time <u>1300</u> Temp. <u>75</u>	Begin Purge <u>1306</u> End Purge <u>1346</u>
Water Column (feet) <u>497</u>	Pump: Depth (ft brp) <u>560</u> Type <u>peristaltic</u> Voltage <u>740</u> HP	Skies <u>partly sunny</u>	Gallons Purged <u>960</u> CVs Purged <u>3.2</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow Fast <u>X</u>	Wind (mph) <u>2-5</u> From <u>North</u>	DTW (ft brp) <u>67.63</u> Time <u>1300</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1306	67.63	0	0	—	—	—	—	—	—	—	Qs 24 gpm
1312	76.11	144	1.5	20.6	7.38	0.492	-229.5	0.39	2.89	—	
1318	76.25	288	1.0	21.1	7.39	0.492	-246.0	0.39	2.83	—	
1324	76.35	432	1.4	21.5	7.51	0.493	-150.7	0.38	2.58	—	
1331	76.57	600	2.0	21.5	7.57	0.492	-125.6	0.60	2.76	—	
1337	76.60	744	2.5	21.5	7.62	0.493	-132.6	0.44	2.38	—	
1344	76.74	912	3.0	21.5	7.66	0.493	-130.0	0.43	2.32	—	
1346	NM	960	3.2	—	—	—	—	—	—	—	

SAMPLE COLLECTION SAMPLE TIME <u>1345</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>1</u>	40 ml VOA	<u>Dup @ 1346</u>			
8270 SIM 1,4 dioxane	<u>5</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>(Y)</u> N						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 06-03-2019

TASK: 532.71

WELL ID: MW-43

Time 1425 Static DTW (ft below reference point) 57.97	Casing Volume (CV) (gallons) 297	3 CV (gallons) 892	Weather Conditions	Initials: DJS, NES
Casing Total Depth (ft below reference point) 1051	Purging Device SOE 22	Sampling Device P. Pestana	Time 1430 Temp. ~	Begin Purge 1430 End Purge 1515
Pump to Screen Water Column (feet) 534	Pump: Depth (ft brp) 530	Type SOE 22 Voltage HP	Skies overcast	Gallons Purged 1000 CVs Purged 3.185
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) ~ From ~	DTW (ft brp) 57.97 Time 1425

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1430											~22 GPM
1437	65.63	160	0.5	21.9	7.91	0.54	-128.5	1.04	5.19		
1444	65.75	320	1.0	22.2	7.90	0.54	-148.3	1.07	6.91		
1451	65.25	480	1.5	22.8	7.95	0.53	-61.4	1.06	5.00		
1458	65.81	640	2.0	23.4	7.96	0.53	-35.0	0.91	2.79		
1505	65.71	800	2.5	22.3	7.95	0.53	-16.4	0.89	2.53		
1512	65.80	957	3.0	22.3	7.96	0.53	-12.4	1.25	1.70		
1518				~ Stop Purge ~							

SAMPLE COLLECTION	SAMPLE TIME 1511
ANALYSIS	QUANTITY TYPE
8280B VOCs	9 40 ml VOA
8270 SIM 1,4 dioxane	3 1 L Amber
8270 MOD 1,4 dioxane	1 L Amber
DUPLICATES / SPLITS / BLANKS?	0 N

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
MW-4300 @ 1518			
MW-43 → Cal Science / Europur			

GROUNDWATER SAMPLING INFORMATION

DATE: 6/24/19

TASK: 532.71

WELL ID: MW-43

Time <u>9:11</u> Static DTW (ft below reference point) <u>61.70</u>	Casing Volume (gallons) <u>Screen 50 297 327 3 CV (gallons) 892 972</u>	Weather Conditions	Initials: <u>TSE/DIS</u>
Casing Total Depth (ft below reference point) <u>Screen 1051</u>	Purging Device <u>dal pump</u> Sampling Device <u>MD 317</u>	Time <u>9:00</u> Temp. <u>65</u>	Begin Purge <u>10:00</u> End Purge <u>11:05</u>
Water Column (feet) <u>491</u>	Pump: Depth (ft brp) <u>560</u> Type <u>gr-dw</u> Voltage <u>54V</u> HP <u>1/2</u>	Skies <u>cloudy</u>	Gallons Purged <u>972</u> CVs Purged <u>30</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow <u>X</u> Fast <u>X</u>	Wind (mph) <u>2-5</u> From <u>S</u>	DTW (ft brp) <u>61.70</u> Time <u>9:11</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1018	61.70	0	0	pump on						-	Q ≈ 21 gpm
1025	68.81	147	~~147~~	20.8	7.46	0.913	-133.0	0.42	0.42	-	
1032	68.90	294	~~294~~	21.4	7.52	0.515	-111.2	0.39	0.40	-	Q ≈ 24 gpm
1039	69.02	462	~~462~~	21.5	7.61	0.504	-59.0	0.36	0.38	-	
1046	69.22	630	~~630~~	21.5	7.65	0.504	-32.6	0.36	0.33	-	
1053	69.31	798	~~798~~	21.5	7.65	0.506	-33.4	0.34	0.01	-	
1100	69.35	972	~~972~~	21.5	7.65	0.507	-38.4	0.34	0.04	-	
1105				pump off							

SAMPLE COLLECTION SAMPLE TIME 11:07

ANALYSIS QUANTITY TYPE

8260B VOCs 9 40 ml VOA8270 SIM 1,4 dioxane 1 1 L Amber8270 MOD 1,4 dioxane 3 1 L Amber

DUPLICATES / SPLITS BLANKS? Y N

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

MW-4300 @ 1106

MW-43 to ECI

GROUNDWATER SAMPLING INFORMATION

DATE: 5/16/19TASK: 532.30WELL ID: EW-01

Time <u>0925</u> Static DTW (ft below reference point) <u>110.23</u>	Casing Volume (CV) (gallons) <u>46</u> 3 CV (gallons) <u>138</u>	Weather Conditions Time <u>0930</u> Temp. <u>60</u>	Initials: <u>AMD/RES/RHH</u>
Casing Total Depth (ft below reference point) <u>188</u>	Purging Device <u>ded pump</u> Sampling Device <u>ded sample port</u>	Skies <u>rain</u>	Begin Purge <u>0930</u> End Purge <u>0942</u>
Water Column (feet) <u>69.77</u>	Pump: Depth (ft brp) <u>-</u> Type <u>-</u> Voltage <u>-</u> HP <u>-</u>	Wind (mph) <u>-</u> From <u>-</u>	Gallons Purged <u>156</u> CVs Purged <u>3.3</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>		DTW (ft brp) <u>118.73</u> Time <u>0940</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0930	110.23	0	0	Begin Purge						-	
0932	118.70	26	0.56	20.5	7.59	1335	211.9	7.67	14.03	-	Q=13gpm
0934	118.74	52	1.13	20.9	7.54	1340	200.5	7.56	36.1	-	
0935	118.75	65	1.41	21.1	7.53	1343	194.7	7.40	31.75	-	
0937	118.75	91	1.97	21.0	7.57	1339	193.0	7.95	12.31	-	
0938	118.73	104	2.26	21.1	7.59	1344	197.4	7.84	10.6	-	
0940	118.73	130	2.9	21.0	7.56	1344	198.2	7.82	4.96	-	
0942	NM	156	3.3	End Purge						-	

SAMPLE COLLECTION SAMPLE TIME <u>0942</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA		
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)		
8260B VOCs	<u>3</u>	40 ml VOA			
8270 SIM 1,4 dioxane		1 L Amber			
8270 MOD 1,4 dioxane	<u>1</u>	1 L Amber			
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>N</u> If yes, complete appropriate forms.					

GROUNDWATER SAMPLING INFORMATION

DATE: 5/16/19

TASK: 532.30

WELL ID: MW-21

Time <u>0949</u> Static DTW (ft below reference point)	<u>113.78</u>	Casing Volume (CV) (gallons) <u>78</u> 3 CV (gallons) <u>234</u>	Weather Conditions	Initials: <u>AMP/RES/RHH</u>
Casing Total Depth (ft below reference point)	<u>232</u>	Purging Device <u>ded pump</u> Sampling Device <u>ded sample</u>	Time <u>0945</u> Temp. <u>60</u>	Begin Purge <u>0950</u> End Purge <u>1002</u>
Water Column (feet)	<u>118.22</u>	Pump: Depth (ft brp) <u>-</u> Type <u>-</u> Voltage <u>-</u> HP <u>-</u>	Skies <u>rain</u>	Gallons Purged <u>300</u> CVs Purged <u>3.8</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.66</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>131.72</u> Time <u>1000</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>0950</u>	<u>113.78</u>	<u>0</u>	<u>0</u>	<u>Begin Purge</u>							
<u>0952</u>	<u>129.41</u>	<u>50</u>	<u>0.64</u>	<u>21.1</u>	<u>7.57</u>	<u>1561</u>	<u>64.1</u>	<u>3.60</u>	<u>17.0</u>	<u>-</u>	<u>Q = 25 gpm</u>
<u>0954</u>	<u>130.79</u>	<u>100</u>	<u>1.28</u>	<u>21.3</u>	<u>7.50</u>	<u>1989</u>	<u>34.0</u>	<u>5.03</u>	<u>16.3</u>	<u>-</u>	
<u>0955</u>	<u>131.13</u>	<u>125</u>	<u>1.60</u>	<u>21.3</u>	<u>7.49</u>	<u>2027</u>	<u>59.0</u>	<u>6.11</u>	<u>3.0</u>	<u>-</u>	
<u>0956</u>	<u>131.35</u>	<u>150</u>	<u>1.92</u>	<u>21.3</u>	<u>7.45</u>	<u>2045</u>	<u>78.0</u>	<u>5.52</u>	<u>2.91</u>	<u>-</u>	
<u>0958</u>	<u>131.53</u>	<u>200</u>	<u>2.56</u>	<u>21.3</u>	<u>7.46</u>	<u>2048</u>	<u>82.3</u>	<u>6.04</u>	<u>3.61</u>	<u>-</u>	
<u>1000</u>	<u>131.72</u>	<u>250</u>	<u>3.2</u>	<u>21.0</u>	<u>7.44</u>	<u>2052</u>	<u>92.3</u>	<u>5.96</u>	<u>5.32</u>	<u>-</u>	
<u>1002</u>	<u>NM</u>	<u>300</u>	<u>3.8</u>	<u>End Purge</u>							

SAMPLE COLLECTION SAMPLE TIME <u>1000</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane	<u>1</u>	1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u> If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 2/14/19

TASK: 532.30

WELL ID: MW-32A

Time 0832 Static DTW (ft below reference point) 72.86	Screen SV Gaging Volume (GV) (gallons) 207	SV 3 GV (gallons) 621	Weather Conditions	Initials: NES/pjs
Casing Total Depth (ft below reference point) 905	Purging Device ded pump	Sampling Device ND P. Portland	Time 0830 Temp. 60	Begin Purge 855 End Purge 0920
Pump to Screen Water Column (feet) 345	Pump: Depth (ft brp) 560	Type groundfo Voltage 240 HP -	Skies rain	Gallons Purged 660 CVs Purged 3.2
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) - From -	DTW (ft brp) 74.73 Time 0917

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0833	72.86	0	0							-	Q ≈ 13 gpm
0842	74.54	104	0.5	19.8	7.52	1212	51.0	4.72	1.67	-	
0849	74.63	207	1.0	20.0	7.56	1215	45.8	3.46	1.82	-	
0856	74.70	311	1.5	20.2	7.56	1212	33.5	2.96	2.38	-	
0903	74.71	411	2.0	20.1	7.58	1208	35.7	3.31	1.96	-	
0910	74.72	518	2.5	20.2	7.60	1206	36.3	4.14	1.98	-	
0917	74.73	621	3.0	20.1	7.52	1209	33.1	3.04	1.45	-	
0920	NM	660	3.2				End Purge			-	

SAMPLE COLLECTION SAMPLE TIME 0920		AIR MONITORING PID/FID ppm: VAULT NA		BKGD NA		BREATHING ZONE NA		DISCHARGE WATER NA	
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)						
8260B VOCs	3	40 ml VOA							
8270 SIM 1,4 dioxane	1	1 L Amber							
8270 MOD 1,4 dioxane	1	1 L Amber							
DUPLICATES / SPLITS / BLANKS? Y									

GROUNDWATER SAMPLING INFORMATION

DATE: 2-13-19TASK: 532.30WELL ID: MW-32C

Time <u>1422</u> Static DTW (ft below reference point)	<u>71.30</u> Screen <u>SU</u> Casing Volume (GV) (gallons)	<u>318</u> <u>SU</u> 3 GV (gallons)	<u>454</u>	Weather Conditions	Initials: <u>DJS/NE</u>
Casing Total Depth (ft below reference point)	<u>1090</u>	Purging Device <u>DEL pump</u>	Sampling Device <u>NO PIPETOR</u>	Time <u>1415</u> Temp. <u>53°F</u>	Begin Purge <u>1431</u> End Purge <u>1551</u>
Pump to Water Column (feet)	<u>930</u>	Pump: Depth (ft brp) <u>560</u> Type <u>GRANDS</u> Voltage <u>240</u> HP <u>-</u>		Skies <u>cloudy</u>	Gallons Purged <u>966</u> CVs Purged <u>3.1</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot)	<u>0.66</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>✓</u>		Wind (mph) <u>~</u> From <u>~</u>	DTW (ft brp) <u>NM</u> Time <u>-</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
<u>1431</u>	<u>71.30</u>	<u>0</u>	<u>0</u>	<u>~</u>	<u>~</u>	<u>Begin</u>	<u>Purge</u>	<u>~</u>	<u>~</u>	<u>-</u>	<u>Q ≈ 12 GPM</u>
<u>1444</u>	<u>NM</u>	<u>159</u>	<u>0.5</u>	<u>19.7</u>	<u>7.96</u>	<u>552.7</u>	<u>-173.1</u>	<u>2.21</u>	<u>1.26</u>	<u>-</u>	<u>* transducer blocking water column</u>
<u>1458</u>	<u>NM</u>	<u>318</u>	<u>1.0</u>	<u>20.2</u>	<u>7.98</u>	<u>545.7</u>	<u>-151.2</u>	<u>1.01</u>	<u>0.90</u>	<u>-</u>	<u>unable to obtain WL</u>
<u>1511</u>	<u>NM</u>	<u>477</u>	<u>1.5</u>	<u>20.3</u>	<u>8.02</u>	<u>544.8</u>	<u>-92.9</u>	<u>1.29</u>	<u>3.98</u>	<u>-</u>	
<u>1524</u>	<u>NM</u>	<u>636</u>	<u>2.0</u>	<u>19.7</u>	<u>8.04</u>	<u>548.3</u>	<u>-90.0</u>	<u>1.72</u>	<u>2.76</u>	<u>-</u>	
<u>1537</u>	<u>NM</u>	<u>795</u>	<u>2.5</u>	<u>20.0</u>	<u>8.03</u>	<u>547.9</u>	<u>-77.0</u>	<u>0.54</u>	<u>1.82</u>	<u>-</u>	
<u>1550</u>	<u>NM</u>	<u>954</u>	<u>3.0</u>	<u>19.6</u>	<u>7.93</u>	<u>548.1</u>	<u>-91.0</u>	<u>2.55</u>	<u>5.18</u>	<u>-</u>	
<u>1551</u>	<u>NM</u>	<u>966</u>	<u>3.1</u>	<u>~</u>	<u>~</u>	<u>End</u>	<u>Purge</u>	<u>~</u>	<u>~</u>	<u>-</u>	

SAMPLE COLLECTION SAMPLE TIME <u>1550</u>			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	<u>3</u>	40 ml VOA				
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber				
8270 MOD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>0</u>						
If yes, complete appropriate forms.						

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19

TASK:

WELL ID: ~~4-32~~ MW-32B

Time 1319 Static DTW (ft below reference point)	72.60	Screen SV	264	3 CV (gallons)	791	Weather Conditions	Initials: NES/DJS
Casing Total Depth (ft below reference point)	99.9	Purging Device	dead pump	Sampling Device	pipe stand	Time 1318 Temp. 64	Begin Purge 1323 End Purge 1434
Water Column (feet)	436	Pump: Depth (ft brp)	560	Type	granite	Skies	Gallons Purged 791 CVs Purged 309
Casing Capacity (Diameter 4") (gallons per foot)	0.64	Monitor Well Recharge Rate: Slow		Fast	X	Wind (mph) 4	DTW (ft brp) 1319 Time 1319

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1328	72.60	0	0			Begin Purge				-	Q ≈ 12 gpm
1339	88.02	132	0.5	21.8	7.75	0.935	-98.2	1.35	76.43	-	
1350	88.50	264	1	21.4	7.79	0.838	-106.7	1.67	4.57	-	
1401	88.69	396	1.5	21.5	7.80	0.904	-58.2	1.97	6.24	-	
1412	88.84	528	2	21.7	7.83	0.923	-53.3	1.39	5.91	-	
1423	88.76	660	2.5	21.5	7.80	0.921	-51.6	1.32	8.58	-	
1434	88.90	791	3							-	
1437	-	-	2.05	End Purge						-	

SAMPLE COLLECTION SAMPLE TIME 1434

ANALYSIS	QUANTITY	TYPE
8260B VOCs	12	40 ml VOA
8270 SIM 1,4 dioxane	3	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber

DUPLICATES / SPLITS / BLANKS? (Y) N

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

MW-32B-2-SV @ 1414

MW-3200B @ 1437

mw-32 @ 1434

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19

TASK: 532.30

WELL ID: MW-33

Time 0915 Static DTW (ft below reference point) 64.04	Screen Casing Volume (CV) (gallons) 291	3 CV (gallons) 873	Weather Conditions
Casing Total Depth (ft below reference point) 1020	Purging Device ded pump	Sampling Device pipelband	Time 0915 Temp 62
Water Column (feet) 485	Pump: Depth (ft bfp) 535	Type groundwater	Skies cloudy
Casing Capacity (Diameter *) (gallons per foot) 0.61	Monitor Well Recharge Rate: Slow	Fast	Wind (mph) 4-6 From
			Initials: NEV/DKV
			Begin Purge 0920 End Purge 1011
			Gallons Purged 909 CVs Purged 3.1
			DTW (ft bfp) 64.04 Time 0915

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0920	64.04	0									Pump On
0928	98.61	146	0.5	20.4	7.78	0.591	-52.1	0.82	1.50	-	Q ≈ 18 gpm
0936	98.56	291	1	20.7	7.74	0.676	-34.8	0.46	0.77	-	
0944	98.59	437	1.5	20.8	7.77	0.673	-8.6	0.58	0.14	-	
0952	98.63	582	2	20.8	7.75	0.681	-9.5	0.52	1.65	-	
1000	98.63	728	2.5	20.7	7.78	0.691	-8.4	0.56	0.39	-	
1009	98.65	873	3	20.1	7.73	0.679	-9.1	0.54	0.17	-	
1011		909	3.1								End Purge

SAMPLE COLLECTION SAMPLE TIME 1009

ANALYSIS QUANTITY TYPE

8260B VOCs 3 40 ml VOA

8270 SIM 1.4 dioxane 2 1 L Amber

8270 MOD 1.4 dioxane 2 1 L Amber

DUPLICATES / SPLITS / BLANKS? Y N

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

MW-33 - 2 - SV @ 0958

MW-33 @ 1009

DATE: 2/13/19

GROUNDWATER SAMPLING INFORMATION

TASK: 532.50

WELL ID: MW-35C

Time 0806 Static DTW (ft below reference point)	73.30	Screen Casing Volume (CV) (gallons) 378	SV 3 GV (gallons) 1134	Weather Conditions	Time 0805 Temp. 45F	Initials: NES/DJR
Casing Total Depth (ft below reference point)	1040	Purging Device	ded pump	Sampling Device	ND pipette	Begin Purge 0820 End Purge 0920
Water Column (feet)	630	Pump: Depth (ft bsp)	410	Type	grnd for	Gallons Purged 1179 CVs Purged 3.1
Casing Capacity (Diameter 4" (gallons per foot))	0.66	Monitor Well Recharge Rate: Slow	Fast	X	Wind (mph) 4	DTW (ft bsp) 76.85 Time 0928

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (C)	pH	EC (S/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
0820	73.30	0	0			Begin Purge				-	NES 2/12/19 ~~Q = 22 gpm~~
0829	76.83	189	0.5	18.9	7.24	857	116.5	4.58	2.31	-	Q = 20 gpm
0839	76.84	378	1	19.3	7.51	828	92.1	2.54	8.61	-	
0850	76.82	567	1.5	19.4	7.61	853	79.3	2.89	8.09	-	
0859	76.82	756	2	19.3	7.63	847	74.2	2.98	7.04	-	
0908	76.85	944	2.5	19.4	7.62	846	70.6	2.98	7.54	-	
0918	76.85	1134	3	19.3	7.41	852	69.5	3.00	7.12	-	
0920	NM	1179	3.1			End Purge				-	

SAMPLE COLLECTION SAMPLE TIME 0920			AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA			
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
8260B VOCs	5	40 ml VOA				
8270 SEM 1,4 dioxane	1	1 L Amber				
8270 MQD 1,4 dioxane		1 L Amber				
DUPLICATES / SPLITS / BLANKS? Y ☒ N ☐						

HARGIS + ASSOCIATES, INC.

DATE: 2/12/19

GROUNDWATER SAMPLING INFORMATION

TASK: 532.30

WELL ID: MW-39

Time <u>1419</u> Static DTW (ft below reference point) <u>66.88</u>	Screen SV Casing Volume (CV) (gallons) <u>271</u> 3 CV (gallons) <u>813</u>	Weather Conditions	Initials: <u>NES/DJS</u>
Casing Total Depth (ft below reference point) <u>1012</u>	Purging Device <u>dept pump</u> Sampling Device <u>ND pipette</u>	Time <u>1426</u> Temp <u>65</u>	Begin Purge <u>1429</u> End Purge <u>1509</u>
Water Column (feet) <u>452</u>	Pump: Depth (ft brp) <u>566</u> Type <u>granular</u> Voltage <u>240</u> HP	Skies <u>cloudy</u>	Gallons Purged <u>871</u> CVs Purged <u>3.2</u>
Casing Capacity (Diameter <u>4"</u>) (gallons per foot) <u>0.66</u>	Monitor Well Recharge Rate: Slow Fast <u>Fast</u>	Wind (mph) <u>0</u> From	DTW (ft brp) <u>8240</u> Time <u>1506</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1429	66.88	0	0								Q ≈ 22 gpm
1435	82.21	136	0.5	21.1	8.25	488.5	-221.3	4.96	1.50	-	
1441	82.24	271	1	21.4	8.43	436.8	-204.6	1.02	1.28	-	
1447	82.36	407	1.5	21.7	8.40	482.4	-157.4	1.03	1.34	-	
1453	82.33	542	2	21.8	8.34	439.5	-124.9	0.96	0.89	-	
1459	82.38	678	2.5	21.8	8.32	436.2	-123.5	0.94	1.66	-	
1506	82.40	813	3	21.8	8.32	440.7	-120.4	0.94	1.80	-	
1509	NM	871	3.23								End Purge

SAMPLE COLLECTION SAMPLE TIME 1505

ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>3</u>	40 ml VOA
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber
8270 MOD 1,4 dioxane	<u>1</u>	1 L Amber

DUPLICATES / SPLITS / BLANKS? Y (N)

If yes, complete appropriate forms.

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 05-16-19

TASK: 532.30

WELL ID: MW-36

Time 1130 Static DTW (ft below reference point) 68.25	Screen Casing Volume (CV) (gallons) 320	SV 3 EV (gallons) 960	Weather Conditions	Initials: BJJ/NES
Casing Total Depth (ft below reference point) 994	Purging Device 202. Pump	Sampling Device 10-100 Pipestone	Time 1130 Temp. 53°F	Begin Purge 1130 End Purge 1249
Pump to Screen Water Column (feet) 925.75	Pump: Depth (ft brp) 1160 Type ground	Voltage 240 HP -	Skies Partly cloudy	Gallons Purged 973 CVs Purged 3.1
Casing Capacity (Diameter 4") (gallons per foot) 0.66	Monitor Well Recharge Rate: Slow	Fast ✓	Wind (mph) - From -	DTW (ft brp) 71.90 Time 1249

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	... FIELD PARAMETERS ...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (mS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1135	68.25	0	0	~		Begin	Purge				Q ≈ 13 Gpm
1147	71.84	160	0.5	21.2	8.07	1.201	39.3	3.89	0.54		
1159	71.90	320	1.0	21.6	7.70	1.201	10.6	1.97	7.20		
1211	71.90	480	1.5	21.5	7.62	1.282	12.0	3.02	0.18		
1223	71.90	640	2.0	21.8	7.67	1.294	14.3	2.90	0.30		
1235	71.90	800	2.5	21.8	7.71	1.295	22.0	2.56	0.10		
1249	71.90	960	3.0	22.4	7.66	1.299	21.8	2.09	0.62		
1250	~	-	3.1	~		End	Purge				

SAMPLE COLLECTION SAMPLE TIME 1249	
ANALYSIS	QUANTITY TYPE
8260B VOCs	6 40 ml VOA
8270 SIM 1,4 dioxane	1 L Amber
8270 MOD 1,4 dioxane	1 L Amber
DUPLICATES / SPLITS / BLANKS? 0 N	
If yes, complete appropriate forms.	

AIR MONITORING PID/FID ppm: VAULT NA	BKGD NA	BREATHING ZONE NA	DISCHARGE WATER NA
NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)			
MW-36-2.05V G 1223			
MW-36 G 1249			

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19 108.96 TASK: 532.30 WELL ID: MW-30A

Time <u>1425</u> Static DTW (ft below reference point) <u>89.96</u>	Screen SV Casing Volume (GV) (gallons) <u>17.6</u> SV 3 GV (gallons) <u>52.8</u>	Weather Conditions	Initials: <u>AMD/RES</u>
Casing Total Depth (ft below reference point) <u>564</u>	Purging Device <u>ded pump</u> Sampling Device <u>ND pipestand</u>	Time <u>1425</u> Temp. <u>70</u>	Begin Purge <u>1427</u> End Purge <u>1441</u>
Water Column (feet) <u>44</u>	Pump: Depth (ft brp) <u>520</u> Type <u>grundfor</u> Voltage <u>240</u> HP <u>0.5</u>	Skies <u>cloudy</u>	Gallons Purged <u>61</u> CVs Purged <u>3.5</u>
Casing Capacity (Diameter <u>3"</u>) (gallons per foot) <u>0.39</u>	Monitor Well Recharge Rate: Slow Fast <u>X</u>	Wind (mph) <u>-</u> From <u>-</u>	DTW (ft brp) <u>110.03</u> Time <u>1439</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	...FIELD PARAMETERS...						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1427	108.96	0	0	—	—	PUMP	ON	—	—	—	
1429	109.61	14	0.79	21.2	7.87	744	181.7	0.70	0.06	—	Q = 7 gpm
1431	110.11	1421	1.19	21.2	7.85	744	166.3	0.91	0.51	—	
1434	110.10	26 ³³	1.87	21.5	7.81	743	143.2	0.53	2.53	—	Q = 4 gpm
1435	110.04	37	2.10	21.5	7.78	743	126.9	0.49	7.07	—	
1437	110.03	45	2.56	21.6	7.75	743	120.3	0.51	6.83	—	
1439	110.03	53	3.0	21.6	7.74	742	116.6	0.52	5.16	—	SAMPLE
1441	NM	61	3.5	—	—	PUMP OFF	—	—	—	—	

SAMPLE COLLECTION SAMPLE TIME <u>1439</u>		
ANALYSIS	QUANTITY	TYPE
8260B VOCs	<u>3</u>	40 ml VOA
8270 SIM 1,4 dioxane	<u>1</u>	1 L Amber
8270 MOD 1,4 dioxane		1 L Amber
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u>		
If yes, complete appropriate forms.		

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

GROUNDWATER SAMPLING INFORMATION

DATE: 5/15/19

TASK: 532.30

WELL ID: MW-30B

Time 1455 Static DTW (ft below reference point)	106.66	Screen SV Casing Volume (GV) (gallons) 40	SV 3 GV (gallons) 120	Weather Conditions	Initials: AMD/RES
Casing Total Depth (ft below reference point)	619	Purging Device ded pump	Sampling Device >100 pipe stand	Time 1455 Temp. 70	Begin Purge 1458 End Purge 1520
pump to Screen Water Column (feet)	99	Pump: Depth (ft brp) 520	Type grundfos Voltage 240 HP 0.5	Skies cloudy	Gallons Purged 135 CVs Purged 3.4
Casing Capacity (Diameter 3") (gallons per foot)	0.39	Monitor Well Recharge Rate: Slow	Fast X	Wind (mph) - From -	DTW (ft brp) 132.88 Time 1520

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (MS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1458	106.66	0	0				PUMP ON				
1503	128.62	27.5	0.69	21.3	7.88	1006	-159.1	0.16	2.02	-	Q = 2.75 gpm 5.5 gpm
1506	129.96	44	1.10	21.5	7.51	1212	-102.6	0.72	1.25	-	
1510	130.84	66	1.65	21.5	7.38	1515	-30.2	3.17	5.13	-	
1513	132.02	82.5	2.06	21.6	7.46	1344	1.8	2.63	7.56	-	
1516	132.74	99	2.50	21.6	7.47	1339	11.1	2.60	6.59	-	
1520	132.88	121	3.0	21.6	7.47	1339	15.7	2.55	3.83	-	
1523	NM	135	3.4				PUMP OFF				

SAMPLE COLLECTION SAMPLE TIME 1520			AIR MONITORING PID/FID ppm: VAULT NA			BKGD NA			BREATHING ZONE NA			DISCHARGE WATER NA		
ANALYSIS	QUANTITY	TYPE	NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)											
8260B VOCs	3	40 ml VOA												
8270 SIM 1,4 dioxane	1	1 L Amber												
8270 MOD 1,4 dioxane		1 L Amber												
DUPLICATES / SPLITS / BLANKS? Y (N)														

GROUNDWATER SAMPLING INFORMATION

DATE: 5/16/19

TASK: 532.30

WELL ID: MW-31

Time <u>1317</u> Static DTW (ft below reference point) <u>97.86</u>	Screen Casing Volume (CV) (gallons) <u>81</u> <u>SV</u> <u>3 CV</u> (gallons) <u>243</u>	Weather Conditions Time <u>1317</u> Temp. <u>70</u>	Initials: <u>AMP/RES</u>
Casing Total Depth (ft below reference point) <u>996</u>	Purging Device <u>ded pump</u> Sampling Device <u>10-100 pipe stand</u>	Skies <u>clear</u>	Begin Purge <u>1324</u> End Purge <u>1347</u>
pump to screen Water Column (feet) <u>54</u>	Pump: Depth (ft brp) <u>942</u> Type <u>grundfos</u> Voltage <u>240</u> HP <u>-</u>	Wind (mph) <u>-</u> From <u>-</u>	Gallons Purged <u>276</u> CVs Purged <u>3.4</u>
Casing Capacity (Diameter <u>6"</u>) (gallons per foot) <u>1.5</u>	Monitor Well Recharge Rate: Slow <u>-</u> Fast <u>X</u>		DTW (ft brp) <u>101.84</u> Time <u>1346</u>

Time	Depth to Water	Volume Purged (Gallons)	Casing Volumes Purged	FIELD PARAMETERS....						Pump Frequency Hz	COMMENTS
				Temp. (°C)	pH	EC (µS/cm)	O.R.P. (mV)	D.O. (mg/L)	Turbidity (NTU)		
1324	97.86	0	0			PUMP	ON				
1327	101.75	36	0.44	20.9	7.72	1112	225.0	0.12	6.12	-	Q = 12 gpm
1330	101.79	72	0.88	21.2	8.80	1669	158.5	0.09	84.01	-	Q = 12 gpm
1333	101.82	108	1.33	21.3	8.06	1617	118.0	0.06	15.12	-	
1336	101.84	144	1.77	21.3	7.62	1420	93.7	0.14	6.29	-	
1340	101.84	192	2.37	21.4	7.62	1273	89.4	0.26	5.74	-	
1343	101.84	228	2.81	21.4	7.62	1200	86.2	0.37	2.30	-	
1346	101.84	264	3.25	21.4	7.63	1168	86.1	0.41	1.87	-	
1347	NM	276	3.4				PUMP	OFF			

SAMPLE COLLECTION SAMPLE TIME <u>1346</u>	
ANALYSIS	QUANTITY TYPE
8260B VOCs	<u>3</u> 40 ml VOA
8270 SIM 1,4 dioxane	<u>1</u> 1 L Amber
8270 MOD 1,4 dioxane	<u>1</u> 1 L Amber
DUPLICATES / SPLITS / BLANKS? <u>Y</u> <u>(N)</u>	
If yes, complete appropriate forms.	

AIR MONITORING PID/FID ppm: VAULT NA BKGD NA BREATHING ZONE NA DISCHARGE WATER NA

NOTES (Color, odor, sand and silt content, factors possibly affecting samples, condition of vault, wellhead, sampling apparatus, etc.)

TABLE 2
WELL CONSTRUCTION SUMMARY

Well Identifier	Date Installed	Current Land Surface Elevation (feet msl)	Current Reference Point Elevation (feet msl)	Total Depth of Borehole (feet bls)	Perforated Interval (feet bls)	Screen Slot Size (inches)	Borehole Diameter (inches)	Casing Diameter (inches) (a)	Filter Pack Interval (feet bls)	Filter Pack Sand Size	Grout Filter/ Intermediate Seal Interval (feet bls) (b)	Annular Seal Interval (feet bls) (c)
<u>Regional Groundwater System Monitor Wells, Extraction Wells and Piezometers</u>												
MW-06	1/16/1997	185.0	184.70	190.9	149.6 - 189.6	0.010	8.5	2	145.4 - 190.9	#2/16	139.4 - 145.4 (d)	0 - 139.4
MW-08	1/22/1997	156.6	155.91	167.2	126.1 - 166.1	0.010	8.5	2	120.7 - 167.2	#2/16	115.7 - 120.7	0 - 115.7
MW-09	3/21/1997	180.5	180.10	194.2	152.2 - 192.2	0.010	8.5	2	146.2 - 194.2	#2/16	141.2 - 146.2	0 - 141.2
MW-13	4/16/1997	142.5	141.84	159.6	120.6 - 159.6	0.010	8.5	2	114.6 - 159.6	#2/16	109.6 - 114.6	0 - 109.6
MW-15	5/18/1998	145.6	144.95	174.8	120.8 - 170.8	0.010	8.5	2	115.8 - 174.8	#2/16	112.8 - 115.8	0 - 112.8
MW-16	11/20/1999	143.0	142.40	179.5	148.5 - 178.5	0.010	11.0	4	144.5 - 179.5	#2/16	134.5 - 144.5 (e)	0 - 134.5
MW-17	5/31/2000	142.8	142.70	203.7	173.1 - 193.1 (f)	0.020	10.0	4	159.7 - 193.1	#2/16	156.2 - 159.7 193.1 - 203.7 (j)	0 - 156.2
MW-18	5/24/2000	142.4	142.32	195.6	164.1 - 194.1	0.020	10.0	4	158.9 - 194.5	#2/16	154.2 - 158.9	0 - 154.2
MW-19	5/26/2000	142.7	142.06	205.5	184.9 - 204.9	0.020	10.0	4	177.0 - 205.3	#2/16	171.5 - 177.0	0 - 171.5
MW-20	6/26/2003	184.4	184.19	200.0	158.6 - 198.2	0.020	11.0	4 (f)	158.0 - 200.0	#2/12	151.0 - 158.0 (g)	0 - 151.1 (h)
MW-21	7/17/2003	143.3	141.18	238.3	212.1 - 232.1	0.010	8.0	4 (k)	205.0 - 234.5	#2/16	202.0 - 205.0 234.5 - 238 (j)	0 - 202.0 (h)
MW-22	8/13/2003	139.4	138.65	245.0	217.4 - 237.4	0.020	8.0	4 (l)	215.0 - 238.0	#2/12	208.0 - 215.0 (m)	0 - 208.0 (h)
MW-23	8/18/2003	137.8	137.33	235.6	215.2 - 235.2	0.020	8.0	4 (n)	209.4 - 235.6	#2/12	203.5 - 209.4 (m)	0 - 203.5 (h)
MW-24	9/15/2004	143.1	142.83	338.0	310.3 - 330.3	0.030	10.6	4 (o)	306 - 330	#3	301 - 306 (p)	0 - 301 (h)
MW-25	9/10/2004	143.0	142.64	805	449.4 - 479.8	0.010	8.5 (q)	2 (r)	429 - 485	#2/16	418 - 429	0 - 418 (h)
MW-26A (s)	10/1/2004	137.6	137.04	805	279 - 309	0.020	12.25 (q)	2 (l)	274 - 315	#2/12	266 - 274	0 - 266 (h)
MW-26B (s)	10/1/2004	137.6	137.05	805	339 - 379	0.020	12.25 (q)	2 (u)	334 - 387	#2/12	266 - 274	0 - 266 (h)
MW-26C (s)	10/1/2004	137.6	137.22	805	459 - 499	0.020	12.25 (q)	2 (v)	435 - 499	#2/12	387 - 435 (w)	0 - 266 (h)
MW-27	4/22/2008	137.6	137.16	550	475 - 505.2 (cc)	0.030	11.25 (q)	4 (z)	468 - 520	#3	457.5 - 468	0 - 457.5 (h)
MW-28	5/5/2008	141.4	140.77	425	335 - 375	0.040	12.25 (q)	4 (z)	325.4 - 377	#8	318 - 325.4	0 - 318 (h)
MW-29	8/15/2008	142.7	142.34	265.7	200 - 240	0.020	10.0 (aa)	4 (z)	185 - 246	#2/12	176 - 185	0 - 176 (h)
MW-30A(s)	11/26/2008	130.2	129.44	635 (j)	524-584	0.020	14.25	3 (y)	515.9-570.5	#2/12	495.5-515.9	0-495.5 (bb)
MW-30B(s)	11/26/2008	130.2	129.39	635 (j)	596-616	0.020	14.25	3 (y)	586.8-625	#2/12	586.8-570.5	0-495.5 (bb)
MW-31	10/2/2009	120.3	119.60	1,100 (jj)	946-996	0.020	13	6(kk)	922-1,006	#2/12	904-922	0-904
MW-32A(s)	12/10/2009	93.4	92.88	1,153 (gg)	890-905	0.020	18.5	4(dd)	880-910	#2/12	832-880	0-832
MW-32B(s)	12/10/2009	93.4	92.89	1,153 (gg)	969-999	0.020	18.5	4(dd)	960-1,004.5	#2/12	910-960	0-832
MW-32C(s)	12/10/2009	93.4	92.88	1,153 (gg)	1,070-1,090	0.020	18.5	4(dd)	1,054-1,100	#2/12	1,004.5-1,054	0-832
MW-33	7/2/2010	83.8	83.19	1,080 (hh)	980-1,020	0.020	11	4(dd)	970-1,025	#2/12	924-970	0-924 (ii)
MW-34A	2/3/2011	154.0	153.25	290	220 - 280	0.020	12.25	4(dd)	211 - 290	#2/12	175 - 211	0 - 175
MW-34B	2/1/2011	153.9	153.11	540	486 - 536	0.020	12.25	4(dd)	475 - 540	#2/12	449 - 475	0 - 449
MW-34C	1/19/2011	154.1	153.29	709 (ll)	556 - 576	0.020	12.25	4(dd)	551 - 582	#2/12	530 - 551	0 - 530
MW-35A	12/20/2010	94.3	93.57	1,101	420 - 470	0.020	18	4(dd)	401 - 482	#2/12	376 - 401	0 - 376
MW-35B	12/20/2010	94.3	93.56	1,101	745 - 805	0.020	18	4(dd)	725 - 816	#2/12	482 - 725	0 - 376
MW-35C	12/20/2010	94.3	93.55	1101 (ll)	990 - 1,040	0.020	12.25	4(dd)	980 - 1,048	#2/12	816 - 980	0 - 376
MW-36	1/3/2012	87.19	86.65	1030 (mm)	934 - 954 974 - 994	0.020	12.25	4(dd)	914 - 1,003	#2/12	95 - 853 (oo), 853 - 914 (pp)	0 - 95 (qq)
MW-37	10/17/2012	156.02	155.60	916	770-820	0.020	12.25	4(dd)	755-834	#2/12	229-724 (rr) 724-755 (pp)	0-229 (ss)
MW-38	7/29/2013	155.7	154.90	203	150-200	0.020	10	4(z)	140-203	#2/12	120-140 (pp)	0-120 (qq)
MW-39	7/25/2013	84.71	84.25	1,080 (ll)	982-1,012	0.020	12.25	4(dd)	974-1,017	#2/12	156 - 917 (rr) 917-974 (pp)	0-156 (qq)
MW-40	7/2/2013	124.09	123.40	1040 (ll)	930-970	0.030	12.25	6(dd)	916-975	#3	175 - 880 (rr) 880-916 (pp)	0-175 (qq)
EW-01	5/16/2005	143.3	141.07	195	138.1-188.1	0.020	7.6	4 (x)	134.1-195	#2/12	129-134.1 (m)	0-129 (h)
EW-02	10/20/2009	136.0	132.97	473 (ee)	410-460	0.030	17.0	8 (ff)	400-465	#3	384-400	0-384
<u>Perched Zone Piezometers</u>												
P-07	6/6/1997	142.7	142.31	116.8	107.7 - 117.7	0.010	8.5	2	104.7 - 117.7	#2/16	101.7 - 104.7	0 - 101.7
P-09	6/30/2003	184.3	183.86	130.0	109.6 - 129.6	0.010	11.0	4	114.0 - 130.0	#2/16	101.0 - 108.0 (g)	0 - 101.0 (h)

TABLE 2

WELL CONSTRUCTION SUMMARY

NOTE: Refer to page 2 of this table for footnotes.

FOOTNOTES

- msl = Mean sea level, City of Fullerton datum
 bls = Below current land surface (October 2004)
- (a) = Schedule 40 polyvinyl chloride (PVC) screen and casing, unless otherwise indicated
 (b) = Medium bentonite chip seal, unless otherwise indicated
 (c) = Bentonite grout annular seal unless otherwise indicated, completed at surface with vault set in concrete
 (d) = No. 60 silica sand
 (e) = Includes 2.0 feet of No. 60 silica sand placed above filter pack
 (f) = Schedule 80 polyvinyl chloride screen and casing
 (g) = Includes 2.5 to 3.0 feet of No. 60 silica sand placed above bentonite chip seal
 (h) = Cement/bentonite grout, Type III Portland, less than 5% bentonite
 (i) = Well plug, approximately 0.5-foot length, set at bottom of perforated interval
 (j) = Bottom of borehole backfilled with bentonite chips
 (k) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 122.0 - 212.1 feet bls; Schedule 40 mild steel casing 0 - 122.0 feet bls
 (l) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 112.4 - 217.4 feet bls; Schedule 40 mild steel casing 0 - 112.4 feet bls
 (m) = 1/4-inch coated bentonite pellets
 (n) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 110.1 - 215.2 feet bls; Schedule 40 mild steel casing 0 - 110.1 feet bls
 (o) = Mild steel wire wrap screen and Schedule 40 mild steel well casing
 (p) = Includes 1 to 2 feet of #2/16 sand placed above bentonite chip seal
 (q) = Below filter pack, diameter of the original pilot borehole is 5 to 6.25 inches to total depth of boring. Lower borehole backfilled with cement/bentonite grout, Type III Portland, less than 5% bentonite
 (r) = Stainless steel wire wrap screen, Schedule 10 stainless steel casing 429.4 - 449.4 feet bls, Schedule 80 polyvinylchloride casing 429.0 - 429.4 feet bls, Schedule 40 mild steel casing 0 - 429.0 feet bls
 (s) = Nested wells MWV-26A, MWV-26B, MWV-26C, and MWV-32A, MWV-32B, MWV-32C are constructed with three separate well casings in a single borehole; nested well MWV-30A and MWV-30B is constructed with two separate casings in a single borehole.
 (t) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 259 - 279 feet bls and 0 - 19 feet bls; Schedule 40 mild steel casing 19 - 259 feet bls
 (u) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 319 - 339 feet bls; Schedule 40 mild steel casing 0 - 319 feet bls
 (v) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 439 - 459 feet bls; Schedule 40 mild steel casing 0 - 439 feet bls
 (w) = #8 granular bentonite with exception of heavy mud/formational caving filling annular interval from 417 to 428 feet bls
 (x) = Stainless steel wire wrap screen; Schedule 10 stainless steel casing 118.1-138.1 feet bls; Schedule 40 mild steel casing 0-118.1 feet bls
 (y) = Schedule 40 Stainless steel endcaps; Schedule 10 stainless steel casing; Stainless steel wire wrap screen
 (z) = Schedule 80 PVC blank and screen casing
 (aa) = Below filter pack, diameter of the original pilot borehole is 8 inches to total depth of boring. Lower borehole backfilled with cement/bentonite grout, Type III Portland, less than 5% bentonite
 (bb) = Neat cement
 (cc) = Depth of screen interval adjusted to account for loss at bottom of casing due to breakage in casing wall. Original casing (515 ft bls) was sealed at 505.2 ft bls
 (dd) = Schedule 40 Stainless steel endcaps; Schedule 80 polyvinyl chloride casing; Stainless steel wire wrap screen
 (ee) = Pilot borehole drilled to a total depth of 493 feet bls and backfilled with 5% bentonite-cement grout seal to 465 feet bls
 (ff) = Schedule 40 Stainless steel endcaps; Schedule 40 stainless steel casing; Stainless steel wire wrap screen; 2.5-foot stainless steel sump
 (gg) = Pilot borehole drilled to a total depth of 1,153 feet bls and backfilled with 5% bentonite-cement grout seal to 1,100 feet bls
 (hh) = Pilot borehole drilled to a total depth of 1,080 feet bls and backfilled with 5% bentonite-cement grout seal to 1,025 feet bls
 (ii) = Annular seal interval is composed of cement grout with approximately 5% bentonite from 720 to 924 feet bls and bentonite grout from near land surface to 720 feet bls
 (jj) = Pilot borehole drilled to a total depth of 1,100 feet bls and backfilled with 5% bentonite-cement grout seal to 1,005 feet bls
 (kk) = Schedule 40 Stainless steel endcaps; Schedule 40 stainless steel casing; Stainless steel wire wrap screen; 5-foot stainless steel sump
 (ll) = Bottom of borehole backfilled with approximately 5% bentonite-cement grout
 (mm) = Bottom of borehole backfilled with bentonite pellets
 (oo) = High solids bentonite grout
 (pp) = Bentonite chips
 (qq) = Portland cement with approximately 5% bentonite
 (rr) = Medium bentonite chips and #2/12 Sand; 1:1 dry volume mix
 (ss) = Portland cement with approximately 2.5% bentonite

Jul 09, 2019 - 9:22am ESS - T: 2019\500-599\532 Roytheon\Hydrogeology\H+A Base\410-10166.dwg

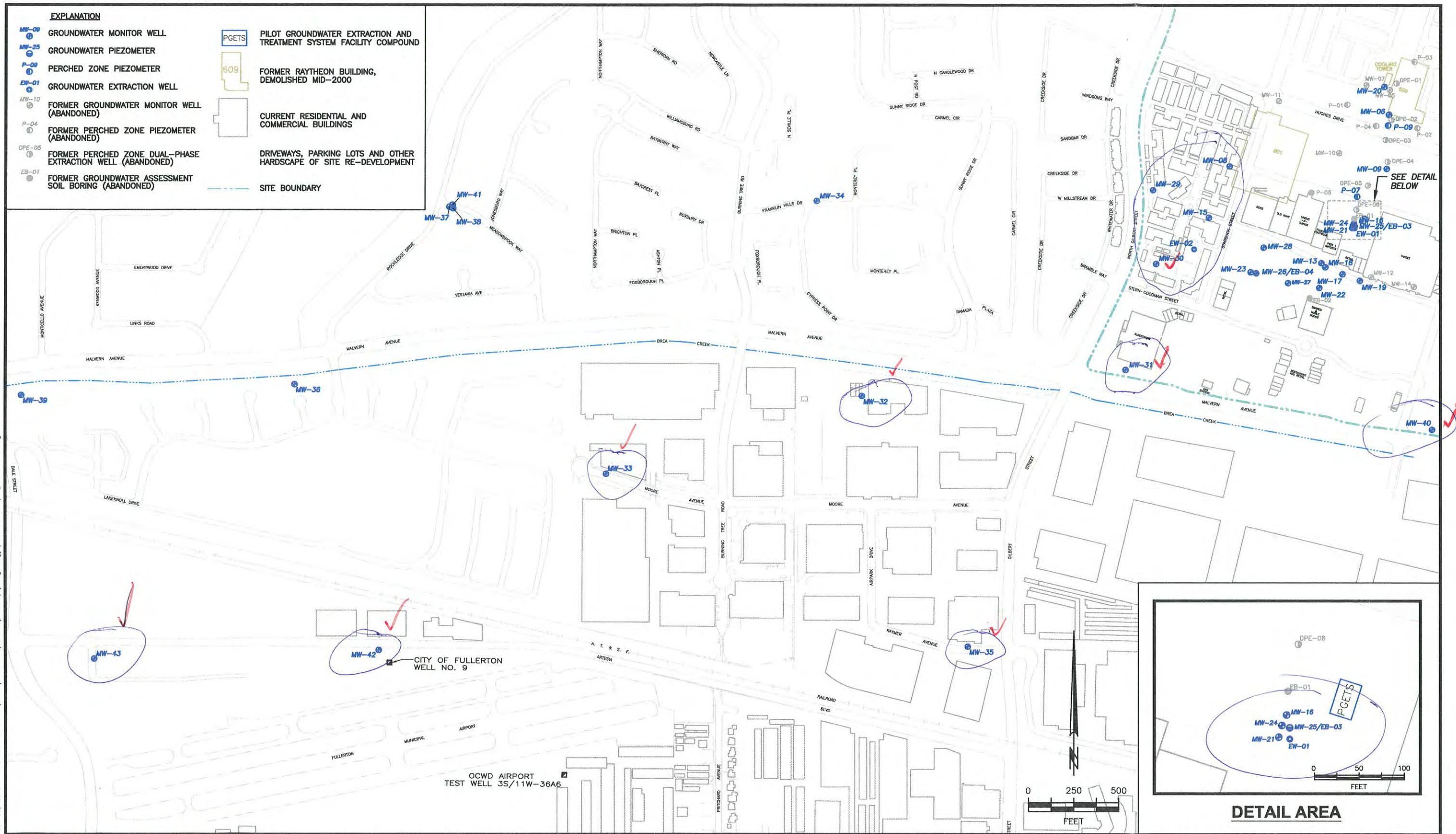


FIGURE 2.
WELL AND PIEZOMETER LOCATIONS



HARGIS + ASSOCIATES, INC.
Hydrogeology/Engineering

APPENDIX B
LABORATORY ANALYTICAL REPORTS

GROUNDWATER SAMPLING ANALYTICAL RESULTS

ANALYTICAL REPORT

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Tel: (714)895-5494

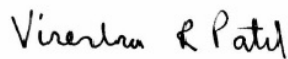
Laboratory Job ID: 570-4771-1

Client Project/Site: Raytheon Fullerton / 532.30

For:

Hargis + Associates, Inc.
La Jolla Gateway
9171 Towne Centre Drive
Suite 375
San Diego, California 92122

Attn: Julie Kelly



Authorized for release by:
8/28/2019 5:22:51 PM

Virendra Patel, Project Manager I
(714)895-5494
virendrapatel@eurofinsus.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Job ID: 570-4771-1

Laboratory: Eurofins Calscience LLC

Narrative

Job Narrative 570-4771-1

Comments

No additional comments.

Receipt

The samples were received on 8/14/2019 5:12 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.4° C.

GC/MS VOA

Method(s) 8260B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for the following sample associated with analytical batch 570-15051 were outside control limits: (570-4966-B-1 MS) and (570-4966-C-1 MSD). The associated laboratory control sample (LCS) recovery met acceptance criteria.

Method(s) 8260B: The lot test of the laboratory trip blank water associated with job 570-4771 indicated a detection above the method detection limit (MDL) for the following analyte(s): Methylene Chloride and Chloroform. This is a client supplied Trip Blank; therefore confirmation was not performed.

Method(s) 8260B: The initial calibration curve analyzed in batch 570-15360 was outside method criteria for the following analyte(s): Dichlorodifluoromethane. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered an estimated concentration.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Client Sample ID: TB-081319B

Lab Sample ID: 570-4771-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloroform	0.10	J	0.50	0.062	ug/L	1		8260B	Total/NA
Methylene Chloride	0.39	J	1.0	0.043	ug/L	1		8260B	Total/NA

Client Sample ID: MW-34B

Lab Sample ID: 570-4771-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1,2-Trichloroethane	0.23	J	0.50	0.069	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	0.68		0.50	0.060	ug/L	1		8260B	Total/NA
1,2-Dichloroethane	0.11	J	0.50	0.075	ug/L	1		8260B	Total/NA
Chloroform	0.12	J	0.50	0.062	ug/L	1		8260B	Total/NA
Methylene Chloride	0.064	J	1.0	0.043	ug/L	1		8260B	Total/NA
Trichloroethene	0.22	J	0.50	0.10	ug/L	1		8260B	Total/NA
1,1-Dichloroethene - DL	57		2.0	0.41	ug/L	4		8260B	Total/NA
1,4-Dioxane	26		0.50	0.18	ug/L	1		8270C SIM ID	Total/NA

Client Sample ID: MW-31

Lab Sample ID: 570-4771-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1,2-Trichloroethane	0.55		0.50	0.069	ug/L	1		8260B	Total/NA
1,1-Dichloroethane	3.0		0.50	0.060	ug/L	1		8260B	Total/NA
1,2-Dichloroethane	0.27	J	0.50	0.075	ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	0.81		0.50	0.11	ug/L	1		8260B	Total/NA
Carbon tetrachloride	0.15	J	0.50	0.057	ug/L	1		8260B	Total/NA
Chloroform	0.44	J	0.50	0.062	ug/L	1		8260B	Total/NA
Methylene Chloride	0.14	J	1.0	0.043	ug/L	1		8260B	Total/NA
Tetrachloroethene	0.53		0.50	0.24	ug/L	1		8260B	Total/NA
Toluene	0.22	J	0.50	0.093	ug/L	1		8260B	Total/NA
Trichloroethene	13		0.50	0.10	ug/L	1		8260B	Total/NA
1,1-Dichloroethene - DL	290		10	2.1	ug/L	20		8260B	Total/NA
1,4-Dioxane	17		0.50	0.18	ug/L	1		8270C SIM ID	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Calscience LLC

Client Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: TB-081319B
Date Collected: 08/13/19 08:05
Date Received: 08/14/19 17:12

Lab Sample ID: 570-4771-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.50	0.070	ug/L			08/26/19 20:18	1
1,1,1-Trichloroethane	ND		0.50	0.084	ug/L			08/26/19 20:18	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.087	ug/L			08/26/19 20:18	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50	0.13	ug/L			08/26/19 20:18	1
1,1,2-Trichloroethane	ND		0.50	0.069	ug/L			08/26/19 20:18	1
1,1-Dichloroethane	ND		0.50	0.060	ug/L			08/26/19 20:18	1
1,1-Dichloroethene	ND		0.50	0.10	ug/L			08/26/19 20:18	1
1,1-Dichloropropene	ND		0.50	0.070	ug/L			08/26/19 20:18	1
1,2,3-Trichlorobenzene	ND		0.50	0.12	ug/L			08/26/19 20:18	1
1,2,3-Trichloropropane	ND		1.0	0.076	ug/L			08/26/19 20:18	1
1,2,4-Trichlorobenzene	ND		0.50	0.089	ug/L			08/26/19 20:18	1
1,2,4-Trimethylbenzene	ND		0.50	0.068	ug/L			08/26/19 20:18	1
1,2-Dibromo-3-Chloropropane	ND		5.0	0.51	ug/L			08/26/19 20:18	1
1,2-Dibromoethane	ND		0.50	0.059	ug/L			08/26/19 20:18	1
1,2-Dichlorobenzene	ND		0.50	0.082	ug/L			08/26/19 20:18	1
1,2-Dichloroethane	ND		0.50	0.075	ug/L			08/26/19 20:18	1
1,2-Dichloropropane	ND		0.50	0.099	ug/L			08/26/19 20:18	1
1,3,5-Trimethylbenzene	ND		0.50	0.079	ug/L			08/26/19 20:18	1
1,3-Dichlorobenzene	ND		0.50	0.098	ug/L			08/26/19 20:18	1
1,3-Dichloropropane	ND		1.0	0.082	ug/L			08/26/19 20:18	1
1,4-Dichlorobenzene	ND		0.50	0.073	ug/L			08/26/19 20:18	1
2,2-Dichloropropane	ND		1.0	0.38	ug/L			08/26/19 20:18	1
2-Butanone	ND		5.0	0.46	ug/L			08/26/19 20:18	1
2-Chlorotoluene	ND		0.50	0.058	ug/L			08/26/19 20:18	1
2-Hexanone	ND		10	0.50	ug/L			08/26/19 20:18	1
4-Chlorotoluene	ND		0.50	0.091	ug/L			08/26/19 20:18	1
4-Methyl-2-pentanone	ND		5.0	0.42	ug/L			08/26/19 20:18	1
Acetone	ND		10	4.0	ug/L			08/26/19 20:18	1
Benzene	ND		0.50	0.072	ug/L			08/26/19 20:18	1
Bromobenzene	ND		0.50	0.061	ug/L			08/26/19 20:18	1
Bromochloromethane	ND		1.0	0.082	ug/L			08/26/19 20:18	1
Bromodichloromethane	ND		0.50	0.053	ug/L			08/26/19 20:18	1
Bromoform	ND		0.50	0.096	ug/L			08/26/19 20:18	1
Bromomethane	ND		2.0	0.99	ug/L			08/26/19 20:18	1
cis-1,2-Dichloroethene	ND		0.50	0.11	ug/L			08/26/19 20:18	1
cis-1,3-Dichloropropene	ND		0.50	0.096	ug/L			08/26/19 20:18	1
Carbon disulfide	ND		10	0.39	ug/L			08/26/19 20:18	1
Carbon tetrachloride	ND		0.50	0.057	ug/L			08/26/19 20:18	1
Chlorobenzene	ND		0.50	0.088	ug/L			08/26/19 20:18	1
Chloroethane	ND		0.50	0.12	ug/L			08/26/19 20:18	1
Chloroform	0.10	J	0.50	0.062	ug/L			08/26/19 20:18	1
Chloromethane	ND		5.0	2.0	ug/L			08/26/19 20:18	1
Dibromochloromethane	ND		0.50	0.064	ug/L			08/26/19 20:18	1
Dibromomethane	ND		0.50	0.13	ug/L			08/26/19 20:18	1
Dichlorodifluoromethane	ND		1.0	0.099	ug/L			08/26/19 20:18	1
Ethylbenzene	ND		0.50	0.087	ug/L			08/26/19 20:18	1
Isopropylbenzene	ND		0.50	0.077	ug/L			08/26/19 20:18	1
Methylene Chloride	0.39	J	1.0	0.043	ug/L			08/26/19 20:18	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	0.067	ug/L			08/26/19 20:18	1

Eurofins Calscience LLC

Client Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: TB-081319B
Date Collected: 08/13/19 08:05
Date Received: 08/14/19 17:12

Lab Sample ID: 570-4771-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		1.0	0.097	ug/L			08/26/19 20:18	1
n-Butylbenzene	ND		0.50	0.11	ug/L			08/26/19 20:18	1
N-Propylbenzene	ND		0.50	0.076	ug/L			08/26/19 20:18	1
o-Xylene	ND		0.50	0.086	ug/L			08/26/19 20:18	1
m,p-Xylene	ND		1.0	0.15	ug/L			08/26/19 20:18	1
p-Isopropyltoluene	ND		0.50	0.074	ug/L			08/26/19 20:18	1
sec-Butylbenzene	ND		0.50	0.095	ug/L			08/26/19 20:18	1
Styrene	ND		0.50	0.059	ug/L			08/26/19 20:18	1
trans-1,2-Dichloroethene	ND		0.50	0.082	ug/L			08/26/19 20:18	1
trans-1,3-Dichloropropene	ND		0.50	0.053	ug/L			08/26/19 20:18	1
tert-Butylbenzene	ND		0.50	0.082	ug/L			08/26/19 20:18	1
Tetrachloroethene	ND		0.50	0.24	ug/L			08/26/19 20:18	1
Toluene	ND		0.50	0.093	ug/L			08/26/19 20:18	1
Trichloroethene	ND		0.50	0.10	ug/L			08/26/19 20:18	1
Trichlorofluoromethane	ND		0.50	0.10	ug/L			08/26/19 20:18	1
Vinyl acetate	ND		5.0	0.70	ug/L			08/26/19 20:18	1
Vinyl chloride	ND		0.50	0.078	ug/L			08/26/19 20:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		80 - 128		08/26/19 20:18	1
4-Bromofluorobenzene (Surr)	99		68 - 120		08/26/19 20:18	1
Dibromofluoromethane	104		80 - 127		08/26/19 20:18	1
Toluene-d8 (Surr)	103		80 - 120		08/26/19 20:18	1

Client Sample ID: MW-34B
Date Collected: 08/13/19 10:34
Date Received: 08/14/19 17:12

Lab Sample ID: 570-4771-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.50	0.070	ug/L			08/26/19 20:48	1
1,1,1-Trichloroethane	ND		0.50	0.084	ug/L			08/26/19 20:48	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.087	ug/L			08/26/19 20:48	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50	0.13	ug/L			08/26/19 20:48	1
1,1,2-Trichloroethane	0.23	J	0.50	0.069	ug/L			08/26/19 20:48	1
1,1-Dichloroethane	0.68		0.50	0.060	ug/L			08/26/19 20:48	1
1,1-Dichloropropene	ND		0.50	0.070	ug/L			08/26/19 20:48	1
1,2,3-Trichlorobenzene	ND		0.50	0.12	ug/L			08/26/19 20:48	1
1,2,3-Trichloropropane	ND		1.0	0.076	ug/L			08/26/19 20:48	1
1,2,4-Trichlorobenzene	ND		0.50	0.089	ug/L			08/26/19 20:48	1
1,2,4-Trimethylbenzene	ND		0.50	0.068	ug/L			08/26/19 20:48	1
1,2-Dibromo-3-Chloropropane	ND		5.0	0.51	ug/L			08/26/19 20:48	1
1,2-Dibromoethane	ND		0.50	0.059	ug/L			08/26/19 20:48	1
1,2-Dichlorobenzene	ND		0.50	0.082	ug/L			08/26/19 20:48	1
1,2-Dichloroethane	0.11	J	0.50	0.075	ug/L			08/26/19 20:48	1
1,2-Dichloropropane	ND		0.50	0.099	ug/L			08/26/19 20:48	1
1,3,5-Trimethylbenzene	ND		0.50	0.079	ug/L			08/26/19 20:48	1
1,3-Dichlorobenzene	ND		0.50	0.098	ug/L			08/26/19 20:48	1
1,3-Dichloropropane	ND		1.0	0.082	ug/L			08/26/19 20:48	1
1,4-Dichlorobenzene	ND		0.50	0.073	ug/L			08/26/19 20:48	1
2,2-Dichloropropane	ND		1.0	0.38	ug/L			08/26/19 20:48	1
2-Butanone	ND		5.0	0.46	ug/L			08/26/19 20:48	1

Eurofins Calscience LLC

Client Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: MW-34B
Date Collected: 08/13/19 10:34
Date Received: 08/14/19 17:12

Lab Sample ID: 570-4771-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chlorotoluene	ND		0.50	0.058	ug/L			08/26/19 20:48	1
2-Hexanone	ND		10	0.50	ug/L			08/26/19 20:48	1
4-Chlorotoluene	ND		0.50	0.091	ug/L			08/26/19 20:48	1
4-Methyl-2-pentanone	ND		5.0	0.42	ug/L			08/26/19 20:48	1
Acetone	ND		10	4.0	ug/L			08/26/19 20:48	1
Benzene	ND		0.50	0.072	ug/L			08/26/19 20:48	1
Bromobenzene	ND		0.50	0.061	ug/L			08/26/19 20:48	1
Bromochloromethane	ND		1.0	0.082	ug/L			08/26/19 20:48	1
Bromodichloromethane	ND		0.50	0.053	ug/L			08/26/19 20:48	1
Bromoform	ND		0.50	0.096	ug/L			08/26/19 20:48	1
Bromomethane	ND		2.0	0.99	ug/L			08/26/19 20:48	1
cis-1,2-Dichloroethene	ND		0.50	0.11	ug/L			08/26/19 20:48	1
cis-1,3-Dichloropropene	ND		0.50	0.096	ug/L			08/26/19 20:48	1
Carbon disulfide	ND		10	0.39	ug/L			08/26/19 20:48	1
Carbon tetrachloride	ND		0.50	0.057	ug/L			08/26/19 20:48	1
Chlorobenzene	ND		0.50	0.088	ug/L			08/26/19 20:48	1
Chloroethane	ND		0.50	0.12	ug/L			08/26/19 20:48	1
Chloroform	0.12	J	0.50	0.062	ug/L			08/26/19 20:48	1
Chloromethane	ND		5.0	2.0	ug/L			08/26/19 20:48	1
Dibromochloromethane	ND		0.50	0.064	ug/L			08/26/19 20:48	1
Dibromomethane	ND		0.50	0.13	ug/L			08/26/19 20:48	1
Dichlorodifluoromethane	ND		1.0	0.099	ug/L			08/26/19 20:48	1
Ethylbenzene	ND		0.50	0.087	ug/L			08/26/19 20:48	1
Isopropylbenzene	ND		0.50	0.077	ug/L			08/26/19 20:48	1
Methylene Chloride	0.064	J	1.0	0.043	ug/L			08/26/19 20:48	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	0.067	ug/L			08/26/19 20:48	1
Naphthalene	ND		1.0	0.097	ug/L			08/26/19 20:48	1
n-Butylbenzene	ND		0.50	0.11	ug/L			08/26/19 20:48	1
N-Propylbenzene	ND		0.50	0.076	ug/L			08/26/19 20:48	1
o-Xylene	ND		0.50	0.086	ug/L			08/26/19 20:48	1
m,p-Xylene	ND		1.0	0.15	ug/L			08/26/19 20:48	1
p-Isopropyltoluene	ND		0.50	0.074	ug/L			08/26/19 20:48	1
sec-Butylbenzene	ND		0.50	0.095	ug/L			08/26/19 20:48	1
Styrene	ND		0.50	0.059	ug/L			08/26/19 20:48	1
trans-1,2-Dichloroethene	ND		0.50	0.082	ug/L			08/26/19 20:48	1
trans-1,3-Dichloropropene	ND		0.50	0.053	ug/L			08/26/19 20:48	1
tert-Butylbenzene	ND		0.50	0.082	ug/L			08/26/19 20:48	1
Tetrachloroethene	ND		0.50	0.24	ug/L			08/26/19 20:48	1
Toluene	ND		0.50	0.093	ug/L			08/26/19 20:48	1
Trichloroethene	0.22	J	0.50	0.10	ug/L			08/26/19 20:48	1
Trichlorofluoromethane	ND		0.50	0.10	ug/L			08/26/19 20:48	1
Vinyl acetate	ND		5.0	0.70	ug/L			08/26/19 20:48	1
Vinyl chloride	ND		0.50	0.078	ug/L			08/26/19 20:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		80 - 128		08/26/19 20:48	1
4-Bromofluorobenzene (Surr)	99		68 - 120		08/26/19 20:48	1
Dibromofluoromethane	105		80 - 127		08/26/19 20:48	1
Toluene-d8 (Surr)	101		80 - 120		08/26/19 20:48	1

Eurofins Calscience LLC

Client Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: MW-31
Date Collected: 08/13/19 13:59
Date Received: 08/14/19 17:12

Lab Sample ID: 570-4771-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.50	0.070	ug/L			08/26/19 21:18	1
1,1,1-Trichloroethane	ND		0.50	0.084	ug/L			08/26/19 21:18	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.087	ug/L			08/26/19 21:18	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50	0.13	ug/L			08/26/19 21:18	1
1,1,2-Trichloroethane	0.55		0.50	0.069	ug/L			08/26/19 21:18	1
1,1-Dichloroethane	3.0		0.50	0.060	ug/L			08/26/19 21:18	1
1,1-Dichloropropene	ND		0.50	0.070	ug/L			08/26/19 21:18	1
1,2,3-Trichlorobenzene	ND		0.50	0.12	ug/L			08/26/19 21:18	1
1,2,3-Trichloropropane	ND		1.0	0.076	ug/L			08/26/19 21:18	1
1,2,4-Trichlorobenzene	ND		0.50	0.089	ug/L			08/26/19 21:18	1
1,2,4-Trimethylbenzene	ND		0.50	0.068	ug/L			08/26/19 21:18	1
1,2-Dibromo-3-Chloropropane	ND		5.0	0.51	ug/L			08/26/19 21:18	1
1,2-Dibromoethane	ND		0.50	0.059	ug/L			08/26/19 21:18	1
1,2-Dichlorobenzene	ND		0.50	0.082	ug/L			08/26/19 21:18	1
1,2-Dichloroethane	0.27	J	0.50	0.075	ug/L			08/26/19 21:18	1
1,2-Dichloropropane	ND		0.50	0.099	ug/L			08/26/19 21:18	1
1,3,5-Trimethylbenzene	ND		0.50	0.079	ug/L			08/26/19 21:18	1
1,3-Dichlorobenzene	ND		0.50	0.098	ug/L			08/26/19 21:18	1
1,3-Dichloropropane	ND		1.0	0.082	ug/L			08/26/19 21:18	1
1,4-Dichlorobenzene	ND		0.50	0.073	ug/L			08/26/19 21:18	1
2,2-Dichloropropane	ND		1.0	0.38	ug/L			08/26/19 21:18	1
2-Butanone	ND		5.0	0.46	ug/L			08/26/19 21:18	1
2-Chlorotoluene	ND		0.50	0.058	ug/L			08/26/19 21:18	1
2-Hexanone	ND		10	0.50	ug/L			08/26/19 21:18	1
4-Chlorotoluene	ND		0.50	0.091	ug/L			08/26/19 21:18	1
4-Methyl-2-pentanone	ND		5.0	0.42	ug/L			08/26/19 21:18	1
Acetone	ND		10	4.0	ug/L			08/26/19 21:18	1
Benzene	ND		0.50	0.072	ug/L			08/26/19 21:18	1
Bromobenzene	ND		0.50	0.061	ug/L			08/26/19 21:18	1
Bromochloromethane	ND		1.0	0.082	ug/L			08/26/19 21:18	1
Bromodichloromethane	ND		0.50	0.053	ug/L			08/26/19 21:18	1
Bromoform	ND		0.50	0.096	ug/L			08/26/19 21:18	1
Bromomethane	ND		2.0	0.99	ug/L			08/26/19 21:18	1
cis-1,2-Dichloroethene	0.81		0.50	0.11	ug/L			08/26/19 21:18	1
cis-1,3-Dichloropropene	ND		0.50	0.096	ug/L			08/26/19 21:18	1
Carbon disulfide	ND		10	0.39	ug/L			08/26/19 21:18	1
Carbon tetrachloride	0.15	J	0.50	0.057	ug/L			08/26/19 21:18	1
Chlorobenzene	ND		0.50	0.088	ug/L			08/26/19 21:18	1
Chloroethane	ND		0.50	0.12	ug/L			08/26/19 21:18	1
Chloroform	0.44	J	0.50	0.062	ug/L			08/26/19 21:18	1
Chloromethane	ND		5.0	2.0	ug/L			08/26/19 21:18	1
Dibromochloromethane	ND		0.50	0.064	ug/L			08/26/19 21:18	1
Dibromomethane	ND		0.50	0.13	ug/L			08/26/19 21:18	1
Dichlorodifluoromethane	ND		1.0	0.099	ug/L			08/26/19 21:18	1
Ethylbenzene	ND		0.50	0.087	ug/L			08/26/19 21:18	1
Isopropylbenzene	ND		0.50	0.077	ug/L			08/26/19 21:18	1
Methylene Chloride	0.14	J	1.0	0.043	ug/L			08/26/19 21:18	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	0.067	ug/L			08/26/19 21:18	1
Naphthalene	ND		1.0	0.097	ug/L			08/26/19 21:18	1

Eurofins Calscience LLC

Client Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: MW-31
Date Collected: 08/13/19 13:59
Date Received: 08/14/19 17:12

Lab Sample ID: 570-4771-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
n-Butylbenzene	ND		0.50	0.11	ug/L			08/26/19 21:18	1
N-Propylbenzene	ND		0.50	0.076	ug/L			08/26/19 21:18	1
o-Xylene	ND		0.50	0.086	ug/L			08/26/19 21:18	1
m,p-Xylene	ND		1.0	0.15	ug/L			08/26/19 21:18	1
p-Isopropyltoluene	ND		0.50	0.074	ug/L			08/26/19 21:18	1
sec-Butylbenzene	ND		0.50	0.095	ug/L			08/26/19 21:18	1
Styrene	ND		0.50	0.059	ug/L			08/26/19 21:18	1
trans-1,2-Dichloroethene	ND		0.50	0.082	ug/L			08/26/19 21:18	1
trans-1,3-Dichloropropene	ND		0.50	0.053	ug/L			08/26/19 21:18	1
tert-Butylbenzene	ND		0.50	0.082	ug/L			08/26/19 21:18	1
Tetrachloroethene	0.53		0.50	0.24	ug/L			08/26/19 21:18	1
Toluene	0.22	J	0.50	0.093	ug/L			08/26/19 21:18	1
Trichloroethene	13		0.50	0.10	ug/L			08/26/19 21:18	1
Trichlorofluoromethane	ND		0.50	0.10	ug/L			08/26/19 21:18	1
Vinyl acetate	ND		5.0	0.70	ug/L			08/26/19 21:18	1
Vinyl chloride	ND		0.50	0.078	ug/L			08/26/19 21:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		80 - 128		08/26/19 21:18	1
4-Bromofluorobenzene (Surr)	99		68 - 120		08/26/19 21:18	1
Dibromofluoromethane	103		80 - 127		08/26/19 21:18	1
Toluene-d8 (Surr)	102		80 - 120		08/26/19 21:18	1

Client Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8260B - Volatile Organic Compounds (GC/MS) - DL

Client Sample ID: MW-34B
Date Collected: 08/13/19 10:34
Date Received: 08/14/19 17:12

Lab Sample ID: 570-4771-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	57		2.0	0.41	ug/L			08/27/19 21:04	4
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		80 - 128					08/27/19 21:04	4
4-Bromofluorobenzene (Surr)	90		68 - 120					08/27/19 21:04	4
Dibromofluoromethane	98		80 - 127					08/27/19 21:04	4
Toluene-d8 (Surr)	100		80 - 120					08/27/19 21:04	4

Client Sample ID: MW-31
Date Collected: 08/13/19 13:59
Date Received: 08/14/19 17:12

Lab Sample ID: 570-4771-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	290		10	2.1	ug/L			08/27/19 21:29	20
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 128					08/27/19 21:29	20
4-Bromofluorobenzene (Surr)	90		68 - 120					08/27/19 21:29	20
Dibromofluoromethane	98		80 - 127					08/27/19 21:29	20
Toluene-d8 (Surr)	100		80 - 120					08/27/19 21:29	20

Client Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8270C SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Client Sample ID: MW-34B
Date Collected: 08/13/19 10:34
Date Received: 08/14/19 17:12

Lab Sample ID: 570-4771-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	26		0.50	0.18	ug/L	—	08/16/19 13:56	08/19/19 23:11	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	32		30 - 120				08/16/19 13:56	08/19/19 23:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	84		56 - 123				08/16/19 13:56	08/19/19 23:11	1

Client Sample ID: MW-31
Date Collected: 08/13/19 13:59
Date Received: 08/14/19 17:12

Lab Sample ID: 570-4771-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	17		0.50	0.18	ug/L	—	08/16/19 13:56	08/19/19 23:27	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	34		30 - 120				08/16/19 13:56	08/19/19 23:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	89		56 - 123				08/16/19 13:56	08/19/19 23:27	1

Surrogate Summary

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (80-128)	BFB (68-120)	DBFM (80-127)	TOL (80-120)
570-4771-1	TB-081319B	104	99	104	103
570-4771-2	MW-34B	106	99	105	101
570-4771-2 - DL	MW-34B	102	90	98	100
570-4771-3	MW-31	106	99	103	102
570-4771-3 - DL	MW-31	100	90	98	100
570-4966-B-1 MS	Matrix Spike	101	102	103	101
570-4966-C-1 MSD	Matrix Spike Duplicate	105	103	106	101
LCS 570-15051/3	Lab Control Sample	101	101	100	98
LCS 570-15360/4	Lab Control Sample	97	96	103	102
LCSD 570-15051/4	Lab Control Sample Dup	98	102	100	101
LCSD 570-15360/5	Lab Control Sample Dup	99	95	102	102
MB 570-15051/6	Method Blank	103	97	98	100
MB 570-15360/8	Method Blank	100	91	99	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane

TOL = Toluene-d8 (Surr)

Method: 8270C SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		NBZ (56-123)			
570-4771-2	MW-34B	84			
570-4771-3	MW-31	89			
570-4771-3 MS	MW-31	89			
570-4771-3 MSD	MW-31	97			
LCS 570-13011/2-A	Lab Control Sample	86			
MB 570-13011/1-A	Method Blank	91			

Surrogate Legend

NBZ = Nitrobenzene-d5

Isotope Dilution Summary

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8270C SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DXE (30-120)
570-4771-2	MW-34B	32
570-4771-3	MW-31	34
570-4771-3 MS	MW-31	32
570-4771-3 MSD	MW-31	33
LCS 570-13011/2-A	Lab Control Sample	30
MB 570-13011/1-A	Method Blank	33

Surrogate Legend

DXE = 1,4-Dioxane-d8

QC Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 570-15051/6

Matrix: Water

Analysis Batch: 15051

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.50	0.070	ug/L			08/26/19 12:00	1
1,1,1-Trichloroethane	ND		0.50	0.084	ug/L			08/26/19 12:00	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.087	ug/L			08/26/19 12:00	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50	0.13	ug/L			08/26/19 12:00	1
1,1,2-Trichloroethane	ND		0.50	0.069	ug/L			08/26/19 12:00	1
1,1-Dichloroethane	ND		0.50	0.060	ug/L			08/26/19 12:00	1
1,1-Dichloroethene	ND		0.50	0.10	ug/L			08/26/19 12:00	1
1,1-Dichloropropene	ND		0.50	0.070	ug/L			08/26/19 12:00	1
1,2,3-Trichlorobenzene	ND		0.50	0.12	ug/L			08/26/19 12:00	1
1,2,3-Trichloropropane	ND		1.0	0.076	ug/L			08/26/19 12:00	1
1,2,4-Trichlorobenzene	ND		0.50	0.089	ug/L			08/26/19 12:00	1
1,2,4-Trimethylbenzene	ND		0.50	0.068	ug/L			08/26/19 12:00	1
1,2-Dibromo-3-Chloropropane	ND		5.0	0.51	ug/L			08/26/19 12:00	1
1,2-Dibromoethane	ND		0.50	0.059	ug/L			08/26/19 12:00	1
1,2-Dichlorobenzene	ND		0.50	0.082	ug/L			08/26/19 12:00	1
1,2-Dichloroethane	ND		0.50	0.075	ug/L			08/26/19 12:00	1
1,2-Dichloropropane	ND		0.50	0.099	ug/L			08/26/19 12:00	1
1,3,5-Trimethylbenzene	ND		0.50	0.079	ug/L			08/26/19 12:00	1
1,3-Dichlorobenzene	ND		0.50	0.098	ug/L			08/26/19 12:00	1
1,3-Dichloropropane	ND		1.0	0.082	ug/L			08/26/19 12:00	1
1,4-Dichlorobenzene	ND		0.50	0.073	ug/L			08/26/19 12:00	1
2,2-Dichloropropane	ND		1.0	0.38	ug/L			08/26/19 12:00	1
2-Butanone	ND		5.0	0.46	ug/L			08/26/19 12:00	1
2-Chlorotoluene	ND		0.50	0.058	ug/L			08/26/19 12:00	1
2-Hexanone	ND		10	0.50	ug/L			08/26/19 12:00	1
4-Chlorotoluene	ND		0.50	0.091	ug/L			08/26/19 12:00	1
4-Methyl-2-pentanone	ND		5.0	0.42	ug/L			08/26/19 12:00	1
Acetone	ND		10	4.0	ug/L			08/26/19 12:00	1
Benzene	ND		0.50	0.072	ug/L			08/26/19 12:00	1
Bromobenzene	ND		0.50	0.061	ug/L			08/26/19 12:00	1
Bromochloromethane	ND		1.0	0.082	ug/L			08/26/19 12:00	1
Bromodichloromethane	ND		0.50	0.053	ug/L			08/26/19 12:00	1
Bromoform	ND		0.50	0.096	ug/L			08/26/19 12:00	1
Bromomethane	ND		2.0	0.99	ug/L			08/26/19 12:00	1
cis-1,2-Dichloroethene	ND		0.50	0.11	ug/L			08/26/19 12:00	1
cis-1,3-Dichloropropene	ND		0.50	0.096	ug/L			08/26/19 12:00	1
Carbon disulfide	ND		10	0.39	ug/L			08/26/19 12:00	1
Carbon tetrachloride	ND		0.50	0.057	ug/L			08/26/19 12:00	1
Chlorobenzene	ND		0.50	0.088	ug/L			08/26/19 12:00	1
Chloroethane	ND		0.50	0.12	ug/L			08/26/19 12:00	1
Chloroform	ND		0.50	0.062	ug/L			08/26/19 12:00	1
Chloromethane	ND		5.0	2.0	ug/L			08/26/19 12:00	1
Dibromochloromethane	ND		0.50	0.064	ug/L			08/26/19 12:00	1
Dibromomethane	ND		0.50	0.13	ug/L			08/26/19 12:00	1
Dichlorodifluoromethane	ND		1.0	0.099	ug/L			08/26/19 12:00	1
Ethylbenzene	ND		0.50	0.087	ug/L			08/26/19 12:00	1
Isopropylbenzene	ND		0.50	0.077	ug/L			08/26/19 12:00	1
Methylene Chloride	ND		1.0	0.043	ug/L			08/26/19 12:00	1

Eurofins Calscience LLC

QC Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 570-15051/6

Matrix: Water

Analysis Batch: 15051

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl-t-Butyl Ether (MTBE)	ND		0.50	0.067	ug/L			08/26/19 12:00	1
Naphthalene	ND		1.0	0.097	ug/L			08/26/19 12:00	1
n-Butylbenzene	ND		0.50	0.11	ug/L			08/26/19 12:00	1
N-Propylbenzene	ND		0.50	0.076	ug/L			08/26/19 12:00	1
o-Xylene	ND		0.50	0.086	ug/L			08/26/19 12:00	1
m,p-Xylene	ND		1.0	0.15	ug/L			08/26/19 12:00	1
p-Isopropyltoluene	ND		0.50	0.074	ug/L			08/26/19 12:00	1
sec-Butylbenzene	ND		0.50	0.095	ug/L			08/26/19 12:00	1
Styrene	ND		0.50	0.059	ug/L			08/26/19 12:00	1
trans-1,2-Dichloroethene	ND		0.50	0.082	ug/L			08/26/19 12:00	1
trans-1,3-Dichloropropene	ND		0.50	0.053	ug/L			08/26/19 12:00	1
tert-Butylbenzene	ND		0.50	0.082	ug/L			08/26/19 12:00	1
Tetrachloroethene	ND		0.50	0.24	ug/L			08/26/19 12:00	1
Toluene	ND		0.50	0.093	ug/L			08/26/19 12:00	1
Trichloroethene	ND		0.50	0.10	ug/L			08/26/19 12:00	1
Trichlorofluoromethane	ND		0.50	0.10	ug/L			08/26/19 12:00	1
Vinyl acetate	ND		5.0	0.70	ug/L			08/26/19 12:00	1
Vinyl chloride	ND		0.50	0.078	ug/L			08/26/19 12:00	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		80 - 128		08/26/19 12:00	1
4-Bromofluorobenzene (Surr)	97		68 - 120		08/26/19 12:00	1
Dibromofluoromethane	98		80 - 127		08/26/19 12:00	1
Toluene-d8 (Surr)	100		80 - 120		08/26/19 12:00	1

Lab Sample ID: LCS 570-15051/3

Matrix: Water

Analysis Batch: 15051

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	10.0	9.553		ug/L		96	77 - 120
1,2-Dibromoethane	10.0	9.965		ug/L		100	80 - 120
1,2-Dichlorobenzene	10.0	10.39		ug/L		104	80 - 120
1,2-Dichloroethane	10.0	10.21		ug/L		102	80 - 122
Benzene	10.0	10.23		ug/L		102	80 - 120
Carbon tetrachloride	10.0	10.26		ug/L		103	80 - 129
Chlorobenzene	10.0	10.14		ug/L		101	80 - 120
Ethylbenzene	10.0	10.38		ug/L		104	80 - 120
Methyl-t-Butyl Ether (MTBE)	10.0	10.41		ug/L		104	75 - 123
o-Xylene	10.0	10.84		ug/L		108	80 - 120
m,p-Xylene	20.0	21.25		ug/L		106	80 - 120
Toluene	10.0	10.23		ug/L		102	80 - 120
Trichloroethene	10.0	10.09		ug/L		101	80 - 120
Vinyl chloride	10.0	10.51		ug/L		105	63 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	101		80 - 128
4-Bromofluorobenzene (Surr)	101		68 - 120

Eurofins Calscience LLC

QC Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 570-15051/3

Matrix: Water

Analysis Batch: 15051

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
Dibromofluoromethane	100		80 - 127
Toluene-d8 (Surr)	98		80 - 120

Lab Sample ID: LCSD 570-15051/4

Matrix: Water

Analysis Batch: 15051

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	10.0	8.831		ug/L		88	77 - 120	8	26
1,2-Dibromoethane	10.0	10.07		ug/L		101	80 - 120	1	32
1,2-Dichlorobenzene	10.0	10.17		ug/L		102	80 - 120	2	30
1,2-Dichloroethane	10.0	10.09		ug/L		101	80 - 122	1	23
Benzene	10.0	9.879		ug/L		99	80 - 120	4	22
Carbon tetrachloride	10.0	9.348		ug/L		93	80 - 129	9	36
Chlorobenzene	10.0	9.932		ug/L		99	80 - 120	2	29
Ethylbenzene	10.0	9.974		ug/L		100	80 - 120	4	25
Methyl-t-Butyl Ether (MTBE)	10.0	10.17		ug/L		102	75 - 123	2	27
o-Xylene	10.0	10.40		ug/L		104	80 - 120	4	30
m,p-Xylene	20.0	20.58		ug/L		103	80 - 120	3	30
Toluene	10.0	9.878		ug/L		99	80 - 120	4	28
Trichloroethene	10.0	9.627		ug/L		96	80 - 120	5	25
Vinyl chloride	10.0	9.473		ug/L		95	63 - 135	10	30

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		80 - 128
4-Bromofluorobenzene (Surr)	102		68 - 120
Dibromofluoromethane	100		80 - 127
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: 570-4966-B-1 MS

Matrix: Water

Analysis Batch: 15051

Client Sample ID: Matrix Spike

Prep Type: Total/NA

	Sample	Sample	Spike	MS	MS			%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,1-Dichloroethene	ND		10.0	8.888		ug/L		89	66 - 126
1,2-Dibromoethane	ND		10.0	9.364		ug/L		94	75 - 126
1,2-Dichlorobenzene	ND		10.0	9.313		ug/L		93	75 - 125
1,2-Dichloroethane	ND		10.0	9.440		ug/L		94	75 - 127
Benzene	0.11	J	10.0	9.500		ug/L		94	75 - 125
Carbon tetrachloride	ND		10.0	9.369		ug/L		94	69 - 135
Chlorobenzene	ND		10.0	9.069		ug/L		91	75 - 125
Ethylbenzene	0.13	J	10.0	9.459		ug/L		93	75 - 125
Methyl-t-Butyl Ether (MTBE)	ND		10.0	10.21		ug/L		102	71 - 131
o-Xylene	ND		10.0	9.721		ug/L		97	75 - 127
m,p-Xylene	ND		20.0	19.45		ug/L		97	75 - 125
Toluene	ND		10.0	9.419		ug/L		94	75 - 125
Trichloroethene	ND		10.0	9.286		ug/L		93	75 - 125
Vinyl chloride	ND		10.0	10.83		ug/L		108	52 - 142

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QC Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 570-4966-B-1 MS

Matrix: Water

Analysis Batch: 15051

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	101		80 - 128
4-Bromofluorobenzene (Surr)	102		68 - 120
Dibromofluoromethane	103		80 - 127
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: 570-4966-C-1 MSD

Matrix: Water

Analysis Batch: 15051

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	ND		10.0	8.336		ug/L		83	66 - 126	6	20
1,2-Dibromoethane	ND		10.0	8.882		ug/L		89	75 - 126	5	20
1,2-Dichlorobenzene	ND		10.0	8.752		ug/L		88	75 - 125	6	20
1,2-Dichloroethane	ND		10.0	8.891		ug/L		89	75 - 127	6	20
Benzene	0.11	J	10.0	8.696		ug/L		86	75 - 125	9	20
Carbon tetrachloride	ND		10.0	8.751		ug/L		88	69 - 135	7	20
Chlorobenzene	ND		10.0	8.327		ug/L		83	75 - 125	9	20
Ethylbenzene	0.13	J	10.0	8.633		ug/L		85	75 - 125	9	20
Methyl-t-Butyl Ether (MTBE)	ND		10.0	10.52		ug/L		105	71 - 131	3	20
o-Xylene	ND		10.0	8.966		ug/L		90	75 - 127	8	20
m,p-Xylene	ND		20.0	17.68		ug/L		88	75 - 125	10	20
Toluene	ND		10.0	8.734		ug/L		87	75 - 125	8	20
Trichloroethene	ND		10.0	8.384		ug/L		84	75 - 125	10	20
Vinyl chloride	ND		10.0	11.01		ug/L		110	52 - 142	2	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	105		80 - 128
4-Bromofluorobenzene (Surr)	103		68 - 120
Dibromofluoromethane	106		80 - 127
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: MB 570-15360/8

Matrix: Water

Analysis Batch: 15360

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.50	0.070	ug/L			08/27/19 18:31	1
1,1,1-Trichloroethane	ND		0.50	0.084	ug/L			08/27/19 18:31	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.087	ug/L			08/27/19 18:31	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50	0.13	ug/L			08/27/19 18:31	1
1,1,2-Trichloroethane	ND		0.50	0.069	ug/L			08/27/19 18:31	1
1,1-Dichloroethane	ND		0.50	0.060	ug/L			08/27/19 18:31	1
1,1-Dichloroethene	ND		0.50	0.10	ug/L			08/27/19 18:31	1
1,1-Dichloropropene	ND		0.50	0.070	ug/L			08/27/19 18:31	1
1,2,3-Trichlorobenzene	ND		0.50	0.12	ug/L			08/27/19 18:31	1
1,2,3-Trichloropropane	ND		1.0	0.076	ug/L			08/27/19 18:31	1
1,2,4-Trichlorobenzene	ND		0.50	0.089	ug/L			08/27/19 18:31	1
1,2,4-Trimethylbenzene	ND		0.50	0.068	ug/L			08/27/19 18:31	1

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QC Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 570-15360/8

Matrix: Water

Analysis Batch: 15360

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	ND		5.0	0.51	ug/L			08/27/19 18:31	1
1,2-Dibromoethane	ND		0.50	0.059	ug/L			08/27/19 18:31	1
1,2-Dichlorobenzene	ND		0.50	0.082	ug/L			08/27/19 18:31	1
1,2-Dichloroethane	ND		0.50	0.075	ug/L			08/27/19 18:31	1
1,2-Dichloropropane	ND		0.50	0.099	ug/L			08/27/19 18:31	1
1,3,5-Trimethylbenzene	ND		0.50	0.079	ug/L			08/27/19 18:31	1
1,3-Dichlorobenzene	ND		0.50	0.098	ug/L			08/27/19 18:31	1
1,3-Dichloropropane	ND		1.0	0.082	ug/L			08/27/19 18:31	1
1,4-Dichlorobenzene	ND		0.50	0.073	ug/L			08/27/19 18:31	1
2,2-Dichloropropane	ND		1.0	0.38	ug/L			08/27/19 18:31	1
2-Butanone	ND		5.0	0.46	ug/L			08/27/19 18:31	1
2-Chlorotoluene	ND		0.50	0.058	ug/L			08/27/19 18:31	1
2-Hexanone	ND		10	0.50	ug/L			08/27/19 18:31	1
4-Chlorotoluene	ND		0.50	0.091	ug/L			08/27/19 18:31	1
4-Methyl-2-pentanone	ND		5.0	0.42	ug/L			08/27/19 18:31	1
Acetone	ND		10	4.0	ug/L			08/27/19 18:31	1
Benzene	ND		0.50	0.072	ug/L			08/27/19 18:31	1
Bromobenzene	ND		0.50	0.061	ug/L			08/27/19 18:31	1
Bromochloromethane	ND		1.0	0.082	ug/L			08/27/19 18:31	1
Bromodichloromethane	ND		0.50	0.053	ug/L			08/27/19 18:31	1
Bromoform	ND		0.50	0.096	ug/L			08/27/19 18:31	1
Bromomethane	ND		2.0	0.99	ug/L			08/27/19 18:31	1
cis-1,2-Dichloroethene	ND		0.50	0.11	ug/L			08/27/19 18:31	1
cis-1,3-Dichloropropene	ND		0.50	0.096	ug/L			08/27/19 18:31	1
Carbon disulfide	ND		10	0.39	ug/L			08/27/19 18:31	1
Carbon tetrachloride	ND		0.50	0.057	ug/L			08/27/19 18:31	1
Chlorobenzene	ND		0.50	0.088	ug/L			08/27/19 18:31	1
Chloroethane	ND		0.50	0.12	ug/L			08/27/19 18:31	1
Chloroform	ND		0.50	0.062	ug/L			08/27/19 18:31	1
Chloromethane	ND		5.0	2.0	ug/L			08/27/19 18:31	1
Dibromochloromethane	ND		0.50	0.064	ug/L			08/27/19 18:31	1
Dibromomethane	ND		0.50	0.13	ug/L			08/27/19 18:31	1
Dichlorodifluoromethane	ND		1.0	0.099	ug/L			08/27/19 18:31	1
Ethylbenzene	ND		0.50	0.087	ug/L			08/27/19 18:31	1
Isopropylbenzene	ND		0.50	0.077	ug/L			08/27/19 18:31	1
Methylene Chloride	ND		1.0	0.043	ug/L			08/27/19 18:31	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	0.067	ug/L			08/27/19 18:31	1
Naphthalene	ND		1.0	0.097	ug/L			08/27/19 18:31	1
n-Butylbenzene	ND		0.50	0.11	ug/L			08/27/19 18:31	1
N-Propylbenzene	ND		0.50	0.076	ug/L			08/27/19 18:31	1
o-Xylene	ND		0.50	0.086	ug/L			08/27/19 18:31	1
m,p-Xylene	ND		1.0	0.15	ug/L			08/27/19 18:31	1
p-Isopropyltoluene	ND		0.50	0.074	ug/L			08/27/19 18:31	1
sec-Butylbenzene	ND		0.50	0.095	ug/L			08/27/19 18:31	1
Styrene	ND		0.50	0.059	ug/L			08/27/19 18:31	1
trans-1,2-Dichloroethene	ND		0.50	0.082	ug/L			08/27/19 18:31	1
trans-1,3-Dichloropropene	ND		0.50	0.053	ug/L			08/27/19 18:31	1
tert-Butylbenzene	ND		0.50	0.082	ug/L			08/27/19 18:31	1
Tetrachloroethene	ND		0.50	0.24	ug/L			08/27/19 18:31	1

Eurofins Calscience LLC

QC Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 570-15360/8

Matrix: Water

Analysis Batch: 15360

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	ND		0.50	0.093	ug/L			08/27/19 18:31	1
Trichloroethene	ND		0.50	0.10	ug/L			08/27/19 18:31	1
Trichlorofluoromethane	ND		0.50	0.10	ug/L			08/27/19 18:31	1
Vinyl acetate	ND		5.0	0.70	ug/L			08/27/19 18:31	1
Vinyl chloride	ND		0.50	0.078	ug/L			08/27/19 18:31	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		80 - 128		08/27/19 18:31	1
4-Bromofluorobenzene (Surr)	91		68 - 120		08/27/19 18:31	1
Dibromofluoromethane	99		80 - 127		08/27/19 18:31	1
Toluene-d8 (Surr)	99		80 - 120		08/27/19 18:31	1

Lab Sample ID: LCS 570-15360/4

Matrix: Water

Analysis Batch: 15360

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	10.0	10.55		ug/L		105	77 - 120
1,2-Dibromoethane	10.0	10.32		ug/L		103	80 - 120
1,2-Dichlorobenzene	10.0	10.27		ug/L		103	80 - 120
1,2-Dichloroethane	10.0	10.25		ug/L		103	80 - 122
Benzene	10.0	10.34		ug/L		103	80 - 120
Carbon tetrachloride	10.0	9.494		ug/L		95	80 - 129
Chlorobenzene	10.0	10.17		ug/L		102	80 - 120
Ethylbenzene	10.0	10.27		ug/L		103	80 - 120
Methyl-t-Butyl Ether (MTBE)	10.0	9.649		ug/L		96	75 - 123
o-Xylene	10.0	10.01		ug/L		100	80 - 120
m,p-Xylene	20.0	20.80		ug/L		104	80 - 120
Toluene	10.0	10.34		ug/L		103	80 - 120
Trichloroethene	10.0	10.18		ug/L		102	80 - 120
Vinyl chloride	10.0	11.49		ug/L		115	63 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		80 - 128
4-Bromofluorobenzene (Surr)	96		68 - 120
Dibromofluoromethane	103		80 - 127
Toluene-d8 (Surr)	102		80 - 120

Lab Sample ID: LCSD 570-15360/5

Matrix: Water

Analysis Batch: 15360

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	10.0	10.31		ug/L		103	77 - 120	2	26
1,2-Dibromoethane	10.0	10.14		ug/L		101	80 - 120	2	32
1,2-Dichlorobenzene	10.0	9.866		ug/L		99	80 - 120	4	30
1,2-Dichloroethane	10.0	10.08		ug/L		101	80 - 122	2	23
Benzene	10.0	10.03		ug/L		100	80 - 120	3	22

Eurofins Calscience LLC

QC Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 570-15360/5

Matrix: Water

Analysis Batch: 15360

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon tetrachloride	10.0	9.333		ug/L		93	80 - 129	2	36
Chlorobenzene	10.0	9.956		ug/L		100	80 - 120	2	29
Ethylbenzene	10.0	10.03		ug/L		100	80 - 120	2	25
Methyl-t-Butyl Ether (MTBE)	10.0	9.467		ug/L		95	75 - 123	2	27
o-Xylene	10.0	9.621		ug/L		96	80 - 120	4	30
m,p-Xylene	20.0	19.89		ug/L		99	80 - 120	4	30
Toluene	10.0	9.927		ug/L		99	80 - 120	4	28
Trichloroethene	10.0	9.693		ug/L		97	80 - 120	5	25
Vinyl chloride	10.0	10.97		ug/L		110	63 - 135	5	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		80 - 128
4-Bromofluorobenzene (Surr)	95		68 - 120
Dibromofluoromethane	102		80 - 127
Toluene-d8 (Surr)	102		80 - 120

Method: 8270C SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Lab Sample ID: MB 570-13011/1-A

Matrix: Water

Analysis Batch: 13528

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 13011

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.50	0.18	ug/L		08/16/19 13:55	08/19/19 18:25	1
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	33		30 - 120				08/16/19 13:55	08/19/19 18:25	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	91		56 - 123				08/16/19 13:55	08/19/19 18:25	1

Lab Sample ID: LCS 570-13011/2-A

Matrix: Water

Analysis Batch: 13528

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 13011

			Spike	LCS	LCS				%Rec.		
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits		
1,4-Dioxane			20.0	21.63		ug/L	-	108	50 - 130		
	LCS	LCS									
Isotope Dilution	%Recovery	Qualifier	Limits								
1,4-Dioxane-d8	30		30 - 120								
	LCS	LCS									
Surrogate	%Recovery	Qualifier	Limits								
Nitrobenzene-d5	86		56 - 123								

QC Sample Results

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method: 8270C SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution) (Continued)

Lab Sample ID: 570-4771-3 MS

Matrix: Water

Analysis Batch: 13528

Client Sample ID: MW-31

Prep Type: Total/NA

Prep Batch: 13011

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	17		20.0	36.40		ug/L		96	50 - 130
	<i>MS</i>	<i>MS</i>							
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>						
1,4-Dioxane-d8	32		30 - 120						
	<i>MS</i>	<i>MS</i>							
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>						
Nitrobenzene-d5	89		56 - 123						

Lab Sample ID: 570-4771-3 MSD

Matrix: Water

Analysis Batch: 13528

Client Sample ID: MW-31

Prep Type: Total/NA

Prep Batch: 13011

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	17		20.0	38.16		ug/L		105	50 - 130	5	20
	<i>MSD</i>	<i>MSD</i>									
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>								
1,4-Dioxane-d8	33		30 - 120								
	<i>MSD</i>	<i>MSD</i>									
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>								
Nitrobenzene-d5	97		56 - 123								

QC Association Summary

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

GC/MS VOA

Analysis Batch: 15051

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-4771-1	TB-081319B	Total/NA	Water	8260B	
570-4771-2	MW-34B	Total/NA	Water	8260B	
570-4771-3	MW-31	Total/NA	Water	8260B	
MB 570-15051/6	Method Blank	Total/NA	Water	8260B	
LCS 570-15051/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 570-15051/4	Lab Control Sample Dup	Total/NA	Water	8260B	
570-4966-B-1 MS	Matrix Spike	Total/NA	Water	8260B	
570-4966-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 15360

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-4771-2 - DL	MW-34B	Total/NA	Water	8260B	
570-4771-3 - DL	MW-31	Total/NA	Water	8260B	
MB 570-15360/8	Method Blank	Total/NA	Water	8260B	
LCS 570-15360/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 570-15360/5	Lab Control Sample Dup	Total/NA	Water	8260B	

GC/MS Semi VOA

Prep Batch: 13011

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-4771-2	MW-34B	Total/NA	Water	3510C	
570-4771-3	MW-31	Total/NA	Water	3510C	
MB 570-13011/1-A	Method Blank	Total/NA	Water	3510C	
LCS 570-13011/2-A	Lab Control Sample	Total/NA	Water	3510C	
570-4771-3 MS	MW-31	Total/NA	Water	3510C	
570-4771-3 MSD	MW-31	Total/NA	Water	3510C	

Analysis Batch: 13528

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-4771-2	MW-34B	Total/NA	Water	8270C SIM ID	13011
570-4771-3	MW-31	Total/NA	Water	8270C SIM ID	13011
MB 570-13011/1-A	Method Blank	Total/NA	Water	8270C SIM ID	13011
LCS 570-13011/2-A	Lab Control Sample	Total/NA	Water	8270C SIM ID	13011
570-4771-3 MS	MW-31	Total/NA	Water	8270C SIM ID	13011
570-4771-3 MSD	MW-31	Total/NA	Water	8270C SIM ID	13011

Lab Chronicle

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Client Sample ID: TB-081319B

Date Collected: 08/13/19 08:05

Date Received: 08/14/19 17:12

Lab Sample ID: 570-4771-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	20 mL	20 mL	15051	08/26/19 20:18	UJHB	ECL 2
Instrument ID: GCMSL										

Client Sample ID: MW-34B

Date Collected: 08/13/19 10:34

Date Received: 08/14/19 17:12

Lab Sample ID: 570-4771-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	20 mL	20 mL	15051	08/26/19 20:48	UJHB	ECL 2
Instrument ID: GCMSL										
Total/NA	Analysis	8260B	DL	4	20 mL	20 mL	15360	08/27/19 21:04	UX77	ECL 2
Instrument ID: GCMSUU										
Total/NA	Prep	3510C			100 mL	10 mL	13011	08/16/19 13:56	XF3X	ECL 1
Total/NA	Analysis	8270C SIM ID		1			13528	08/19/19 23:11	ULLI	ECL 1
Instrument ID: GCMSDDD										

Client Sample ID: MW-31

Date Collected: 08/13/19 13:59

Date Received: 08/14/19 17:12

Lab Sample ID: 570-4771-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	20 mL	20 mL	15051	08/26/19 21:18	UJHB	ECL 2
Instrument ID: GCMSL										
Total/NA	Analysis	8260B	DL	20	20 mL	20 mL	15360	08/27/19 21:29	UX77	ECL 2
Instrument ID: GCMSUU										
Total/NA	Prep	3510C			100 mL	10 mL	13011	08/16/19 13:56	XF3X	ECL 1
Total/NA	Analysis	8270C SIM ID		1			13528	08/19/19 23:27	ULLI	ECL 1
Instrument ID: GCMSDDD										

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Accreditation/Certification Summary

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Laboratory: Eurofins Calscience LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arizona	State Program	AZ0781	03-13-20
California	SCAQMD LAP	N/A	11-30-19
California	State Program	2944	09-30-19
Guam	State Program	19-004R	10-31-19
Hawaii	State Program	N/A	01-29-20
Oregon	NELAP Primary AB	CA300001	01-20-20
Washington	State Program	C916	10-11-19

Method Summary

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	ECL 2
8270C SIM ID	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	ECL 1
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	ECL 1
5030C	Purge and Trap	SW846	ECL 2

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Sample Summary

Client: Hargis + Associates, Inc.
Project/Site: Raytheon Fullerton / 532.30

Job ID: 570-4771-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
570-4771-1	TB-081319B	Water	08/13/19 08:05	08/14/19 17:12	
570-4771-2	MW-34B	Water	08/13/19 10:34	08/14/19 17:12	
570-4771-3	MW-31	Water	08/13/19 13:59	08/14/19 17:12	

PROJECT: Raytheon Fullerton

TASK NO.: 532.30

Project Manager **Steve Netto**
QA Manager **Ross Horton** *Tyler Evans*
Phone 858.455.6500
Fax 858.455.6533

Loc: 570

4771

Date: 08/08/2019

Page 1 of 1

Sampled By:

A. DONNELLY, A. JANZON

SAMPLE COLLECTION

LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Ice	40-ml VOA	1 Liter Amber	VOCs by EPA 8260B	1,4-Dioxane by EPA 8270C (M)	Expected Concentration Range (ppb) for	SPECIAL HANDLING
	TB-091319B	8/13/19	0805	X	X			X	3			X		0 - 100	STANDARD TAT
	MW-34B		1034	X	X			X	3			X		100 - 1,000	
	↓		↓	X				X		1			X	1,000 - 10,000	
	MW-31		1359	X	X			X	3			X			
	↓		↓	X				X		1			X		

Total number of containers per analysis:

Total No. of Containers: 0

Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
<i>AD / H+A</i>	8/14/19 1630	<i>Peter / DCS</i>	8/14/19 1630
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
<i>Peter / DCS</i>	8/14/19 1712	<i>[Signature]</i>	8/14/19 1712

- ☐ No. of containers correct
☐ Received in good condition
☐ Custody seals secure
☐ Conforms to COC document

Send Results to:

Steve Netto

9171 Towne Centre Drive

Suite 375

San Diego, CA 92122

Ph: 858.455.6500

snetto@hargis.com

Instructions

1. Fill out form completely and sign only after verified for completeness
2. Complete in ballpoint pen. Draw one line through error, initial and date correction
3. Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✗
4. Note applicable preservatives, special instructions, and deviations from typical environmental samples.
5. Consult project QA documents for specific instructions.

Temperature on receipt



570-4771 Chain of Custody

Login Sample Receipt Checklist

Client: Hargis + Associates, Inc.

Job Number: 570-4771-1

Login Number: 4771

List Number: 1

Creator: Castro, Joy

List Source: Eurofins Calscience

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



August 20, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1903024
Client Reference : Raytheon FULLERTON, 532.30

Enclosed are the results for sample(s) received on August 13, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read "Edgar Caballero", with a small "Ar" written below the main signature.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-081319A	1903024-01	Lab prepared water	8/13/19 8:00	8/13/19 16:55
MW-34A	1903024-02	Groundwater	8/13/19 9:46	8/13/19 16:55
MW-34B	1903024-03	Groundwater	8/13/19 10:32	8/13/19 16:55
MW-3400B	1903024-04	Groundwater	8/13/19 10:33	8/13/19 16:55
MW-34C	1903024-05	Groundwater	8/13/19 12:59	8/13/19 16:55
MW-31	1903024-06	Groundwater	8/13/19 13:57	8/13/19 16:55
MW-3100	1903024-07	Groundwater	8/13/19 13:58	8/13/19 16:55
MW-30A	1903024-08	Groundwater	8/13/19 14:49	8/13/19 16:55
MW-30B	1903024-09	Groundwater	8/13/19 15:28	8/13/19 16:55
MW-32A	1903024-10	Groundwater	8/13/19 10:31	8/13/19 16:55
MW-32C	1903024-11	Groundwater	8/13/19 14:08	8/13/19 16:55
MW-32B_2SV_	1903024-12	Groundwater	8/13/19 16:03	8/13/19 16:55
MW-32B	1903024-13	Groundwater	8/13/19 16:22	8/13/19 16:55

CASE NARRATIVE

Results were J-flagged. "J" is used to flag those results that are between the PQL (Practical Quantitation Limit) and the calculated MDL (Method Detection Limit). Results that are "J" flagged are estimated values since it becomes difficult to accurately quantitate the analyte near the MDL.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: TB-081319A

Lab ID: 1903024-01

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 17:08	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0318	08/14/2019	08/14/19 17:08	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0318	08/14/2019	08/14/19 17:08	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0318	08/14/2019	08/14/19 17:08	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 17:08	
1,1-Dichloroethene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 17:08	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 17:08	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0318	08/14/2019	08/14/19 17:08	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0318	08/14/2019	08/14/19 17:08	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0318	08/14/2019	08/14/19 17:08	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0318	08/14/2019	08/14/19 17:08	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0318	08/14/2019	08/14/19 17:08	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0318	08/14/2019	08/14/19 17:08	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0318	08/14/2019	08/14/19 17:08	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0318	08/14/2019	08/14/19 17:08	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0318	08/14/2019	08/14/19 17:08	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 17:08	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0318	08/14/2019	08/14/19 17:08	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0318	08/14/2019	08/14/19 17:08	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0318	08/14/2019	08/14/19 17:08	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0318	08/14/2019	08/14/19 17:08	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 17:08	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0318	08/14/2019	08/14/19 17:08	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 17:08	
Benzene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 17:08	
Bromobenzene	ND	0.50	0.21	1	B9H0318	08/14/2019	08/14/19 17:08	
Bromodichloromethane	ND	0.50	0.14	1	B9H0318	08/14/2019	08/14/19 17:08	
Bromoform	ND	0.50	0.20	1	B9H0318	08/14/2019	08/14/19 17:08	
Bromomethane	ND	0.50	0.17	1	B9H0318	08/14/2019	08/14/19 17:08	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 17:08	
Chlorobenzene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 17:08	
Chloroethane	ND	0.50	0.15	1	B9H0318	08/14/2019	08/14/19 17:08	
Chloroform	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 17:08	
Chloromethane	ND	0.50	0.12	1	B9H0318	08/14/2019	08/14/19 17:08	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0318	08/14/2019	08/14/19 17:08	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 17:08	
Dibromochloromethane	ND	0.50	0.16	1	B9H0318	08/14/2019	08/14/19 17:08	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: TB-081319A

Lab ID: 1903024-01

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0318	08/14/2019	08/14/19 17:08	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0318	08/14/2019	08/14/19 17:08	
Ethylbenzene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 17:08	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0318	08/14/2019	08/14/19 17:08	
Isopropylbenzene	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 17:08	
m,p-Xylene	ND	1.0	0.19	1	B9H0318	08/14/2019	08/14/19 17:08	
Methylene chloride	ND	1.0	0.71	1	B9H0318	08/14/2019	08/14/19 17:08	
n-Butylbenzene	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 17:08	
n-Propylbenzene	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 17:08	
Naphthalene	ND	0.50	0.41	1	B9H0318	08/14/2019	08/14/19 17:08	
o-Xylene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 17:08	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 17:08	
Styrene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 17:08	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 17:08	
Tetrachloroethene	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 17:08	
Toluene	ND	0.50	0.12	1	B9H0318	08/14/2019	08/14/19 17:08	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 17:08	
Trichloroethene	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 17:08	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 17:08	
Vinyl chloride	ND	0.50	0.05	1	B9H0318	08/14/2019	08/14/19 17:08	
Surrogate: 1,2-Dichloroethane-d4	125 %		57 - 152		B9H0318	08/14/2019	08/14/19 17:08	
Surrogate: 4-Bromofluorobenzene	99.5 %		62 - 134		B9H0318	08/14/2019	08/14/19 17:08	
Surrogate: Dibromofluoromethane	135 %		56 - 167		B9H0318	08/14/2019	08/14/19 17:08	
Surrogate: Toluene-d8	115 %		33 - 170		B9H0318	08/14/2019	08/14/19 17:08	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-34A

Lab ID: 1903024-02

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 21:38	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0318	08/14/2019	08/14/19 21:38	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0318	08/14/2019	08/14/19 21:38	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0318	08/14/2019	08/14/19 21:38	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 21:38	
1,1-Dichloroethene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:38	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:38	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0318	08/14/2019	08/14/19 21:38	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0318	08/14/2019	08/14/19 21:38	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0318	08/14/2019	08/14/19 21:38	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0318	08/14/2019	08/14/19 21:38	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0318	08/14/2019	08/14/19 21:38	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0318	08/14/2019	08/14/19 21:38	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0318	08/14/2019	08/14/19 21:38	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0318	08/14/2019	08/14/19 21:38	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0318	08/14/2019	08/14/19 21:38	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:38	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0318	08/14/2019	08/14/19 21:38	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0318	08/14/2019	08/14/19 21:38	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0318	08/14/2019	08/14/19 21:38	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0318	08/14/2019	08/14/19 21:38	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 21:38	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0318	08/14/2019	08/14/19 21:38	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 21:38	
Benzene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:38	
Bromobenzene	ND	0.50	0.21	1	B9H0318	08/14/2019	08/14/19 21:38	
Bromodichloromethane	ND	0.50	0.14	1	B9H0318	08/14/2019	08/14/19 21:38	
Bromoform	ND	0.50	0.20	1	B9H0318	08/14/2019	08/14/19 21:38	
Bromomethane	ND	0.50	0.17	1	B9H0318	08/14/2019	08/14/19 21:38	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 21:38	
Chlorobenzene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:38	
Chloroethane	ND	0.50	0.15	1	B9H0318	08/14/2019	08/14/19 21:38	
Chloroform	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 21:38	
Chloromethane	ND	0.50	0.12	1	B9H0318	08/14/2019	08/14/19 21:38	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0318	08/14/2019	08/14/19 21:38	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:38	
Dibromochloromethane	ND	0.50	0.16	1	B9H0318	08/14/2019	08/14/19 21:38	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-34A

Lab ID: 1903024-02

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0318	08/14/2019	08/14/19 21:38	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0318	08/14/2019	08/14/19 21:38	
Ethylbenzene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:38	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0318	08/14/2019	08/14/19 21:38	
Isopropylbenzene	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 21:38	
m,p-Xylene	ND	1.0	0.19	1	B9H0318	08/14/2019	08/14/19 21:38	
Methylene chloride	ND	1.0	0.71	1	B9H0318	08/14/2019	08/14/19 21:38	
n-Butylbenzene	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 21:38	
n-Propylbenzene	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 21:38	
Naphthalene	ND	0.50	0.41	1	B9H0318	08/14/2019	08/14/19 21:38	
o-Xylene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:38	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 21:38	
Styrene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:38	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 21:38	
Tetrachloroethene	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 21:38	
Toluene	ND	0.50	0.12	1	B9H0318	08/14/2019	08/14/19 21:38	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 21:38	
Trichloroethene	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 21:38	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 21:38	
Vinyl chloride	ND	0.50	0.05	1	B9H0318	08/14/2019	08/14/19 21:38	
Surrogate: 1,2-Dichloroethane-d4	138 %		57 - 152		B9H0318	08/14/2019	08/14/19 21:38	
Surrogate: 4-Bromofluorobenzene	97.1 %		62 - 134		B9H0318	08/14/2019	08/14/19 21:38	
Surrogate: Dibromofluoromethane	147 %		56 - 167		B9H0318	08/14/2019	08/14/19 21:38	
Surrogate: Toluene-d8	127 %		33 - 170		B9H0318	08/14/2019	08/14/19 21:38	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-34A

Lab ID: 1903024-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	0.05	1	B9H0394	08/16/2019	08/16/19 23:18	
Surrogate: 1,2-Dichlorobenzene-d4	71.6 %		22 - 117		B9H0394	08/16/2019	08/16/19 23:18	
Surrogate: 2-Fluorobiphenyl	80.6 %		20 - 131		B9H0394	08/16/2019	08/16/19 23:18	
Surrogate: 4-Terphenyl-d14	91.2 %		24 - 135		B9H0394	08/16/2019	08/16/19 23:18	
Surrogate: Nitrobenzene-d5	80.2 %		6 - 124		B9H0394	08/16/2019	08/16/19 23:18	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-34B

Lab ID: 1903024-03

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 20:50	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0318	08/14/2019	08/14/19 20:50	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0318	08/14/2019	08/14/19 20:50	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0318	08/14/2019	08/14/19 20:50	
1,1-Dichloroethane	2.4	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 20:50	
1,1-Dichloroethene	58	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 20:50	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 20:50	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0318	08/14/2019	08/14/19 20:50	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0318	08/14/2019	08/14/19 20:50	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0318	08/14/2019	08/14/19 20:50	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0318	08/14/2019	08/14/19 20:50	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0318	08/14/2019	08/14/19 20:50	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0318	08/14/2019	08/14/19 20:50	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0318	08/14/2019	08/14/19 20:50	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0318	08/14/2019	08/14/19 20:50	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0318	08/14/2019	08/14/19 20:50	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 20:50	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0318	08/14/2019	08/14/19 20:50	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0318	08/14/2019	08/14/19 20:50	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0318	08/14/2019	08/14/19 20:50	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0318	08/14/2019	08/14/19 20:50	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 20:50	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0318	08/14/2019	08/14/19 20:50	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 20:50	
Benzene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 20:50	
Bromobenzene	ND	0.50	0.21	1	B9H0318	08/14/2019	08/14/19 20:50	
Bromodichloromethane	ND	0.50	0.14	1	B9H0318	08/14/2019	08/14/19 20:50	
Bromoform	ND	0.50	0.20	1	B9H0318	08/14/2019	08/14/19 20:50	
Bromomethane	ND	0.50	0.17	1	B9H0318	08/14/2019	08/14/19 20:50	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 20:50	
Chlorobenzene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 20:50	
Chloroethane	ND	0.50	0.15	1	B9H0318	08/14/2019	08/14/19 20:50	
Chloroform	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 20:50	
Chloromethane	ND	0.50	0.12	1	B9H0318	08/14/2019	08/14/19 20:50	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0318	08/14/2019	08/14/19 20:50	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 20:50	
Dibromochloromethane	ND	0.50	0.16	1	B9H0318	08/14/2019	08/14/19 20:50	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-34B

Lab ID: 1903024-03

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0318	08/14/2019	08/14/19 20:50	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0318	08/14/2019	08/14/19 20:50	
Ethylbenzene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 20:50	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0318	08/14/2019	08/14/19 20:50	
Isopropylbenzene	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 20:50	
m,p-Xylene	ND	1.0	0.19	1	B9H0318	08/14/2019	08/14/19 20:50	
Methylene chloride	ND	1.0	0.71	1	B9H0318	08/14/2019	08/14/19 20:50	
n-Butylbenzene	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 20:50	
n-Propylbenzene	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 20:50	
Naphthalene	ND	0.50	0.41	1	B9H0318	08/14/2019	08/14/19 20:50	
o-Xylene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 20:50	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 20:50	
Styrene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 20:50	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 20:50	
Tetrachloroethene	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 20:50	
Toluene	ND	0.50	0.12	1	B9H0318	08/14/2019	08/14/19 20:50	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 20:50	
Trichloroethene	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 20:50	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 20:50	
Vinyl chloride	ND	0.50	0.05	1	B9H0318	08/14/2019	08/14/19 20:50	
Surrogate: 1,2-Dichloroethane-d4	130 %		57 - 152		B9H0318	08/14/2019	08/14/19 20:50	
Surrogate: 4-Bromofluorobenzene	98.8 %		62 - 134		B9H0318	08/14/2019	08/14/19 20:50	
Surrogate: Dibromofluoromethane	136 %		56 - 167		B9H0318	08/14/2019	08/14/19 20:50	
Surrogate: Toluene-d8	125 %		33 - 170		B9H0318	08/14/2019	08/14/19 20:50	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-34B

Lab ID: 1903024-03

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	22	2.0	0.84	1	B9H0393	08/16/2019	08/16/19 19:44	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>64.1 %</i>		<i>34 - 188</i>		B9H0393	08/16/2019	<i>08/16/19 19:44</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>66.1 %</i>		<i>39 - 108</i>		B9H0393	08/16/2019	<i>08/16/19 19:44</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>103 %</i>		<i>71 - 131</i>		B9H0393	08/16/2019	<i>08/16/19 19:44</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>66.4 %</i>		<i>32 - 106</i>		B9H0393	08/16/2019	<i>08/16/19 19:44</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-3400B

Lab ID: 1903024-04

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 21:14	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0318	08/14/2019	08/14/19 21:14	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0318	08/14/2019	08/14/19 21:14	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0318	08/14/2019	08/14/19 21:14	
1,1-Dichloroethane	2.3	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 21:14	
1,1-Dichloroethene	70	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:14	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:14	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0318	08/14/2019	08/14/19 21:14	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0318	08/14/2019	08/14/19 21:14	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0318	08/14/2019	08/14/19 21:14	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0318	08/14/2019	08/14/19 21:14	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0318	08/14/2019	08/14/19 21:14	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0318	08/14/2019	08/14/19 21:14	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0318	08/14/2019	08/14/19 21:14	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0318	08/14/2019	08/14/19 21:14	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0318	08/14/2019	08/14/19 21:14	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:14	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0318	08/14/2019	08/14/19 21:14	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0318	08/14/2019	08/14/19 21:14	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0318	08/14/2019	08/14/19 21:14	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0318	08/14/2019	08/14/19 21:14	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 21:14	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0318	08/14/2019	08/14/19 21:14	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 21:14	
Benzene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:14	
Bromobenzene	ND	0.50	0.21	1	B9H0318	08/14/2019	08/14/19 21:14	
Bromodichloromethane	ND	0.50	0.14	1	B9H0318	08/14/2019	08/14/19 21:14	
Bromoform	ND	0.50	0.20	1	B9H0318	08/14/2019	08/14/19 21:14	
Bromomethane	ND	0.50	0.17	1	B9H0318	08/14/2019	08/14/19 21:14	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 21:14	
Chlorobenzene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:14	
Chloroethane	ND	0.50	0.15	1	B9H0318	08/14/2019	08/14/19 21:14	
Chloroform	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 21:14	
Chloromethane	ND	0.50	0.12	1	B9H0318	08/14/2019	08/14/19 21:14	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0318	08/14/2019	08/14/19 21:14	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:14	
Dibromochloromethane	ND	0.50	0.16	1	B9H0318	08/14/2019	08/14/19 21:14	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-3400B

Lab ID: 1903024-04

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0318	08/14/2019	08/14/19 21:14	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0318	08/14/2019	08/14/19 21:14	
Ethylbenzene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:14	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0318	08/14/2019	08/14/19 21:14	
Isopropylbenzene	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 21:14	
m,p-Xylene	ND	1.0	0.19	1	B9H0318	08/14/2019	08/14/19 21:14	
Methylene chloride	ND	1.0	0.71	1	B9H0318	08/14/2019	08/14/19 21:14	
n-Butylbenzene	ND	0.50	0.11	1	B9H0318	08/14/2019	08/14/19 21:14	
n-Propylbenzene	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 21:14	
Naphthalene	ND	0.50	0.41	1	B9H0318	08/14/2019	08/14/19 21:14	
o-Xylene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:14	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 21:14	
Styrene	ND	0.50	0.13	1	B9H0318	08/14/2019	08/14/19 21:14	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 21:14	
Tetrachloroethene	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 21:14	
Toluene	ND	0.50	0.12	1	B9H0318	08/14/2019	08/14/19 21:14	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0318	08/14/2019	08/14/19 21:14	
Trichloroethene	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 21:14	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0318	08/14/2019	08/14/19 21:14	
Vinyl chloride	ND	0.50	0.05	1	B9H0318	08/14/2019	08/14/19 21:14	
Surrogate: 1,2-Dichloroethane-d4	135 %		57 - 152		B9H0318	08/14/2019	08/14/19 21:14	
Surrogate: 4-Bromofluorobenzene	97.7 %		62 - 134		B9H0318	08/14/2019	08/14/19 21:14	
Surrogate: Dibromofluoromethane	143 %		56 - 167		B9H0318	08/14/2019	08/14/19 21:14	
Surrogate: Toluene-d8	121 %		33 - 170		B9H0318	08/14/2019	08/14/19 21:14	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-3400B

Lab ID: 1903024-04

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	21	2.0	0.84	1	B9H0393	08/16/2019	08/16/19 20:10	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>60.7 %</i>		<i>34 - 188</i>		B9H0393	08/16/2019	<i>08/16/19 20:10</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>66.3 %</i>		<i>39 - 108</i>		B9H0393	08/16/2019	<i>08/16/19 20:10</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>103 %</i>		<i>71 - 131</i>		B9H0393	08/16/2019	<i>08/16/19 20:10</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>65.5 %</i>		<i>32 - 106</i>		B9H0393	08/16/2019	<i>08/16/19 20:10</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-34C

Lab ID: 1903024-05

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 16:10	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0348	08/15/2019	08/15/19 16:10	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0348	08/15/2019	08/15/19 16:10	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0348	08/15/2019	08/15/19 16:10	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 16:10	
1,1-Dichloroethene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:10	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:10	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0348	08/15/2019	08/15/19 16:10	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0348	08/15/2019	08/15/19 16:10	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 16:10	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 16:10	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0348	08/15/2019	08/15/19 16:10	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0348	08/15/2019	08/15/19 16:10	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 16:10	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 16:10	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 16:10	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:10	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 16:10	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0348	08/15/2019	08/15/19 16:10	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0348	08/15/2019	08/15/19 16:10	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0348	08/15/2019	08/15/19 16:10	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 16:10	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 16:10	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 16:10	
Benzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:10	
Bromobenzene	ND	0.50	0.21	1	B9H0348	08/15/2019	08/15/19 16:10	
Bromodichloromethane	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 16:10	
Bromoform	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 16:10	
Bromomethane	ND	0.50	0.17	1	B9H0348	08/15/2019	08/15/19 16:10	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 16:10	
Chlorobenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:10	
Chloroethane	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 16:10	
Chloroform	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 16:10	
Chloromethane	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 16:10	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 16:10	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:10	
Dibromochloromethane	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 16:10	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-34C

Lab ID: 1903024-05

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0348	08/15/2019	08/15/19 16:10	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0348	08/15/2019	08/15/19 16:10	
Ethylbenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:10	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 16:10	
Isopropylbenzene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 16:10	
m,p-Xylene	ND	1.0	0.19	1	B9H0348	08/15/2019	08/15/19 16:10	
Methylene chloride	ND	1.0	0.71	1	B9H0348	08/15/2019	08/15/19 16:10	
n-Butylbenzene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 16:10	
n-Propylbenzene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 16:10	
Naphthalene	ND	0.50	0.41	1	B9H0348	08/15/2019	08/15/19 16:10	
o-Xylene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:10	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 16:10	
Styrene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:10	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 16:10	
Tetrachloroethene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 16:10	
Toluene	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 16:10	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 16:10	
Trichloroethene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 16:10	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 16:10	
Vinyl chloride	ND	0.50	0.05	1	B9H0348	08/15/2019	08/15/19 16:10	
Surrogate: 1,2-Dichloroethane-d4	130 %		59 - 158		B9H0348	08/15/2019	08/15/19 16:10	
Surrogate: 4-Bromofluorobenzene	101 %		71 - 127		B9H0348	08/15/2019	08/15/19 16:10	
Surrogate: Dibromofluoromethane	135 %		66 - 147		B9H0348	08/15/2019	08/15/19 16:10	
Surrogate: Toluene-d8	123 %		77 - 138		B9H0348	08/15/2019	08/15/19 16:10	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-34C

Lab ID: 1903024-05

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	0.05	1	B9H0394	08/16/2019	08/19/19 15:36	
Surrogate: 1,2-Dichlorobenzene-d4	60.6 %		22 - 117		B9H0394	08/16/2019	08/19/19 15:36	
Surrogate: 2-Fluorobiphenyl	65.5 %		20 - 131		B9H0394	08/16/2019	08/19/19 15:36	
Surrogate: 4-Terphenyl-d14	68.4 %		24 - 135		B9H0394	08/16/2019	08/19/19 15:36	
Surrogate: Nitrobenzene-d5	70.6 %		6 - 124		B9H0394	08/16/2019	08/19/19 15:36	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-31

Lab ID: 1903024-06

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 16:58	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0348	08/15/2019	08/15/19 16:58	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0348	08/15/2019	08/15/19 16:58	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0348	08/15/2019	08/15/19 16:58	
1,1-Dichloroethane	5.0	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 16:58	
1,1-Dichloroethene	330	5.0	1.3	10	B9H0348	08/15/2019	08/15/19 18:46	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:58	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0348	08/15/2019	08/15/19 16:58	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0348	08/15/2019	08/15/19 16:58	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 16:58	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 16:58	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0348	08/15/2019	08/15/19 16:58	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0348	08/15/2019	08/15/19 16:58	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 16:58	
1,2-Dichloroethane	0.51	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 16:58	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 16:58	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:58	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 16:58	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0348	08/15/2019	08/15/19 16:58	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0348	08/15/2019	08/15/19 16:58	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0348	08/15/2019	08/15/19 16:58	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 16:58	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 16:58	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 16:58	
Benzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:58	
Bromobenzene	ND	0.50	0.21	1	B9H0348	08/15/2019	08/15/19 16:58	
Bromodichloromethane	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 16:58	
Bromoform	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 16:58	
Bromomethane	ND	0.50	0.17	1	B9H0348	08/15/2019	08/15/19 16:58	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 16:58	
Chlorobenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:58	
Chloroethane	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 16:58	
Chloroform	0.58	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 16:58	
Chloromethane	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 16:58	
cis-1,2-Dichloroethene	3.0	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 16:58	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:58	
Dibromochloromethane	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 16:58	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-31

Lab ID: 1903024-06

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0348	08/15/2019	08/15/19 16:58	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0348	08/15/2019	08/15/19 16:58	
Ethylbenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:58	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 16:58	
Isopropylbenzene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 16:58	
m,p-Xylene	ND	1.0	0.19	1	B9H0348	08/15/2019	08/15/19 16:58	
Methylene chloride	ND	1.0	0.71	1	B9H0348	08/15/2019	08/15/19 16:58	
n-Butylbenzene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 16:58	
n-Propylbenzene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 16:58	
Naphthalene	ND	0.50	0.41	1	B9H0348	08/15/2019	08/15/19 16:58	
o-Xylene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:58	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 16:58	
Styrene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:58	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 16:58	
Tetrachloroethene	2.4	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 16:58	
Toluene	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 16:58	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 16:58	
Trichloroethene	14	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 16:58	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 16:58	
Vinyl chloride	ND	0.50	0.05	1	B9H0348	08/15/2019	08/15/19 16:58	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>132 %</i>		<i>59 - 158</i>		B9H0348	08/15/2019	<i>08/15/19 18:46</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>132 %</i>		<i>59 - 158</i>		B9H0348	08/15/2019	<i>08/15/19 16:58</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>94.2 %</i>		<i>71 - 127</i>		B9H0348	08/15/2019	<i>08/15/19 18:46</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>98.4 %</i>		<i>71 - 127</i>		B9H0348	08/15/2019	<i>08/15/19 16:58</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>140 %</i>		<i>66 - 147</i>		B9H0348	08/15/2019	<i>08/15/19 16:58</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>145 %</i>		<i>66 - 147</i>		B9H0348	08/15/2019	<i>08/15/19 18:46</i>	
<i>Surrogate: Toluene-d8</i>	<i>120 %</i>		<i>77 - 138</i>		B9H0348	08/15/2019	<i>08/15/19 18:46</i>	
<i>Surrogate: Toluene-d8</i>	<i>117 %</i>		<i>77 - 138</i>		B9H0348	08/15/2019	<i>08/15/19 16:58</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-31

Lab ID: 1903024-06

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	11	0.20	0.05	1	B9H0394	08/16/2019	08/17/19 00:12	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>80.1 %</i>		<i>22 - 117</i>		B9H0394	08/16/2019	<i>08/17/19 00:12</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>86.6 %</i>		<i>20 - 131</i>		B9H0394	08/16/2019	<i>08/17/19 00:12</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>103 %</i>		<i>24 - 135</i>		B9H0394	08/16/2019	<i>08/17/19 00:12</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>92.9 %</i>		<i>6 - 124</i>		B9H0394	08/16/2019	<i>08/17/19 00:12</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-3100

Lab ID: 1903024-07

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 19:12	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0348	08/15/2019	08/15/19 19:12	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0348	08/15/2019	08/15/19 19:12	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0348	08/15/2019	08/15/19 19:12	
1,1-Dichloroethane	5.2	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 19:12	
1,1-Dichloroethene	290	5.0	1.3	10	B9H0408	08/19/2019	08/19/19 17:46	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 19:12	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0348	08/15/2019	08/15/19 19:12	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0348	08/15/2019	08/15/19 19:12	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 19:12	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 19:12	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0348	08/15/2019	08/15/19 19:12	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0348	08/15/2019	08/15/19 19:12	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 19:12	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 19:12	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 19:12	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 19:12	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 19:12	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0348	08/15/2019	08/15/19 19:12	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0348	08/15/2019	08/15/19 19:12	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0348	08/15/2019	08/15/19 19:12	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 19:12	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 19:12	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 19:12	
Benzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 19:12	
Bromobenzene	ND	0.50	0.21	1	B9H0348	08/15/2019	08/15/19 19:12	
Bromodichloromethane	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 19:12	
Bromoform	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 19:12	
Bromomethane	ND	0.50	0.17	1	B9H0348	08/15/2019	08/15/19 19:12	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 19:12	
Chlorobenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 19:12	
Chloroethane	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 19:12	
Chloroform	0.55	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 19:12	
Chloromethane	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 19:12	
cis-1,2-Dichloroethene	3.0	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 19:12	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 19:12	
Dibromochloromethane	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 19:12	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-3100

Lab ID: 1903024-07

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0348	08/15/2019	08/15/19 19:12	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0348	08/15/2019	08/15/19 19:12	
Ethylbenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 19:12	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 19:12	
Isopropylbenzene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 19:12	
m,p-Xylene	ND	1.0	0.19	1	B9H0348	08/15/2019	08/15/19 19:12	
Methylene chloride	ND	1.0	0.71	1	B9H0348	08/15/2019	08/15/19 19:12	
n-Butylbenzene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 19:12	
n-Propylbenzene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 19:12	
Naphthalene	ND	0.50	0.41	1	B9H0348	08/15/2019	08/15/19 19:12	
o-Xylene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 19:12	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 19:12	
Styrene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 19:12	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 19:12	
Tetrachloroethene	2.4	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 19:12	
Toluene	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 19:12	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 19:12	
Trichloroethene	14	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 19:12	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 19:12	
Vinyl chloride	ND	0.50	0.05	1	B9H0348	08/15/2019	08/15/19 19:12	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>136 %</i>		<i>59 - 158</i>		B9H0348	08/15/2019	<i>08/15/19 19:12</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>105 %</i>		<i>59 - 158</i>		B9H0408	08/19/2019	<i>08/19/19 17:46</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>96.9 %</i>		<i>71 - 127</i>		B9H0348	08/15/2019	<i>08/15/19 19:12</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>99.6 %</i>		<i>71 - 127</i>		B9H0408	08/19/2019	<i>08/19/19 17:46</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>133 %</i>		<i>66 - 147</i>		B9H0348	08/15/2019	<i>08/15/19 19:12</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>107 %</i>		<i>66 - 147</i>		B9H0408	08/19/2019	<i>08/19/19 17:46</i>	
<i>Surrogate: Toluene-d8</i>	<i>109 %</i>		<i>77 - 138</i>		B9H0408	08/19/2019	<i>08/19/19 17:46</i>	
<i>Surrogate: Toluene-d8</i>	<i>117 %</i>		<i>77 - 138</i>		B9H0348	08/15/2019	<i>08/15/19 19:12</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-3100

Lab ID: 1903024-07

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	11	0.20	0.05	1	B9H0394	08/16/2019	08/17/19 00:40	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>76.3 %</i>		<i>22 - 117</i>		B9H0394	08/16/2019	<i>08/17/19 00:40</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>78.5 %</i>		<i>20 - 131</i>		B9H0394	08/16/2019	<i>08/17/19 00:40</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>86.1 %</i>		<i>24 - 135</i>		B9H0394	08/16/2019	<i>08/17/19 00:40</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>86.3 %</i>		<i>6 - 124</i>		B9H0394	08/16/2019	<i>08/17/19 00:40</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-30A

Lab ID: 1903024-08

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0408	08/19/2019	08/19/19 16:57	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0408	08/19/2019	08/19/19 16:57	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0408	08/19/2019	08/19/19 16:57	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0408	08/19/2019	08/19/19 16:57	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0408	08/19/2019	08/19/19 16:57	
1,1-Dichloroethene	ND	0.50	0.13	1	B9H0408	08/19/2019	08/19/19 16:57	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0408	08/19/2019	08/19/19 16:57	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0408	08/19/2019	08/19/19 16:57	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0408	08/19/2019	08/19/19 16:57	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0408	08/19/2019	08/19/19 16:57	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0408	08/19/2019	08/19/19 16:57	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0408	08/19/2019	08/19/19 16:57	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0408	08/19/2019	08/19/19 16:57	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0408	08/19/2019	08/19/19 16:57	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0408	08/19/2019	08/19/19 16:57	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0408	08/19/2019	08/19/19 16:57	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0408	08/19/2019	08/19/19 16:57	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0408	08/19/2019	08/19/19 16:57	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0408	08/19/2019	08/19/19 16:57	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0408	08/19/2019	08/19/19 16:57	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0408	08/19/2019	08/19/19 16:57	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0408	08/19/2019	08/19/19 16:57	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0408	08/19/2019	08/19/19 16:57	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0408	08/19/2019	08/19/19 16:57	
Benzene	ND	0.50	0.13	1	B9H0408	08/19/2019	08/19/19 16:57	
Bromobenzene	ND	0.50	0.21	1	B9H0408	08/19/2019	08/19/19 16:57	
Bromodichloromethane	ND	0.50	0.14	1	B9H0408	08/19/2019	08/19/19 16:57	
Bromoform	ND	0.50	0.20	1	B9H0408	08/19/2019	08/19/19 16:57	
Bromomethane	ND	0.50	0.17	1	B9H0408	08/19/2019	08/19/19 16:57	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0408	08/19/2019	08/19/19 16:57	
Chlorobenzene	ND	0.50	0.13	1	B9H0408	08/19/2019	08/19/19 16:57	
Chloroethane	ND	0.50	0.15	1	B9H0408	08/19/2019	08/19/19 16:57	
Chloroform	ND	0.50	0.11	1	B9H0408	08/19/2019	08/19/19 16:57	
Chloromethane	ND	0.50	0.12	1	B9H0408	08/19/2019	08/19/19 16:57	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0408	08/19/2019	08/19/19 16:57	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0408	08/19/2019	08/19/19 16:57	
Dibromochloromethane	ND	0.50	0.16	1	B9H0408	08/19/2019	08/19/19 16:57	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-30A

Lab ID: 1903024-08

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0408	08/19/2019	08/19/19 16:57	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0408	08/19/2019	08/19/19 16:57	
Ethylbenzene	ND	0.50	0.13	1	B9H0408	08/19/2019	08/19/19 16:57	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0408	08/19/2019	08/19/19 16:57	
Isopropylbenzene	ND	0.50	0.10	1	B9H0408	08/19/2019	08/19/19 16:57	
m,p-Xylene	ND	1.0	0.19	1	B9H0408	08/19/2019	08/19/19 16:57	
Methylene chloride	ND	1.0	0.71	1	B9H0408	08/19/2019	08/19/19 16:57	
n-Butylbenzene	ND	0.50	0.11	1	B9H0408	08/19/2019	08/19/19 16:57	
n-Propylbenzene	ND	0.50	0.10	1	B9H0408	08/19/2019	08/19/19 16:57	
Naphthalene	ND	0.50	0.41	1	B9H0408	08/19/2019	08/19/19 16:57	
o-Xylene	ND	0.50	0.13	1	B9H0408	08/19/2019	08/19/19 16:57	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0408	08/19/2019	08/19/19 16:57	
Styrene	ND	0.50	0.13	1	B9H0408	08/19/2019	08/19/19 16:57	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0408	08/19/2019	08/19/19 16:57	
Tetrachloroethene	ND	0.50	0.10	1	B9H0408	08/19/2019	08/19/19 16:57	
Toluene	ND	0.50	0.12	1	B9H0408	08/19/2019	08/19/19 16:57	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0408	08/19/2019	08/19/19 16:57	
Trichloroethene	ND	0.50	0.10	1	B9H0408	08/19/2019	08/19/19 16:57	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0408	08/19/2019	08/19/19 16:57	
Vinyl chloride	ND	0.50	0.05	1	B9H0408	08/19/2019	08/19/19 16:57	
Surrogate: 1,2-Dichloroethane-d4	108 %		59 - 158		B9H0408	08/19/2019	08/19/19 16:57	
Surrogate: 4-Bromofluorobenzene	102 %		71 - 127		B9H0408	08/19/2019	08/19/19 16:57	
Surrogate: Dibromofluoromethane	107 %		66 - 147		B9H0408	08/19/2019	08/19/19 16:57	
Surrogate: Toluene-d8	107 %		77 - 138		B9H0408	08/19/2019	08/19/19 16:57	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-30A

Lab ID: 1903024-08

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.06	0.20	0.05	1	B9H0394	08/16/2019	08/17/19 01:06	J
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>63.5 %</i>		<i>22 - 117</i>		B9H0394	08/16/2019	<i>08/17/19 01:06</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>74.1 %</i>		<i>20 - 131</i>		B9H0394	08/16/2019	<i>08/17/19 01:06</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>92.7 %</i>		<i>24 - 135</i>		B9H0394	08/16/2019	<i>08/17/19 01:06</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>74.9 %</i>		<i>6 - 124</i>		B9H0394	08/16/2019	<i>08/17/19 01:06</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-30B

Lab ID: 1903024-09

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 16:34	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0348	08/15/2019	08/15/19 16:34	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0348	08/15/2019	08/15/19 16:34	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0348	08/15/2019	08/15/19 16:34	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 16:34	
1,1-Dichloroethene	28	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:34	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:34	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0348	08/15/2019	08/15/19 16:34	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0348	08/15/2019	08/15/19 16:34	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 16:34	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 16:34	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0348	08/15/2019	08/15/19 16:34	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0348	08/15/2019	08/15/19 16:34	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 16:34	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 16:34	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 16:34	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:34	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 16:34	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0348	08/15/2019	08/15/19 16:34	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0348	08/15/2019	08/15/19 16:34	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0348	08/15/2019	08/15/19 16:34	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 16:34	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 16:34	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 16:34	
Benzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:34	
Bromobenzene	ND	0.50	0.21	1	B9H0348	08/15/2019	08/15/19 16:34	
Bromodichloromethane	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 16:34	
Bromoform	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 16:34	
Bromomethane	ND	0.50	0.17	1	B9H0348	08/15/2019	08/15/19 16:34	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 16:34	
Chlorobenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:34	
Chloroethane	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 16:34	
Chloroform	0.77	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 16:34	
Chloromethane	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 16:34	
cis-1,2-Dichloroethene	8.2	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 16:34	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:34	
Dibromochloromethane	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 16:34	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-30B

Lab ID: 1903024-09

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0348	08/15/2019	08/15/19 16:34	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0348	08/15/2019	08/15/19 16:34	
Ethylbenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:34	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 16:34	
Isopropylbenzene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 16:34	
m,p-Xylene	ND	1.0	0.19	1	B9H0348	08/15/2019	08/15/19 16:34	
Methylene chloride	ND	1.0	0.71	1	B9H0348	08/15/2019	08/15/19 16:34	
n-Butylbenzene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 16:34	
n-Propylbenzene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 16:34	
Naphthalene	ND	0.50	0.41	1	B9H0348	08/15/2019	08/15/19 16:34	
o-Xylene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:34	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 16:34	
Styrene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 16:34	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 16:34	
Tetrachloroethene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 16:34	
Toluene	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 16:34	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 16:34	
Trichloroethene	87	5.0	0.99	10	B9H0408	08/19/2019	08/19/19 17:21	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 16:34	
Vinyl chloride	ND	0.50	0.05	1	B9H0348	08/15/2019	08/15/19 16:34	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>106 %</i>		<i>59 - 158</i>		B9H0408	08/19/2019	<i>08/19/19 17:21</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>133 %</i>		<i>59 - 158</i>		B9H0348	08/15/2019	<i>08/15/19 16:34</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>100 %</i>		<i>71 - 127</i>		B9H0408	08/19/2019	<i>08/19/19 17:21</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>97.6 %</i>		<i>71 - 127</i>		B9H0348	08/15/2019	<i>08/15/19 16:34</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>137 %</i>		<i>66 - 147</i>		B9H0348	08/15/2019	<i>08/15/19 16:34</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>105 %</i>		<i>66 - 147</i>		B9H0408	08/19/2019	<i>08/19/19 17:21</i>	
<i>Surrogate: Toluene-d8</i>	<i>105 %</i>		<i>77 - 138</i>		B9H0408	08/19/2019	<i>08/19/19 17:21</i>	
<i>Surrogate: Toluene-d8</i>	<i>110 %</i>		<i>77 - 138</i>		B9H0348	08/15/2019	<i>08/15/19 16:34</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-30B

Lab ID: 1903024-09

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.92	0.20	0.05	1	B9H0394	08/16/2019	08/16/19 20:07	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>73.1 %</i>		<i>22 - 117</i>		B9H0394	08/16/2019	<i>08/16/19 20:07</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>78.9 %</i>		<i>20 - 131</i>		B9H0394	08/16/2019	<i>08/16/19 20:07</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>76.6 %</i>		<i>24 - 135</i>		B9H0394	08/16/2019	<i>08/16/19 20:07</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>83.2 %</i>		<i>6 - 124</i>		B9H0394	08/16/2019	<i>08/16/19 20:07</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-32A

Lab ID: 1903024-10

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 20:00	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0348	08/15/2019	08/15/19 20:00	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0348	08/15/2019	08/15/19 20:00	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0348	08/15/2019	08/15/19 20:00	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 20:00	
1,1-Dichloroethene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:00	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:00	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0348	08/15/2019	08/15/19 20:00	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0348	08/15/2019	08/15/19 20:00	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 20:00	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 20:00	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0348	08/15/2019	08/15/19 20:00	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0348	08/15/2019	08/15/19 20:00	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 20:00	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 20:00	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 20:00	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:00	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 20:00	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0348	08/15/2019	08/15/19 20:00	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0348	08/15/2019	08/15/19 20:00	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0348	08/15/2019	08/15/19 20:00	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 20:00	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 20:00	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 20:00	
Benzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:00	
Bromobenzene	ND	0.50	0.21	1	B9H0348	08/15/2019	08/15/19 20:00	
Bromodichloromethane	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 20:00	
Bromoform	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 20:00	
Bromomethane	ND	0.50	0.17	1	B9H0348	08/15/2019	08/15/19 20:00	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 20:00	
Chlorobenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:00	
Chloroethane	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 20:00	
Chloroform	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 20:00	
Chloromethane	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 20:00	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 20:00	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:00	
Dibromochloromethane	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 20:00	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-32A

Lab ID: 1903024-10

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0348	08/15/2019	08/15/19 20:00	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0348	08/15/2019	08/15/19 20:00	
Ethylbenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:00	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 20:00	
Isopropylbenzene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 20:00	
m,p-Xylene	ND	1.0	0.19	1	B9H0348	08/15/2019	08/15/19 20:00	
Methylene chloride	ND	1.0	0.71	1	B9H0348	08/15/2019	08/15/19 20:00	
n-Butylbenzene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 20:00	
n-Propylbenzene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 20:00	
Naphthalene	ND	0.50	0.41	1	B9H0348	08/15/2019	08/15/19 20:00	
o-Xylene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:00	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 20:00	
Styrene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:00	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 20:00	
Tetrachloroethene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 20:00	
Toluene	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 20:00	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 20:00	
Trichloroethene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 20:00	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 20:00	
Vinyl chloride	ND	0.50	0.05	1	B9H0348	08/15/2019	08/15/19 20:00	
Surrogate: 1,2-Dichloroethane-d4	141 %		59 - 158		B9H0348	08/15/2019	08/15/19 20:00	
Surrogate: 4-Bromofluorobenzene	98.8 %		71 - 127		B9H0348	08/15/2019	08/15/19 20:00	
Surrogate: Dibromofluoromethane	145 %		66 - 147		B9H0348	08/15/2019	08/15/19 20:00	
Surrogate: Toluene-d8	123 %		77 - 138		B9H0348	08/15/2019	08/15/19 20:00	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-32A

Lab ID: 1903024-10

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	0.05	1	B9H0394	08/16/2019	08/17/19 01:34	
Surrogate: 1,2-Dichlorobenzene-d4	77.1 %		22 - 117		B9H0394	08/16/2019	08/17/19 01:34	
Surrogate: 2-Fluorobiphenyl	78.6 %		20 - 131		B9H0394	08/16/2019	08/17/19 01:34	
Surrogate: 4-Terphenyl-d14	93.8 %		24 - 135		B9H0394	08/16/2019	08/17/19 01:34	
Surrogate: Nitrobenzene-d5	89.5 %		6 - 124		B9H0394	08/16/2019	08/17/19 01:34	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-32C

Lab ID: 1903024-11

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 20:25	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0348	08/15/2019	08/15/19 20:25	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0348	08/15/2019	08/15/19 20:25	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0348	08/15/2019	08/15/19 20:25	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 20:25	
1,1-Dichloroethene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:25	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:25	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0348	08/15/2019	08/15/19 20:25	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0348	08/15/2019	08/15/19 20:25	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 20:25	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 20:25	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0348	08/15/2019	08/15/19 20:25	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0348	08/15/2019	08/15/19 20:25	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 20:25	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 20:25	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 20:25	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:25	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 20:25	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0348	08/15/2019	08/15/19 20:25	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0348	08/15/2019	08/15/19 20:25	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0348	08/15/2019	08/15/19 20:25	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 20:25	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 20:25	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 20:25	
Benzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:25	
Bromobenzene	ND	0.50	0.21	1	B9H0348	08/15/2019	08/15/19 20:25	
Bromodichloromethane	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 20:25	
Bromoform	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 20:25	
Bromomethane	ND	0.50	0.17	1	B9H0348	08/15/2019	08/15/19 20:25	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 20:25	
Chlorobenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:25	
Chloroethane	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 20:25	
Chloroform	0.24	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 20:25	J
Chloromethane	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 20:25	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 20:25	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:25	
Dibromochloromethane	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 20:25	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-32C

Lab ID: 1903024-11

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0348	08/15/2019	08/15/19 20:25	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0348	08/15/2019	08/15/19 20:25	
Ethylbenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:25	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 20:25	
Isopropylbenzene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 20:25	
m,p-Xylene	ND	1.0	0.19	1	B9H0348	08/15/2019	08/15/19 20:25	
Methylene chloride	ND	1.0	0.71	1	B9H0348	08/15/2019	08/15/19 20:25	
n-Butylbenzene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 20:25	
n-Propylbenzene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 20:25	
Naphthalene	ND	0.50	0.41	1	B9H0348	08/15/2019	08/15/19 20:25	
o-Xylene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:25	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 20:25	
Styrene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:25	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 20:25	
Tetrachloroethene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 20:25	
Toluene	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 20:25	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 20:25	
Trichloroethene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 20:25	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 20:25	
Vinyl chloride	ND	0.50	0.05	1	B9H0348	08/15/2019	08/15/19 20:25	
Surrogate: 1,2-Dichloroethane-d4	130 %		59 - 158		B9H0348	08/15/2019	08/15/19 20:25	
Surrogate: 4-Bromofluorobenzene	97.4 %		71 - 127		B9H0348	08/15/2019	08/15/19 20:25	
Surrogate: Dibromofluoromethane	144 %		66 - 147		B9H0348	08/15/2019	08/15/19 20:25	
Surrogate: Toluene-d8	123 %		77 - 138		B9H0348	08/15/2019	08/15/19 20:25	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-32C

Lab ID: 1903024-11

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	0.05	1	B9H0394	08/16/2019	08/17/19 02:01	
Surrogate: 1,2-Dichlorobenzene-d4	71.7 %		22 - 117		B9H0394	08/16/2019	08/17/19 02:01	
Surrogate: 2-Fluorobiphenyl	75.6 %		20 - 131		B9H0394	08/16/2019	08/17/19 02:01	
Surrogate: 4-Terphenyl-d14	72.2 %		24 - 135		B9H0394	08/16/2019	08/17/19 02:01	
Surrogate: Nitrobenzene-d5	82.0 %		6 - 124		B9H0394	08/16/2019	08/17/19 02:01	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-32B_2SV_

Lab ID: 1903024-12

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 20:49	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0348	08/15/2019	08/15/19 20:49	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0348	08/15/2019	08/15/19 20:49	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0348	08/15/2019	08/15/19 20:49	
1,1-Dichloroethane	3.9	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 20:49	
1,1-Dichloroethene	230	5.0	1.3	10	B9H0438	08/20/2019	08/20/19 13:59	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:49	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0348	08/15/2019	08/15/19 20:49	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0348	08/15/2019	08/15/19 20:49	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 20:49	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 20:49	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0348	08/15/2019	08/15/19 20:49	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0348	08/15/2019	08/15/19 20:49	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 20:49	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 20:49	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 20:49	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:49	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 20:49	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0348	08/15/2019	08/15/19 20:49	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0348	08/15/2019	08/15/19 20:49	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0348	08/15/2019	08/15/19 20:49	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 20:49	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 20:49	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 20:49	
Benzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:49	
Bromobenzene	ND	0.50	0.21	1	B9H0348	08/15/2019	08/15/19 20:49	
Bromodichloromethane	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 20:49	
Bromoform	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 20:49	
Bromomethane	ND	0.50	0.17	1	B9H0348	08/15/2019	08/15/19 20:49	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 20:49	
Chlorobenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:49	
Chloroethane	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 20:49	
Chloroform	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 20:49	
Chloromethane	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 20:49	
cis-1,2-Dichloroethene	8.5	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 20:49	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:49	
Dibromochloromethane	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 20:49	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-32B_2SV_

Lab ID: 1903024-12

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0348	08/15/2019	08/15/19 20:49	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0348	08/15/2019	08/15/19 20:49	
Ethylbenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:49	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 20:49	
Isopropylbenzene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 20:49	
m,p-Xylene	ND	1.0	0.19	1	B9H0348	08/15/2019	08/15/19 20:49	
Methylene chloride	ND	1.0	0.71	1	B9H0348	08/15/2019	08/15/19 20:49	
n-Butylbenzene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 20:49	
n-Propylbenzene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 20:49	
Naphthalene	ND	0.50	0.41	1	B9H0348	08/15/2019	08/15/19 20:49	
o-Xylene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:49	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 20:49	
Styrene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 20:49	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 20:49	
Tetrachloroethene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 20:49	
Toluene	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 20:49	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 20:49	
Trichloroethene	55	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 20:49	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 20:49	
Vinyl chloride	ND	0.50	0.05	1	B9H0348	08/15/2019	08/15/19 20:49	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>112 %</i>		<i>59 - 158</i>		B9H0438	08/20/2019	<i>08/20/19 13:59</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>133 %</i>		<i>59 - 158</i>		B9H0348	08/15/2019	<i>08/15/19 20:49</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>101 %</i>		<i>71 - 127</i>		B9H0438	08/20/2019	<i>08/20/19 13:59</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>95.1 %</i>		<i>71 - 127</i>		B9H0348	08/15/2019	<i>08/15/19 20:49</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>146 %</i>		<i>66 - 147</i>		B9H0348	08/15/2019	<i>08/15/19 20:49</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>114 %</i>		<i>66 - 147</i>		B9H0438	08/20/2019	<i>08/20/19 13:59</i>	
<i>Surrogate: Toluene-d8</i>	<i>114 %</i>		<i>77 - 138</i>		B9H0438	08/20/2019	<i>08/20/19 13:59</i>	
<i>Surrogate: Toluene-d8</i>	<i>108 %</i>		<i>77 - 138</i>		B9H0348	08/15/2019	<i>08/15/19 20:49</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-32B_2SV_

Lab ID: 1903024-12

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	7.6	0.20	0.05	1	B9H0394	08/16/2019	08/17/19 02:27	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>70.1 %</i>		<i>22 - 117</i>		B9H0394	08/16/2019	<i>08/17/19 02:27</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>73.6 %</i>		<i>20 - 131</i>		B9H0394	08/16/2019	<i>08/17/19 02:27</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>81.8 %</i>		<i>24 - 135</i>		B9H0394	08/16/2019	<i>08/17/19 02:27</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>80.3 %</i>		<i>6 - 124</i>		B9H0394	08/16/2019	<i>08/17/19 02:27</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-32B

Lab ID: 1903024-13

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 21:13	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0348	08/15/2019	08/15/19 21:13	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0348	08/15/2019	08/15/19 21:13	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0348	08/15/2019	08/15/19 21:13	
1,1-Dichloroethane	3.6	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 21:13	
1,1-Dichloroethene	230	5.0	1.3	10	B9H0438	08/20/2019	08/20/19 15:36	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 21:13	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0348	08/15/2019	08/15/19 21:13	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0348	08/15/2019	08/15/19 21:13	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 21:13	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 21:13	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0348	08/15/2019	08/15/19 21:13	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0348	08/15/2019	08/15/19 21:13	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 21:13	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 21:13	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 21:13	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 21:13	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 21:13	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0348	08/15/2019	08/15/19 21:13	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0348	08/15/2019	08/15/19 21:13	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0348	08/15/2019	08/15/19 21:13	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 21:13	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 21:13	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 21:13	
Benzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 21:13	
Bromobenzene	ND	0.50	0.21	1	B9H0348	08/15/2019	08/15/19 21:13	
Bromodichloromethane	ND	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 21:13	
Bromoform	ND	0.50	0.20	1	B9H0348	08/15/2019	08/15/19 21:13	
Bromomethane	ND	0.50	0.17	1	B9H0348	08/15/2019	08/15/19 21:13	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 21:13	
Chlorobenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 21:13	
Chloroethane	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 21:13	
Chloroform	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 21:13	
Chloromethane	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 21:13	
cis-1,2-Dichloroethene	7.9	0.50	0.14	1	B9H0348	08/15/2019	08/15/19 21:13	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 21:13	
Dibromochloromethane	ND	0.50	0.16	1	B9H0348	08/15/2019	08/15/19 21:13	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-32B

Lab ID: 1903024-13

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0348	08/15/2019	08/15/19 21:13	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0348	08/15/2019	08/15/19 21:13	
Ethylbenzene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 21:13	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0348	08/15/2019	08/15/19 21:13	
Isopropylbenzene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 21:13	
m,p-Xylene	ND	1.0	0.19	1	B9H0348	08/15/2019	08/15/19 21:13	
Methylene chloride	ND	1.0	0.71	1	B9H0348	08/15/2019	08/15/19 21:13	
n-Butylbenzene	ND	0.50	0.11	1	B9H0348	08/15/2019	08/15/19 21:13	
n-Propylbenzene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 21:13	
Naphthalene	ND	0.50	0.41	1	B9H0348	08/15/2019	08/15/19 21:13	
o-Xylene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 21:13	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 21:13	
Styrene	ND	0.50	0.13	1	B9H0348	08/15/2019	08/15/19 21:13	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 21:13	
Tetrachloroethene	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 21:13	
Toluene	ND	0.50	0.12	1	B9H0348	08/15/2019	08/15/19 21:13	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0348	08/15/2019	08/15/19 21:13	
Trichloroethene	52	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 21:13	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0348	08/15/2019	08/15/19 21:13	
Vinyl chloride	ND	0.50	0.05	1	B9H0348	08/15/2019	08/15/19 21:13	

Surrogate: 1,2-Dichloroethane-d4	119 %	59 - 158	B9H0438	08/20/2019	08/20/19 15:36
Surrogate: 1,2-Dichloroethane-d4	138 %	59 - 158	B9H0348	08/15/2019	08/15/19 21:13
Surrogate: 4-Bromofluorobenzene	99.8 %	71 - 127	B9H0438	08/20/2019	08/20/19 15:36
Surrogate: 4-Bromofluorobenzene	101 %	71 - 127	B9H0348	08/15/2019	08/15/19 21:13
Surrogate: Dibromofluoromethane	146 %	66 - 147	B9H0348	08/15/2019	08/15/19 21:13
Surrogate: Dibromofluoromethane	118 %	66 - 147	B9H0438	08/20/2019	08/20/19 15:36
Surrogate: Toluene-d8	111 %	77 - 138	B9H0348	08/15/2019	08/15/19 21:13
Surrogate: Toluene-d8	113 %	77 - 138	B9H0438	08/20/2019	08/20/19 15:36



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Client Sample ID: MW-32B

Lab ID: 1903024-13

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	7.6	0.20	0.05	1	B9H0394	08/16/2019	08/17/19 02:55	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>58.4 %</i>		<i>22 - 117</i>		B9H0394	08/16/2019	<i>08/17/19 02:55</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>64.6 %</i>		<i>20 - 131</i>		B9H0394	08/16/2019	<i>08/17/19 02:55</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>82.1 %</i>		<i>24 - 135</i>		B9H0394	08/16/2019	<i>08/17/19 02:55</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>69.2 %</i>		<i>6 - 124</i>		B9H0394	08/16/2019	<i>08/17/19 02:55</i>	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

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QUALITY CONTROL SECTION

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0318 - MSVOA_W

Blank (B9H0318-BLK1)

Prepared: 8/14/2019 Analyzed: 8/14/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,1,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05



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San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0318 - MSVOA_W (continued)

Blank (B9H0318-BLK1) - Continued

Prepared: 8/14/2019 Analyzed: 8/14/2019

Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15
Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	29.27		25.0000	117	57 - 152
Surrogate: 4-Bromofluorobenzene	25.29		25.0000	101	62 - 134
Surrogate: Dibromofluoromethane	31.44		25.0000	126	56 - 167
Surrogate: Toluene-d8	28.37		25.0000	113	33 - 170

LCS (B9H0318-BS1)

Prepared: 8/14/2019 Analyzed: 8/14/2019

1,1,1,2-Tetrachloroethane	18.7800	0.50	0.11	20.0000	93.9	80 - 137
1,1,1-Trichloroethane	21.7100	0.50	0.07	20.0000	109	75 - 148
1,1,2,2-Tetrachloroethane	17.6500	0.50	0.36	20.0000	88.2	64 - 118
1,1,2-Trichloroethane	19.1500	0.50	0.25	20.0000	95.8	77 - 113
1,1-Dichloroethane	21.2300	0.50	0.09	20.0000	106	72 - 131
1,1-Dichloroethene	21.1800	0.50	0.13	20.0000	106	75 - 132
1,1-Dichloropropene	20.9800	0.50	0.13	20.0000	105	84 - 141
1,2,3-Trichloropropane	17.9400	0.50	0.39	20.0000	89.7	65 - 111
1,2,3-Trichlorobenzene	18.4800	0.50	0.18	20.0000	92.4	79 - 117
1,2,4-Trichlorobenzene	18.9400	0.50	0.16	20.0000	94.7	78 - 121
1,2,4-Trimethylbenzene	19.3300	0.50	0.14	20.0000	96.6	83 - 125
1,2-Dibromo-3-chloropropane	15.2300	0.50	0.41	20.0000	76.2	54 - 116
1,2-Dibromoethane	18.3700	0.50	0.24	20.0000	91.8	79 - 118
1,2-Dichlorobenzene	21.0500	0.50	0.20	20.0000	105	82 - 115
1,2-Dichloroethane	22.7000	0.50	0.20	20.0000	114	76 - 115
1,2-Dichloropropane	20.2400	0.50	0.15	20.0000	101	74 - 113
1,3,5-Trimethylbenzene	19.8500	0.50	0.13	20.0000	99.2	83 - 126



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San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0318 - MSVOA_W (continued)

LCS (B9H0318-BS1) - Continued

Prepared: 8/14/2019 Analyzed: 8/14/2019

1,3-Dichlorobenzene	20.1200	0.50	0.16	20.0000		101	84 - 118		
1,3-Dichloropropane	18.9100	0.50	0.21	20.0000		94.6	72 - 116		
1,4-Dichlorobenzene	20.8900	0.50	0.17	20.0000		104	83 - 112		
2,2-Dichloropropane	23.2400	0.50	0.38	20.0000		116	72 - 150		
2-Chlorotoluene	20.1800	0.50	0.11	20.0000		101	82 - 120		
4-Chlorotoluene	20.1900	0.50	0.12	20.0000		101	81 - 121		
4-Isopropyltoluene	19.4900	0.50	0.11	20.0000		97.4	86 - 124		
Benzene	44.6100	0.50	0.13	40.0000		112	81 - 118		
Bromobenzene	20.6200	0.50	0.21	20.0000		103	82 - 117		
Bromodichloromethane	19.5200	0.50	0.14	20.0000		97.6	80 - 122		
Bromoform	16.8300	0.50	0.20	20.0000		84.2	53 - 145		
Bromomethane	18.0100	0.50	0.17	20.0000		90.0	30 - 204		
Carbon tetrachloride	20.7400	0.50	0.09	20.0000		104	77 - 157		
Chlorobenzene	21.5300	0.50	0.13	20.0000		108	86 - 113		
Chloroethane	21.8500	0.50	0.15	20.0000		109	70 - 160		
Chloroform	21.4400	0.50	0.11	20.0000		107	66 - 136		
Chloromethane	18.5900	0.50	0.12	20.0000		93.0	52 - 138		
cis-1,2-Dichloroethene	21.6400	0.50	0.14	20.0000		108	71 - 128		
cis-1,3-Dichloropropene	20.9600	0.50	0.13	20.0000		105	71 - 123		
Dibromochloromethane	17.5100	0.50	0.16	20.0000		87.6	78 - 140		
Dibromomethane	19.7700	0.50	0.19	20.0000		98.8	78 - 109		
Dichlorodifluoromethane	18.9600	0.50	0.05	20.0000		94.8	64 - 144		
Ethylbenzene	37.4600	0.50	0.13	40.0000		93.6	90 - 116		
Hexachlorobutadiene	19.3300	0.50	0.15	20.0000		96.6	81 - 129		
Isopropylbenzene	21.1900	0.50	0.10	20.0000		106	83 - 129		
m,p-Xylene	40.8000	1.0	0.19	40.0000		102	88 - 124		
Methylene chloride	18.2500	1.0	0.71	20.0000		91.2	76 - 137		
n-Butylbenzene	19.8600	0.50	0.11	20.0000		99.3	83 - 129		
n-Propylbenzene	20.3300	0.50	0.10	20.0000		102	85 - 124		
Naphthalene	16.8900	0.50	0.41	20.0000		84.4	67 - 113		
o-Xylene	37.9000	0.50	0.13	40.0000		94.8	82 - 129		
sec-Butylbenzene	19.9100	0.50	0.09	20.0000		99.6	86 - 127		
Styrene	19.8900	0.50	0.13	20.0000		99.4	83 - 122		
tert-Butylbenzene	19.9500	0.50	0.09	20.0000		99.8	84 - 130		
Tetrachloroethene	20.2300	0.50	0.10	20.0000		101	87 - 123		
Toluene	45.1800	0.50	0.12	40.0000		113	84 - 115		
trans-1,2-Dichloroethene	21.1100	0.50	0.09	20.0000		106	60 - 148		
Trichloroethene	20.2100	0.50	0.10	20.0000		101	79 - 129		
Trichlorofluoromethane	21.0800	0.50	0.10	20.0000		105	68 - 162		
Vinyl chloride	20.2300	0.50	0.05	20.0000		101	73 - 128		

Surrogate: 1,2-Dichloroethane-d4	26.18			25.0000		105	57 - 152		



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0318 - MSVOA_W (continued)

LCS (B9H0318-BS1) - Continued

Prepared: 8/14/2019 Analyzed: 8/14/2019

Surrogate: 4-Bromofluorobenzene	25.97		25.0000		104	62 - 134			
Surrogate: Dibromofluoromethane	28.52		25.0000		114	56 - 167			
Surrogate: Toluene-d8	27.25		25.0000		109	33 - 170			

LCS Dup (B9H0318-BSD1)

Prepared: 8/14/2019 Analyzed: 8/14/2019

1,1,1,2-Tetrachloroethane	18.6300	0.50	0.11	20.0000	93.2	80 - 137	0.802	20	
1,1,1-Trichloroethane	21.2400	0.50	0.07	20.0000	106	75 - 148	2.19	20	
1,1,2,2-Tetrachloroethane	19.5100	0.50	0.36	20.0000	97.6	64 - 118	10.0	20	
1,1,2-Trichloroethane	20.1500	0.50	0.25	20.0000	101	77 - 113	5.09	20	
1,1-Dichloroethane	21.0200	0.50	0.09	20.0000	105	72 - 131	0.994	20	
1,1-Dichloroethene	21.2800	0.50	0.13	20.0000	106	75 - 132	0.471	20	
1,1-Dichloropropene	20.9000	0.50	0.13	20.0000	104	84 - 141	0.382	20	
1,2,3-Trichloropropane	19.2100	0.50	0.39	20.0000	96.0	65 - 111	6.84	20	
1,2,3-Trichlorobenzene	18.2100	0.50	0.18	20.0000	91.0	79 - 117	1.47	20	
1,2,4-Trichlorobenzene	18.1500	0.50	0.16	20.0000	90.8	78 - 121	4.26	20	
1,2,4-Trimethylbenzene	18.2200	0.50	0.14	20.0000	91.1	83 - 125	5.91	20	
1,2-Dibromo-3-chloropropane	17.2700	0.50	0.41	20.0000	86.4	54 - 116	12.6	20	
1,2-Dibromoethane	19.6900	0.50	0.24	20.0000	98.4	79 - 118	6.94	20	
1,2-Dichlorobenzene	20.5000	0.50	0.20	20.0000	102	82 - 115	2.65	20	
1,2-Dichloroethane	22.3600	0.50	0.20	20.0000	112	76 - 115	1.51	20	
1,2-Dichloropropane	20.1200	0.50	0.15	20.0000	101	74 - 113	0.595	20	
1,3,5-Trimethylbenzene	18.4900	0.50	0.13	20.0000	92.4	83 - 126	7.09	20	
1,3-Dichlorobenzene	19.1700	0.50	0.16	20.0000	95.8	84 - 118	4.84	20	
1,3-Dichloropropane	18.9000	0.50	0.21	20.0000	94.5	72 - 116	0.0529	20	
1,4-Dichlorobenzene	20.4500	0.50	0.17	20.0000	102	83 - 112	2.13	20	
2,2-Dichloropropane	21.6200	0.50	0.38	20.0000	108	72 - 150	7.22	20	
2-Chlorotoluene	18.7800	0.50	0.11	20.0000	93.9	82 - 120	7.19	20	
4-Chlorotoluene	19.3000	0.50	0.12	20.0000	96.5	81 - 121	4.51	20	
4-Isopropyltoluene	18.1800	0.50	0.11	20.0000	90.9	86 - 124	6.96	20	
Benzene	42.7400	0.50	0.13	40.0000	107	81 - 118	4.28	20	
Bromobenzene	19.7500	0.50	0.21	20.0000	98.8	82 - 117	4.31	20	
Bromodichloromethane	19.4100	0.50	0.14	20.0000	97.0	80 - 122	0.565	20	
Bromoform	17.7000	0.50	0.20	20.0000	88.5	53 - 145	5.04	20	
Bromomethane	18.7200	0.50	0.17	20.0000	93.6	30 - 204	3.87	20	
Carbon tetrachloride	19.6700	0.50	0.09	20.0000	98.4	77 - 157	5.30	20	
Chlorobenzene	21.1100	0.50	0.13	20.0000	106	86 - 113	1.97	20	
Chloroethane	24.4200	0.50	0.15	20.0000	122	70 - 160	11.1	20	
Chloroform	21.1100	0.50	0.11	20.0000	106	66 - 136	1.55	20	
Chloromethane	19.2900	0.50	0.12	20.0000	96.4	52 - 138	3.70	20	
cis-1,2-Dichloroethene	20.6300	0.50	0.14	20.0000	103	71 - 128	4.78	20	
cis-1,3-Dichloropropene	21.0000	0.50	0.13	20.0000	105	71 - 123	0.191	20	
Dibromochloromethane	17.4300	0.50	0.16	20.0000	87.2	78 - 140	0.458	20	



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0318 - MSVOA_W (continued)

LCS Dup (B9H0318-BSD1) - Continued

Prepared: 8/14/2019 Analyzed: 8/14/2019

Dibromomethane	20.4500	0.50	0.19	20.0000		102	78 - 109	3.38	20	
Dichlorodifluoromethane	19.2800	0.50	0.05	20.0000		96.4	64 - 144	1.67	20	
Ethylbenzene	35.8500	0.50	0.13	40.0000		89.6	90 - 116	4.39	20	L3
Hexachlorobutadiene	18.7600	0.50	0.15	20.0000		93.8	81 - 129	2.99	20	
Isopropylbenzene	19.3500	0.50	0.10	20.0000		96.8	83 - 129	9.08	20	
m,p-Xylene	39.1300	1.0	0.19	40.0000		97.8	88 - 124	4.18	20	
Methylene chloride	18.0800	1.0	0.71	20.0000		90.4	76 - 137	0.936	20	
n-Butylbenzene	17.8900	0.50	0.11	20.0000		89.4	83 - 129	10.4	20	
n-Propylbenzene	18.4000	0.50	0.10	20.0000		92.0	85 - 124	9.97	20	
Naphthalene	18.1000	0.50	0.41	20.0000		90.5	67 - 113	6.92	20	
o-Xylene	36.6800	0.50	0.13	40.0000		91.7	82 - 129	3.27	20	
sec-Butylbenzene	18.2800	0.50	0.09	20.0000		91.4	86 - 127	8.54	20	
Styrene	19.3900	0.50	0.13	20.0000		97.0	83 - 122	2.55	20	
tert-Butylbenzene	18.0600	0.50	0.09	20.0000		90.3	84 - 130	9.94	20	
Tetrachloroethene	18.6400	0.50	0.10	20.0000		93.2	87 - 123	8.18	20	
Toluene	43.6000	0.50	0.12	40.0000		109	84 - 115	3.56	20	
trans-1,2-Dichloroethene	20.3400	0.50	0.09	20.0000		102	60 - 148	3.72	20	
Trichloroethene	19.3200	0.50	0.10	20.0000		96.6	79 - 129	4.50	20	
Trichlorofluoromethane	21.5500	0.50	0.10	20.0000		108	68 - 162	2.21	20	
Vinyl chloride	20.3900	0.50	0.05	20.0000		102	73 - 128	0.788	20	
Surrogate: 1,2-Dichloroethane-d4	27.36			25.0000		109	57 - 152			
Surrogate: 4-Bromofluorobenzene	26.64			25.0000		107	62 - 134			
Surrogate: Dibromofluoromethane	29.02			25.0000		116	56 - 167			
Surrogate: Toluene-d8	27.31			25.0000		109	33 - 170			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0348 - MSVOA_W

Blank (B9H0348-BLK1)

Prepared: 8/15/2019 Analyzed: 8/15/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0348 - MSVOA_W (continued)

Blank (B9H0348-BLK1) - Continued

Prepared: 8/15/2019 Analyzed: 8/15/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	31.34		25.0000	125	59 - 158
Surrogate: 4-Bromofluorobenzene	24.90		25.0000	99.6	71 - 127
Surrogate: Dibromofluoromethane	33.66		25.0000	135	66 - 147
Surrogate: Toluene-d8	29.76		25.0000	119	77 - 138

LCS (B9H0348-BS1)

Prepared: 8/15/2019 Analyzed: 8/15/2019

1,1,1,2-Tetrachloroethane	17.2800	0.50	0.11	20.0000	86.4	80 - 137
1,1,1-Trichloroethane	21.1700	0.50	0.07	20.0000	106	75 - 148
1,1,2,2-Tetrachloroethane	16.7900	0.50	0.36	20.0000	84.0	64 - 118
1,1,2-Trichloroethane	19.8000	0.50	0.25	20.0000	99.0	77 - 113
1,1-Dichloroethane	20.4900	0.50	0.09	20.0000	102	72 - 131
1,1-Dichloroethene	21.2100	0.50	0.13	20.0000	106	75 - 132
1,1-Dichloropropene	20.1500	0.50	0.13	20.0000	101	84 - 141
1,2,3-Trichloropropane	16.8700	0.50	0.39	20.0000	84.4	65 - 111
1,2,3-Trichlorobenzene	16.3000	0.50	0.18	20.0000	81.5	79 - 117
1,2,4-Trichlorobenzene	16.3700	0.50	0.16	20.0000	81.8	78 - 121
1,2,4-Trimethylbenzene	16.8200	0.50	0.14	20.0000	84.1	83 - 125
1,2-Dibromo-3-chloropropane	14.7100	0.50	0.41	20.0000	73.6	54 - 116
1,2-Dibromoethane	18.7100	0.50	0.24	20.0000	93.6	79 - 118
1,2-Dichlorobenzene	18.4400	0.50	0.20	20.0000	92.2	82 - 115
1,2-Dichloroethane	22.7400	0.50	0.20	20.0000	114	76 - 115
1,2-Dichloropropane	19.4400	0.50	0.15	20.0000	97.2	74 - 113
1,3,5-Trimethylbenzene	17.2500	0.50	0.13	20.0000	86.2	83 - 126
1,3-Dichlorobenzene	17.4800	0.50	0.16	20.0000	87.4	84 - 118
1,3-Dichloropropane	17.1300	0.50	0.21	20.0000	85.6	72 - 116



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0348 - MSVOA_W (continued)

LCS (B9H0348-BS1) - Continued

Prepared: 8/15/2019 Analyzed: 8/15/2019

1,4-Dichlorobenzene	17.8300	0.50	0.17	20.0000		89.2	83 - 112		
2,2-Dichloropropane	21.1200	0.50	0.38	20.0000		106	72 - 150		
2-Chlorotoluene	17.4700	0.50	0.11	20.0000		87.4	82 - 120		
4-Chlorotoluene	17.3700	0.50	0.12	20.0000		86.8	81 - 121		
4-Isopropyltoluene	16.7700	0.50	0.11	20.0000		83.8	86 - 124		L3
Benzene	42.3900	0.50	0.13	40.0000		106	81 - 118		
Bromobenzene	18.1000	0.50	0.21	20.0000		90.5	82 - 117		
Bromodichloromethane	19.9600	0.50	0.14	20.0000		99.8	80 - 122		
Bromoform	16.1500	0.50	0.20	20.0000		80.8	53 - 145		
Bromomethane	20.7500	0.50	0.17	20.0000		104	30 - 204		
Carbon tetrachloride	19.6300	0.50	0.09	20.0000		98.2	77 - 157		
Chlorobenzene	19.0400	0.50	0.13	20.0000		95.2	86 - 113		
Chloroethane	22.9800	0.50	0.15	20.0000		115	70 - 160		
Chloroform	20.9700	0.50	0.11	20.0000		105	66 - 136		
Chloromethane	21.0600	0.50	0.12	20.0000		105	52 - 138		
cis-1,2-Dichloroethene	20.1800	0.50	0.14	20.0000		101	71 - 128		
cis-1,3-Dichloropropene	20.6800	0.50	0.13	20.0000		103	71 - 123		
Dibromochloromethane	16.7100	0.50	0.16	20.0000		83.6	78 - 140		
Dibromomethane	20.1500	0.50	0.19	20.0000		101	78 - 109		
Dichlorodifluoromethane	19.3400	0.50	0.05	20.0000		96.7	64 - 144		
Ethylbenzene	33.0100	0.50	0.13	40.0000		82.5	90 - 116		L3
Hexachlorobutadiene	17.6300	0.50	0.15	20.0000		88.2	81 - 129		
Isopropylbenzene	18.1000	0.50	0.10	20.0000		90.5	83 - 129		
m,p-Xylene	36.2600	1.0	0.19	40.0000		90.6	88 - 124		
Methylene chloride	17.3000	1.0	0.71	20.0000		86.5	76 - 137		
n-Butylbenzene	16.7600	0.50	0.11	20.0000		83.8	83 - 129		
n-Propylbenzene	17.3800	0.50	0.10	20.0000		86.9	85 - 124		
Naphthalene	15.8000	0.50	0.41	20.0000		79.0	67 - 113		
o-Xylene	33.5500	0.50	0.13	40.0000		83.9	82 - 129		
sec-Butylbenzene	17.1500	0.50	0.09	20.0000		85.8	86 - 127		L3
Styrene	17.8000	0.50	0.13	20.0000		89.0	83 - 122		
tert-Butylbenzene	17.3500	0.50	0.09	20.0000		86.8	84 - 130		
Tetrachloroethene	17.0400	0.50	0.10	20.0000		85.2	87 - 123		L3
Toluene	42.7200	0.50	0.12	40.0000		107	84 - 115		
trans-1,2-Dichloroethene	19.8700	0.50	0.09	20.0000		99.4	60 - 148		
Trichloroethene	19.2600	0.50	0.10	20.0000		96.3	79 - 129		
Trichlorofluoromethane	22.5000	0.50	0.10	20.0000		112	68 - 162		
Vinyl chloride	21.3000	0.50	0.05	20.0000		106	73 - 128		
Surrogate: 1,2-Dichloroethane-d4	29.69			25.0000		119	57 - 152		
Surrogate: 4-Bromofluorobenzene	26.26			25.0000		105	62 - 134		
Surrogate: Dibromofluoromethane	31.25			25.0000		125	56 - 167		



Certificate of Analysis

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Report To : Steve Netto

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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0348 - MSVOA_W (continued)

LCS (B9H0348-BS1) - Continued

Prepared: 8/15/2019 Analyzed: 8/15/2019

Surrogate: Toluene-d8 29.43 25.0000 118 33 - 170

LCS Dup (B9H0348-BS1)

Prepared: 8/15/2019 Analyzed: 8/15/2019

1,1,1,2-Tetrachloroethane	18.1500	0.50	0.11	20.0000	90.8	71 - 133	4.91	20	
1,1,1-Trichloroethane	22.2300	0.50	0.07	20.0000	111	62 - 124	4.88	20	
1,1,2,2-Tetrachloroethane	17.7900	0.50	0.36	20.0000	89.0	50 - 131	5.78	20	
1,1,2-Trichloroethane	20.5400	0.50	0.25	20.0000	103	77 - 121	3.67	20	
1,1-Dichloroethane	22.1600	0.50	0.09	20.0000	111	52 - 130	7.83	20	
1,1-Dichloroethene	22.0700	0.50	0.13	20.0000	110	61 - 136	3.97	20	
1,1-Dichloropropene	19.8000	0.50	0.13	20.0000	99.0	80 - 128	1.75	20	
1,2,3-Trichloropropane	17.8200	0.50	0.39	20.0000	89.1	59 - 126	5.48	20	
1,2,3-Trichlorobenzene	17.0500	0.50	0.18	20.0000	85.2	69 - 138	4.50	20	
1,2,4-Trichlorobenzene	17.5800	0.50	0.16	20.0000	87.9	78 - 125	7.13	20	
1,2,4-Trimethylbenzene	17.3600	0.50	0.14	20.0000	86.8	70 - 126	3.16	20	
1,2-Dibromo-3-chloropropane	15.6500	0.50	0.41	20.0000	78.2	58 - 127	6.19	20	
1,2-Dibromoethane	19.5500	0.50	0.24	20.0000	97.8	76 - 120	4.39	20	
1,2-Dichlorobenzene	19.2500	0.50	0.20	20.0000	96.2	82 - 117	4.30	20	
1,2-Dichloroethane	22.5300	0.50	0.20	20.0000	113	66 - 126	0.928	20	
1,2-Dichloropropane	19.8000	0.50	0.15	20.0000	99.0	70 - 117	1.83	20	
1,3,5-Trimethylbenzene	17.8100	0.50	0.13	20.0000	89.0	71 - 125	3.19	20	
1,3-Dichlorobenzene	18.1100	0.50	0.16	20.0000	90.6	81 - 116	3.54	20	
1,3-Dichloropropane	17.8500	0.50	0.21	20.0000	89.2	69 - 124	4.12	20	
1,4-Dichlorobenzene	18.3200	0.50	0.17	20.0000	91.6	80 - 114	2.71	20	
2,2-Dichloropropane	21.6700	0.50	0.38	20.0000	108	58 - 132	2.57	20	
2-Chlorotoluene	18.0500	0.50	0.11	20.0000	90.2	71 - 119	3.27	20	
4-Chlorotoluene	18.0700	0.50	0.12	20.0000	90.4	72 - 122	3.95	20	
4-Isopropyltoluene	17.2700	0.50	0.11	20.0000	86.4	69 - 126	2.94	20	
Benzene	43.4500	0.50	0.13	40.0000	109	80 - 116	2.47	20	
Bromobenzene	19.3500	0.50	0.21	20.0000	96.8	77 - 118	6.68	20	
Bromodichloromethane	19.8400	0.50	0.14	20.0000	99.2	73 - 118	0.603	20	
Bromoform	16.7900	0.50	0.20	20.0000	84.0	65 - 133	3.89	20	
Bromomethane	20.3500	0.50	0.17	20.0000	102	7 - 205	1.95	20	
Carbon tetrachloride	20.0700	0.50	0.09	20.0000	100	63 - 133	2.22	20	
Chlorobenzene	19.9200	0.50	0.13	20.0000	99.6	86 - 113	4.52	20	
Chloroethane	23.1800	0.50	0.15	20.0000	116	66 - 141	0.867	20	
Chloroform	22.5500	0.50	0.11	20.0000	113	63 - 127	7.26	20	
Chloromethane	20.6900	0.50	0.12	20.0000	103	0 - 207	1.77	20	
cis-1,2-Dichloroethene	22.1000	0.50	0.14	20.0000	110	64 - 126	9.08	20	
cis-1,3-Dichloropropene	21.1300	0.50	0.13	20.0000	106	70 - 141	2.15	20	
Dibromochloromethane	17.4800	0.50	0.16	20.0000	87.4	67 - 135	4.50	20	
Dibromomethane	19.6700	0.50	0.19	20.0000	98.4	74 - 118	2.41	20	
Dichlorodifluoromethane	19.9400	0.50	0.05	20.0000	99.7	14 - 181	3.05	20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0348 - MSVOA_W (continued)

LCS Dup (B9H0348-BSD1) - Continued

Prepared: 8/15/2019 Analyzed: 8/15/2019

Ethylbenzene	34.2200	0.50	0.13	40.0000		85.6	77 - 118	3.60	20	L3
Hexachlorobutadiene	18.0700	0.50	0.15	20.0000		90.4	66 - 125	2.46	20	
Isopropylbenzene	18.7100	0.50	0.10	20.0000		93.6	68 - 137	3.31	20	
m,p-Xylene	37.4400	1.0	0.19	40.0000		93.6	78 - 126	3.20	20	
Methylene chloride	18.5500	1.0	0.71	20.0000		92.8	51 - 149	6.97	20	
n-Butylbenzene	17.2600	0.50	0.11	20.0000		86.3	63 - 127	2.94	20	
n-Propylbenzene	17.8900	0.50	0.10	20.0000		89.4	69 - 124	2.89	20	
Naphthalene	16.1800	0.50	0.41	20.0000		80.9	60 - 126	2.38	20	
o-Xylene	35.2200	0.50	0.13	40.0000		88.0	79 - 126	4.86	20	
sec-Butylbenzene	17.6700	0.50	0.09	20.0000		88.4	69 - 124	2.99	20	
Styrene	18.5000	0.50	0.13	20.0000		92.5	80 - 127	3.86	20	
tert-Butylbenzene	17.3600	0.50	0.09	20.0000		86.8	71 - 124	0.0576	20	
Tetrachloroethene	17.7600	0.50	0.10	20.0000		88.8	73 - 129	4.14	20	
Toluene	44.1000	0.50	0.12	40.0000		110	78 - 121	3.18	20	
trans-1,2-Dichloroethene	21.6300	0.50	0.09	20.0000		108	58 - 141	8.48	20	
Trichloroethene	19.5700	0.50	0.10	20.0000		97.8	73 - 126	1.60	20	
Trichlorofluoromethane	22.7100	0.50	0.10	20.0000		114	62 - 146	0.929	20	
Vinyl chloride	21.8000	0.50	0.05	20.0000		109	61 - 137	2.32	20	
Surrogate: 1,2-Dichloroethane-d4	29.21			25.0000		117	59 - 158			
Surrogate: 4-Bromofluorobenzene	25.38			25.0000		102	71 - 127			
Surrogate: Dibromofluoromethane	31.37			25.0000		125	66 - 147			
Surrogate: Toluene-d8	28.10			25.0000		112	77 - 138			



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Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W

Blank (B9H0408-BLK1)

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

Blank (B9H0408-BLK1) - Continued

Prepared: 8/19/2019 Analyzed: 8/19/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	25.51		25.0000	102	59 - 158
Surrogate: 4-Bromofluorobenzene	26.04		25.0000	104	71 - 127
Surrogate: Dibromofluoromethane	25.91		25.0000	104	66 - 147
Surrogate: Toluene-d8	26.21		25.0000	105	77 - 138

LCS (B9H0408-BS1)

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,1,1,2-Tetrachloroethane	19.3100	0.50	0.11	20.0000	96.6	71 - 133
1,1,1-Trichloroethane	18.0300	0.50	0.07	20.0000	90.2	62 - 124
1,1,2,2-Tetrachloroethane	19.9900	0.50	0.36	20.0000	100	50 - 131
1,1,2-Trichloroethane	19.5100	0.50	0.25	20.0000	97.6	77 - 121
1,1-Dichloroethane	19.5300	0.50	0.09	20.0000	97.6	52 - 130
1,1-Dichloroethene	18.9700	0.50	0.13	20.0000	94.8	61 - 136
1,1-Dichloropropene	19.5200	0.50	0.13	20.0000	97.6	80 - 128
1,2,3-Trichloropropane	19.8400	0.50	0.39	20.0000	99.2	59 - 126
1,2,3-Trichlorobenzene	19.1800	0.50	0.18	20.0000	95.9	69 - 138
1,2,4-Trichlorobenzene	19.3700	0.50	0.16	20.0000	96.8	78 - 125
1,2,4-Trimethylbenzene	20.7600	0.50	0.14	20.0000	104	70 - 126
1,2-Dibromo-3-chloropropane	18.4700	0.50	0.41	20.0000	92.4	58 - 127
1,2-Dibromoethane	19.2200	0.50	0.24	20.0000	96.1	76 - 120
1,2-Dichlorobenzene	18.2100	0.50	0.20	20.0000	91.0	82 - 117
1,2-Dichloroethane	19.5900	0.50	0.20	20.0000	98.0	66 - 126
1,2-Dichloropropane	18.6900	0.50	0.15	20.0000	93.4	70 - 117
1,3,5-Trimethylbenzene	20.2000	0.50	0.13	20.0000	101	71 - 125
1,3-Dichlorobenzene	18.8600	0.50	0.16	20.0000	94.3	81 - 116
1,3-Dichloropropane	19.6400	0.50	0.21	20.0000	98.2	69 - 124



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Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

LCS (B9H0408-BS1) - Continued

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,4-Dichlorobenzene	19.7300	0.50	0.17	20.0000		98.6	80 - 114		
2,2-Dichloropropane	21.6900	0.50	0.38	20.0000		108	58 - 132		
2-Chlorotoluene	19.7300	0.50	0.11	20.0000		98.6	71 - 119		
4-Chlorotoluene	19.5600	0.50	0.12	20.0000		97.8	72 - 122		
4-Isopropyltoluene	20.8000	0.50	0.11	20.0000		104	69 - 126		
Benzene	38.0000	0.50	0.13	40.0000		95.0	80 - 116		
Bromobenzene	19.5800	0.50	0.21	20.0000		97.9	77 - 118		
Bromodichloromethane	18.6800	0.50	0.14	20.0000		93.4	73 - 118		
Bromoform	18.4700	0.50	0.20	20.0000		92.4	65 - 133		
Bromomethane	26.7000	0.50	0.17	20.0000		134	7 - 205		
Carbon tetrachloride	18.3100	0.50	0.09	20.0000		91.6	63 - 133		
Chlorobenzene	19.9500	0.50	0.13	20.0000		99.8	86 - 113		
Chloroethane	20.1800	0.50	0.15	20.0000		101	66 - 141		
Chloroform	19.5600	0.50	0.11	20.0000		97.8	63 - 127		
Chloromethane	19.5300	0.50	0.12	20.0000		97.6	0 - 207		
cis-1,2-Dichloroethene	19.0700	0.50	0.14	20.0000		95.4	64 - 126		
cis-1,3-Dichloropropene	22.6800	0.50	0.13	20.0000		113	70 - 141		
Dibromochloromethane	18.8000	0.50	0.16	20.0000		94.0	67 - 135		
Dibromomethane	19.4800	0.50	0.19	20.0000		97.4	74 - 118		
Dichlorodifluoromethane	20.1600	0.50	0.05	20.0000		101	14 - 181		
Ethylbenzene	37.4600	0.50	0.13	40.0000		93.6	77 - 118		
Hexachlorobutadiene	19.8600	0.50	0.15	20.0000		99.3	66 - 125		
Isopropylbenzene	21.7500	0.50	0.10	20.0000		109	68 - 137		
m,p-Xylene	40.1700	1.0	0.19	40.0000		100	78 - 126		
Methylene chloride	24.9600	1.0	0.71	20.0000		125	51 - 149		
n-Butylbenzene	20.7200	0.50	0.11	20.0000		104	63 - 127		
n-Propylbenzene	20.1100	0.50	0.10	20.0000		101	69 - 124		
Naphthalene	17.8800	0.50	0.41	20.0000		89.4	60 - 126		
o-Xylene	40.6600	0.50	0.13	40.0000		102	79 - 126		
sec-Butylbenzene	20.3200	0.50	0.09	20.0000		102	69 - 124		
Styrene	20.9800	0.50	0.13	20.0000		105	80 - 127		
tert-Butylbenzene	20.6700	0.50	0.09	20.0000		103	71 - 124		
Tetrachloroethene	18.9900	0.50	0.10	20.0000		95.0	73 - 129		
Toluene	38.0800	0.50	0.12	40.0000		95.2	78 - 121		
trans-1,2-Dichloroethene	19.5900	0.50	0.09	20.0000		98.0	58 - 141		
Trichloroethene	18.1500	0.50	0.10	20.0000		90.8	73 - 126		
Trichlorofluoromethane	18.8700	0.50	0.10	20.0000		94.4	62 - 146		
Vinyl chloride	20.1300	0.50	0.05	20.0000		101	61 - 137		
Surrogate: 1,2-Dichloroethane-d4	23.32			25.0000		93.3	59 - 158		
Surrogate: 4-Bromofluorobenzene	26.49			25.0000		106	71 - 127		
Surrogate: Dibromofluoromethane	23.65			25.0000		94.6	66 - 147		



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

LCS (B9H0408-BS1) - Continued

Prepared: 8/19/2019 Analyzed: 8/19/2019

Surrogate: Toluene-d8 25.73 25.0000 103 77 - 138

Matrix Spike (B9H0408-MS1)

Source: 1903038-04

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,1,1,2-Tetrachloroethane	19.5800	0.50	0.11	20.0000	ND	97.9	71 - 133
1,1,1-Trichloroethane	18.6600	0.50	0.07	20.0000	ND	93.3	62 - 124
1,1,2,2-Tetrachloroethane	22.4200	0.50	0.36	20.0000	ND	112	50 - 131
1,1,2-Trichloroethane	20.2400	0.50	0.25	20.0000	ND	101	77 - 121
1,1-Dichloroethane	20.2100	0.50	0.09	20.0000	ND	101	52 - 130
1,1-Dichloroethene	24.5300	0.50	0.13	20.0000	4.25000	101	61 - 136
1,1-Dichloropropene	18.8000	0.50	0.13	20.0000	ND	94.0	80 - 128
1,2,3-Trichloropropane	20.9600	0.50	0.39	20.0000	ND	105	59 - 126
1,2,3-Trichlorobenzene	20.9800	0.50	0.18	20.0000	ND	105	69 - 138
1,2,4-Trichlorobenzene	20.6100	0.50	0.16	20.0000	ND	103	78 - 125
1,2,4-Trimethylbenzene	21.3500	0.50	0.14	20.0000	ND	107	70 - 126
1,2-Dibromo-3-chloropropane	20.6600	0.50	0.41	20.0000	ND	103	58 - 127
1,2-Dibromoethane	20.1600	0.50	0.24	20.0000	ND	101	76 - 120
1,2-Dichlorobenzene	19.4200	0.50	0.20	20.0000	ND	97.1	82 - 117
1,2-Dichloroethane	19.7400	0.50	0.20	20.0000	ND	98.7	66 - 126
1,2-Dichloropropane	18.5600	0.50	0.15	20.0000	ND	92.8	70 - 117
1,3,5-Trimethylbenzene	20.6900	0.50	0.13	20.0000	ND	103	71 - 125
1,3-Dichlorobenzene	19.7600	0.50	0.16	20.0000	ND	98.8	81 - 116
1,3-Dichloropropane	20.1600	0.50	0.21	20.0000	ND	101	69 - 124
1,4-Dichlorobenzene	20.2500	0.50	0.17	20.0000	ND	101	80 - 114
2,2-Dichloropropane	22.4200	0.50	0.38	20.0000	ND	112	58 - 132
2-Chlorotoluene	20.3200	0.50	0.11	20.0000	ND	102	71 - 119
4-Chlorotoluene	19.9400	0.50	0.12	20.0000	ND	99.7	72 - 122
4-Isopropyltoluene	21.2600	0.50	0.11	20.0000	ND	106	69 - 126
Benzene	37.1000	0.50	0.13	40.0000	ND	92.8	80 - 116
Bromobenzene	20.2700	0.50	0.21	20.0000	ND	101	77 - 118
Bromodichloromethane	18.9800	0.50	0.14	20.0000	ND	94.9	73 - 118
Bromoform	18.9400	0.50	0.20	20.0000	ND	94.7	65 - 133
Bromomethane	26.8000	0.50	0.17	20.0000	ND	134	7 - 205
Carbon tetrachloride	18.1100	0.50	0.09	20.0000	ND	90.6	63 - 133
Chlorobenzene	20.0000	0.50	0.13	20.0000	ND	100	81 - 115
Chloroethane	19.6300	0.50	0.15	20.0000	ND	98.2	66 - 141
Chloroform	20.9000	0.50	0.11	20.0000	0.620000	101	63 - 127
Chloromethane	19.8000	0.50	0.12	20.0000	ND	99.0	0 - 207
cis-1,2-Dichloroethene	19.9100	0.50	0.14	20.0000	ND	99.6	64 - 126
cis-1,3-Dichloropropene	21.1500	0.50	0.13	20.0000	ND	106	70 - 141
Dibromochloromethane	19.7000	0.50	0.16	20.0000	ND	98.5	67 - 135
Dibromomethane	19.3500	0.50	0.19	20.0000	ND	96.8	74 - 118
Dichlorodifluoromethane	19.1900	0.50	0.05	20.0000	ND	96.0	14 - 181



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

Matrix Spike (B9H0408-MS1) - Continued

Source: 1903038-04

Prepared: 8/19/2019 Analyzed: 8/19/2019

Ethylbenzene	37.3400	0.50	0.13	40.0000	ND	93.4	77 - 118			
Hexachlorobutadiene	20.5500	0.50	0.15	20.0000	ND	103	66 - 125			
Isopropylbenzene	22.1600	0.50	0.10	20.0000	ND	111	68 - 137			
m,p-Xylene	40.2600	1.0	0.19	40.0000	ND	101	78 - 126			
Methylene chloride	24.7000	1.0	0.71	20.0000	ND	124	51 - 149			
n-Butylbenzene	21.0500	0.50	0.11	20.0000	ND	105	63 - 127			
n-Propylbenzene	20.3700	0.50	0.10	20.0000	ND	102	69 - 124			
Naphthalene	19.4500	0.50	0.41	20.0000	ND	97.2	60 - 126			
o-Xylene	41.5100	0.50	0.13	40.0000	ND	104	79 - 126			
sec-Butylbenzene	20.6800	0.50	0.09	20.0000	ND	103	69 - 124			
Styrene	20.5300	0.50	0.13	20.0000	ND	103	80 - 127			
tert-Butylbenzene	20.8300	0.50	0.09	20.0000	ND	104	71 - 124			
Tetrachloroethene	18.8800	0.50	0.10	20.0000	ND	94.4	73 - 129			
Toluene	37.2100	0.50	0.12	40.0000	ND	93.0	78 - 121			
trans-1,2-Dichloroethene	19.6000	0.50	0.09	20.0000	ND	98.0	58 - 141			
Trichloroethene	17.8900	0.50	0.10	20.0000	ND	89.4	73 - 126			
Trichlorofluoromethane	18.3600	0.50	0.10	20.0000	ND	91.8	62 - 146			
Vinyl chloride	19.9200	0.50	0.05	20.0000	ND	99.6	61 - 137			
Surrogate: 1,2-Dichloroethane-d4	24.47			25.0000		97.9	59 - 158			
Surrogate: 4-Bromofluorobenzene	27.10			25.0000		108	71 - 127			
Surrogate: Dibromofluoromethane	24.51			25.0000		98.0	66 - 147			
Surrogate: Toluene-d8	25.05			25.0000		100	77 - 138			

Matrix Spike (B9H0408-MS2)

Source: 1903024-09RE1

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,1,1,2-Tetrachloroethane	176.700	5.0	1.1	200.000	12.8000	82.0	71 - 133			
1,1,1-Trichloroethane	163.600	5.0	0.74	200.000	ND	81.8	62 - 124			
1,1,2,2-Tetrachloroethane	178.800	5.0	3.6	200.000	ND	89.4	50 - 131			
1,1,2-Trichloroethane	174.000	5.0	2.5	200.000	ND	87.0	77 - 121			
1,1-Dichloroethane	172.300	5.0	0.92	200.000	2.70000	84.8	52 - 130			
1,1-Dichloroethene	188.100	5.0	1.3	200.000	22.4000	82.8	61 - 136			
1,1-Dichloropropene	182.500	5.0	1.3	200.000	ND	91.2	80 - 128			
1,2,3-Trichloropropane	173.500	5.0	3.9	200.000	ND	86.8	59 - 126			
1,2,3-Trichlorobenzene	182.600	5.0	1.8	200.000	ND	91.3	69 - 138			
1,2,4-Trichlorobenzene	185.400	5.0	1.6	200.000	ND	92.7	78 - 125			
1,2,4-Trimethylbenzene	199.300	5.0	1.4	200.000	ND	99.6	70 - 126			
1,2-Dibromo-3-chloropropane	170.200	5.0	4.1	200.000	22.6000	73.8	58 - 127			
1,2-Dibromoethane	164.600	5.0	2.4	200.000	3.90000	80.4	76 - 120			
1,2-Dichlorobenzene	170.900	5.0	2.0	200.000	ND	85.4	82 - 117			
1,2-Dichloroethane	173.100	5.0	2.0	200.000	ND	86.6	66 - 126			
1,2-Dichloropropane	163.600	5.0	1.5	200.000	ND	81.8	70 - 117			
1,3,5-Trimethylbenzene	192.400	5.0	1.3	200.000	ND	96.2	71 - 125			



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9H0408 - MSVOA_W (continued)										
Matrix Spike (B9H0408-MS2) - Continued				Source: 1903024-09RE1		Prepared: 8/19/2019 Analyzed: 8/19/2019				
1,3-Dichlorobenzene	177.500	5.0	1.6	200.000	ND	88.8	81 - 116			
1,3-Dichloropropane	173.400	5.0	2.1	200.000	8.50000	82.4	69 - 124			
1,4-Dichlorobenzene	185.800	5.0	1.7	200.000	3.90000	91.0	80 - 114			
2,2-Dichloropropane	196.600	5.0	3.8	200.000	ND	98.3	58 - 132			
2-Chlorotoluene	185.600	5.0	1.1	200.000	ND	92.8	71 - 119			
4-Chlorotoluene	183.900	5.0	1.2	200.000	ND	92.0	72 - 122			
4-Isopropyltoluene	198.400	5.0	1.1	200.000	ND	99.2	69 - 126			
Benzene	338.100	5.0	1.3	400.000	ND	84.5	80 - 116			
Bromobenzene	181.100	5.0	2.1	200.000	7.90000	86.6	77 - 118			
Bromodichloromethane	169.300	5.0	1.4	200.000	4.50000	82.4	73 - 118			
Bromoform	159.700	5.0	2.0	200.000	20.0000	69.8	65 - 133			
Bromomethane	196.800	5.0	1.7	200.000	ND	98.4	7 - 205			
Carbon tetrachloride	164.500	5.0	0.92	200.000	ND	82.2	63 - 133			
Chlorobenzene	184.500	5.0	1.3	200.000	2.80000	90.8	81 - 115			
Chloroethane	138.200	5.0	1.5	200.000	ND	69.1	66 - 141			
Chloroform	170.900	5.0	1.1	200.000	ND	85.4	63 - 127			
Chloromethane	291.800	5.0	1.2	200.000	ND	146	0 - 207			
cis-1,2-Dichloroethene	177.100	5.0	1.4	200.000	10.2000	83.4	64 - 126			
cis-1,3-Dichloropropene	195.300	5.0	1.3	200.000	ND	97.6	70 - 141			
Dibromochloromethane	170.700	5.0	1.6	200.000	17.0000	76.8	67 - 135			
Dibromomethane	172.300	5.0	1.9	200.000	ND	86.2	74 - 118			
Dichlorodifluoromethane	246.100	5.0	0.54	200.000	ND	123	14 - 181			
Ethylbenzene	351.900	5.0	1.3	400.000	ND	88.0	77 - 118			
Hexachlorobutadiene	201.200	5.0	1.5	200.000	15.1000	93.0	66 - 125			
Isopropylbenzene	205.900	5.0	1.0	200.000	ND	103	68 - 137			
m,p-Xylene	375.300	10	1.9	400.000	ND	93.8	78 - 126			
Methylene chloride	208.500	10	7.1	200.000	ND	104	51 - 149			
n-Butylbenzene	198.400	5.0	1.1	200.000	ND	99.2	63 - 127			
n-Propylbenzene	189.900	5.0	1.0	200.000	ND	95.0	69 - 124			
Naphthalene	161.600	5.0	4.1	200.000	17.3000	72.2	60 - 126			
o-Xylene	379.000	5.0	1.3	400.000	ND	94.8	79 - 126			
sec-Butylbenzene	194.100	5.0	0.90	200.000	ND	97.0	69 - 124			
Styrene	192.200	5.0	1.3	200.000	ND	96.1	80 - 127			
tert-Butylbenzene	195.500	5.0	0.90	200.000	ND	97.8	71 - 124			
Tetrachloroethene	178.400	5.0	1.0	200.000	ND	89.2	73 - 129			
Toluene	344.800	5.0	1.2	400.000	ND	86.2	78 - 121			
trans-1,2-Dichloroethene	169.300	5.0	0.92	200.000	4.10000	82.6	58 - 141			
Trichloroethene	245.500	5.0	0.99	200.000	86.6000	79.4	73 - 126			
Trichlorofluoromethane	138.200	5.0	0.98	200.000	ND	69.1	62 - 146			
Vinyl chloride	139.200	5.0	0.53	200.000	ND	69.6	61 - 137			
Surrogate: 1,2-Dichloroethane-d4	22.38			25.0000		89.5	59 - 158			



Certificate of Analysis

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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

Matrix Spike (B9H0408-MS2) - Continued

Source: 1903024-09RE1

Prepared: 8/19/2019 Analyzed: 8/19/2019

Surrogate: 4-Bromofluorobenzene	27.30		25.0000		109	71 - 127			
Surrogate: Dibromofluoromethane	23.28		25.0000		93.1	66 - 147			
Surrogate: Toluene-d8	25.89		25.0000		104	77 - 138			

Matrix Spike Dup (B9H0408-MSD1)

Source: 1903038-04

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,1,1,2-Tetrachloroethane	19.2200	0.50	0.11	20.0000	ND	96.1	71 - 133	1.86	20
1,1,1-Trichloroethane	17.5100	0.50	0.07	20.0000	ND	87.6	62 - 124	6.36	20
1,1,2,2-Tetrachloroethane	21.9200	0.50	0.36	20.0000	ND	110	50 - 131	2.26	20
1,1,2-Trichloroethane	20.2200	0.50	0.25	20.0000	ND	101	77 - 121	0.0989	20
1,1-Dichloroethane	19.3300	0.50	0.09	20.0000	ND	96.6	52 - 130	4.45	20
1,1-Dichloroethene	22.7200	0.50	0.13	20.0000	4.25000	92.4	61 - 136	7.66	20
1,1-Dichloropropene	19.4600	0.50	0.13	20.0000	ND	97.3	80 - 128	3.45	20
1,2,3-Trichloropropane	20.2400	0.50	0.39	20.0000	ND	101	59 - 126	3.50	20
1,2,3-Trichlorobenzene	20.5100	0.50	0.18	20.0000	ND	103	69 - 138	2.27	20
1,2,4-Trichlorobenzene	20.3400	0.50	0.16	20.0000	ND	102	78 - 125	1.32	20
1,2,4-Trimethylbenzene	20.5700	0.50	0.14	20.0000	ND	103	70 - 126	3.72	20
1,2-Dibromo-3-chloropropane	19.1700	0.50	0.41	20.0000	ND	95.8	58 - 127	7.48	20
1,2-Dibromoethane	20.1800	0.50	0.24	20.0000	ND	101	76 - 120	0.0992	20
1,2-Dichlorobenzene	18.8300	0.50	0.20	20.0000	ND	94.2	82 - 117	3.08	20
1,2-Dichloroethane	20.7100	0.50	0.20	20.0000	ND	104	66 - 126	4.80	20
1,2-Dichloropropane	18.9800	0.50	0.15	20.0000	ND	94.9	70 - 117	2.24	20
1,3,5-Trimethylbenzene	20.6400	0.50	0.13	20.0000	ND	103	71 - 125	0.242	20
1,3-Dichlorobenzene	18.7300	0.50	0.16	20.0000	ND	93.6	81 - 116	5.35	20
1,3-Dichloropropane	20.5300	0.50	0.21	20.0000	ND	103	69 - 124	1.82	20
1,4-Dichlorobenzene	20.0700	0.50	0.17	20.0000	ND	100	80 - 114	0.893	20
2,2-Dichloropropane	21.1300	0.50	0.38	20.0000	ND	106	58 - 132	5.92	20
2-Chlorotoluene	19.8400	0.50	0.11	20.0000	ND	99.2	71 - 119	2.39	20
4-Chlorotoluene	19.8400	0.50	0.12	20.0000	ND	99.2	72 - 122	0.503	20
4-Isopropyltoluene	20.8800	0.50	0.11	20.0000	ND	104	69 - 126	1.80	20
Benzene	37.7800	0.50	0.13	40.0000	ND	94.4	80 - 116	1.82	20
Bromobenzene	20.2800	0.50	0.21	20.0000	ND	101	77 - 118	0.0493	20
Bromodichloromethane	19.4800	0.50	0.14	20.0000	ND	97.4	73 - 118	2.60	20
Bromoform	18.9300	0.50	0.20	20.0000	ND	94.6	65 - 133	0.0528	20
Bromomethane	23.7200	0.50	0.17	20.0000	ND	119	7 - 205	12.2	20
Carbon tetrachloride	18.2500	0.50	0.09	20.0000	ND	91.2	63 - 133	0.770	20
Chlorobenzene	20.2300	0.50	0.13	20.0000	ND	101	81 - 115	1.14	20
Chloroethane	19.1400	0.50	0.15	20.0000	ND	95.7	66 - 141	2.53	20
Chloroform	20.1300	0.50	0.11	20.0000	0.620000	97.6	63 - 127	3.75	20
Chloromethane	17.2300	0.50	0.12	20.0000	ND	86.2	0 - 207	13.9	20
cis-1,2-Dichloroethene	19.3000	0.50	0.14	20.0000	ND	96.5	64 - 126	3.11	20
cis-1,3-Dichloropropene	22.3100	0.50	0.13	20.0000	ND	112	70 - 141	5.34	20
Dibromochloromethane	19.1300	0.50	0.16	20.0000	ND	95.6	67 - 135	2.94	20



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

Matrix Spike Dup (B9H0408-MSD1) - Continued

Source: 1903038-04

Prepared: 8/19/2019 Analyzed: 8/19/2019

Dibromomethane	19.5400	0.50	0.19	20.0000	ND	97.7	74 - 118	0.977	20	
Dichlorodifluoromethane	16.8100	0.50	0.05	20.0000	ND	84.0	14 - 181	13.2	20	
Ethylbenzene	37.9600	0.50	0.13	40.0000	ND	94.9	77 - 118	1.65	20	
Hexachlorobutadiene	19.4700	0.50	0.15	20.0000	ND	97.4	66 - 125	5.40	20	
Isopropylbenzene	21.7300	0.50	0.10	20.0000	ND	109	68 - 137	1.96	20	
m,p-Xylene	40.4000	1.0	0.19	40.0000	ND	101	78 - 126	0.347	20	
Methylene chloride	23.2100	1.0	0.71	20.0000	ND	116	51 - 149	6.22	20	
n-Butylbenzene	20.5700	0.50	0.11	20.0000	ND	103	63 - 127	2.31	20	
n-Propylbenzene	20.3000	0.50	0.10	20.0000	ND	102	69 - 124	0.344	20	
Naphthalene	19.2400	0.50	0.41	20.0000	ND	96.2	60 - 126	1.09	20	
o-Xylene	41.4800	0.50	0.13	40.0000	ND	104	79 - 126	0.0723	20	
sec-Butylbenzene	20.3900	0.50	0.09	20.0000	ND	102	69 - 124	1.41	20	
Styrene	20.4000	0.50	0.13	20.0000	ND	102	80 - 127	0.635	20	
tert-Butylbenzene	20.7600	0.50	0.09	20.0000	ND	104	71 - 124	0.337	20	
Tetrachloroethene	18.8000	0.50	0.10	20.0000	ND	94.0	73 - 129	0.425	20	
Toluene	38.1400	0.50	0.12	40.0000	ND	95.4	78 - 121	2.47	20	
trans-1,2-Dichloroethene	18.5600	0.50	0.09	20.0000	ND	92.8	58 - 141	5.45	20	
Trichloroethene	17.9900	0.50	0.10	20.0000	ND	90.0	73 - 126	0.557	20	
Trichlorofluoromethane	16.1000	0.50	0.10	20.0000	ND	80.5	62 - 146	13.1	20	
Vinyl chloride	17.4800	0.50	0.05	20.0000	ND	87.4	61 - 137	13.0	20	

Surrogate: 1,2-Dichloroethane-d4

23.31

25.0000

93.2

59 - 158

Surrogate: 4-Bromofluorobenzene

26.80

25.0000

107

71 - 127

Surrogate: Dibromofluoromethane

23.37

25.0000

93.5

66 - 147

Surrogate: Toluene-d8

25.96

25.0000

104

77 - 138

Matrix Spike Dup (B9H0408-MSD2)

Source: 1903024-09RE1

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,1,1,2-Tetrachloroethane	197.500	5.0	1.1	200.000	12.8000	92.4	71 - 133	11.1	20	
1,1,1-Trichloroethane	183.900	5.0	0.74	200.000	ND	92.0	62 - 124	11.7	20	
1,1,2,2-Tetrachloroethane	214.000	5.0	3.6	200.000	ND	107	50 - 131	17.9	20	
1,1,2-Trichloroethane	205.700	5.0	2.5	200.000	ND	103	77 - 121	16.7	20	
1,1-Dichloroethane	202.800	5.0	0.92	200.000	2.70000	100	52 - 130	16.3	20	
1,1-Dichloroethene	215.600	5.0	1.3	200.000	22.4000	96.6	61 - 136	13.6	20	
1,1-Dichloropropene	199.700	5.0	1.3	200.000	ND	99.8	80 - 128	9.00	20	
1,2,3-Trichloropropane	209.800	5.0	3.9	200.000	ND	105	59 - 126	18.9	20	
1,2,3-Trichlorobenzene	209.600	5.0	1.8	200.000	ND	105	69 - 138	13.8	20	
1,2,4-Trichlorobenzene	209.800	5.0	1.6	200.000	ND	105	78 - 125	12.3	20	
1,2,4-Trimethylbenzene	216.400	5.0	1.4	200.000	ND	108	70 - 126	8.23	20	
1,2-Dibromo-3-chloropropane	199.700	5.0	4.1	200.000	22.6000	88.6	58 - 127	16.0	20	
1,2-Dibromoethane	198.400	5.0	2.4	200.000	3.90000	97.2	76 - 120	18.6	20	
1,2-Dichlorobenzene	190.900	5.0	2.0	200.000	ND	95.4	82 - 117	11.1	20	
1,2-Dichloroethane	201.800	5.0	2.0	200.000	ND	101	66 - 126	15.3	20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

Matrix Spike Dup (B9H0408-MSD2) - Continued

Source: 1903024-09RE1

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,2-Dichloropropane	184.500	5.0	1.5	200.000	ND	92.2	70 - 117	12.0	20	
1,3,5-Trimethylbenzene	208.900	5.0	1.3	200.000	ND	104	71 - 125	8.22	20	
1,3-Dichlorobenzene	197.300	5.0	1.6	200.000	ND	98.6	81 - 116	10.6	20	
1,3-Dichloropropane	203.400	5.0	2.1	200.000	8.50000	97.4	69 - 124	15.9	20	
1,4-Dichlorobenzene	204.000	5.0	1.7	200.000	3.90000	100	80 - 114	9.34	20	
2,2-Dichloropropane	219.000	5.0	3.8	200.000	ND	110	58 - 132	10.8	20	
2-Chlorotoluene	206.900	5.0	1.1	200.000	ND	103	71 - 119	10.9	20	
4-Chlorotoluene	204.000	5.0	1.2	200.000	ND	102	72 - 122	10.4	20	
4-Isopropyltoluene	217.100	5.0	1.1	200.000	ND	109	69 - 126	9.00	20	
Benzene	377.600	5.0	1.3	400.000	ND	94.4	80 - 116	11.0	20	
Bromobenzene	203.900	5.0	2.1	200.000	7.90000	98.0	77 - 118	11.8	20	
Bromodichloromethane	191.000	5.0	1.4	200.000	4.50000	93.2	73 - 118	12.0	20	
Bromoform	191.800	5.0	2.0	200.000	20.0000	85.9	65 - 133	18.3	20	
Bromomethane	242.200	5.0	1.7	200.000	ND	121	7 - 205	20.7	20	R
Carbon tetrachloride	183.600	5.0	0.92	200.000	ND	91.8	63 - 133	11.0	20	
Chlorobenzene	204.300	5.0	1.3	200.000	2.80000	101	81 - 115	10.2	20	
Chloroethane	194.200	5.0	1.5	200.000	ND	97.1	66 - 141	33.7	20	R
Chloroform	201.000	5.0	1.1	200.000	ND	100	63 - 127	16.2	20	
Chloromethane	176.400	5.0	1.2	200.000	ND	88.2	0 - 207	49.3	20	R
cis-1,2-Dichloroethene	195.600	5.0	1.4	200.000	10.2000	92.7	64 - 126	9.93	20	
cis-1,3-Dichloropropene	220.800	5.0	1.3	200.000	ND	110	70 - 141	12.3	20	
Dibromochloromethane	195.200	5.0	1.6	200.000	17.0000	89.1	67 - 135	13.4	20	
Dibromomethane	191.700	5.0	1.9	200.000	ND	95.8	74 - 118	10.7	20	
Dichlorodifluoromethane	149.200	5.0	0.54	200.000	ND	74.6	14 - 181	49.0	20	R
Ethylbenzene	385.300	5.0	1.3	400.000	ND	96.3	77 - 118	9.06	20	
Hexachlorobutadiene	208.300	5.0	1.5	200.000	15.1000	96.6	66 - 125	3.47	20	
Isopropylbenzene	224.100	5.0	1.0	200.000	ND	112	68 - 137	8.47	20	
m,p-Xylene	412.200	10	1.9	400.000	ND	103	78 - 126	9.37	20	
Methylene chloride	242.600	10	7.1	200.000	ND	121	51 - 149	15.1	20	
n-Butylbenzene	214.600	5.0	1.1	200.000	ND	107	63 - 127	7.85	20	
n-Propylbenzene	207.500	5.0	1.0	200.000	ND	104	69 - 124	8.86	20	
Naphthalene	191.700	5.0	4.1	200.000	17.3000	87.2	60 - 126	17.0	20	
o-Xylene	424.400	5.0	1.3	400.000	ND	106	79 - 126	11.3	20	
sec-Butylbenzene	212.200	5.0	0.90	200.000	ND	106	69 - 124	8.91	20	
Styrene	213.000	5.0	1.3	200.000	ND	106	80 - 127	10.3	20	
tert-Butylbenzene	214.000	5.0	0.90	200.000	ND	107	71 - 124	9.04	20	
Tetrachloroethene	196.100	5.0	1.0	200.000	ND	98.0	73 - 129	9.45	20	
Toluene	375.900	5.0	1.2	400.000	ND	94.0	78 - 121	8.63	20	
trans-1,2-Dichloroethene	195.000	5.0	0.92	200.000	4.10000	95.4	58 - 141	14.1	20	
Trichloroethene	275.400	5.0	0.99	200.000	86.6000	94.4	73 - 126	11.5	20	
Trichlorofluoromethane	180.500	5.0	0.98	200.000	ND	90.2	62 - 146	26.5	20	R
Vinyl chloride	181.400	5.0	0.53	200.000	ND	90.7	61 - 137	26.3	20	R



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

Matrix Spike Dup (B9H0408-MSD2) - Continued

Source: 1903024-09RE1

Prepared: 8/19/2019 Analyzed: 8/19/2019

Surrogate: 1,2-Dichloroethane-d4	23.79		25.0000		95.2	59 - 158
Surrogate: 4-Bromofluorobenzene	26.69		25.0000		107	71 - 127
Surrogate: Dibromofluoromethan	23.80		25.0000		95.2	66 - 147
Surrogate: Toluene-d8	24.90		25.0000		99.6	77 - 138



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Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0438 - MSVOA_W

Blank (B9H0438-BLK1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0438 - MSVOA_W (continued)

Blank (B9H0438-BLK1) - Continued

Prepared: 8/20/2019 Analyzed: 8/20/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	25.74		25.0000	103	59 - 158
Surrogate: 4-Bromofluorobenzene	24.39		25.0000	97.6	71 - 127
Surrogate: Dibromofluoromethane	26.85		25.0000	107	66 - 147
Surrogate: Toluene-d8	27.17		25.0000	109	77 - 138

LCS (B9H0438-BS1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,1,1,2-Tetrachloroethane	17.4400	0.50	0.11	20.0000	87.2	71 - 133
1,1,1-Trichloroethane	17.6200	0.50	0.07	20.0000	88.1	62 - 124
1,1,2,2-Tetrachloroethane	17.2100	0.50	0.36	20.0000	86.0	50 - 131
1,1,2-Trichloroethane	16.6500	0.50	0.25	20.0000	83.2	77 - 121
1,1-Dichloroethane	18.7800	0.50	0.09	20.0000	93.9	52 - 130
1,1-Dichloroethene	18.9800	0.50	0.13	20.0000	94.9	61 - 136
1,1-Dichloropropene	17.2200	0.50	0.13	20.0000	86.1	80 - 128
1,2,3-Trichloropropane	16.4700	0.50	0.39	20.0000	82.4	59 - 126
1,2,3-Trichlorobenzene	17.3700	0.50	0.18	20.0000	86.8	69 - 138
1,2,4-Trichlorobenzene	17.2000	0.50	0.16	20.0000	86.0	78 - 125
1,2,4-Trimethylbenzene	18.9600	0.50	0.14	20.0000	94.8	70 - 126
1,2-Dibromo-3-chloropropane	16.7700	0.50	0.41	20.0000	83.8	58 - 127
1,2-Dibromoethane	16.2300	0.50	0.24	20.0000	81.2	76 - 120
1,2-Dichlorobenzene	16.6900	0.50	0.20	20.0000	83.4	82 - 117
1,2-Dichloroethane	17.5600	0.50	0.20	20.0000	87.8	66 - 126
1,2-Dichloropropane	16.1200	0.50	0.15	20.0000	80.6	70 - 117
1,3,5-Trimethylbenzene	18.8200	0.50	0.13	20.0000	94.1	71 - 125
1,3-Dichlorobenzene	17.1900	0.50	0.16	20.0000	86.0	81 - 116
1,3-Dichloropropane	16.3600	0.50	0.21	20.0000	81.8	69 - 124



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0438 - MSVOA_W (continued)

LCS (B9H0438-BS1) - Continued

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,4-Dichlorobenzene	17.9800	0.50	0.17	20.0000		89.9	80 - 114		
2,2-Dichloropropane	20.7900	0.50	0.38	20.0000		104	58 - 132		
2-Chlorotoluene	18.0800	0.50	0.11	20.0000		90.4	71 - 119		
4-Chlorotoluene	17.8500	0.50	0.12	20.0000		89.2	72 - 122		
4-Isopropyltoluene	19.1000	0.50	0.11	20.0000		95.5	69 - 126		
Benzene	33.8200	0.50	0.13	40.0000		84.6	80 - 116		
Bromobenzene	17.7000	0.50	0.21	20.0000		88.5	77 - 118		
Bromodichloromethane	16.8000	0.50	0.14	20.0000		84.0	73 - 118		
Bromoform	16.5100	0.50	0.20	20.0000		82.6	65 - 133		
Bromomethane	16.7500	0.50	0.17	20.0000		83.8	7 - 205		
Carbon tetrachloride	16.9400	0.50	0.09	20.0000		84.7	63 - 133		
Chlorobenzene	17.6800	0.50	0.13	20.0000		88.4	86 - 113		
Chloroethane	17.6200	0.50	0.15	20.0000		88.1	66 - 141		
Chloroform	18.8400	0.50	0.11	20.0000		94.2	63 - 127		
Chloromethane	15.0100	0.50	0.12	20.0000		75.0	0 - 207		
cis-1,2-Dichloroethene	18.5700	0.50	0.14	20.0000		92.8	64 - 126		
cis-1,3-Dichloropropene	19.5000	0.50	0.13	20.0000		97.5	70 - 141		
Dibromochloromethane	16.5500	0.50	0.16	20.0000		82.8	67 - 135		
Dibromomethane	17.0800	0.50	0.19	20.0000		85.4	74 - 118		
Dichlorodifluoromethane	18.0800	0.50	0.05	20.0000		90.4	14 - 181		
Ethylbenzene	34.0100	0.50	0.13	40.0000		85.0	77 - 118		
Hexachlorobutadiene	18.0900	0.50	0.15	20.0000		90.4	66 - 125		
Isopropylbenzene	19.5500	0.50	0.10	20.0000		97.8	68 - 137		
m,p-Xylene	36.1900	1.0	0.19	40.0000		90.5	78 - 126		
Methylene chloride	23.7000	1.0	0.71	20.0000		118	51 - 149		
n-Butylbenzene	19.0900	0.50	0.11	20.0000		95.4	63 - 127		
n-Propylbenzene	18.3100	0.50	0.10	20.0000		91.6	69 - 124		
Naphthalene	15.1000	0.50	0.41	20.0000		75.5	60 - 126		
o-Xylene	37.1200	0.50	0.13	40.0000		92.8	79 - 126		
sec-Butylbenzene	18.6700	0.50	0.09	20.0000		93.4	69 - 124		
Styrene	18.3900	0.50	0.13	20.0000		92.0	80 - 127		
tert-Butylbenzene	18.9300	0.50	0.09	20.0000		94.6	71 - 124		
Tetrachloroethene	17.0000	0.50	0.10	20.0000		85.0	73 - 129		
Toluene	33.9700	0.50	0.12	40.0000		84.9	78 - 121		
trans-1,2-Dichloroethene	18.3500	0.50	0.09	20.0000		91.8	58 - 141		
Trichloroethene	15.7200	0.50	0.10	20.0000		78.6	73 - 126		
Trichlorofluoromethane	17.2700	0.50	0.10	20.0000		86.4	62 - 146		
Vinyl chloride	18.1800	0.50	0.05	20.0000		90.9	61 - 137		

Surrogate: 1,2-Dichloroethane-d4	25.25			25.0000		101	59 - 158		
Surrogate: 4-Bromofluorobenzene	26.55			25.0000		106	71 - 127		
Surrogate: Dibromofluoromethane	25.98			25.0000		104	66 - 147		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0438 - MSVOA_W (continued)

LCS (B9H0438-BS1) - Continued

Prepared: 8/20/2019 Analyzed: 8/20/2019

Surrogate: Toluene-d8 26.16 25.0000 105 77 - 138

LCS Dup (B9H0438-BS1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,1,1,2-Tetrachloroethane	20.2100	0.50	0.11	20.0000	101	71 - 133	14.7	20	
1,1,1-Trichloroethane	19.7800	0.50	0.07	20.0000	98.9	62 - 124	11.6	20	
1,1,2,2-Tetrachloroethane	21.2000	0.50	0.36	20.0000	106	50 - 131	20.8	20	R
1,1,2-Trichloroethane	20.4700	0.50	0.25	20.0000	102	77 - 121	20.6	20	R
1,1-Dichloroethane	21.0200	0.50	0.09	20.0000	105	52 - 130	11.3	20	
1,1-Dichloroethene	21.4000	0.50	0.13	20.0000	107	61 - 136	12.0	20	
1,1-Dichloropropene	21.2700	0.50	0.13	20.0000	106	80 - 128	21.0	20	R
1,2,3-Trichloropropane	19.4900	0.50	0.39	20.0000	97.4	59 - 126	16.8	20	
1,2,3-Trichlorobenzene	20.6200	0.50	0.18	20.0000	103	69 - 138	17.1	20	
1,2,4-Trichlorobenzene	19.4800	0.50	0.16	20.0000	97.4	78 - 125	12.4	20	
1,2,4-Trimethylbenzene	21.4700	0.50	0.14	20.0000	107	70 - 126	12.4	20	
1,2-Dibromo-3-chloropropane	18.3600	0.50	0.41	20.0000	91.8	58 - 127	9.05	20	
1,2-Dibromoethane	20.2700	0.50	0.24	20.0000	101	76 - 120	22.1	20	R
1,2-Dichlorobenzene	18.8300	0.50	0.20	20.0000	94.2	82 - 117	12.0	20	
1,2-Dichloroethane	21.3700	0.50	0.20	20.0000	107	66 - 126	19.6	20	
1,2-Dichloropropane	19.3600	0.50	0.15	20.0000	96.8	70 - 117	18.3	20	
1,3,5-Trimethylbenzene	21.0100	0.50	0.13	20.0000	105	71 - 125	11.0	20	
1,3-Dichlorobenzene	19.1700	0.50	0.16	20.0000	95.8	81 - 116	10.9	20	
1,3-Dichloropropane	20.5400	0.50	0.21	20.0000	103	69 - 124	22.7	20	R
1,4-Dichlorobenzene	20.3000	0.50	0.17	20.0000	102	80 - 114	12.1	20	
2,2-Dichloropropane	22.9800	0.50	0.38	20.0000	115	58 - 132	10.0	20	
2-Chlorotoluene	20.2200	0.50	0.11	20.0000	101	71 - 119	11.2	20	
4-Chlorotoluene	20.2200	0.50	0.12	20.0000	101	72 - 122	12.5	20	
4-Isopropyltoluene	21.0500	0.50	0.11	20.0000	105	69 - 126	9.71	20	
Benzene	40.2500	0.50	0.13	40.0000	101	80 - 116	17.4	20	
Bromobenzene	19.6900	0.50	0.21	20.0000	98.4	77 - 118	10.6	20	
Bromodichloromethane	20.1900	0.50	0.14	20.0000	101	73 - 118	18.3	20	
Bromoform	19.4800	0.50	0.20	20.0000	97.4	65 - 133	16.5	20	
Bromomethane	17.1600	0.50	0.17	20.0000	85.8	7 - 205	2.42	20	
Carbon tetrachloride	20.5100	0.50	0.09	20.0000	103	63 - 133	19.1	20	
Chlorobenzene	20.8100	0.50	0.13	20.0000	104	86 - 113	16.3	20	
Chloroethane	17.7100	0.50	0.15	20.0000	88.6	66 - 141	0.509	20	
Chloroform	21.2800	0.50	0.11	20.0000	106	63 - 127	12.2	20	
Chloromethane	14.0700	0.50	0.12	20.0000	70.4	0 - 207	6.46	20	
cis-1,2-Dichloroethene	20.6700	0.50	0.14	20.0000	103	64 - 126	10.7	20	
cis-1,3-Dichloropropene	23.0800	0.50	0.13	20.0000	115	70 - 141	16.8	20	
Dibromochloromethane	19.6100	0.50	0.16	20.0000	98.0	67 - 135	16.9	20	
Dibromomethane	21.0400	0.50	0.19	20.0000	105	74 - 118	20.8	20	R
Dichlorodifluoromethane	17.6200	0.50	0.05	20.0000	88.1	14 - 181	2.58	20	



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0438 - MSVOA_W (continued)

LCS Dup (B9H0438-BSD1) - Continued

Prepared: 8/20/2019 Analyzed: 8/20/2019

Ethylbenzene	39.5400	0.50	0.13	40.0000		98.8	77 - 118	15.0	20	
Hexachlorobutadiene	20.2400	0.50	0.15	20.0000		101	66 - 125	11.2	20	
Isopropylbenzene	22.1500	0.50	0.10	20.0000		111	68 - 137	12.5	20	
m,p-Xylene	42.1700	1.0	0.19	40.0000		105	78 - 126	15.3	20	
Methylene chloride	25.7100	1.0	0.71	20.0000		129	51 - 149	8.14	20	
n-Butylbenzene	20.6400	0.50	0.11	20.0000		103	63 - 127	7.80	20	
n-Propylbenzene	20.3300	0.50	0.10	20.0000		102	69 - 124	10.5	20	
Naphthalene	18.0200	0.50	0.41	20.0000		90.1	60 - 126	17.6	20	
o-Xylene	42.8900	0.50	0.13	40.0000		107	79 - 126	14.4	20	
sec-Butylbenzene	21.1400	0.50	0.09	20.0000		106	69 - 124	12.4	20	
Styrene	21.7200	0.50	0.13	20.0000		109	80 - 127	16.6	20	
tert-Butylbenzene	20.9300	0.50	0.09	20.0000		105	71 - 124	10.0	20	
Tetrachloroethene	19.3600	0.50	0.10	20.0000		96.8	73 - 129	13.0	20	
Toluene	40.4700	0.50	0.12	40.0000		101	78 - 121	17.5	20	
trans-1,2-Dichloroethene	19.9500	0.50	0.09	20.0000		99.8	58 - 141	8.36	20	
Trichloroethene	18.8400	0.50	0.10	20.0000		94.2	73 - 126	18.1	20	
Trichlorofluoromethane	17.4800	0.50	0.10	20.0000		87.4	62 - 146	1.21	20	
Vinyl chloride	17.3400	0.50	0.05	20.0000		86.7	61 - 137	4.73	20	
Surrogate: 1,2-Dichloroethane-d4	25.22			25.0000		101	59 - 158			
Surrogate: 4-Bromofluorobenzene	27.45			25.0000		110	71 - 127			
Surrogate: Dibromofluoromethane	25.86			25.0000		103	66 - 147			
Surrogate: Toluene-d8	26.39			25.0000		106	77 - 138			



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0393 - EPA 1311_W (SVOA_GCMS)

Blank (B9H0393-BLK1)

Prepared: 8/16/2019 Analyzed: 8/16/2019

1,4-Dioxane	ND	2.0	0.84						
Surrogate: 1,2-Dichlorobenzene-d	62.77			100.000		62.8	34 - 188		
Surrogate: 2-Fluorobiphenyl	65.33			100.000		65.3	39 - 108		
Surrogate: 4-Terphenyl-d14	100.4			100.000		100	71 - 131		
Surrogate: Nitrobenzene-d5	67.04			100.000		67.0	32 - 106		

LCS (B9H0393-BS1)

Prepared: 8/16/2019 Analyzed: 8/19/2019

1,4-Dioxane	110.530	2.0	0.84	100.000		111	40 - 159		
Surrogate: 1,2-Dichlorobenzene-d	51.21			100.000		51.2	34 - 188		
Surrogate: 2-Fluorobiphenyl	61.46			100.000		61.5	39 - 108		
Surrogate: 4-Terphenyl-d14	91.21			100.000		91.2	71 - 131		
Surrogate: Nitrobenzene-d5	59.54			100.000		59.5	32 - 106		

LCS Dup (B9H0393-BSD1)

Prepared: 8/16/2019 Analyzed: 8/19/2019

1,4-Dioxane	111.260	2.0	0.84	100.000		111	40 - 159	0.658	20
Surrogate: 1,2-Dichlorobenzene-d	51.60			100.000		51.6	34 - 188		
Surrogate: 2-Fluorobiphenyl	62.93			100.000		62.9	39 - 108		
Surrogate: 4-Terphenyl-d14	92.16			100.000		92.2	71 - 131		
Surrogate: Nitrobenzene-d5	61.11			100.000		61.1	32 - 106		



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0394 - EPA 1311_W (SVOA_GCMS)

Blank (B9H0394-BLK1)

Prepared: 8/16/2019 Analyzed: 8/16/2019

1,4-Dioxane	ND	0.20	0.05							
Surrogate: 1,2-Dichlorobenzene-d	0.8093			1.00000		80.9	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.8516			1.00000		85.2	20 - 131			
Surrogate: 4-Terphenyl-d14	1.183			1.00000		118	24 - 135			
Surrogate: Nitrobenzene-d5	0.9274			1.00000		92.7	6 - 124			

LCS (B9H0394-BS1)

Prepared: 8/16/2019 Analyzed: 8/16/2019

1,4-Dioxane	1.19304	0.20	0.05	1.00000		119	64 - 129			
Surrogate: 1,2-Dichlorobenzene-d	0.6399			1.00000		64.0	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.6809			1.00000		68.1	20 - 131			
Surrogate: 4-Terphenyl-d14	0.8912			1.00000		89.1	24 - 135			
Surrogate: Nitrobenzene-d5	0.7507			1.00000		75.1	6 - 124			

LCS Dup (B9H0394-BS1)

Prepared: 8/16/2019 Analyzed: 8/16/2019

1,4-Dioxane	1.20215	0.20	0.05	1.00000		120	64 - 129	0.761	20	
Surrogate: 1,2-Dichlorobenzene-d	0.6076			1.00000		60.8	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.6504			1.00000		65.0	20 - 131			
Surrogate: 4-Terphenyl-d14	0.8992			1.00000		89.9	24 - 135			
Surrogate: Nitrobenzene-d5	0.7110			1.00000		71.1	6 - 124			

Matrix Spike (B9H0394-MS1)

Source: 1903024-09

Prepared: 8/16/2019 Analyzed: 8/16/2019

1,4-Dioxane	2.12402	0.20	0.05	1.00000	0.923960	120	56 - 128			M2
Surrogate: 1,2-Dichlorobenzene-d	0.9002			1.00000		90.0	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.9219			1.00000		92.2	20 - 131			
Surrogate: 4-Terphenyl-d14	1.048			1.00000		105	24 - 135			
Surrogate: Nitrobenzene-d5	1.018			1.00000		102	6 - 124			

Matrix Spike Dup (B9H0394-MSD1)

Source: 1903024-09

Prepared: 8/16/2019 Analyzed: 8/16/2019

1,4-Dioxane	2.10600	0.20	0.05	1.00000	0.923960	118	56 - 128	0.852	20	
Surrogate: 1,2-Dichlorobenzene-d	0.6782			1.00000		67.8	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.7013			1.00000		70.1	20 - 131			
Surrogate: 4-Terphenyl-d14	0.8518			1.00000		85.2	24 - 135			
Surrogate: Nitrobenzene-d5	0.6998			1.00000		70.0	6 - 124			



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San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/20/2019

Notes and Definitions

R	RPD value outside acceptance criteria. Calculation is based on raw values.
M2	Matrix spike recovery outside of acceptance limit due to possible matrix interference. The analytical batch was validated by the laboratory control sample.
L3	Laboratory control sample outside in-house established limits but within method criteria.
J	Analyte detected below the Practical Quantitation Limit but above or equal to the Method Detection Limit. Result is an estimated concentration.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

PROJECT: Raytheon Main GETS Mid-Month Sample
FULLERTON

TASK NO.: 532.30

Project Manager Steve Netto

QA Manager Tyler Evans

Phone 858.455.6500

Fax 858.455.6533

Sampled By:		SAMPLE COLLECTION		MATRIX		PRESERVATION		CONTAINERS		ANALYSIS REQUESTED										Expected Concentration Range (ppb) for		SPECIAL HANDLING				Laboratory												
LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Ice	40-ml VOA	125 mL Poly	250 mL Poly	250 mL Glass	1L Poly	1L Amber	VOCs by EPA 8260B	Bromate by EPA 317	Bromide by EPA 300	Alkalinity by SM2320B	Total Organic Carbon by SM5310B	Total Suspended Solids by SM2540D	UV Absorption EPA 415.3 @254 nm	1,4-Dioxane by EPA 8270C MOD	1,4-Dioxane by EPA 8270C SIM	0 - 10	10 - 100	100 - 1,000	>1,000	STANDARD TAT	24 hr TAT	48 Hour TAT	5 Day TAT	Level IV Data Validation Requested	MS/MSD Requested	REMARKS			
1903024-01	TE-081319A	8/13/19	0800		X	X			X	3						X									X				X									
-02	MW-34A		0946	X	X				X	3						X									X				X									Report J flags
	↓		↓	X					X						1									X				X										
-03	MW-34B		1032	X	X				X	2						X									X				X									
	↓		↓	X					X						1								X					X										
-04	MW-3400B		1033	X	X				X	3						X									X				X									
	↓		↓	X					X						1								X					X										
-05	MW-34C		1259	X	X				X	3						X									X				X									
	↓		↓	X					X						1									X				X										
-06	MW-31		1357	X	X				X	3						X									X				X									
	↓		↓	X					X						1									X				X										
-07	MW-3100		1358	X	X				X	3						X									X				X									
	↓		↓	X					X						1									X				X										
-08	MW-30A		1449	X	X				X	3						X									X				X									
	↓		↓	X					X						1									X				X										
-09	MW-30B		1528	X	X				X	9						X									X				X									
	↓		↓	X					X						3									X				X										

Total number of containers per analysis:

Total No. of Containers: 0

Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
A. Donnelly / H+H	8/13/19 1655	Justin ATC	8/13/19 1655
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
Justin ATC	8/13/19 1800	UF from J	8/13/19 1800

- ☐ No. of containers correct
- ☐ Received in good condition
- ☐ Custody seals secure
- ☐ Conforms to COC document

Send Results to:

Steve Netto

9171 Towne Centre Drive

Suite 275

San Diego, CA 92122

Ph: 858.455.6500

snetto@hargis.com

Instructions 2.8 °C, 3.4 °C Temperature on receipt

- Fill out form completely and sign only after verified for completeness
- Complete in ballpoint pen. Draw one line through error, initial and date correction
- Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✗
- Note applicable preservatives, special instructions, and deviations from typical environmental samples.
- Consult project QA documents for specific instructions.



HARGIS+ASSOCIATES, INC.
HYDROGEOLOGY • ENGINEERING

PROJECT: Raytheon Fullerton

TASK NO.: 532.30

Project Manager Steve Netto
QA Manager Ross Horton Tyler Evans
Phone 858.455.6500
Fax 858.455.6533

Date: 08/08/2019
Page 1 of 4
2 of 2

Sampled By:				SAMPLE COLLECTION		MATRIX	PRESERVATION	CONTAINERS	ANALYSIS REQUESTED	Expected Concentration Range (ppb) for	SPECIAL HANDLING	REMARKS												
LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Ice	40-ml VOA	1 Liter Amber		VOCs by EPA 8260B 20 ML LL	1,4-Dioxane by EPA 8270C (H ₂ Sing)	10 - 100	100 - 1,000	1,000 - 10,000	24 hr TAT	48 Hour TAT	5-Day TAT	Level IV Data Validation Requested	MS/MSD Requested		
1903024-10	MW-32A	8/13/19	1031	X		X				3		X		X										Report "J" flags.
	↓		↓			X				1		X												
-11	MW-32B		1408			X				3		X		X										
	↓		↓							1														
-12	MW-32B-29v-		1603			X				3		X			X									
	↓		↓							1				X										
-13	MW-32B		1622			X				3		X			X									
	↓		↓							1			X											

Total number of containers per analysis:				Total No. of Containers: <u>16</u>			
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time				
<u>AD... / H+A</u>	<u>8/13/19 1655</u>	<u>[Signature] ATL</u>	<u>8/13/19 1655</u>				
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time				
<u>[Signature] ATL</u>	<u>8/13/19 1800</u>	<u>[Signature]</u>	<u>8/13/19 1800</u>				

- ☐ No. of containers correct
- ☐ Received in good condition
- ☐ Custody seals secure
- ☐ Conforms to COC document

Send Results to:
Steve Netto
9171 Towne Centre Drive
Suite 375
San Diego, CA 92122
Ph: 858.455.6500
snetto@hargis.com

- Instructions
- Fill out form completely and sign only after verified for completeness
 - Complete in ballpoint pen. Draw one line through error, initial and date correction
 - Indicate the number of sample containers in analytical request space; indicate choice with ✓ or x
 - Indicate applicable preservatives, special instructions, and deviations from typical environmental samples.
 - Consult project QA documents for specific instructions.
- Temperature on receipt _____



August 21, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1903038
Client Reference : Raytheon FULLERTON, 532.30

Enclosed are the results for sample(s) received on August 14, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read "Edgar Caballero", with a small "Ar" written below it.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-081419	1903038-01	Lab prepared water	8/14/19 8:00	8/14/19 17:00
MW-26C	1903038-02	Groundwater	8/14/19 9:32	8/14/19 17:00
RB-081419	1903038-03	Lab prepared water	8/14/19 9:40	8/14/19 17:00
MW-41	1903038-04	Groundwater	8/14/19 13:41	8/14/19 17:00
MW-43	1903038-05	Groundwater	8/14/19 9:13	8/14/19 17:00
MW-42	1903038-06	Groundwater	8/14/19 11:22	8/14/19 17:00
MW-33_2SV_	1903038-07	Groundwater	8/14/19 13:34	8/14/19 17:00
MW-33	1903038-08	Groundwater	8/14/19 13:50	8/14/19 17:00
MW-36_2SV_	1903038-09	Groundwater	8/14/19 16:06	8/14/19 17:00
MW-36	1903038-10	Groundwater	8/14/19 16:30	8/14/19 17:00



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: TB-081419

Lab ID: 1903038-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,1,1-Trichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,1,2-Trichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,1-Dichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,1-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,1-Dichloropropene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,2,3-Trichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,2-Dibromoethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,2-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,2-Dichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,2-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,3-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,3-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
1,4-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
2,2-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
2-Chlorotoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
4-Chlorotoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
4-Isopropyltoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Benzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Bromobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Bromodichloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Bromoform	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Bromomethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Carbon tetrachloride	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Chlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Chloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Chloroform	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Chloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Dibromochloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: TB-081419

Lab ID: 1903038-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Dichlorodifluoromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Ethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Hexachlorobutadiene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Isopropylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
m,p-Xylene	ND	1.0	1	B9H0370	08/16/2019	08/16/19 14:29	
Methylene chloride	ND	1.0	1	B9H0370	08/16/2019	08/16/19 14:29	
n-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
n-Propylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Naphthalene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
o-Xylene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
sec-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Styrene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
tert-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Tetrachloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Toluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Trichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Trichlorofluoromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Vinyl chloride	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:29	
Surrogate: 1,2-Dichloroethane-d4	148 %	59 - 158		B9H0370	08/16/2019	08/16/19 14:29	
Surrogate: 4-Bromofluorobenzene	97.8 %	71 - 127		B9H0370	08/16/2019	08/16/19 14:29	
Surrogate: Dibromofluoromethane	159 %	66 - 147		B9H0370	08/16/2019	08/16/19 14:29	S1
Surrogate: Toluene-d8	124 %	77 - 138		B9H0370	08/16/2019	08/16/19 14:29	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-26C

Lab ID: 1903038-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,1,1-Trichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,1,2-Trichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,1-Dichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,1-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,1-Dichloropropene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,2,3-Trichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,2-Dibromoethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,2-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,2-Dichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,2-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,3-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,3-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
1,4-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
2,2-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
2-Chlorotoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
4-Chlorotoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
4-Isopropyltoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Benzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Bromobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Bromodichloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Bromoform	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Bromomethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Carbon tetrachloride	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Chlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Chloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Chloroform	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Chloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Dibromochloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-26C

Lab ID: 1903038-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Dichlorodifluoromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Ethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Hexachlorobutadiene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Isopropylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
m,p-Xylene	ND	1.0	1	B9H0370	08/16/2019	08/16/19 14:58	
Methylene chloride	ND	1.0	1	B9H0370	08/16/2019	08/16/19 14:58	
n-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
n-Propylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Naphthalene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
o-Xylene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
sec-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Styrene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
tert-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Tetrachloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Toluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Trichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Trichlorofluoromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Vinyl chloride	ND	0.50	1	B9H0370	08/16/2019	08/16/19 14:58	
Surrogate: 1,2-Dichloroethane-d4	141 %	59 - 158		B9H0370	08/16/2019	08/16/19 14:58	
Surrogate: 4-Bromofluorobenzene	97.3 %	71 - 127		B9H0370	08/16/2019	08/16/19 14:58	
Surrogate: Dibromofluoromethane	156 %	66 - 147		B9H0370	08/16/2019	08/16/19 14:58	S1
Surrogate: Toluene-d8	129 %	77 - 138		B9H0370	08/16/2019	08/16/19 14:58	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-26C

Lab ID: 1903038-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9H0424	08/19/2019	08/19/19 17:28	
Surrogate: 1,2-Dichlorobenzene-d4	87.1 %	22 - 117		B9H0424	08/19/2019	08/19/19 17:28	
Surrogate: 2-Fluorobiphenyl	91.1 %	20 - 131		B9H0424	08/19/2019	08/19/19 17:28	
Surrogate: 4-Terphenyl-d14	99.8 %	24 - 135		B9H0424	08/19/2019	08/19/19 17:28	
Surrogate: Nitrobenzene-d5	104 %	6 - 124		B9H0424	08/19/2019	08/19/19 17:28	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: RB-081419

Lab ID: 1903038-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,1,1-Trichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,1,2-Trichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,1-Dichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,1-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,1-Dichloropropene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,2,3-Trichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,2-Dibromoethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,2-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,2-Dichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,2-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,3-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,3-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
1,4-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
2,2-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
2-Chlorotoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
4-Chlorotoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
4-Isopropyltoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Benzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Bromobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Bromodichloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Bromoform	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Bromomethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Carbon tetrachloride	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Chlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Chloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Chloroform	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Chloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Dibromochloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: RB-081419

Lab ID: 1903038-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Dichlorodifluoromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Ethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Hexachlorobutadiene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Isopropylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
m,p-Xylene	ND	1.0	1	B9H0370	08/16/2019	08/16/19 15:25	
Methylene chloride	ND	1.0	1	B9H0370	08/16/2019	08/16/19 15:25	
n-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
n-Propylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Naphthalene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
o-Xylene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
sec-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Styrene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
tert-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Tetrachloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Toluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Trichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Trichlorofluoromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Vinyl chloride	ND	0.50	1	B9H0370	08/16/2019	08/16/19 15:25	
Surrogate: 1,2-Dichloroethane-d4	139 %	59 - 158		B9H0370	08/16/2019	08/16/19 15:25	
Surrogate: 4-Bromofluorobenzene	98.6 %	71 - 127		B9H0370	08/16/2019	08/16/19 15:25	
Surrogate: Dibromofluoromethane	150 %	66 - 147		B9H0370	08/16/2019	08/16/19 15:25	S1
Surrogate: Toluene-d8	132 %	77 - 138		B9H0370	08/16/2019	08/16/19 15:25	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: RB-081419

Lab ID: 1903038-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9H0424	08/19/2019	08/19/19 17:56	
Surrogate: 1,2-Dichlorobenzene-d4	86.9 %	22 - 117		B9H0424	08/19/2019	08/19/19 17:56	
Surrogate: 2-Fluorobiphenyl	87.8 %	20 - 131		B9H0424	08/19/2019	08/19/19 17:56	
Surrogate: 4-Terphenyl-d14	105 %	24 - 135		B9H0424	08/19/2019	08/19/19 17:56	
Surrogate: Nitrobenzene-d5	103 %	6 - 124		B9H0424	08/19/2019	08/19/19 17:56	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-41

Lab ID: 1903038-04

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,1,1-Trichloroethane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,1,2-Trichloroethane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,1-Dichloroethane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,1-Dichloroethene	4.2	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,1-Dichloropropene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,2,3-Trichloropropane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,2-Dibromoethane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,2-Dichlorobenzene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,2-Dichloroethane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,2-Dichloropropane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,3-Dichlorobenzene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,3-Dichloropropane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
1,4-Dichlorobenzene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
2,2-Dichloropropane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
2-Chlorotoluene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
4-Chlorotoluene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
4-Isopropyltoluene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Benzene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Bromobenzene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Bromodichloromethane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Bromoform	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Bromomethane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Carbon tetrachloride	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Chlorobenzene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Chloroethane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Chloroform	0.62	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Chloromethane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Dibromochloromethane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-41

Lab ID: 1903038-04

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Dichlorodifluoromethane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Ethylbenzene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Hexachlorobutadiene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Isopropylbenzene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
m,p-Xylene	ND	1.0	1	B9H0408	08/19/2019	08/19/19 16:33	
Methylene chloride	ND	1.0	1	B9H0408	08/19/2019	08/19/19 16:33	
n-Butylbenzene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
n-Propylbenzene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Naphthalene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
o-Xylene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
sec-Butylbenzene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Styrene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
tert-Butylbenzene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Tetrachloroethene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Toluene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Trichloroethene	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Trichlorofluoromethane	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Vinyl chloride	ND	0.50	1	B9H0408	08/19/2019	08/19/19 16:33	
Surrogate: 1,2-Dichloroethane-d4	106 %	59 - 158		B9H0408	08/19/2019	08/19/19 16:33	
Surrogate: 4-Bromofluorobenzene	105 %	71 - 127		B9H0408	08/19/2019	08/19/19 16:33	
Surrogate: Dibromofluoromethane	108 %	66 - 147		B9H0408	08/19/2019	08/19/19 16:33	
Surrogate: Toluene-d8	108 %	77 - 138		B9H0408	08/19/2019	08/19/19 16:33	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-41

Lab ID: 1903038-04

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.84	0.20	1	B9H0424	08/19/2019	08/19/19 16:04	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>89.2 %</i>	<i>22 - 117</i>		B9H0424	08/19/2019	<i>08/19/19 16:04</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>89.3 %</i>	<i>20 - 131</i>		B9H0424	08/19/2019	<i>08/19/19 16:04</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>94.2 %</i>	<i>24 - 135</i>		B9H0424	08/19/2019	<i>08/19/19 16:04</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>103 %</i>	<i>6 - 124</i>		B9H0424	08/19/2019	<i>08/19/19 16:04</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-43

Lab ID: 1903038-05

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,1,1-Trichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,1,2-Trichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,1-Dichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,1-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,1-Dichloropropene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,2,3-Trichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,2-Dibromoethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,2-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,2-Dichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,2-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,3-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,3-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
1,4-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
2,2-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
2-Chlorotoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
4-Chlorotoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
4-Isopropyltoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Benzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Bromobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Bromodichloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Bromoform	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Bromomethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Carbon tetrachloride	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Chlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Chloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Chloroform	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Chloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Dibromochloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-43

Lab ID: 1903038-05

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Dichlorodifluoromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Ethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Hexachlorobutadiene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Isopropylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
m,p-Xylene	ND	1.0	1	B9H0370	08/16/2019	08/16/19 16:13	
Methylene chloride	ND	1.0	1	B9H0370	08/16/2019	08/16/19 16:13	
n-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
n-Propylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Naphthalene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
o-Xylene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
sec-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Styrene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
tert-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Tetrachloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Toluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Trichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Trichlorofluoromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Vinyl chloride	ND	0.50	1	B9H0370	08/16/2019	08/16/19 16:13	
Surrogate: 1,2-Dichloroethane-d4	146 %	59 - 158		B9H0370	08/16/2019	08/16/19 16:13	
Surrogate: 4-Bromofluorobenzene	95.4 %	71 - 127		B9H0370	08/16/2019	08/16/19 16:13	
Surrogate: Dibromofluoromethane	153 %	66 - 147		B9H0370	08/16/2019	08/16/19 16:13	S1
Surrogate: Toluene-d8	128 %	77 - 138		B9H0370	08/16/2019	08/16/19 16:13	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-43

Lab ID: 1903038-05

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9H0424	08/19/2019	08/19/19 18:24	
Surrogate: 1,2-Dichlorobenzene-d4	92.7 %	22 - 117		B9H0424	08/19/2019	08/19/19 18:24	
Surrogate: 2-Fluorobiphenyl	94.4 %	20 - 131		B9H0424	08/19/2019	08/19/19 18:24	
Surrogate: 4-Terphenyl-d14	81.7 %	24 - 135		B9H0424	08/19/2019	08/19/19 18:24	
Surrogate: Nitrobenzene-d5	110 %	6 - 124		B9H0424	08/19/2019	08/19/19 18:24	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-42

Lab ID: 1903038-06

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,1,1-Trichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,1,2-Trichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,1-Dichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,1-Dichloroethene	4.6	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,1-Dichloropropene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,2,3-Trichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,2-Dibromoethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,2-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,2-Dichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,2-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,3-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,3-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
1,4-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
2,2-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
2-Chlorotoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
4-Chlorotoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
4-Isopropyltoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Benzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Bromobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Bromodichloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Bromoform	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Bromomethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Carbon tetrachloride	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Chlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Chloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Chloroform	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Chloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Dibromochloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-42

Lab ID: 1903038-06

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Dichlorodifluoromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Ethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Hexachlorobutadiene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Isopropylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
m,p-Xylene	ND	1.0	1	B9H0438	08/20/2019	08/20/19 12:47	
Methylene chloride	ND	1.0	1	B9H0438	08/20/2019	08/20/19 12:47	
n-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
n-Propylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Naphthalene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
o-Xylene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
sec-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Styrene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
tert-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Tetrachloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Toluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Trichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Trichlorofluoromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Vinyl chloride	ND	0.50	1	B9H0438	08/20/2019	08/20/19 12:47	
Surrogate: 1,2-Dichloroethane-d4	115 %	59 - 158		B9H0438	08/20/2019	08/20/19 12:47	
Surrogate: 4-Bromofluorobenzene	99.5 %	71 - 127		B9H0438	08/20/2019	08/20/19 12:47	
Surrogate: Dibromofluoromethane	113 %	66 - 147		B9H0438	08/20/2019	08/20/19 12:47	
Surrogate: Toluene-d8	113 %	77 - 138		B9H0438	08/20/2019	08/20/19 12:47	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-42

Lab ID: 1903038-06

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.25	0.20	1	B9H0424	08/19/2019	08/19/19 18:52	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>91.6 %</i>	<i>22 - 117</i>		B9H0424	08/19/2019	<i>08/19/19 18:52</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>93.6 %</i>	<i>20 - 131</i>		B9H0424	08/19/2019	<i>08/19/19 18:52</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>92.0 %</i>	<i>24 - 135</i>		B9H0424	08/19/2019	<i>08/19/19 18:52</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>108 %</i>	<i>6 - 124</i>		B9H0424	08/19/2019	<i>08/19/19 18:52</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-33_2SV_

Lab ID: 1903038-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,1,1-Trichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,1,2-Trichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,1-Dichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,1-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,1-Dichloropropene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,2,3-Trichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,2-Dibromoethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,2-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,2-Dichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,2-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,3-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,3-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
1,4-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
2,2-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
2-Chlorotoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
4-Chlorotoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
4-Isopropyltoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Benzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Bromobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Bromodichloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Bromoform	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Bromomethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Carbon tetrachloride	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Chlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Chloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Chloroform	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Chloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Dibromochloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-33_2SV_

Lab ID: 1903038-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Dichlorodifluoromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Ethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Hexachlorobutadiene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Isopropylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
m,p-Xylene	ND	1.0	1	B9H0370	08/16/2019	08/16/19 17:07	
Methylene chloride	ND	1.0	1	B9H0370	08/16/2019	08/16/19 17:07	
n-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
n-Propylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Naphthalene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
o-Xylene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
sec-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Styrene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
tert-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Tetrachloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Toluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Trichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Trichlorofluoromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Vinyl chloride	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:07	
Surrogate: 1,2-Dichloroethane-d4	142 %	59 - 158		B9H0370	08/16/2019	08/16/19 17:07	
Surrogate: 4-Bromofluorobenzene	97.0 %	71 - 127		B9H0370	08/16/2019	08/16/19 17:07	
Surrogate: Dibromofluoromethane	162 %	66 - 147		B9H0370	08/16/2019	08/16/19 17:07	S1
Surrogate: Toluene-d8	129 %	77 - 138		B9H0370	08/16/2019	08/16/19 17:07	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-33_2SV_

Lab ID: 1903038-07

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9H0424	08/19/2019	08/19/19 19:20	
Surrogate: 1,2-Dichlorobenzene-d4	86.3 %	22 - 117		B9H0424	08/19/2019	08/19/19 19:20	
Surrogate: 2-Fluorobiphenyl	88.0 %	20 - 131		B9H0424	08/19/2019	08/19/19 19:20	
Surrogate: 4-Terphenyl-d14	98.5 %	24 - 135		B9H0424	08/19/2019	08/19/19 19:20	
Surrogate: Nitrobenzene-d5	103 %	6 - 124		B9H0424	08/19/2019	08/19/19 19:20	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-33

Lab ID: 1903038-08

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,1,1-Trichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,1,2-Trichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,1-Dichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,1-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,1-Dichloropropene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,2,3-Trichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,2-Dibromoethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,2-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,2-Dichloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,2-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,3-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,3-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
1,4-Dichlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
2,2-Dichloropropane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
2-Chlorotoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
4-Chlorotoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
4-Isopropyltoluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Benzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Bromobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Bromodichloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Bromoform	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Bromomethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Carbon tetrachloride	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Chlorobenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Chloroethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Chloroform	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Chloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Dibromochloromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-33

Lab ID: 1903038-08

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Dichlorodifluoromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Ethylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Hexachlorobutadiene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Isopropylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
m,p-Xylene	ND	1.0	1	B9H0370	08/16/2019	08/16/19 17:32	
Methylene chloride	ND	1.0	1	B9H0370	08/16/2019	08/16/19 17:32	
n-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
n-Propylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Naphthalene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
o-Xylene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
sec-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Styrene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
tert-Butylbenzene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Tetrachloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Toluene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Trichloroethene	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Trichlorofluoromethane	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Vinyl chloride	ND	0.50	1	B9H0370	08/16/2019	08/16/19 17:32	
Surrogate: 1,2-Dichloroethane-d4	148 %	59 - 158		B9H0370	08/16/2019	08/16/19 17:32	
Surrogate: 4-Bromofluorobenzene	99.8 %	71 - 127		B9H0370	08/16/2019	08/16/19 17:32	
Surrogate: Dibromofluoromethane	164 %	66 - 147		B9H0370	08/16/2019	08/16/19 17:32	S1
Surrogate: Toluene-d8	133 %	77 - 138		B9H0370	08/16/2019	08/16/19 17:32	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-33

Lab ID: 1903038-08

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9H0424	08/19/2019	08/19/19 19:47	
Surrogate: 1,2-Dichlorobenzene-d4	92.2 %	22 - 117		B9H0424	08/19/2019	08/19/19 19:47	
Surrogate: 2-Fluorobiphenyl	92.4 %	20 - 131		B9H0424	08/19/2019	08/19/19 19:47	
Surrogate: 4-Terphenyl-d14	93.9 %	24 - 135		B9H0424	08/19/2019	08/19/19 19:47	
Surrogate: Nitrobenzene-d5	110 %	6 - 124		B9H0424	08/19/2019	08/19/19 19:47	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-36_2SV_

Lab ID: 1903038-09

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,1,1-Trichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,1,2-Trichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,1-Dichloroethane	0.99	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,1-Dichloroethene	66	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,1-Dichloropropene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,2,3-Trichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,2-Dibromoethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,2-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,2-Dichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,2-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,3-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,3-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
1,4-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
2,2-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
2-Chlorotoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
4-Chlorotoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
4-Isopropyltoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Benzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Bromobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Bromodichloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Bromoform	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Bromomethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Carbon tetrachloride	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Chlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Chloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Chloroform	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Chloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Dibromochloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-36_2SV_

Lab ID: 1903038-09

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Dichlorodifluoromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Ethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Hexachlorobutadiene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Isopropylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
m,p-Xylene	ND	1.0	1	B9H0438	08/20/2019	08/20/19 13:11	
Methylene chloride	ND	1.0	1	B9H0438	08/20/2019	08/20/19 13:11	
n-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
n-Propylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Naphthalene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
o-Xylene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
sec-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Styrene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
tert-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Tetrachloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Toluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Trichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Trichlorofluoromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Vinyl chloride	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:11	
Surrogate: 1,2-Dichloroethane-d4	111 %	59 - 158		B9H0438	08/20/2019	08/20/19 13:11	
Surrogate: 4-Bromofluorobenzene	100 %	71 - 127		B9H0438	08/20/2019	08/20/19 13:11	
Surrogate: Dibromofluoromethane	109 %	66 - 147		B9H0438	08/20/2019	08/20/19 13:11	
Surrogate: Toluene-d8	115 %	77 - 138		B9H0438	08/20/2019	08/20/19 13:11	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-36_2SV_

Lab ID: 1903038-09

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	6.0	0.20	1	B9H0424	08/19/2019	08/19/19 20:15	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>89.7 %</i>	<i>22 - 117</i>		B9H0424	08/19/2019	<i>08/19/19 20:15</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>91.4 %</i>	<i>20 - 131</i>		B9H0424	08/19/2019	<i>08/19/19 20:15</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>101 %</i>	<i>24 - 135</i>		B9H0424	08/19/2019	<i>08/19/19 20:15</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>106 %</i>	<i>6 - 124</i>		B9H0424	08/19/2019	<i>08/19/19 20:15</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-36

Lab ID: 1903038-10

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,1,1-Trichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,1,2-Trichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,1-Dichloroethane	1.1	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,1-Dichloroethene	73	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,1-Dichloropropene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,2,3-Trichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,2-Dibromoethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,2-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,2-Dichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,2-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,3-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,3-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
1,4-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
2,2-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
2-Chlorotoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
4-Chlorotoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
4-Isopropyltoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Benzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Bromobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Bromodichloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Bromoform	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Bromomethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Carbon tetrachloride	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Chlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Chloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Chloroform	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Chloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Dibromochloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-36

Lab ID: 1903038-10

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Dichlorodifluoromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Ethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Hexachlorobutadiene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Isopropylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
m,p-Xylene	ND	1.0	1	B9H0438	08/20/2019	08/20/19 13:35	
Methylene chloride	ND	1.0	1	B9H0438	08/20/2019	08/20/19 13:35	
n-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
n-Propylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Naphthalene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
o-Xylene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
sec-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Styrene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
tert-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Tetrachloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Toluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Trichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Trichlorofluoromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Vinyl chloride	ND	0.50	1	B9H0438	08/20/2019	08/20/19 13:35	
Surrogate: 1,2-Dichloroethane-d4	119 %	59 - 158		B9H0438	08/20/2019	08/20/19 13:35	
Surrogate: 4-Bromofluorobenzene	97.6 %	71 - 127		B9H0438	08/20/2019	08/20/19 13:35	
Surrogate: Dibromofluoromethane	115 %	66 - 147		B9H0438	08/20/2019	08/20/19 13:35	
Surrogate: Toluene-d8	114 %	77 - 138		B9H0438	08/20/2019	08/20/19 13:35	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Client Sample ID: MW-36

Lab ID: 1903038-10

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	6.7	0.20	1	B9H0424	08/19/2019	08/19/19 20:42	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>92.4 %</i>	<i>22 - 117</i>		B9H0424	08/19/2019	<i>08/19/19 20:42</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>91.9 %</i>	<i>20 - 131</i>		B9H0424	08/19/2019	<i>08/19/19 20:42</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>103 %</i>	<i>24 - 135</i>		B9H0424	08/19/2019	<i>08/19/19 20:42</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>109 %</i>	<i>6 - 124</i>		B9H0424	08/19/2019	<i>08/19/19 20:42</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

QUALITY CONTROL SECTION

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0370 - MSVOA_W

Blank (B9H0370-BLK1)

Prepared: 8/16/2019 Analyzed: 8/16/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,1,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0370 - MSVOA_W (continued)

Blank (B9H0370-BLK1) - Continued

Prepared: 8/16/2019 Analyzed: 8/16/2019

Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15
Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	33.65		25.0000	135	59 - 158
Surrogate: 4-Bromofluorobenzene	23.88		25.0000	95.5	71 - 127
Surrogate: Dibromofluoromethane	36.39		25.0000	146	66 - 147
Surrogate: Toluene-d8	30.38		25.0000	122	77 - 138

LCS (B9H0370-BS1)

Prepared: 8/16/2019 Analyzed: 8/16/2019

1,1,1,2-Tetrachloroethane	18.3700	0.50	0.11	20.0000	91.8	80 - 137
1,1,1-Trichloroethane	23.3400	0.50	0.07	20.0000	117	75 - 148
1,1,2,2-Tetrachloroethane	16.1100	0.50	0.36	20.0000	80.6	64 - 118
1,1,2-Trichloroethane	20.2700	0.50	0.25	20.0000	101	77 - 113
1,1-Dichloroethane	22.8500	0.50	0.09	20.0000	114	72 - 131
1,1-Dichloroethene	22.9500	0.50	0.13	20.0000	115	75 - 132
1,1-Dichloropropene	20.8600	0.50	0.13	20.0000	104	84 - 141
1,2,3-Trichloropropane	16.3900	0.50	0.39	20.0000	82.0	65 - 111
1,2,3-Trichlorobenzene	16.9800	0.50	0.18	20.0000	84.9	79 - 117
1,2,4-Trichlorobenzene	17.7600	0.50	0.16	20.0000	88.8	78 - 121
1,2,4-Trimethylbenzene	17.7000	0.50	0.14	20.0000	88.5	83 - 125
1,2-Dibromo-3-chloropropane	14.6100	0.50	0.41	20.0000	73.0	54 - 116
1,2-Dibromoethane	19.1600	0.50	0.24	20.0000	95.8	79 - 118
1,2-Dichlorobenzene	19.3100	0.50	0.20	20.0000	96.6	82 - 115
1,2-Dichloroethane	22.2400	0.50	0.20	20.0000	111	76 - 115
1,2-Dichloropropane	19.6200	0.50	0.15	20.0000	98.1	74 - 113
1,3,5-Trimethylbenzene	18.4100	0.50	0.13	20.0000	92.0	83 - 126



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0370 - MSVOA_W (continued)

LCS (B9H0370-BS1) - Continued

Prepared: 8/16/2019 Analyzed: 8/16/2019

1,3-Dichlorobenzene	18.5200	0.50	0.16	20.0000		92.6	84 - 118		
1,3-Dichloropropane	16.6200	0.50	0.21	20.0000		83.1	72 - 116		
1,4-Dichlorobenzene	19.5000	0.50	0.17	20.0000		97.5	83 - 112		
2,2-Dichloropropane	24.0800	0.50	0.38	20.0000		120	72 - 150		
2-Chlorotoluene	18.5000	0.50	0.11	20.0000		92.5	82 - 120		
4-Chlorotoluene	18.6600	0.50	0.12	20.0000		93.3	81 - 121		
4-Isopropyltoluene	18.1500	0.50	0.11	20.0000		90.8	86 - 124		
Benzene	44.2200	0.50	0.13	40.0000		111	81 - 118		
Bromobenzene	18.5600	0.50	0.21	20.0000		92.8	82 - 117		
Bromodichloromethane	19.7300	0.50	0.14	20.0000		98.6	80 - 122		
Bromoform	15.9400	0.50	0.20	20.0000		79.7	53 - 145		
Bromomethane	20.4300	0.50	0.17	20.0000		102	30 - 204		
Carbon tetrachloride	21.3000	0.50	0.09	20.0000		106	77 - 157		
Chlorobenzene	20.4300	0.50	0.13	20.0000		102	86 - 113		
Chloroethane	21.6600	0.50	0.15	20.0000		108	70 - 160		
Chloroform	23.5300	0.50	0.11	20.0000		118	66 - 136		
Chloromethane	19.2400	0.50	0.12	20.0000		96.2	52 - 138		
cis-1,2-Dichloroethene	22.6200	0.50	0.14	20.0000		113	71 - 128		
cis-1,3-Dichloropropene	21.3700	0.50	0.13	20.0000		107	71 - 123		
Dibromochloromethane	16.9600	0.50	0.16	20.0000		84.8	78 - 140		
Dibromomethane	19.8600	0.50	0.19	20.0000		99.3	78 - 109		
Dichlorodifluoromethane	19.0300	0.50	0.05	20.0000		95.2	64 - 144		
Ethylbenzene	35.4300	0.50	0.13	40.0000		88.6	90 - 116		L4
Hexachlorobutadiene	19.5700	0.50	0.15	20.0000		97.8	81 - 129		
Isopropylbenzene	19.3700	0.50	0.10	20.0000		96.8	83 - 129		
m,p-Xylene	38.8900	1.0	0.19	40.0000		97.2	88 - 124		
Methylene chloride	19.2100	1.0	0.71	20.0000		96.0	76 - 137		
n-Butylbenzene	18.2600	0.50	0.11	20.0000		91.3	83 - 129		
n-Propylbenzene	18.5100	0.50	0.10	20.0000		92.6	85 - 124		
Naphthalene	15.3900	0.50	0.41	20.0000		77.0	67 - 113		
o-Xylene	35.5400	0.50	0.13	40.0000		88.8	82 - 129		
sec-Butylbenzene	18.3900	0.50	0.09	20.0000		92.0	86 - 127		
Styrene	18.3700	0.50	0.13	20.0000		91.8	83 - 122		
tert-Butylbenzene	18.3700	0.50	0.09	20.0000		91.8	84 - 130		
Tetrachloroethene	18.6100	0.50	0.10	20.0000		93.0	87 - 123		
Toluene	45.4600	0.50	0.12	40.0000		114	84 - 115		
trans-1,2-Dichloroethene	23.4000	0.50	0.09	20.0000		117	60 - 148		
Trichloroethene	20.0700	0.50	0.10	20.0000		100	79 - 129		
Trichlorofluoromethane	21.1500	0.50	0.10	20.0000		106	68 - 162		
Vinyl chloride	20.2800	0.50	0.05	20.0000		101	73 - 128		
Surrogate: 1,2-Dichloroethane-d4	30.38			25.0000		122	57 - 152		



Certificate of Analysis

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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0370 - MSVOA_W (continued)

LCS (B9H0370-BS1) - Continued

Prepared: 8/16/2019 Analyzed: 8/16/2019

Surrogate: 4-Bromofluorobenzene	25.63		25.0000		103	62 - 134			
Surrogate: Dibromofluoromethane	33.28		25.0000		133	56 - 167			
Surrogate: Toluene-d8	29.50		25.0000		118	33 - 170			

LCS Dup (B9H0370-BSD1)

Prepared: 8/16/2019 Analyzed: 8/16/2019

1,1,1,2-Tetrachloroethane	19.8900	0.50	0.11	20.0000	99.4	80 - 137	7.95	20	
1,1,1-Trichloroethane	24.5400	0.50	0.07	20.0000	123	75 - 148	5.01	20	
1,1,2,2-Tetrachloroethane	18.7300	0.50	0.36	20.0000	93.6	64 - 118	15.0	20	
1,1,2-Trichloroethane	22.2600	0.50	0.25	20.0000	111	77 - 113	9.36	20	
1,1-Dichloroethane	23.6900	0.50	0.09	20.0000	118	72 - 131	3.61	20	
1,1-Dichloroethene	25.4200	0.50	0.13	20.0000	127	75 - 132	10.2	20	
1,1-Dichloropropene	22.2500	0.50	0.13	20.0000	111	84 - 141	6.45	20	
1,2,3-Trichloropropane	18.7100	0.50	0.39	20.0000	93.6	65 - 111	13.2	20	
1,2,3-Trichlorobenzene	18.4900	0.50	0.18	20.0000	92.4	79 - 117	8.51	20	
1,2,4-Trichlorobenzene	18.6800	0.50	0.16	20.0000	93.4	78 - 121	5.05	20	
1,2,4-Trimethylbenzene	18.5600	0.50	0.14	20.0000	92.8	83 - 125	4.74	20	
1,2-Dibromo-3-chloropropane	16.4600	0.50	0.41	20.0000	82.3	54 - 116	11.9	20	
1,2-Dibromoethane	21.2200	0.50	0.24	20.0000	106	79 - 118	10.2	20	
1,2-Dichlorobenzene	20.6200	0.50	0.20	20.0000	103	82 - 115	6.56	20	
1,2-Dichloroethane	24.9200	0.50	0.20	20.0000	125	76 - 115	11.4	20	L3
1,2-Dichloropropane	20.7100	0.50	0.15	20.0000	104	74 - 113	5.41	20	
1,3,5-Trimethylbenzene	18.9300	0.50	0.13	20.0000	94.6	83 - 126	2.79	20	
1,3-Dichlorobenzene	19.4800	0.50	0.16	20.0000	97.4	84 - 118	5.05	20	
1,3-Dichloropropane	18.8200	0.50	0.21	20.0000	94.1	72 - 116	12.4	20	
1,4-Dichlorobenzene	20.2100	0.50	0.17	20.0000	101	83 - 112	3.58	20	
2,2-Dichloropropane	25.2500	0.50	0.38	20.0000	126	72 - 150	4.74	20	
2-Chlorotoluene	19.1400	0.50	0.11	20.0000	95.7	82 - 120	3.40	20	
4-Chlorotoluene	19.1800	0.50	0.12	20.0000	95.9	81 - 121	2.75	20	
4-Isopropyltoluene	18.9900	0.50	0.11	20.0000	95.0	86 - 124	4.52	20	
Benzene	46.4900	0.50	0.13	40.0000	116	81 - 118	5.00	20	
Bromobenzene	19.7900	0.50	0.21	20.0000	99.0	82 - 117	6.41	20	
Bromodichloromethane	21.9200	0.50	0.14	20.0000	110	80 - 122	10.5	20	
Bromoform	18.0400	0.50	0.20	20.0000	90.2	53 - 145	12.4	20	
Bromomethane	23.0500	0.50	0.17	20.0000	115	30 - 204	12.1	20	
Carbon tetrachloride	21.6600	0.50	0.09	20.0000	108	77 - 157	1.68	20	
Chlorobenzene	21.1200	0.50	0.13	20.0000	106	86 - 113	3.32	20	
Chloroethane	24.0600	0.50	0.15	20.0000	120	70 - 160	10.5	20	
Chloroform	25.3800	0.50	0.11	20.0000	127	66 - 136	7.56	20	
Chloromethane	21.0600	0.50	0.12	20.0000	105	52 - 138	9.03	20	
cis-1,2-Dichloroethene	23.7600	0.50	0.14	20.0000	119	71 - 128	4.92	20	
cis-1,3-Dichloropropene	22.3600	0.50	0.13	20.0000	112	71 - 123	4.53	20	
Dibromochloromethane	18.4600	0.50	0.16	20.0000	92.3	78 - 140	8.47	20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0370 - MSVOA_W (continued)

LCS Dup (B9H0370-BSD1) - Continued

Prepared: 8/16/2019 Analyzed: 8/16/2019

Dibromomethane	21.3200	0.50	0.19	20.0000		107	78 - 109	7.09	20	
Dichlorodifluoromethane	20.0800	0.50	0.05	20.0000		100	64 - 144	5.37	20	
Ethylbenzene	36.6300	0.50	0.13	40.0000		91.6	90 - 116	3.33	20	
Hexachlorobutadiene	19.2200	0.50	0.15	20.0000		96.1	81 - 129	1.80	20	
Isopropylbenzene	19.9700	0.50	0.10	20.0000		99.8	83 - 129	3.05	20	
m,p-Xylene	39.8400	1.0	0.19	40.0000		99.6	88 - 124	2.41	20	
Methylene chloride	20.2000	1.0	0.71	20.0000		101	76 - 137	5.02	20	
n-Butylbenzene	18.6300	0.50	0.11	20.0000		93.2	83 - 129	2.01	20	
n-Propylbenzene	19.1100	0.50	0.10	20.0000		95.6	85 - 124	3.19	20	
Naphthalene	17.1200	0.50	0.41	20.0000		85.6	67 - 113	10.6	20	
o-Xylene	36.9100	0.50	0.13	40.0000		92.3	82 - 129	3.78	20	
sec-Butylbenzene	18.8900	0.50	0.09	20.0000		94.4	86 - 127	2.68	20	
Styrene	19.4800	0.50	0.13	20.0000		97.4	83 - 122	5.87	20	
tert-Butylbenzene	18.7800	0.50	0.09	20.0000		93.9	84 - 130	2.21	20	
Tetrachloroethene	18.7700	0.50	0.10	20.0000		93.8	87 - 123	0.856	20	
Toluene	47.5600	0.50	0.12	40.0000		119	84 - 115	4.52	20	L4
trans-1,2-Dichloroethene	24.5800	0.50	0.09	20.0000		123	60 - 148	4.92	20	
Trichloroethene	21.5800	0.50	0.10	20.0000		108	79 - 129	7.25	20	
Trichlorofluoromethane	23.4300	0.50	0.10	20.0000		117	68 - 162	10.2	20	
Vinyl chloride	22.2700	0.50	0.05	20.0000		111	73 - 128	9.35	20	
Surrogate: 1,2-Dichloroethane-d4	31.15			25.0000		125	57 - 152			
Surrogate: 4-Bromofluorobenzene	25.72			25.0000		103	62 - 134			
Surrogate: Dibromofluoromethane	33.90			25.0000		136	56 - 167			
Surrogate: Toluene-d8	29.06			25.0000		116	33 - 170			



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Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W

Blank (B9H0408-BLK1)

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

Blank (B9H0408-BLK1) - Continued

Prepared: 8/19/2019 Analyzed: 8/19/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	25.51		25.0000	102	59 - 158
Surrogate: 4-Bromofluorobenzene	26.04		25.0000	104	71 - 127
Surrogate: Dibromofluoromethane	25.91		25.0000	104	66 - 147
Surrogate: Toluene-d8	26.21		25.0000	105	77 - 138

LCS (B9H0408-BS1)

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,1,1,2-Tetrachloroethane	19.3100	0.50	0.11	20.0000	96.6	71 - 133
1,1,1-Trichloroethane	18.0300	0.50	0.07	20.0000	90.2	62 - 124
1,1,2,2-Tetrachloroethane	19.9900	0.50	0.36	20.0000	100	50 - 131
1,1,2-Trichloroethane	19.5100	0.50	0.25	20.0000	97.6	77 - 121
1,1-Dichloroethane	19.5300	0.50	0.09	20.0000	97.6	52 - 130
1,1-Dichloroethene	18.9700	0.50	0.13	20.0000	94.8	61 - 136
1,1-Dichloropropene	19.5200	0.50	0.13	20.0000	97.6	80 - 128
1,2,3-Trichloropropane	19.8400	0.50	0.39	20.0000	99.2	59 - 126
1,2,3-Trichlorobenzene	19.1800	0.50	0.18	20.0000	95.9	69 - 138
1,2,4-Trichlorobenzene	19.3700	0.50	0.16	20.0000	96.8	78 - 125
1,2,4-Trimethylbenzene	20.7600	0.50	0.14	20.0000	104	70 - 126
1,2-Dibromo-3-chloropropane	18.4700	0.50	0.41	20.0000	92.4	58 - 127
1,2-Dibromoethane	19.2200	0.50	0.24	20.0000	96.1	76 - 120
1,2-Dichlorobenzene	18.2100	0.50	0.20	20.0000	91.0	82 - 117
1,2-Dichloroethane	19.5900	0.50	0.20	20.0000	98.0	66 - 126
1,2-Dichloropropane	18.6900	0.50	0.15	20.0000	93.4	70 - 117
1,3,5-Trimethylbenzene	20.2000	0.50	0.13	20.0000	101	71 - 125
1,3-Dichlorobenzene	18.8600	0.50	0.16	20.0000	94.3	81 - 116
1,3-Dichloropropane	19.6400	0.50	0.21	20.0000	98.2	69 - 124



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

LCS (B9H0408-BS1) - Continued

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,4-Dichlorobenzene	19.7300	0.50	0.17	20.0000		98.6	80 - 114		
2,2-Dichloropropane	21.6900	0.50	0.38	20.0000		108	58 - 132		
2-Chlorotoluene	19.7300	0.50	0.11	20.0000		98.6	71 - 119		
4-Chlorotoluene	19.5600	0.50	0.12	20.0000		97.8	72 - 122		
4-Isopropyltoluene	20.8000	0.50	0.11	20.0000		104	69 - 126		
Benzene	38.0000	0.50	0.13	40.0000		95.0	80 - 116		
Bromobenzene	19.5800	0.50	0.21	20.0000		97.9	77 - 118		
Bromodichloromethane	18.6800	0.50	0.14	20.0000		93.4	73 - 118		
Bromoform	18.4700	0.50	0.20	20.0000		92.4	65 - 133		
Bromomethane	26.7000	0.50	0.17	20.0000		134	7 - 205		
Carbon tetrachloride	18.3100	0.50	0.09	20.0000		91.6	63 - 133		
Chlorobenzene	19.9500	0.50	0.13	20.0000		99.8	86 - 113		
Chloroethane	20.1800	0.50	0.15	20.0000		101	66 - 141		
Chloroform	19.5600	0.50	0.11	20.0000		97.8	63 - 127		
Chloromethane	19.5300	0.50	0.12	20.0000		97.6	0 - 207		
cis-1,2-Dichloroethene	19.0700	0.50	0.14	20.0000		95.4	64 - 126		
cis-1,3-Dichloropropene	22.6800	0.50	0.13	20.0000		113	70 - 141		
Dibromochloromethane	18.8000	0.50	0.16	20.0000		94.0	67 - 135		
Dibromomethane	19.4800	0.50	0.19	20.0000		97.4	74 - 118		
Dichlorodifluoromethane	20.1600	0.50	0.05	20.0000		101	14 - 181		
Ethylbenzene	37.4600	0.50	0.13	40.0000		93.6	77 - 118		
Hexachlorobutadiene	19.8600	0.50	0.15	20.0000		99.3	66 - 125		
Isopropylbenzene	21.7500	0.50	0.10	20.0000		109	68 - 137		
m,p-Xylene	40.1700	1.0	0.19	40.0000		100	78 - 126		
Methylene chloride	24.9600	1.0	0.71	20.0000		125	51 - 149		
n-Butylbenzene	20.7200	0.50	0.11	20.0000		104	63 - 127		
n-Propylbenzene	20.1100	0.50	0.10	20.0000		101	69 - 124		
Naphthalene	17.8800	0.50	0.41	20.0000		89.4	60 - 126		
o-Xylene	40.6600	0.50	0.13	40.0000		102	79 - 126		
sec-Butylbenzene	20.3200	0.50	0.09	20.0000		102	69 - 124		
Styrene	20.9800	0.50	0.13	20.0000		105	80 - 127		
tert-Butylbenzene	20.6700	0.50	0.09	20.0000		103	71 - 124		
Tetrachloroethene	18.9900	0.50	0.10	20.0000		95.0	73 - 129		
Toluene	38.0800	0.50	0.12	40.0000		95.2	78 - 121		
trans-1,2-Dichloroethene	19.5900	0.50	0.09	20.0000		98.0	58 - 141		
Trichloroethene	18.1500	0.50	0.10	20.0000		90.8	73 - 126		
Trichlorofluoromethane	18.8700	0.50	0.10	20.0000		94.4	62 - 146		
Vinyl chloride	20.1300	0.50	0.05	20.0000		101	61 - 137		
Surrogate: 1,2-Dichloroethane-d4	23.32			25.0000		93.3	59 - 158		
Surrogate: 4-Bromofluorobenzene	26.49			25.0000		106	71 - 127		
Surrogate: Dibromofluoromethane	23.65			25.0000		94.6	66 - 147		



Certificate of Analysis

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Report To : Steve Netto

Reported : 08/21/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

LCS (B9H0408-BS1) - Continued

Prepared: 8/19/2019 Analyzed: 8/19/2019

Surrogate: Toluene-d8 25.73 25.0000 103 77 - 138

Matrix Spike (B9H0408-MS1)

Source: 1903038-04

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,1,1,2-Tetrachloroethane	19.5800	0.50	0.11	20.0000	ND	97.9	71 - 133
1,1,1-Trichloroethane	18.6600	0.50	0.07	20.0000	ND	93.3	62 - 124
1,1,2,2-Tetrachloroethane	22.4200	0.50	0.36	20.0000	ND	112	50 - 131
1,1,2-Trichloroethane	20.2400	0.50	0.25	20.0000	ND	101	77 - 121
1,1-Dichloroethane	20.2100	0.50	0.09	20.0000	ND	101	52 - 130
1,1-Dichloroethene	24.5300	0.50	0.13	20.0000	4.25000	101	61 - 136
1,1-Dichloropropene	18.8000	0.50	0.13	20.0000	ND	94.0	80 - 128
1,2,3-Trichloropropane	20.9600	0.50	0.39	20.0000	ND	105	59 - 126
1,2,3-Trichlorobenzene	20.9800	0.50	0.18	20.0000	ND	105	69 - 138
1,2,4-Trichlorobenzene	20.6100	0.50	0.16	20.0000	ND	103	78 - 125
1,2,4-Trimethylbenzene	21.3500	0.50	0.14	20.0000	ND	107	70 - 126
1,2-Dibromo-3-chloropropane	20.6600	0.50	0.41	20.0000	ND	103	58 - 127
1,2-Dibromoethane	20.1600	0.50	0.24	20.0000	ND	101	76 - 120
1,2-Dichlorobenzene	19.4200	0.50	0.20	20.0000	ND	97.1	82 - 117
1,2-Dichloroethane	19.7400	0.50	0.20	20.0000	ND	98.7	66 - 126
1,2-Dichloropropane	18.5600	0.50	0.15	20.0000	ND	92.8	70 - 117
1,3,5-Trimethylbenzene	20.6900	0.50	0.13	20.0000	ND	103	71 - 125
1,3-Dichlorobenzene	19.7600	0.50	0.16	20.0000	ND	98.8	81 - 116
1,3-Dichloropropane	20.1600	0.50	0.21	20.0000	ND	101	69 - 124
1,4-Dichlorobenzene	20.2500	0.50	0.17	20.0000	ND	101	80 - 114
2,2-Dichloropropane	22.4200	0.50	0.38	20.0000	ND	112	58 - 132
2-Chlorotoluene	20.3200	0.50	0.11	20.0000	ND	102	71 - 119
4-Chlorotoluene	19.9400	0.50	0.12	20.0000	ND	99.7	72 - 122
4-Isopropyltoluene	21.2600	0.50	0.11	20.0000	ND	106	69 - 126
Benzene	37.1000	0.50	0.13	40.0000	ND	92.8	80 - 116
Bromobenzene	20.2700	0.50	0.21	20.0000	ND	101	77 - 118
Bromodichloromethane	18.9800	0.50	0.14	20.0000	ND	94.9	73 - 118
Bromoform	18.9400	0.50	0.20	20.0000	ND	94.7	65 - 133
Bromomethane	26.8000	0.50	0.17	20.0000	ND	134	7 - 205
Carbon tetrachloride	18.1100	0.50	0.09	20.0000	ND	90.6	63 - 133
Chlorobenzene	20.0000	0.50	0.13	20.0000	ND	100	81 - 115
Chloroethane	19.6300	0.50	0.15	20.0000	ND	98.2	66 - 141
Chloroform	20.9000	0.50	0.11	20.0000	0.620000	101	63 - 127
Chloromethane	19.8000	0.50	0.12	20.0000	ND	99.0	0 - 207
cis-1,2-Dichloroethene	19.9100	0.50	0.14	20.0000	ND	99.6	64 - 126
cis-1,3-Dichloropropene	21.1500	0.50	0.13	20.0000	ND	106	70 - 141
Dibromochloromethane	19.7000	0.50	0.16	20.0000	ND	98.5	67 - 135
Dibromomethane	19.3500	0.50	0.19	20.0000	ND	96.8	74 - 118
Dichlorodifluoromethane	19.1900	0.50	0.05	20.0000	ND	96.0	14 - 181



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

Matrix Spike (B9H0408-MS1) - Continued

Source: 1903038-04

Prepared: 8/19/2019 Analyzed: 8/19/2019

Ethylbenzene	37.3400	0.50	0.13	40.0000	ND	93.4	77 - 118			
Hexachlorobutadiene	20.5500	0.50	0.15	20.0000	ND	103	66 - 125			
Isopropylbenzene	22.1600	0.50	0.10	20.0000	ND	111	68 - 137			
m,p-Xylene	40.2600	1.0	0.19	40.0000	ND	101	78 - 126			
Methylene chloride	24.7000	1.0	0.71	20.0000	ND	124	51 - 149			
n-Butylbenzene	21.0500	0.50	0.11	20.0000	ND	105	63 - 127			
n-Propylbenzene	20.3700	0.50	0.10	20.0000	ND	102	69 - 124			
Naphthalene	19.4500	0.50	0.41	20.0000	ND	97.2	60 - 126			
o-Xylene	41.5100	0.50	0.13	40.0000	ND	104	79 - 126			
sec-Butylbenzene	20.6800	0.50	0.09	20.0000	ND	103	69 - 124			
Styrene	20.5300	0.50	0.13	20.0000	ND	103	80 - 127			
tert-Butylbenzene	20.8300	0.50	0.09	20.0000	ND	104	71 - 124			
Tetrachloroethene	18.8800	0.50	0.10	20.0000	ND	94.4	73 - 129			
Toluene	37.2100	0.50	0.12	40.0000	ND	93.0	78 - 121			
trans-1,2-Dichloroethene	19.6000	0.50	0.09	20.0000	ND	98.0	58 - 141			
Trichloroethene	17.8900	0.50	0.10	20.0000	ND	89.4	73 - 126			
Trichlorofluoromethane	18.3600	0.50	0.10	20.0000	ND	91.8	62 - 146			
Vinyl chloride	19.9200	0.50	0.05	20.0000	ND	99.6	61 - 137			
Surrogate: 1,2-Dichloroethane-d4	24.47			25.0000		97.9	59 - 158			
Surrogate: 4-Bromofluorobenzene	27.10			25.0000		108	71 - 127			
Surrogate: Dibromofluoromethane	24.51			25.0000		98.0	66 - 147			
Surrogate: Toluene-d8	25.05			25.0000		100	77 - 138			

Matrix Spike (B9H0408-MS2)

Source: 1903024-09RE1

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,1,1,2-Tetrachloroethane	176.700	5.0	1.1	200.000	12.8000	82.0	71 - 133			
1,1,1-Trichloroethane	163.600	5.0	0.74	200.000	ND	81.8	62 - 124			
1,1,2,2-Tetrachloroethane	178.800	5.0	3.6	200.000	ND	89.4	50 - 131			
1,1,2-Trichloroethane	174.000	5.0	2.5	200.000	ND	87.0	77 - 121			
1,1-Dichloroethane	172.300	5.0	0.92	200.000	2.70000	84.8	52 - 130			
1,1-Dichloroethene	188.100	5.0	1.3	200.000	22.4000	82.8	61 - 136			
1,1-Dichloropropene	182.500	5.0	1.3	200.000	ND	91.2	80 - 128			
1,2,3-Trichloropropane	173.500	5.0	3.9	200.000	ND	86.8	59 - 126			
1,2,3-Trichlorobenzene	182.600	5.0	1.8	200.000	ND	91.3	69 - 138			
1,2,4-Trichlorobenzene	185.400	5.0	1.6	200.000	ND	92.7	78 - 125			
1,2,4-Trimethylbenzene	199.300	5.0	1.4	200.000	ND	99.6	70 - 126			
1,2-Dibromo-3-chloropropane	170.200	5.0	4.1	200.000	22.6000	73.8	58 - 127			
1,2-Dibromoethane	164.600	5.0	2.4	200.000	3.90000	80.4	76 - 120			
1,2-Dichlorobenzene	170.900	5.0	2.0	200.000	ND	85.4	82 - 117			
1,2-Dichloroethane	173.100	5.0	2.0	200.000	ND	86.6	66 - 126			
1,2-Dichloropropane	163.600	5.0	1.5	200.000	ND	81.8	70 - 117			
1,3,5-Trimethylbenzene	192.400	5.0	1.3	200.000	ND	96.2	71 - 125			



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

Matrix Spike (B9H0408-MS2) - Continued

Source: 1903024-09RE1

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,3-Dichlorobenzene	177.500	5.0	1.6	200.000	ND	88.8	81 - 116			
1,3-Dichloropropane	173.400	5.0	2.1	200.000	8.50000	82.4	69 - 124			
1,4-Dichlorobenzene	185.800	5.0	1.7	200.000	3.90000	91.0	80 - 114			
2,2-Dichloropropane	196.600	5.0	3.8	200.000	ND	98.3	58 - 132			
2-Chlorotoluene	185.600	5.0	1.1	200.000	ND	92.8	71 - 119			
4-Chlorotoluene	183.900	5.0	1.2	200.000	ND	92.0	72 - 122			
4-Isopropyltoluene	198.400	5.0	1.1	200.000	ND	99.2	69 - 126			
Benzene	338.100	5.0	1.3	400.000	ND	84.5	80 - 116			
Bromobenzene	181.100	5.0	2.1	200.000	7.90000	86.6	77 - 118			
Bromodichloromethane	169.300	5.0	1.4	200.000	4.50000	82.4	73 - 118			
Bromoform	159.700	5.0	2.0	200.000	20.0000	69.8	65 - 133			
Bromomethane	196.800	5.0	1.7	200.000	ND	98.4	7 - 205			
Carbon tetrachloride	164.500	5.0	0.92	200.000	ND	82.2	63 - 133			
Chlorobenzene	184.500	5.0	1.3	200.000	2.80000	90.8	81 - 115			
Chloroethane	138.200	5.0	1.5	200.000	ND	69.1	66 - 141			
Chloroform	170.900	5.0	1.1	200.000	ND	85.4	63 - 127			
Chloromethane	291.800	5.0	1.2	200.000	ND	146	0 - 207			
cis-1,2-Dichloroethene	177.100	5.0	1.4	200.000	10.2000	83.4	64 - 126			
cis-1,3-Dichloropropene	195.300	5.0	1.3	200.000	ND	97.6	70 - 141			
Dibromochloromethane	170.700	5.0	1.6	200.000	17.0000	76.8	67 - 135			
Dibromomethane	172.300	5.0	1.9	200.000	ND	86.2	74 - 118			
Dichlorodifluoromethane	246.100	5.0	0.54	200.000	ND	123	14 - 181			
Ethylbenzene	351.900	5.0	1.3	400.000	ND	88.0	77 - 118			
Hexachlorobutadiene	201.200	5.0	1.5	200.000	15.1000	93.0	66 - 125			
Isopropylbenzene	205.900	5.0	1.0	200.000	ND	103	68 - 137			
m,p-Xylene	375.300	10	1.9	400.000	ND	93.8	78 - 126			
Methylene chloride	208.500	10	7.1	200.000	ND	104	51 - 149			
n-Butylbenzene	198.400	5.0	1.1	200.000	ND	99.2	63 - 127			
n-Propylbenzene	189.900	5.0	1.0	200.000	ND	95.0	69 - 124			
Naphthalene	161.600	5.0	4.1	200.000	17.3000	72.2	60 - 126			
o-Xylene	379.000	5.0	1.3	400.000	ND	94.8	79 - 126			
sec-Butylbenzene	194.100	5.0	0.90	200.000	ND	97.0	69 - 124			
Styrene	192.200	5.0	1.3	200.000	ND	96.1	80 - 127			
tert-Butylbenzene	195.500	5.0	0.90	200.000	ND	97.8	71 - 124			
Tetrachloroethene	178.400	5.0	1.0	200.000	ND	89.2	73 - 129			
Toluene	344.800	5.0	1.2	400.000	ND	86.2	78 - 121			
trans-1,2-Dichloroethene	169.300	5.0	0.92	200.000	4.10000	82.6	58 - 141			
Trichloroethene	245.500	5.0	0.99	200.000	86.6000	79.4	73 - 126			
Trichlorofluoromethane	138.200	5.0	0.98	200.000	ND	69.1	62 - 146			
Vinyl chloride	139.200	5.0	0.53	200.000	ND	69.6	61 - 137			

Surrogate: 1,2-Dichloroethane-d4	22.38			25.0000		89.5	59 - 158			



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

Matrix Spike (B9H0408-MS2) - Continued

Source: 1903024-09RE1

Prepared: 8/19/2019 Analyzed: 8/19/2019

Surrogate: 4-Bromofluorobenzene	27.30		25.0000		109	71 - 127			
Surrogate: Dibromofluoromethane	23.28		25.0000		93.1	66 - 147			
Surrogate: Toluene-d8	25.89		25.0000		104	77 - 138			

Matrix Spike Dup (B9H0408-MSD1)

Source: 1903038-04

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,1,1,2-Tetrachloroethane	19.2200	0.50	0.11	20.0000	ND	96.1	71 - 133	1.86	20
1,1,1-Trichloroethane	17.5100	0.50	0.07	20.0000	ND	87.6	62 - 124	6.36	20
1,1,2,2-Tetrachloroethane	21.9200	0.50	0.36	20.0000	ND	110	50 - 131	2.26	20
1,1,2-Trichloroethane	20.2200	0.50	0.25	20.0000	ND	101	77 - 121	0.0989	20
1,1-Dichloroethane	19.3300	0.50	0.09	20.0000	ND	96.6	52 - 130	4.45	20
1,1-Dichloroethene	22.7200	0.50	0.13	20.0000	4.25000	92.4	61 - 136	7.66	20
1,1-Dichloropropene	19.4600	0.50	0.13	20.0000	ND	97.3	80 - 128	3.45	20
1,2,3-Trichloropropane	20.2400	0.50	0.39	20.0000	ND	101	59 - 126	3.50	20
1,2,3-Trichlorobenzene	20.5100	0.50	0.18	20.0000	ND	103	69 - 138	2.27	20
1,2,4-Trichlorobenzene	20.3400	0.50	0.16	20.0000	ND	102	78 - 125	1.32	20
1,2,4-Trimethylbenzene	20.5700	0.50	0.14	20.0000	ND	103	70 - 126	3.72	20
1,2-Dibromo-3-chloropropane	19.1700	0.50	0.41	20.0000	ND	95.8	58 - 127	7.48	20
1,2-Dibromoethane	20.1800	0.50	0.24	20.0000	ND	101	76 - 120	0.0992	20
1,2-Dichlorobenzene	18.8300	0.50	0.20	20.0000	ND	94.2	82 - 117	3.08	20
1,2-Dichloroethane	20.7100	0.50	0.20	20.0000	ND	104	66 - 126	4.80	20
1,2-Dichloropropane	18.9800	0.50	0.15	20.0000	ND	94.9	70 - 117	2.24	20
1,3,5-Trimethylbenzene	20.6400	0.50	0.13	20.0000	ND	103	71 - 125	0.242	20
1,3-Dichlorobenzene	18.7300	0.50	0.16	20.0000	ND	93.6	81 - 116	5.35	20
1,3-Dichloropropane	20.5300	0.50	0.21	20.0000	ND	103	69 - 124	1.82	20
1,4-Dichlorobenzene	20.0700	0.50	0.17	20.0000	ND	100	80 - 114	0.893	20
2,2-Dichloropropane	21.1300	0.50	0.38	20.0000	ND	106	58 - 132	5.92	20
2-Chlorotoluene	19.8400	0.50	0.11	20.0000	ND	99.2	71 - 119	2.39	20
4-Chlorotoluene	19.8400	0.50	0.12	20.0000	ND	99.2	72 - 122	0.503	20
4-Isopropyltoluene	20.8800	0.50	0.11	20.0000	ND	104	69 - 126	1.80	20
Benzene	37.7800	0.50	0.13	40.0000	ND	94.4	80 - 116	1.82	20
Bromobenzene	20.2800	0.50	0.21	20.0000	ND	101	77 - 118	0.0493	20
Bromodichloromethane	19.4800	0.50	0.14	20.0000	ND	97.4	73 - 118	2.60	20
Bromoform	18.9300	0.50	0.20	20.0000	ND	94.6	65 - 133	0.0528	20
Bromomethane	23.7200	0.50	0.17	20.0000	ND	119	7 - 205	12.2	20
Carbon tetrachloride	18.2500	0.50	0.09	20.0000	ND	91.2	63 - 133	0.770	20
Chlorobenzene	20.2300	0.50	0.13	20.0000	ND	101	81 - 115	1.14	20
Chloroethane	19.1400	0.50	0.15	20.0000	ND	95.7	66 - 141	2.53	20
Chloroform	20.1300	0.50	0.11	20.0000	0.620000	97.6	63 - 127	3.75	20
Chloromethane	17.2300	0.50	0.12	20.0000	ND	86.2	0 - 207	13.9	20
cis-1,2-Dichloroethene	19.3000	0.50	0.14	20.0000	ND	96.5	64 - 126	3.11	20
cis-1,3-Dichloropropene	22.3100	0.50	0.13	20.0000	ND	112	70 - 141	5.34	20
Dibromochloromethane	19.1300	0.50	0.16	20.0000	ND	95.6	67 - 135	2.94	20



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San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

Matrix Spike Dup (B9H0408-MSD1) - Continued

Source: 1903038-04

Prepared: 8/19/2019 Analyzed: 8/19/2019

Dibromomethane	19.5400	0.50	0.19	20.0000	ND	97.7	74 - 118	0.977	20	
Dichlorodifluoromethane	16.8100	0.50	0.05	20.0000	ND	84.0	14 - 181	13.2	20	
Ethylbenzene	37.9600	0.50	0.13	40.0000	ND	94.9	77 - 118	1.65	20	
Hexachlorobutadiene	19.4700	0.50	0.15	20.0000	ND	97.4	66 - 125	5.40	20	
Isopropylbenzene	21.7300	0.50	0.10	20.0000	ND	109	68 - 137	1.96	20	
m,p-Xylene	40.4000	1.0	0.19	40.0000	ND	101	78 - 126	0.347	20	
Methylene chloride	23.2100	1.0	0.71	20.0000	ND	116	51 - 149	6.22	20	
n-Butylbenzene	20.5700	0.50	0.11	20.0000	ND	103	63 - 127	2.31	20	
n-Propylbenzene	20.3000	0.50	0.10	20.0000	ND	102	69 - 124	0.344	20	
Naphthalene	19.2400	0.50	0.41	20.0000	ND	96.2	60 - 126	1.09	20	
o-Xylene	41.4800	0.50	0.13	40.0000	ND	104	79 - 126	0.0723	20	
sec-Butylbenzene	20.3900	0.50	0.09	20.0000	ND	102	69 - 124	1.41	20	
Styrene	20.4000	0.50	0.13	20.0000	ND	102	80 - 127	0.635	20	
tert-Butylbenzene	20.7600	0.50	0.09	20.0000	ND	104	71 - 124	0.337	20	
Tetrachloroethene	18.8000	0.50	0.10	20.0000	ND	94.0	73 - 129	0.425	20	
Toluene	38.1400	0.50	0.12	40.0000	ND	95.4	78 - 121	2.47	20	
trans-1,2-Dichloroethene	18.5600	0.50	0.09	20.0000	ND	92.8	58 - 141	5.45	20	
Trichloroethene	17.9900	0.50	0.10	20.0000	ND	90.0	73 - 126	0.557	20	
Trichlorofluoromethane	16.1000	0.50	0.10	20.0000	ND	80.5	62 - 146	13.1	20	
Vinyl chloride	17.4800	0.50	0.05	20.0000	ND	87.4	61 - 137	13.0	20	
Surrogate: 1,2-Dichloroethane-d4	23.31			25.0000		93.2	59 - 158			
Surrogate: 4-Bromofluorobenzene	26.80			25.0000		107	71 - 127			
Surrogate: Dibromofluoromethane	23.37			25.0000		93.5	66 - 147			
Surrogate: Toluene-d8	25.96			25.0000		104	77 - 138			

Matrix Spike Dup (B9H0408-MSD2)

Source: 1903024-09RE1

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,1,1,2-Tetrachloroethane	197.500	5.0	1.1	200.000	12.8000	92.4	71 - 133	11.1	20	
1,1,1-Trichloroethane	183.900	5.0	0.74	200.000	ND	92.0	62 - 124	11.7	20	
1,1,2,2-Tetrachloroethane	214.000	5.0	3.6	200.000	ND	107	50 - 131	17.9	20	
1,1,2-Trichloroethane	205.700	5.0	2.5	200.000	ND	103	77 - 121	16.7	20	
1,1-Dichloroethane	202.800	5.0	0.92	200.000	2.70000	100	52 - 130	16.3	20	
1,1-Dichloroethene	215.600	5.0	1.3	200.000	22.4000	96.6	61 - 136	13.6	20	
1,1-Dichloropropene	199.700	5.0	1.3	200.000	ND	99.8	80 - 128	9.00	20	
1,2,3-Trichloropropane	209.800	5.0	3.9	200.000	ND	105	59 - 126	18.9	20	
1,2,3-Trichlorobenzene	209.600	5.0	1.8	200.000	ND	105	69 - 138	13.8	20	
1,2,4-Trichlorobenzene	209.800	5.0	1.6	200.000	ND	105	78 - 125	12.3	20	
1,2,4-Trimethylbenzene	216.400	5.0	1.4	200.000	ND	108	70 - 126	8.23	20	
1,2-Dibromo-3-chloropropane	199.700	5.0	4.1	200.000	22.6000	88.6	58 - 127	16.0	20	
1,2-Dibromoethane	198.400	5.0	2.4	200.000	3.90000	97.2	76 - 120	18.6	20	
1,2-Dichlorobenzene	190.900	5.0	2.0	200.000	ND	95.4	82 - 117	11.1	20	
1,2-Dichloroethane	201.800	5.0	2.0	200.000	ND	101	66 - 126	15.3	20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

Matrix Spike Dup (B9H0408-MSD2) - Continued

Source: 1903024-09RE1

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,2-Dichloropropane	184.500	5.0	1.5	200.000	ND	92.2	70 - 117	12.0	20	
1,3,5-Trimethylbenzene	208.900	5.0	1.3	200.000	ND	104	71 - 125	8.22	20	
1,3-Dichlorobenzene	197.300	5.0	1.6	200.000	ND	98.6	81 - 116	10.6	20	
1,3-Dichloropropane	203.400	5.0	2.1	200.000	8.50000	97.4	69 - 124	15.9	20	
1,4-Dichlorobenzene	204.000	5.0	1.7	200.000	3.90000	100	80 - 114	9.34	20	
2,2-Dichloropropane	219.000	5.0	3.8	200.000	ND	110	58 - 132	10.8	20	
2-Chlorotoluene	206.900	5.0	1.1	200.000	ND	103	71 - 119	10.9	20	
4-Chlorotoluene	204.000	5.0	1.2	200.000	ND	102	72 - 122	10.4	20	
4-Isopropyltoluene	217.100	5.0	1.1	200.000	ND	109	69 - 126	9.00	20	
Benzene	377.600	5.0	1.3	400.000	ND	94.4	80 - 116	11.0	20	
Bromobenzene	203.900	5.0	2.1	200.000	7.90000	98.0	77 - 118	11.8	20	
Bromodichloromethane	191.000	5.0	1.4	200.000	4.50000	93.2	73 - 118	12.0	20	
Bromoform	191.800	5.0	2.0	200.000	20.0000	85.9	65 - 133	18.3	20	
Bromomethane	242.200	5.0	1.7	200.000	ND	121	7 - 205	20.7	20	R
Carbon tetrachloride	183.600	5.0	0.92	200.000	ND	91.8	63 - 133	11.0	20	
Chlorobenzene	204.300	5.0	1.3	200.000	2.80000	101	81 - 115	10.2	20	
Chloroethane	194.200	5.0	1.5	200.000	ND	97.1	66 - 141	33.7	20	R
Chloroform	201.000	5.0	1.1	200.000	ND	100	63 - 127	16.2	20	
Chloromethane	176.400	5.0	1.2	200.000	ND	88.2	0 - 207	49.3	20	R
cis-1,2-Dichloroethene	195.600	5.0	1.4	200.000	10.2000	92.7	64 - 126	9.93	20	
cis-1,3-Dichloropropene	220.800	5.0	1.3	200.000	ND	110	70 - 141	12.3	20	
Dibromochloromethane	195.200	5.0	1.6	200.000	17.0000	89.1	67 - 135	13.4	20	
Dibromomethane	191.700	5.0	1.9	200.000	ND	95.8	74 - 118	10.7	20	
Dichlorodifluoromethane	149.200	5.0	0.54	200.000	ND	74.6	14 - 181	49.0	20	R
Ethylbenzene	385.300	5.0	1.3	400.000	ND	96.3	77 - 118	9.06	20	
Hexachlorobutadiene	208.300	5.0	1.5	200.000	15.1000	96.6	66 - 125	3.47	20	
Isopropylbenzene	224.100	5.0	1.0	200.000	ND	112	68 - 137	8.47	20	
m,p-Xylene	412.200	10	1.9	400.000	ND	103	78 - 126	9.37	20	
Methylene chloride	242.600	10	7.1	200.000	ND	121	51 - 149	15.1	20	
n-Butylbenzene	214.600	5.0	1.1	200.000	ND	107	63 - 127	7.85	20	
n-Propylbenzene	207.500	5.0	1.0	200.000	ND	104	69 - 124	8.86	20	
Naphthalene	191.700	5.0	4.1	200.000	17.3000	87.2	60 - 126	17.0	20	
o-Xylene	424.400	5.0	1.3	400.000	ND	106	79 - 126	11.3	20	
sec-Butylbenzene	212.200	5.0	0.90	200.000	ND	106	69 - 124	8.91	20	
Styrene	213.000	5.0	1.3	200.000	ND	106	80 - 127	10.3	20	
tert-Butylbenzene	214.000	5.0	0.90	200.000	ND	107	71 - 124	9.04	20	
Tetrachloroethene	196.100	5.0	1.0	200.000	ND	98.0	73 - 129	9.45	20	
Toluene	375.900	5.0	1.2	400.000	ND	94.0	78 - 121	8.63	20	
trans-1,2-Dichloroethene	195.000	5.0	0.92	200.000	4.10000	95.4	58 - 141	14.1	20	
Trichloroethene	275.400	5.0	0.99	200.000	86.6000	94.4	73 - 126	11.5	20	
Trichlorofluoromethane	180.500	5.0	0.98	200.000	ND	90.2	62 - 146	26.5	20	R
Vinyl chloride	181.400	5.0	0.53	200.000	ND	90.7	61 - 137	26.3	20	R



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0408 - MSVOA_W (continued)

Matrix Spike Dup (B9H0408-MSD2) - Continued

Source: 1903024-09RE1

Prepared: 8/19/2019 Analyzed: 8/19/2019

Surrogate: 1,2-Dichloroethane-d4	23.79		25.0000		95.2	59 - 158			
Surrogate: 4-Bromofluorobenzene	26.69		25.0000		107	71 - 127			
Surrogate: Dibromofluoromethan	23.80		25.0000		95.2	66 - 147			
Surrogate: Toluene-d8	24.90		25.0000		99.6	77 - 138			



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Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0438 - MSVOA_LL_W

Blank (B9H0438-BLK1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0438 - MSVOA_LL_W (continued)

Blank (B9H0438-BLK1) - Continued

Prepared: 8/20/2019 Analyzed: 8/20/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	25.74	25.0000	103	59 - 158
Surrogate: 4-Bromofluorobenzene	24.39	25.0000	97.6	71 - 127
Surrogate: Dibromofluoromethane	26.85	25.0000	107	66 - 147
Surrogate: Toluene-d8	27.17	25.0000	109	77 - 138

LCS (B9H0438-BS1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,1,1,2-Tetrachloroethane	17.4400	0.50	0.11	20.0000	87.2	71 - 133
1,1,1-Trichloroethane	17.6200	0.50	0.07	20.0000	88.1	62 - 124
1,1,2,2-Tetrachloroethane	17.2100	0.50	0.36	20.0000	86.0	50 - 131
1,1,2-Trichloroethane	16.6500	0.50	0.25	20.0000	83.2	77 - 121
1,1-Dichloroethane	18.7800	0.50	0.09	20.0000	93.9	52 - 130
1,1-Dichloroethene	18.9800	0.50	0.13	20.0000	94.9	61 - 136
1,1-Dichloropropene	17.2200	0.50	0.13	20.0000	86.1	80 - 128
1,2,3-Trichloropropane	16.4700	0.50	0.39	20.0000	82.4	59 - 126
1,2,3-Trichlorobenzene	17.3700	0.50	0.18	20.0000	86.8	69 - 138
1,2,4-Trichlorobenzene	17.2000	0.50	0.16	20.0000	86.0	78 - 125
1,2,4-Trimethylbenzene	18.9600	0.50	0.14	20.0000	94.8	70 - 126
1,2-Dibromo-3-chloropropane	16.7700	0.50	0.41	20.0000	83.8	58 - 127
1,2-Dibromoethane	16.2300	0.50	0.24	20.0000	81.2	76 - 120
1,2-Dichlorobenzene	16.6900	0.50	0.20	20.0000	83.4	82 - 117
1,2-Dichloroethane	17.5600	0.50	0.20	20.0000	87.8	66 - 126
1,2-Dichloropropane	16.1200	0.50	0.15	20.0000	80.6	70 - 117
1,3,5-Trimethylbenzene	18.8200	0.50	0.13	20.0000	94.1	71 - 125
1,3-Dichlorobenzene	17.1900	0.50	0.16	20.0000	86.0	81 - 116
1,3-Dichloropropane	16.3600	0.50	0.21	20.0000	81.8	69 - 124



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0438 - MSVOA_LL_W (continued)

LCS (B9H0438-BS1) - Continued

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,4-Dichlorobenzene	17.9800	0.50	0.17	20.0000		89.9	80 - 114		
2,2-Dichloropropane	20.7900	0.50	0.38	20.0000		104	58 - 132		
2-Chlorotoluene	18.0800	0.50	0.11	20.0000		90.4	71 - 119		
4-Chlorotoluene	17.8500	0.50	0.12	20.0000		89.2	72 - 122		
4-Isopropyltoluene	19.1000	0.50	0.11	20.0000		95.5	69 - 126		
Benzene	33.8200	0.50	0.13	40.0000		84.6	80 - 116		
Bromobenzene	17.7000	0.50	0.21	20.0000		88.5	77 - 118		
Bromodichloromethane	16.8000	0.50	0.14	20.0000		84.0	73 - 118		
Bromoform	16.5100	0.50	0.20	20.0000		82.6	65 - 133		
Bromomethane	16.7500	0.50	0.17	20.0000		83.8	7 - 205		
Carbon tetrachloride	16.9400	0.50	0.09	20.0000		84.7	63 - 133		
Chlorobenzene	17.6800	0.50	0.13	20.0000		88.4	86 - 113		
Chloroethane	17.6200	0.50	0.15	20.0000		88.1	66 - 141		
Chloroform	18.8400	0.50	0.11	20.0000		94.2	63 - 127		
Chloromethane	15.0100	0.50	0.12	20.0000		75.0	0 - 207		
cis-1,2-Dichloroethene	18.5700	0.50	0.14	20.0000		92.8	64 - 126		
cis-1,3-Dichloropropene	19.5000	0.50	0.13	20.0000		97.5	70 - 141		
Dibromochloromethane	16.5500	0.50	0.16	20.0000		82.8	67 - 135		
Dibromomethane	17.0800	0.50	0.19	20.0000		85.4	74 - 118		
Dichlorodifluoromethane	18.0800	0.50	0.05	20.0000		90.4	14 - 181		
Ethylbenzene	34.0100	0.50	0.13	40.0000		85.0	77 - 118		
Hexachlorobutadiene	18.0900	0.50	0.15	20.0000		90.4	66 - 125		
Isopropylbenzene	19.5500	0.50	0.10	20.0000		97.8	68 - 137		
m,p-Xylene	36.1900	1.0	0.19	40.0000		90.5	78 - 126		
Methylene chloride	23.7000	1.0	0.71	20.0000		118	51 - 149		
n-Butylbenzene	19.0900	0.50	0.11	20.0000		95.4	63 - 127		
n-Propylbenzene	18.3100	0.50	0.10	20.0000		91.6	69 - 124		
Naphthalene	15.1000	0.50	0.41	20.0000		75.5	60 - 126		
o-Xylene	37.1200	0.50	0.13	40.0000		92.8	79 - 126		
sec-Butylbenzene	18.6700	0.50	0.09	20.0000		93.4	69 - 124		
Styrene	18.3900	0.50	0.13	20.0000		92.0	80 - 127		
tert-Butylbenzene	18.9300	0.50	0.09	20.0000		94.6	71 - 124		
Tetrachloroethene	17.0000	0.50	0.10	20.0000		85.0	73 - 129		
Toluene	33.9700	0.50	0.12	40.0000		84.9	78 - 121		
trans-1,2-Dichloroethene	18.3500	0.50	0.09	20.0000		91.8	58 - 141		
Trichloroethene	15.7200	0.50	0.10	20.0000		78.6	73 - 126		
Trichlorofluoromethane	17.2700	0.50	0.10	20.0000		86.4	62 - 146		
Vinyl chloride	18.1800	0.50	0.05	20.0000		90.9	61 - 137		
Surrogate: 1,2-Dichloroethane-d4	25.25			25.0000		101	59 - 158		
Surrogate: 4-Bromofluorobenzene	26.55			25.0000		106	71 - 127		
Surrogate: Dibromofluoromethane	25.98			25.0000		104	66 - 147		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0438 - MSVOA_LL_W (continued)

LCS (B9H0438-BS1) - Continued

Prepared: 8/20/2019 Analyzed: 8/20/2019

Surrogate: Toluene-d8 26.16 25.0000 105 77 - 138

LCS Dup (B9H0438-BS1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,1,1,2-Tetrachloroethane	20.2100	0.50	0.11	20.0000	101	71 - 133	14.7	20	
1,1,1-Trichloroethane	19.7800	0.50	0.07	20.0000	98.9	62 - 124	11.6	20	
1,1,2,2-Tetrachloroethane	21.2000	0.50	0.36	20.0000	106	50 - 131	20.8	20	R
1,1,2-Trichloroethane	20.4700	0.50	0.25	20.0000	102	77 - 121	20.6	20	R
1,1-Dichloroethane	21.0200	0.50	0.09	20.0000	105	52 - 130	11.3	20	
1,1-Dichloroethene	21.4000	0.50	0.13	20.0000	107	61 - 136	12.0	20	
1,1-Dichloropropene	21.2700	0.50	0.13	20.0000	106	80 - 128	21.0	20	R
1,2,3-Trichloropropane	19.4900	0.50	0.39	20.0000	97.4	59 - 126	16.8	20	
1,2,3-Trichlorobenzene	20.6200	0.50	0.18	20.0000	103	69 - 138	17.1	20	
1,2,4-Trichlorobenzene	19.4800	0.50	0.16	20.0000	97.4	78 - 125	12.4	20	
1,2,4-Trimethylbenzene	21.4700	0.50	0.14	20.0000	107	70 - 126	12.4	20	
1,2-Dibromo-3-chloropropane	18.3600	0.50	0.41	20.0000	91.8	58 - 127	9.05	20	
1,2-Dibromoethane	20.2700	0.50	0.24	20.0000	101	76 - 120	22.1	20	R
1,2-Dichlorobenzene	18.8300	0.50	0.20	20.0000	94.2	82 - 117	12.0	20	
1,2-Dichloroethane	21.3700	0.50	0.20	20.0000	107	66 - 126	19.6	20	
1,2-Dichloropropane	19.3600	0.50	0.15	20.0000	96.8	70 - 117	18.3	20	
1,3,5-Trimethylbenzene	21.0100	0.50	0.13	20.0000	105	71 - 125	11.0	20	
1,3-Dichlorobenzene	19.1700	0.50	0.16	20.0000	95.8	81 - 116	10.9	20	
1,3-Dichloropropane	20.5400	0.50	0.21	20.0000	103	69 - 124	22.7	20	R
1,4-Dichlorobenzene	20.3000	0.50	0.17	20.0000	102	80 - 114	12.1	20	
2,2-Dichloropropane	22.9800	0.50	0.38	20.0000	115	58 - 132	10.0	20	
2-Chlorotoluene	20.2200	0.50	0.11	20.0000	101	71 - 119	11.2	20	
4-Chlorotoluene	20.2200	0.50	0.12	20.0000	101	72 - 122	12.5	20	
4-Isopropyltoluene	21.0500	0.50	0.11	20.0000	105	69 - 126	9.71	20	
Benzene	40.2500	0.50	0.13	40.0000	101	80 - 116	17.4	20	
Bromobenzene	19.6900	0.50	0.21	20.0000	98.4	77 - 118	10.6	20	
Bromodichloromethane	20.1900	0.50	0.14	20.0000	101	73 - 118	18.3	20	
Bromoform	19.4800	0.50	0.20	20.0000	97.4	65 - 133	16.5	20	
Bromomethane	17.1600	0.50	0.17	20.0000	85.8	7 - 205	2.42	20	
Carbon tetrachloride	20.5100	0.50	0.09	20.0000	103	63 - 133	19.1	20	
Chlorobenzene	20.8100	0.50	0.13	20.0000	104	86 - 113	16.3	20	
Chloroethane	17.7100	0.50	0.15	20.0000	88.6	66 - 141	0.509	20	
Chloroform	21.2800	0.50	0.11	20.0000	106	63 - 127	12.2	20	
Chloromethane	14.0700	0.50	0.12	20.0000	70.4	0 - 207	6.46	20	
cis-1,2-Dichloroethene	20.6700	0.50	0.14	20.0000	103	64 - 126	10.7	20	
cis-1,3-Dichloropropene	23.0800	0.50	0.13	20.0000	115	70 - 141	16.8	20	
Dibromochloromethane	19.6100	0.50	0.16	20.0000	98.0	67 - 135	16.9	20	
Dibromomethane	21.0400	0.50	0.19	20.0000	105	74 - 118	20.8	20	R
Dichlorodifluoromethane	17.6200	0.50	0.05	20.0000	88.1	14 - 181	2.58	20	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0438 - MSVOA_LL_W (continued)

LCS Dup (B9H0438-BSD1) - Continued

Prepared: 8/20/2019 Analyzed: 8/20/2019

Ethylbenzene	39.5400	0.50	0.13	40.0000		98.8	77 - 118	15.0	20	
Hexachlorobutadiene	20.2400	0.50	0.15	20.0000		101	66 - 125	11.2	20	
Isopropylbenzene	22.1500	0.50	0.10	20.0000		111	68 - 137	12.5	20	
m,p-Xylene	42.1700	1.0	0.19	40.0000		105	78 - 126	15.3	20	
Methylene chloride	25.7100	1.0	0.71	20.0000		129	51 - 149	8.14	20	
n-Butylbenzene	20.6400	0.50	0.11	20.0000		103	63 - 127	7.80	20	
n-Propylbenzene	20.3300	0.50	0.10	20.0000		102	69 - 124	10.5	20	
Naphthalene	18.0200	0.50	0.41	20.0000		90.1	60 - 126	17.6	20	
o-Xylene	42.8900	0.50	0.13	40.0000		107	79 - 126	14.4	20	
sec-Butylbenzene	21.1400	0.50	0.09	20.0000		106	69 - 124	12.4	20	
Styrene	21.7200	0.50	0.13	20.0000		109	80 - 127	16.6	20	
tert-Butylbenzene	20.9300	0.50	0.09	20.0000		105	71 - 124	10.0	20	
Tetrachloroethene	19.3600	0.50	0.10	20.0000		96.8	73 - 129	13.0	20	
Toluene	40.4700	0.50	0.12	40.0000		101	78 - 121	17.5	20	
trans-1,2-Dichloroethene	19.9500	0.50	0.09	20.0000		99.8	58 - 141	8.36	20	
Trichloroethene	18.8400	0.50	0.10	20.0000		94.2	73 - 126	18.1	20	
Trichlorofluoromethane	17.4800	0.50	0.10	20.0000		87.4	62 - 146	1.21	20	
Vinyl chloride	17.3400	0.50	0.05	20.0000		86.7	61 - 137	4.73	20	
Surrogate: 1,2-Dichloroethane-d4	25.22			25.0000		101	59 - 158			
Surrogate: 4-Bromofluorobenzene	27.45			25.0000		110	71 - 127			
Surrogate: Dibromofluoromethane	25.86			25.0000		103	66 - 147			
Surrogate: Toluene-d8	26.39			25.0000		106	77 - 138			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0424 - EPA 1311_W (SVOA_GCMS)

Blank (B9H0424-BLK1)

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,4-Dioxane	ND	0.20	0.05							
Surrogate: 1,2-Dichlorobenzene-d	0.8044			1.00000		80.4	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.8500			1.00000		85.0	20 - 131			
Surrogate: 4-Terphenyl-d14	1.119			1.00000		112	24 - 135			
Surrogate: Nitrobenzene-d5	0.9408			1.00000		94.1	6 - 124			

LCS (B9H0424-BS1)

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,4-Dioxane	1.16743	0.20	0.05	1.00000		117	64 - 129			
Surrogate: 1,2-Dichlorobenzene-d	0.6379			1.00000		63.8	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.6706			1.00000		67.1	20 - 131			
Surrogate: 4-Terphenyl-d14	0.8311			1.00000		83.1	24 - 135			
Surrogate: Nitrobenzene-d5	0.7616			1.00000		76.2	6 - 124			

Matrix Spike (B9H0424-MS1)

Source: 1903038-04

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,4-Dioxane	2.16512	0.20	0.05	1.00000	0.839590	133	56 - 128			M2
Surrogate: 1,2-Dichlorobenzene-d	0.9112			1.00000		91.1	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.9417			1.00000		94.2	20 - 131			
Surrogate: 4-Terphenyl-d14	0.9509			1.00000		95.1	24 - 135			
Surrogate: Nitrobenzene-d5	1.080			1.00000		108	6 - 124			

Matrix Spike Dup (B9H0424-MSD1)

Source: 1903038-04

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,4-Dioxane	2.06784	0.20	0.05	1.00000	0.839590	123	56 - 128	4.60	20	
Surrogate: 1,2-Dichlorobenzene-d	0.9200			1.00000		92.0	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.9489			1.00000		94.9	20 - 131			
Surrogate: 4-Terphenyl-d14	0.9664			1.00000		96.6	24 - 135			
Surrogate: Nitrobenzene-d5	1.107			1.00000		111	6 - 124			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/21/2019

Notes and Definitions

S1	Surrogate recovery was above laboratory acceptance limit. No target analyte was detected in the sample.
R	RPD value outside acceptance criteria. Calculation is based on raw values.
M2	Matrix spike recovery outside of acceptance limit due to possible matrix interference. The analytical batch was validated by the laboratory control sample.
L4	Laboratory Control Sample outside of control limit but within Marginal Exceedance (ME) limit.
L3	Laboratory control sample outside in-house established limits but within method criteria.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

PROJECT: Raytheon Main GETS Mid-Month-Sample
FOLBERTON

TASK NO.: 532.30

Project Manager Steve Netto

QA Manager Tyler Evans

Phone 858.455.6500

Fax 858.455.6533

Sampled By:				SAMPLE COLLECTION																ANALYSIS REQUESTED																Expected Concentration Range (ppb) for				SPECIAL HANDLING				Laboratory
A. DONNELLY, A. JANZON																																												Advanced Technology Laboratories
LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Ice	40-ml VOA	125 mL Poly	250 mL Poly	250 mL Glass	1 L Poly	1L Amber	VOCs by EPA 8260B	Bromate by EPA 317	Bromide by EPA 300	Alkalinity by SM2320B	Total Organic Carbon by SM5310B	Total Suspended Solids by SM2540D	UV Absorption EPA 415.3 @254 nm	1,4-Dioxane by EPA 8270C MOD	1,4-Dioxane by EPA 8270C SIM	0 - 10	10 - 100	100 - 1,000	>1,000	STANDARD TAT	24 hr TAT	48 Hour TAT	5 Day TAT	Level IV Data Validation Requested	MS/MSD Requested	REMARKS									
190338-01	TB-081419	8/14/19	0800		X	X			X	3						X																												
-02	MW-26C		0932	X		X			X	3						X																												
7A-03	↓		↓	X					X																																			
-03	RB-081419		0940			X	X		X	3						X																												
	↓		↓			X			X																																			
-09	MW-41		1341	X		X			X	9						X																												
	↓		↓	X					X																																			

Total number of containers per analysis:

Total No. of Containers: 0

Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
AP Donnelly / H&A	8/14/19 1700	Anthony Joe ATZ	8/14/19 1700
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
Anthony Joe ATZ	8/14/19 1800		8-14-19 1800

- ☐ No. of containers correct
- ☐ Received in good condition
- ☐ Custody seals secure
- ☐ Conforms to COC document

Send Results to:

Steve Netto

9171 Towne Centre Drive
Suite 275

San Diego, CA 92122

Ph: 858.455.6500

snetto@hargis.com

Instructions: 1. Fill out form completely and sign only after verified for completeness. 2. Complete in ballpoint pen. Draw one line through error, initial and date correction. Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✗. Note applicable preservatives, special instructions, and deviations from typical environmental samples. Consult project QA documents for specific instructions.

12°C

Temperature on receipt



HARGIS+ASSOCIATES, INC.
HYDROGEOLOGY • ENGINEERING

PROJECT: Raytheon Main GETS Mid Month Sample

TASK NO.: 532.30

Project Manager Steve Netto

QA Manager Tyler Evans

Phone 858.455.6500

Fax 858.455.6533

Date: 8/13/2019

Page 2 of 2

2 2

Sampled By:				SAMPLE COLLECTION				MATRIX				PRESERVATION				CONTAINERS				ANALYSIS REQUESTED				Expected Concentration Range (ppb) for				SPECIAL HANDLING				REMARKS			
LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Ice	40-ml VOA	125 mL Poly	250 mL Poly	250 mL Glass	1 L Poly	1L Amber	VOCs by EPA 8260B	Bromate by EPA 317	Bromide by EPA 300	Alkalinity by SM2320B	Total Organic Carbon by SM5310B	Total Suspended Solids by SM2540D	UV Absorption EPA 415.3 @254 nm	1,4-Dioxane by EPA 8270C MOD	1,4-Dioxane by EPA 8270C SIM	0 - 10	10 - 100	100 - 1,000	>1,000	24 hr TAT	48 Hour TAT	5 Day TAT	Level IV Data Validation Requested	MS/MSD Requested		
1903030-05	MW-43	8-14-19	0913	X		X			X	3						X									X										
	↓		↓	X										1										X											
-06	MW-42		1122	X		X				3						X								X											
	↓		↓	X										1									X												
-07	MW-33-25V		1334	X		X				3						X								X											
	↓		↓	X										1									X												
-08	MW-33		1350	X		X				3						X								X											
	↓		↓	X										1									X												
-09	MW-36-25V		1506	X		X				3						X								X											
	↓		↓	X										1									X												
-10	MW-36		1630	X		X				3						X								X											
	↓		↓	X										1									X												

Total number of containers per analysis:

Total No. of Containers: 0

Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
AD Donly / H+A	8/14/19 1700	A. R. / ATL	8/14/19 1700
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
A. R. / ATL	8/14/19 1800		8-14-19 1800

- ☐ No. of containers correct
- ☐ Received in good condition
- ☐ Custody seals secure
- ☐ Conforms to COC document

Send Results to:

Steve Netto

9171 Towne Centre Drive

Suite 275

San Diego, CA 92122

Ph: 858.455.6500

snetto@hargis.com

Instructions

- Fill out form completely and sign only after verified for completeness
- Complete in ballpoint pen. Draw one line through error, initial and date correction
- Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✗
- Note applicable preservatives, special instructions, and deviations from typical environmental samples.
- Consult project QA documents for specific instructions.

1.2 °C Temperature on receipt



August 22, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1903058
Client Reference : Raytheon FULLERTON, 532.30

Enclosed are the results for sample(s) received on August 15, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read "Edgar Caballero", with a small "En" written below the main signature.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-081519	1903058-01	Lab prepared water	8/15/19 8:00	8/15/19 13:02
MW-28	1903058-02	Groundwater	8/15/19 8:38	8/15/19 13:02
MW-21	1903058-03	Groundwater	8/15/19 9:28	8/15/19 13:02
EW-01	1903058-04	Groundwater	8/15/19 9:53	8/15/19 13:02
MW-08	1903058-05	Groundwater	8/15/19 13:51	8/15/19 13:02
MW-18	1903058-06	Groundwater	8/15/19 15:50	8/15/19 13:02
MW-39	1903058-07	Groundwater	8/15/19 9:45	8/15/19 13:02
MW-40	1903058-08	Groundwater	8/15/19 12:58	8/15/19 13:02
MW-09	1903058-09	Groundwater	8/15/19 16:40	8/15/19 13:02

CASE NARRATIVE

Results were J-flagged. "J" is used to flag those results that are between the PQL (Practical Quantitation Limit) and the calculated MDL (Method Detection Limit). Results that are "J" flagged are estimated values since it becomes difficult to accurately quantitate the analyte near the MDL.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: TB-081519

Lab ID: 1903058-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 14:51	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0497	08/21/2019	08/21/19 14:51	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0497	08/21/2019	08/21/19 14:51	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0497	08/21/2019	08/21/19 14:51	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 14:51	
1,1-Dichloroethene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 14:51	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 14:51	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0497	08/21/2019	08/21/19 14:51	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0497	08/21/2019	08/21/19 14:51	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 14:51	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 14:51	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 14:51	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0497	08/21/2019	08/21/19 14:51	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 14:51	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 14:51	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 14:51	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 14:51	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 14:51	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 14:51	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 14:51	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0497	08/21/2019	08/21/19 14:51	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 14:51	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 14:51	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 14:51	
Benzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 14:51	
Bromobenzene	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 14:51	
Bromodichloromethane	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 14:51	
Bromoform	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 14:51	
Bromomethane	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 14:51	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 14:51	
Chlorobenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 14:51	
Chloroethane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 14:51	
Chloroform	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 14:51	
Chloromethane	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 14:51	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 14:51	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 14:51	
Dibromochloromethane	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 14:51	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: TB-081519

Lab ID: 1903058-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0497	08/21/2019	08/21/19 14:51	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 14:51	
Ethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 14:51	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 14:51	
Isopropylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 14:51	
m,p-Xylene	ND	1.0	0.19	1	B9H0497	08/21/2019	08/21/19 14:51	
Methylene chloride	0.87	1.0	0.71	1	B9H0497	08/21/2019	08/21/19 14:51	J, B
n-Butylbenzene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 14:51	
n-Propylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 14:51	
Naphthalene	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 14:51	
o-Xylene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 14:51	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 14:51	
Styrene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 14:51	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 14:51	
Tetrachloroethene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 14:51	
Toluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 14:51	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 14:51	
Trichloroethene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 14:51	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 14:51	
Vinyl chloride	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 14:51	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>130 %</i>		<i>59 - 158</i>		B9H0497	08/21/2019	<i>08/21/19 14:51</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>102 %</i>		<i>71 - 127</i>		B9H0497	08/21/2019	<i>08/21/19 14:51</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>122 %</i>		<i>66 - 147</i>		B9H0497	08/21/2019	<i>08/21/19 14:51</i>	
<i>Surrogate: Toluene-d8</i>	<i>122 %</i>		<i>77 - 138</i>		B9H0497	08/21/2019	<i>08/21/19 14:51</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-28

Lab ID: 1903058-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 15:15	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0497	08/21/2019	08/21/19 15:15	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0497	08/21/2019	08/21/19 15:15	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0497	08/21/2019	08/21/19 15:15	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 15:15	
1,1-Dichloroethene	0.90	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:15	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:15	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0497	08/21/2019	08/21/19 15:15	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0497	08/21/2019	08/21/19 15:15	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 15:15	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 15:15	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 15:15	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0497	08/21/2019	08/21/19 15:15	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 15:15	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 15:15	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 15:15	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:15	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 15:15	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 15:15	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 15:15	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0497	08/21/2019	08/21/19 15:15	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 15:15	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 15:15	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 15:15	
Benzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:15	
Bromobenzene	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 15:15	
Bromodichloromethane	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 15:15	
Bromoform	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 15:15	
Bromomethane	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 15:15	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 15:15	
Chlorobenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:15	
Chloroethane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 15:15	
Chloroform	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 15:15	
Chloromethane	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 15:15	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 15:15	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:15	
Dibromochloromethane	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 15:15	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-28

Lab ID: 1903058-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0497	08/21/2019	08/21/19 15:15	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 15:15	
Ethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:15	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 15:15	
Isopropylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 15:15	
m,p-Xylene	ND	1.0	0.19	1	B9H0497	08/21/2019	08/21/19 15:15	
Methylene chloride	ND	1.0	0.71	1	B9H0497	08/21/2019	08/21/19 15:15	
n-Butylbenzene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 15:15	
n-Propylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 15:15	
Naphthalene	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 15:15	
o-Xylene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:15	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 15:15	
Styrene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:15	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 15:15	
Tetrachloroethene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 15:15	
Toluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 15:15	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 15:15	
Trichloroethene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 15:15	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 15:15	
Vinyl chloride	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 15:15	
Surrogate: 1,2-Dichloroethane-d4	131 %		59 - 158		B9H0497	08/21/2019	08/21/19 15:15	
Surrogate: 4-Bromofluorobenzene	98.5 %		71 - 127		B9H0497	08/21/2019	08/21/19 15:15	
Surrogate: Dibromofluoromethane	128 %		66 - 147		B9H0497	08/21/2019	08/21/19 15:15	
Surrogate: Toluene-d8	122 %		77 - 138		B9H0497	08/21/2019	08/21/19 15:15	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-28

Lab ID: 1903058-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.21	0.20	0.05	1	B9H0424	08/19/2019	08/19/19 22:04	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>88.8 %</i>		<i>22 - 117</i>		B9H0424	08/19/2019	<i>08/19/19 22:04</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>90.0 %</i>		<i>20 - 131</i>		B9H0424	08/19/2019	<i>08/19/19 22:04</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>95.9 %</i>		<i>24 - 135</i>		B9H0424	08/19/2019	<i>08/19/19 22:04</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>104 %</i>		<i>6 - 124</i>		B9H0424	08/19/2019	<i>08/19/19 22:04</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-21

Lab ID: 1903058-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 15:39	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0497	08/21/2019	08/21/19 15:39	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0497	08/21/2019	08/21/19 15:39	
1,1,2-Trichloroethane	8.5	0.50	0.25	1	B9H0497	08/21/2019	08/21/19 15:39	
1,1-Dichloroethane	19	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 15:39	
1,1-Dichloroethene	970	50	13	100	B9H0497	08/21/2019	08/21/19 22:07	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:39	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0497	08/21/2019	08/21/19 15:39	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0497	08/21/2019	08/21/19 15:39	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 15:39	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 15:39	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 15:39	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0497	08/21/2019	08/21/19 15:39	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 15:39	
1,2-Dichloroethane	3.4	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 15:39	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 15:39	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:39	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 15:39	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 15:39	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 15:39	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0497	08/21/2019	08/21/19 15:39	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 15:39	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 15:39	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 15:39	
Benzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:39	
Bromobenzene	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 15:39	
Bromodichloromethane	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 15:39	
Bromoform	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 15:39	
Bromomethane	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 15:39	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 15:39	
Chlorobenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:39	
Chloroethane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 15:39	
Chloroform	1.6	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 15:39	
Chloromethane	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 15:39	
cis-1,2-Dichloroethene	2.2	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 15:39	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:39	
Dibromochloromethane	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 15:39	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-21

Lab ID: 1903058-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0497	08/21/2019	08/21/19 15:39	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 15:39	
Ethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:39	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 15:39	
Isopropylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 15:39	
m,p-Xylene	ND	1.0	0.19	1	B9H0497	08/21/2019	08/21/19 15:39	
Methylene chloride	ND	1.0	0.71	1	B9H0497	08/21/2019	08/21/19 15:39	
n-Butylbenzene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 15:39	
n-Propylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 15:39	
Naphthalene	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 15:39	
o-Xylene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:39	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 15:39	
Styrene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 15:39	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 15:39	
Tetrachloroethene	2.7	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 15:39	
Toluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 15:39	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 15:39	
Trichloroethene	20	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 15:39	
Trichlorofluoromethane	0.47	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 15:39	J
Vinyl chloride	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 15:39	

Surrogate: 1,2-Dichloroethane-d4	130 %	59 - 158	B9H0497	08/21/2019	08/21/19 22:07
Surrogate: 1,2-Dichloroethane-d4	128 %	59 - 158	B9H0497	08/21/2019	08/21/19 15:39
Surrogate: 4-Bromofluorobenzene	99.2 %	71 - 127	B9H0497	08/21/2019	08/21/19 22:07
Surrogate: 4-Bromofluorobenzene	98.1 %	71 - 127	B9H0497	08/21/2019	08/21/19 15:39
Surrogate: Dibromofluoromethane	124 %	66 - 147	B9H0497	08/21/2019	08/21/19 15:39
Surrogate: Dibromofluoromethane	130 %	66 - 147	B9H0497	08/21/2019	08/21/19 22:07
Surrogate: Toluene-d8	123 %	77 - 138	B9H0497	08/21/2019	08/21/19 22:07
Surrogate: Toluene-d8	112 %	77 - 138	B9H0497	08/21/2019	08/21/19 15:39



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-21

Lab ID: 1903058-03

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	510	4.0	1.7	2	B9H0467	08/20/2019	08/21/19 21:15	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>72.6 %</i>		<i>34 - 188</i>		B9H0467	08/20/2019	<i>08/21/19 21:15</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>76.7 %</i>		<i>39 - 108</i>		B9H0467	08/20/2019	<i>08/21/19 21:15</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>112 %</i>		<i>71 - 131</i>		B9H0467	08/20/2019	<i>08/21/19 21:15</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>82.4 %</i>		<i>32 - 106</i>		B9H0467	08/20/2019	<i>08/21/19 21:15</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: EW-01

Lab ID: 1903058-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 16:03	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0497	08/21/2019	08/21/19 16:03	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0497	08/21/2019	08/21/19 16:03	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0497	08/21/2019	08/21/19 16:03	
1,1-Dichloroethane	1.4	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 16:03	
1,1-Dichloroethene	85	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:03	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:03	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0497	08/21/2019	08/21/19 16:03	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0497	08/21/2019	08/21/19 16:03	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 16:03	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 16:03	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 16:03	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0497	08/21/2019	08/21/19 16:03	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 16:03	
1,2-Dichloroethane	0.43	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 16:03	J
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 16:03	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:03	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 16:03	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 16:03	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 16:03	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0497	08/21/2019	08/21/19 16:03	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 16:03	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 16:03	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 16:03	
Benzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:03	
Bromobenzene	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 16:03	
Bromodichloromethane	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 16:03	
Bromoform	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 16:03	
Bromomethane	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 16:03	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 16:03	
Chlorobenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:03	
Chloroethane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 16:03	
Chloroform	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 16:03	
Chloromethane	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 16:03	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 16:03	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:03	
Dibromochloromethane	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 16:03	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: EW-01

Lab ID: 1903058-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0497	08/21/2019	08/21/19 16:03	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 16:03	
Ethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:03	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 16:03	
Isopropylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 16:03	
m,p-Xylene	ND	1.0	0.19	1	B9H0497	08/21/2019	08/21/19 16:03	
Methylene chloride	ND	1.0	0.71	1	B9H0497	08/21/2019	08/21/19 16:03	
n-Butylbenzene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 16:03	
n-Propylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 16:03	
Naphthalene	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 16:03	
o-Xylene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:03	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 16:03	
Styrene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:03	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 16:03	
Tetrachloroethene	0.33	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 16:03	J
Toluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 16:03	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 16:03	
Trichloroethene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 16:03	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 16:03	
Vinyl chloride	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 16:03	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>132 %</i>		<i>59 - 158</i>		B9H0497	08/21/2019	<i>08/21/19 16:03</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>102 %</i>		<i>71 - 127</i>		B9H0497	08/21/2019	<i>08/21/19 16:03</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>131 %</i>		<i>66 - 147</i>		B9H0497	08/21/2019	<i>08/21/19 16:03</i>	
<i>Surrogate: Toluene-d8</i>	<i>125 %</i>		<i>77 - 138</i>		B9H0497	08/21/2019	<i>08/21/19 16:03</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: EW-01

Lab ID: 1903058-04

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	42	2.0	0.84	1	B9H0467	08/20/2019	08/20/19 23:52	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>69.5 %</i>		<i>34 - 188</i>		B9H0467	08/20/2019	<i>08/20/19 23:52</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>74.2 %</i>		<i>39 - 108</i>		B9H0467	08/20/2019	<i>08/20/19 23:52</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>117 %</i>		<i>71 - 131</i>		B9H0467	08/20/2019	<i>08/20/19 23:52</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>77.2 %</i>		<i>32 - 106</i>		B9H0467	08/20/2019	<i>08/20/19 23:52</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-08

Lab ID: 1903058-05

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 16:27	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0497	08/21/2019	08/21/19 16:27	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0497	08/21/2019	08/21/19 16:27	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0497	08/21/2019	08/21/19 16:27	
1,1-Dichloroethane	0.56	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 16:27	
1,1-Dichloroethene	59	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:27	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:27	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0497	08/21/2019	08/21/19 16:27	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0497	08/21/2019	08/21/19 16:27	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 16:27	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 16:27	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 16:27	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0497	08/21/2019	08/21/19 16:27	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 16:27	
1,2-Dichloroethane	0.22	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 16:27	J
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 16:27	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:27	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 16:27	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 16:27	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 16:27	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0497	08/21/2019	08/21/19 16:27	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 16:27	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 16:27	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 16:27	
Benzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:27	
Bromobenzene	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 16:27	
Bromodichloromethane	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 16:27	
Bromoform	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 16:27	
Bromomethane	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 16:27	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 16:27	
Chlorobenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:27	
Chloroethane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 16:27	
Chloroform	0.52	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 16:27	
Chloromethane	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 16:27	
cis-1,2-Dichloroethene	5.6	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 16:27	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:27	
Dibromochloromethane	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 16:27	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-08

Lab ID: 1903058-05

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0497	08/21/2019	08/21/19 16:27	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 16:27	
Ethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:27	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 16:27	
Isopropylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 16:27	
m,p-Xylene	ND	1.0	0.19	1	B9H0497	08/21/2019	08/21/19 16:27	
Methylene chloride	ND	1.0	0.71	1	B9H0497	08/21/2019	08/21/19 16:27	
n-Butylbenzene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 16:27	
n-Propylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 16:27	
Naphthalene	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 16:27	
o-Xylene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:27	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 16:27	
Styrene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:27	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 16:27	
Tetrachloroethene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 16:27	
Toluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 16:27	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 16:27	
Trichloroethene	85	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 16:27	
Trichlorofluoromethane	0.19	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 16:27	J
Vinyl chloride	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 16:27	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>129 %</i>		<i>59 - 158</i>		B9H0497	08/21/2019	<i>08/21/19 16:27</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>100 %</i>		<i>71 - 127</i>		B9H0497	08/21/2019	<i>08/21/19 16:27</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>125 %</i>		<i>66 - 147</i>		B9H0497	08/21/2019	<i>08/21/19 16:27</i>	
<i>Surrogate: Toluene-d8</i>	<i>104 %</i>		<i>77 - 138</i>		B9H0497	08/21/2019	<i>08/21/19 16:27</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-08

Lab ID: 1903058-05

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	3.6	0.20	0.05	1	B9H0424	08/19/2019	08/19/19 22:31	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>87.6 %</i>		<i>22 - 117</i>		B9H0424	08/19/2019	<i>08/19/19 22:31</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>88.6 %</i>		<i>20 - 131</i>		B9H0424	08/19/2019	<i>08/19/19 22:31</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>78.6 %</i>		<i>24 - 135</i>		B9H0424	08/19/2019	<i>08/19/19 22:31</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>103 %</i>		<i>6 - 124</i>		B9H0424	08/19/2019	<i>08/19/19 22:31</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-18

Lab ID: 1903058-06

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 16:52	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0497	08/21/2019	08/21/19 16:52	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0497	08/21/2019	08/21/19 16:52	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0497	08/21/2019	08/21/19 16:52	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 16:52	
1,1-Dichloroethene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:52	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:52	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0497	08/21/2019	08/21/19 16:52	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0497	08/21/2019	08/21/19 16:52	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 16:52	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 16:52	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 16:52	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0497	08/21/2019	08/21/19 16:52	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 16:52	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 16:52	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 16:52	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:52	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 16:52	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 16:52	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 16:52	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0497	08/21/2019	08/21/19 16:52	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 16:52	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 16:52	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 16:52	
Benzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:52	
Bromobenzene	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 16:52	
Bromodichloromethane	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 16:52	
Bromoform	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 16:52	
Bromomethane	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 16:52	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 16:52	
Chlorobenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:52	
Chloroethane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 16:52	
Chloroform	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 16:52	
Chloromethane	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 16:52	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 16:52	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:52	
Dibromochloromethane	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 16:52	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-18

Lab ID: 1903058-06

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0497	08/21/2019	08/21/19 16:52	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 16:52	
Ethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:52	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 16:52	
Isopropylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 16:52	
m,p-Xylene	ND	1.0	0.19	1	B9H0497	08/21/2019	08/21/19 16:52	
Methylene chloride	ND	1.0	0.71	1	B9H0497	08/21/2019	08/21/19 16:52	
n-Butylbenzene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 16:52	
n-Propylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 16:52	
Naphthalene	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 16:52	
o-Xylene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:52	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 16:52	
Styrene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 16:52	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 16:52	
Tetrachloroethene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 16:52	
Toluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 16:52	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 16:52	
Trichloroethene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 16:52	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 16:52	
Vinyl chloride	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 16:52	
Surrogate: 1,2-Dichloroethane-d4	132 %		59 - 158		B9H0497	08/21/2019	08/21/19 16:52	
Surrogate: 4-Bromofluorobenzene	104 %		71 - 127		B9H0497	08/21/2019	08/21/19 16:52	
Surrogate: Dibromofluoromethane	125 %		66 - 147		B9H0497	08/21/2019	08/21/19 16:52	
Surrogate: Toluene-d8	121 %		77 - 138		B9H0497	08/21/2019	08/21/19 16:52	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-18

Lab ID: 1903058-06

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	0.05	1	B9H0424	08/19/2019	08/19/19 22:58	
Surrogate: 1,2-Dichlorobenzene-d4	83.2 %		22 - 117		B9H0424	08/19/2019	08/19/19 22:58	
Surrogate: 2-Fluorobiphenyl	84.5 %		20 - 131		B9H0424	08/19/2019	08/19/19 22:58	
Surrogate: 4-Terphenyl-d14	75.1 %		24 - 135		B9H0424	08/19/2019	08/19/19 22:58	
Surrogate: Nitrobenzene-d5	98.4 %		6 - 124		B9H0424	08/19/2019	08/19/19 22:58	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-39

Lab ID: 1903058-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 17:16	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0497	08/21/2019	08/21/19 17:16	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0497	08/21/2019	08/21/19 17:16	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0497	08/21/2019	08/21/19 17:16	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 17:16	
1,1-Dichloroethene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:16	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:16	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0497	08/21/2019	08/21/19 17:16	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0497	08/21/2019	08/21/19 17:16	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 17:16	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 17:16	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 17:16	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0497	08/21/2019	08/21/19 17:16	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 17:16	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 17:16	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 17:16	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:16	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 17:16	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 17:16	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 17:16	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0497	08/21/2019	08/21/19 17:16	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 17:16	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 17:16	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 17:16	
Benzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:16	
Bromobenzene	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 17:16	
Bromodichloromethane	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 17:16	
Bromoform	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 17:16	
Bromomethane	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 17:16	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 17:16	
Chlorobenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:16	
Chloroethane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 17:16	
Chloroform	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 17:16	
Chloromethane	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 17:16	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 17:16	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:16	
Dibromochloromethane	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 17:16	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-39

Lab ID: 1903058-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0497	08/21/2019	08/21/19 17:16	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 17:16	
Ethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:16	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 17:16	
Isopropylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 17:16	
m,p-Xylene	ND	1.0	0.19	1	B9H0497	08/21/2019	08/21/19 17:16	
Methylene chloride	ND	1.0	0.71	1	B9H0497	08/21/2019	08/21/19 17:16	
n-Butylbenzene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 17:16	
n-Propylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 17:16	
Naphthalene	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 17:16	
o-Xylene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:16	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 17:16	
Styrene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:16	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 17:16	
Tetrachloroethene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 17:16	
Toluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 17:16	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 17:16	
Trichloroethene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 17:16	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 17:16	
Vinyl chloride	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 17:16	
Surrogate: 1,2-Dichloroethane-d4	133 %		59 - 158		B9H0497	08/21/2019	08/21/19 17:16	
Surrogate: 4-Bromofluorobenzene	97.8 %		71 - 127		B9H0497	08/21/2019	08/21/19 17:16	
Surrogate: Dibromofluoromethane	131 %		66 - 147		B9H0497	08/21/2019	08/21/19 17:16	
Surrogate: Toluene-d8	121 %		77 - 138		B9H0497	08/21/2019	08/21/19 17:16	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-39

Lab ID: 1903058-07

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	0.05	1	B9H0424	08/19/2019	08/19/19 23:25	
Surrogate: 1,2-Dichlorobenzene-d4	86.7 %		22 - 117		B9H0424	08/19/2019	08/19/19 23:25	
Surrogate: 2-Fluorobiphenyl	87.0 %		20 - 131		B9H0424	08/19/2019	08/19/19 23:25	
Surrogate: 4-Terphenyl-d14	84.8 %		24 - 135		B9H0424	08/19/2019	08/19/19 23:25	
Surrogate: Nitrobenzene-d5	104 %		6 - 124		B9H0424	08/19/2019	08/19/19 23:25	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-40

Lab ID: 1903058-08

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 17:40	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0497	08/21/2019	08/21/19 17:40	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0497	08/21/2019	08/21/19 17:40	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0497	08/21/2019	08/21/19 17:40	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 17:40	
1,1-Dichloroethene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:40	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:40	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0497	08/21/2019	08/21/19 17:40	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0497	08/21/2019	08/21/19 17:40	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 17:40	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 17:40	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 17:40	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0497	08/21/2019	08/21/19 17:40	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 17:40	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 17:40	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 17:40	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:40	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 17:40	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 17:40	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 17:40	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0497	08/21/2019	08/21/19 17:40	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 17:40	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 17:40	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 17:40	
Benzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:40	
Bromobenzene	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 17:40	
Bromodichloromethane	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 17:40	
Bromoform	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 17:40	
Bromomethane	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 17:40	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 17:40	
Chlorobenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:40	
Chloroethane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 17:40	
Chloroform	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 17:40	
Chloromethane	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 17:40	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 17:40	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:40	
Dibromochloromethane	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 17:40	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-40

Lab ID: 1903058-08

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0497	08/21/2019	08/21/19 17:40	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 17:40	
Ethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:40	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 17:40	
Isopropylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 17:40	
m,p-Xylene	ND	1.0	0.19	1	B9H0497	08/21/2019	08/21/19 17:40	
Methylene chloride	ND	1.0	0.71	1	B9H0497	08/21/2019	08/21/19 17:40	
n-Butylbenzene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 17:40	
n-Propylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 17:40	
Naphthalene	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 17:40	
o-Xylene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:40	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 17:40	
Styrene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 17:40	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 17:40	
Tetrachloroethene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 17:40	
Toluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 17:40	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 17:40	
Trichloroethene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 17:40	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 17:40	
Vinyl chloride	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 17:40	
Surrogate: 1,2-Dichloroethane-d4	139 %		59 - 158		B9H0497	08/21/2019	08/21/19 17:40	
Surrogate: 4-Bromofluorobenzene	100 %		71 - 127		B9H0497	08/21/2019	08/21/19 17:40	
Surrogate: Dibromofluoromethane	137 %		66 - 147		B9H0497	08/21/2019	08/21/19 17:40	
Surrogate: Toluene-d8	122 %		77 - 138		B9H0497	08/21/2019	08/21/19 17:40	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-40

Lab ID: 1903058-08

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	0.05	1	B9H0424	08/19/2019	08/19/19 23:52	
Surrogate: 1,2-Dichlorobenzene-d4	68.6 %		22 - 117		B9H0424	08/19/2019	08/19/19 23:52	
Surrogate: 2-Fluorobiphenyl	70.1 %		20 - 131		B9H0424	08/19/2019	08/19/19 23:52	
Surrogate: 4-Terphenyl-d14	60.2 %		24 - 135		B9H0424	08/19/2019	08/19/19 23:52	
Surrogate: Nitrobenzene-d5	78.9 %		6 - 124		B9H0424	08/19/2019	08/19/19 23:52	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-09

Lab ID: 1903058-09

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 18:04	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0497	08/21/2019	08/21/19 18:04	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0497	08/21/2019	08/21/19 18:04	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0497	08/21/2019	08/21/19 18:04	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 18:04	
1,1-Dichloroethene	0.78	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 18:04	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 18:04	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0497	08/21/2019	08/21/19 18:04	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0497	08/21/2019	08/21/19 18:04	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 18:04	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 18:04	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 18:04	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0497	08/21/2019	08/21/19 18:04	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 18:04	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 18:04	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 18:04	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 18:04	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 18:04	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 18:04	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 18:04	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0497	08/21/2019	08/21/19 18:04	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 18:04	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 18:04	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 18:04	
Benzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 18:04	
Bromobenzene	ND	0.50	0.21	1	B9H0497	08/21/2019	08/21/19 18:04	
Bromodichloromethane	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 18:04	
Bromoform	ND	0.50	0.20	1	B9H0497	08/21/2019	08/21/19 18:04	
Bromomethane	ND	0.50	0.17	1	B9H0497	08/21/2019	08/21/19 18:04	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 18:04	
Chlorobenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 18:04	
Chloroethane	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 18:04	
Chloroform	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 18:04	
Chloromethane	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 18:04	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0497	08/21/2019	08/21/19 18:04	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 18:04	
Dibromochloromethane	ND	0.50	0.16	1	B9H0497	08/21/2019	08/21/19 18:04	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-09

Lab ID: 1903058-09

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0497	08/21/2019	08/21/19 18:04	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 18:04	
Ethylbenzene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 18:04	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0497	08/21/2019	08/21/19 18:04	
Isopropylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 18:04	
m,p-Xylene	ND	1.0	0.19	1	B9H0497	08/21/2019	08/21/19 18:04	
Methylene chloride	ND	1.0	0.71	1	B9H0497	08/21/2019	08/21/19 18:04	
n-Butylbenzene	ND	0.50	0.11	1	B9H0497	08/21/2019	08/21/19 18:04	
n-Propylbenzene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 18:04	
Naphthalene	ND	0.50	0.41	1	B9H0497	08/21/2019	08/21/19 18:04	
o-Xylene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 18:04	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 18:04	
Styrene	ND	0.50	0.13	1	B9H0497	08/21/2019	08/21/19 18:04	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 18:04	
Tetrachloroethene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 18:04	
Toluene	ND	0.50	0.12	1	B9H0497	08/21/2019	08/21/19 18:04	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0497	08/21/2019	08/21/19 18:04	
Trichloroethene	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 18:04	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0497	08/21/2019	08/21/19 18:04	
Vinyl chloride	ND	0.50	0.05	1	B9H0497	08/21/2019	08/21/19 18:04	
Surrogate: 1,2-Dichloroethane-d4	134 %		59 - 158		B9H0497	08/21/2019	08/21/19 18:04	
Surrogate: 4-Bromofluorobenzene	104 %		71 - 127		B9H0497	08/21/2019	08/21/19 18:04	
Surrogate: Dibromofluoromethane	134 %		66 - 147		B9H0497	08/21/2019	08/21/19 18:04	
Surrogate: Toluene-d8	129 %		77 - 138		B9H0497	08/21/2019	08/21/19 18:04	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-09

Lab ID: 1903058-09

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.34	0.20	0.05	1	B9H0468	08/20/2019	08/20/19 18:50	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>81.4 %</i>		<i>22 - 117</i>		B9H0468	08/20/2019	<i>08/20/19 18:50</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>84.5 %</i>		<i>20 - 131</i>		B9H0468	08/20/2019	<i>08/20/19 18:50</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>86.4 %</i>		<i>24 - 135</i>		B9H0468	08/20/2019	<i>08/20/19 18:50</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>99.4 %</i>		<i>6 - 124</i>		B9H0468	08/20/2019	<i>08/20/19 18:50</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

QUALITY CONTROL SECTION

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0497 - MSVOA_LL_W

Blank (B9H0497-BLK1)

Prepared: 8/21/2019 Analyzed: 8/21/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,1,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0497 - MSVOA_LL_W (continued)

Blank (B9H0497-BLK1) - Continued

Prepared: 8/21/2019 Analyzed: 8/21/2019

Ethylbenzene	ND	0.50	0.13						
Hexachlorobutadiene	ND	0.50	0.15						
Isopropylbenzene	ND	0.50	0.10						
m,p-Xylene	ND	1.0	0.19						
Methylene chloride	1.00000	1.0	0.71						B
n-Butylbenzene	ND	0.50	0.11						
n-Propylbenzene	ND	0.50	0.10						
Naphthalene	ND	0.50	0.41						
o-Xylene	ND	0.50	0.13						
sec-Butylbenzene	ND	0.50	0.09						
Styrene	ND	0.50	0.13						
tert-Butylbenzene	ND	0.50	0.09						
Tetrachloroethene	ND	0.50	0.10						
Toluene	ND	0.50	0.12						
trans-1,2-Dichloroethene	ND	0.50	0.09						
Trichloroethene	ND	0.50	0.10						
Trichlorofluoromethane	ND	0.50	0.10						
Vinyl chloride	ND	0.50	0.05						
Surrogate: 1,2-Dichloroethane-d4	30.27			25.0000		121	59 - 158		
Surrogate: 4-Bromofluorobenzene	25.27			25.0000		101	71 - 127		
Surrogate: Dibromofluoromethane	30.97			25.0000		124	66 - 147		
Surrogate: Toluene-d8	29.34			25.0000		117	77 - 138		

LCS (B9H0497-BS1)

Prepared: 8/21/2019 Analyzed: 8/21/2019

1,1,1,2-Tetrachloroethane	18.3700	0.50	0.11	20.0000		91.8	71 - 133
1,1,1-Trichloroethane	19.5400	0.50	0.07	20.0000		97.7	62 - 124
1,1,2,2-Tetrachloroethane	16.8600	0.50	0.36	20.0000		84.3	50 - 131
1,1,2-Trichloroethane	17.8100	0.50	0.25	20.0000		89.0	77 - 121
1,1-Dichloroethane	20.7900	0.50	0.09	20.0000		104	52 - 130
1,1-Dichloroethene	20.9600	0.50	0.13	20.0000		105	61 - 136
1,1-Dichloropropene	20.0400	0.50	0.13	20.0000		100	80 - 128
1,2,3-Trichloropropane	16.4400	0.50	0.39	20.0000		82.2	59 - 126
1,2,3-Trichlorobenzene	17.5500	0.50	0.18	20.0000		87.8	69 - 138
1,2,4-Trichlorobenzene	17.3200	0.50	0.16	20.0000		86.6	78 - 125
1,2,4-Trimethylbenzene	19.7500	0.50	0.14	20.0000		98.8	70 - 126
1,2-Dibromo-3-chloropropane	15.1500	0.50	0.41	20.0000		75.8	58 - 127
1,2-Dibromoethane	17.6500	0.50	0.24	20.0000		88.2	76 - 120
1,2-Dichlorobenzene	16.5100	0.50	0.20	20.0000		82.6	82 - 117
1,2-Dichloroethane	19.1500	0.50	0.20	20.0000		95.8	66 - 126
1,2-Dichloropropane	17.9500	0.50	0.15	20.0000		89.8	70 - 117
1,3,5-Trimethylbenzene	19.5600	0.50	0.13	20.0000		97.8	71 - 125



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0497 - MSVOA_LL_W (continued)

LCS (B9H0497-BS1) - Continued

Prepared: 8/21/2019 Analyzed: 8/21/2019

1,3-Dichlorobenzene	17.5600	0.50	0.16	20.0000		87.8	81 - 116		
1,3-Dichloropropane	16.8800	0.50	0.21	20.0000		84.4	69 - 124		
1,4-Dichlorobenzene	18.4700	0.50	0.17	20.0000		92.4	80 - 114		
2,2-Dichloropropane	23.5200	0.50	0.38	20.0000		118	58 - 132		
2-Chlorotoluene	18.6100	0.50	0.11	20.0000		93.0	71 - 119		
4-Chlorotoluene	18.7800	0.50	0.12	20.0000		93.9	72 - 122		
4-Isopropyltoluene	19.9600	0.50	0.11	20.0000		99.8	69 - 126		
Benzene	38.1100	0.50	0.13	40.0000		95.3	80 - 116		
Bromobenzene	18.0700	0.50	0.21	20.0000		90.4	77 - 118		
Bromodichloromethane	18.5400	0.50	0.14	20.0000		92.7	73 - 118		
Bromoform	16.1700	0.50	0.20	20.0000		80.8	65 - 133		
Bromomethane	21.5000	0.50	0.17	20.0000		108	7 - 205		
Carbon tetrachloride	19.1700	0.50	0.09	20.0000		95.8	63 - 133		
Chlorobenzene	18.5300	0.50	0.13	20.0000		92.6	86 - 113		
Chloroethane	19.9000	0.50	0.15	20.0000		99.5	66 - 141		
Chloroform	20.2800	0.50	0.11	20.0000		101	63 - 127		
Chloromethane	19.0200	0.50	0.12	20.0000		95.1	0 - 207		
cis-1,2-Dichloroethene	20.2400	0.50	0.14	20.0000		101	64 - 126		
cis-1,3-Dichloropropene	21.5100	0.50	0.13	20.0000		108	70 - 141		
Dibromochloromethane	16.9200	0.50	0.16	20.0000		84.6	67 - 135		
Dibromomethane	18.1200	0.50	0.19	20.0000		90.6	74 - 118		
Dichlorodifluoromethane	21.4400	0.50	0.05	20.0000		107	14 - 181		
Ethylbenzene	35.6300	0.50	0.13	40.0000		89.1	77 - 118		
Hexachlorobutadiene	19.3100	0.50	0.15	20.0000		96.6	66 - 125		
Isopropylbenzene	20.9400	0.50	0.10	20.0000		105	68 - 137		
m,p-Xylene	38.1200	1.0	0.19	40.0000		95.3	78 - 126		
Methylene chloride	23.5600	1.0	0.71	20.0000		118	51 - 149		B
n-Butylbenzene	20.1400	0.50	0.11	20.0000		101	63 - 127		
n-Propylbenzene	19.4700	0.50	0.10	20.0000		97.4	69 - 124		
Naphthalene	14.4900	0.50	0.41	20.0000		72.4	60 - 126		
o-Xylene	38.2700	0.50	0.13	40.0000		95.7	79 - 126		
sec-Butylbenzene	19.8100	0.50	0.09	20.0000		99.0	69 - 124		
Styrene	19.1200	0.50	0.13	20.0000		95.6	80 - 127		
tert-Butylbenzene	19.8200	0.50	0.09	20.0000		99.1	71 - 124		
Tetrachloroethene	17.5500	0.50	0.10	20.0000		87.8	73 - 129		
Toluene	38.3400	0.50	0.12	40.0000		95.8	78 - 121		
trans-1,2-Dichloroethene	20.1900	0.50	0.09	20.0000		101	58 - 141		
Trichloroethene	17.7900	0.50	0.10	20.0000		89.0	73 - 126		
Trichlorofluoromethane	20.1300	0.50	0.10	20.0000		101	62 - 146		
Vinyl chloride	21.3800	0.50	0.05	20.0000		107	61 - 137		
Surrogate: 1,2-Dichloroethane-d4	25.94			25.0000		104	59 - 158		



Certificate of Analysis

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Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0497 - MSVOA_LL_W (continued)

LCS (B9H0497-BS1) - Continued

Prepared: 8/21/2019 Analyzed: 8/21/2019

Surrogate: 4-Bromofluorobenzene	26.63		25.0000		107	71 - 127			
Surrogate: Dibromofluoromethane	26.54		25.0000		106	66 - 147			
Surrogate: Toluene-d8	27.51		25.0000		110	77 - 138			

LCS Dup (B9H0497-BSD1)

Prepared: 8/21/2019 Analyzed: 8/21/2019

1,1,1,2-Tetrachloroethane	20.9200	0.50	0.11	20.0000	105	71 - 133	13.0	20	
1,1,1-Trichloroethane	23.0400	0.50	0.07	20.0000	115	62 - 124	16.4	20	
1,1,2,2-Tetrachloroethane	21.3900	0.50	0.36	20.0000	107	50 - 131	23.7	20	R
1,1,2-Trichloroethane	22.6900	0.50	0.25	20.0000	113	77 - 121	24.1	20	R
1,1-Dichloroethane	24.7100	0.50	0.09	20.0000	124	52 - 130	17.2	20	
1,1-Dichloroethene	24.7200	0.50	0.13	20.0000	124	61 - 136	16.5	20	
1,1-Dichloropropene	22.6200	0.50	0.13	20.0000	113	80 - 128	12.1	20	
1,2,3-Trichloropropane	20.2100	0.50	0.39	20.0000	101	59 - 126	20.6	20	R
1,2,3-Trichlorobenzene	20.6100	0.50	0.18	20.0000	103	69 - 138	16.0	20	
1,2,4-Trichlorobenzene	19.8000	0.50	0.16	20.0000	99.0	78 - 125	13.4	20	
1,2,4-Trimethylbenzene	21.8000	0.50	0.14	20.0000	109	70 - 126	9.87	20	
1,2-Dibromo-3-chloropropane	19.8500	0.50	0.41	20.0000	99.2	58 - 127	26.9	20	R
1,2-Dibromoethane	21.9800	0.50	0.24	20.0000	110	76 - 120	21.9	20	R
1,2-Dichlorobenzene	18.8700	0.50	0.20	20.0000	94.4	82 - 117	13.3	20	
1,2-Dichloroethane	22.9200	0.50	0.20	20.0000	115	66 - 126	17.9	20	
1,2-Dichloropropane	20.9000	0.50	0.15	20.0000	104	70 - 117	15.2	20	
1,3,5-Trimethylbenzene	21.4000	0.50	0.13	20.0000	107	71 - 125	8.98	20	
1,3-Dichlorobenzene	19.7700	0.50	0.16	20.0000	98.8	81 - 116	11.8	20	
1,3-Dichloropropane	20.6200	0.50	0.21	20.0000	103	69 - 124	19.9	20	
1,4-Dichlorobenzene	20.3300	0.50	0.17	20.0000	102	80 - 114	9.59	20	
2,2-Dichloropropane	27.7700	0.50	0.38	20.0000	139	58 - 132	16.6	20	L4
2-Chlorotoluene	20.5800	0.50	0.11	20.0000	103	71 - 119	10.1	20	
4-Chlorotoluene	20.6000	0.50	0.12	20.0000	103	72 - 122	9.24	20	
4-Isopropyltoluene	21.5600	0.50	0.11	20.0000	108	69 - 126	7.71	20	
Benzene	43.4900	0.50	0.13	40.0000	109	80 - 116	13.2	20	
Bromobenzene	20.6600	0.50	0.21	20.0000	103	77 - 118	13.4	20	
Bromodichloromethane	22.2200	0.50	0.14	20.0000	111	73 - 118	18.1	20	
Bromoform	18.9800	0.50	0.20	20.0000	94.9	65 - 133	16.0	20	
Bromomethane	23.1400	0.50	0.17	20.0000	116	7 - 205	7.35	20	
Carbon tetrachloride	21.7900	0.50	0.09	20.0000	109	63 - 133	12.8	20	
Chlorobenzene	20.8000	0.50	0.13	20.0000	104	86 - 113	11.5	20	
Chloroethane	20.9800	0.50	0.15	20.0000	105	66 - 141	5.28	20	
Chloroform	24.9300	0.50	0.11	20.0000	125	63 - 127	20.6	20	R
Chloromethane	18.7500	0.50	0.12	20.0000	93.8	0 - 207	1.43	20	
cis-1,2-Dichloroethene	24.5700	0.50	0.14	20.0000	123	64 - 126	19.3	20	
cis-1,3-Dichloropropene	25.7400	0.50	0.13	20.0000	129	70 - 141	17.9	20	
Dibromochloromethane	20.1400	0.50	0.16	20.0000	101	67 - 135	17.4	20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0497 - MSVOA_LL_W (continued)

LCS Dup (B9H0497-BSD1) - Continued

Prepared: 8/21/2019 Analyzed: 8/21/2019

Dibromomethane	22.1000	0.50	0.19	20.0000		110	74 - 118	19.8	20	
Dichlorodifluoromethane	21.0700	0.50	0.05	20.0000		105	14 - 181	1.74	20	
Ethylbenzene	39.8600	0.50	0.13	40.0000		99.6	77 - 118	11.2	20	
Hexachlorobutadiene	20.9800	0.50	0.15	20.0000		105	66 - 125	8.29	20	
Isopropylbenzene	22.5000	0.50	0.10	20.0000		112	68 - 137	7.18	20	
m,p-Xylene	43.1700	1.0	0.19	40.0000		108	78 - 126	12.4	20	
Methylene chloride	29.2800	1.0	0.71	20.0000		146	51 - 149	21.7	20	R, B
n-Butylbenzene	21.4600	0.50	0.11	20.0000		107	63 - 127	6.35	20	
n-Propylbenzene	21.0200	0.50	0.10	20.0000		105	69 - 124	7.66	20	
Naphthalene	17.9800	0.50	0.41	20.0000		89.9	60 - 126	21.5	20	R
o-Xylene	43.1100	0.50	0.13	40.0000		108	79 - 126	11.9	20	
sec-Butylbenzene	21.5800	0.50	0.09	20.0000		108	69 - 124	8.55	20	
Styrene	21.7300	0.50	0.13	20.0000		109	80 - 127	12.8	20	
tert-Butylbenzene	21.7000	0.50	0.09	20.0000		108	71 - 124	9.06	20	
Tetrachloroethene	19.7700	0.50	0.10	20.0000		98.8	73 - 129	11.9	20	
Toluene	44.2000	0.50	0.12	40.0000		110	78 - 121	14.2	20	
trans-1,2-Dichloroethene	24.2400	0.50	0.09	20.0000		121	58 - 141	18.2	20	
Trichloroethene	20.5200	0.50	0.10	20.0000		103	73 - 126	14.3	20	
Trichlorofluoromethane	20.7700	0.50	0.10	20.0000		104	62 - 146	3.13	20	
Vinyl chloride	21.2700	0.50	0.05	20.0000		106	61 - 137	0.516	20	
Surrogate: 1,2-Dichloroethane-d4	28.10			25.0000		112	59 - 158			
Surrogate: 4-Bromofluorobenzene	26.09			25.0000		104	71 - 127			
Surrogate: Dibromofluoromethane	26.63			25.0000		107	66 - 147			
Surrogate: Toluene-d8	27.80			25.0000		111	77 - 138			

Matrix Spike (B9H0497-MS1)

Source: 1903058-03RE1

Prepared: 8/21/2019 Analyzed: 8/21/2019

1,1,1,2-Tetrachloroethane	1880.00	50	11	2000.00	127.000	87.6	71 - 133			
1,1,1-Trichloroethane	2078.00	50	7.4	2000.00	ND	104	62 - 124			
1,1,2,2-Tetrachloroethane	1898.00	50	36	2000.00	ND	94.9	50 - 131			
1,1,2-Trichloroethane	2288.00	50	25	2000.00	ND	114	77 - 121			
1,1-Dichloroethane	2241.00	50	9.2	2000.00	41.0000	110	52 - 130			
1,1-Dichloroethene	2884.00	50	13	2000.00	968.000	95.8	61 - 136			
1,1-Dichloropropene	2048.00	50	13	2000.00	ND	102	80 - 128			
1,2,3-Trichloropropane	1783.00	50	39	2000.00	ND	89.2	59 - 126			
1,2,3-Trichlorobenzene	1773.00	50	18	2000.00	ND	88.6	69 - 138			
1,2,4-Trichlorobenzene	1630.00	50	16	2000.00	ND	81.5	78 - 125			
1,2,4-Trimethylbenzene	1798.00	50	14	2000.00	ND	89.9	70 - 126			
1,2-Dibromo-3-chloropropane	1756.00	50	41	2000.00	226.000	76.5	58 - 127			
1,2-Dibromoethane	2166.00	50	24	2000.00	37.0000	106	76 - 120			
1,2-Dichlorobenzene	1686.00	50	20	2000.00	ND	84.3	82 - 117			
1,2-Dichloroethane	2319.00	50	20	2000.00	ND	116	66 - 126			



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Reported : 08/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0497 - MSVOA_LL_W (continued)

Matrix Spike (B9H0497-MS1) - Continued

Source: 1903058-03RE1

Prepared: 8/21/2019 Analyzed: 8/21/2019

1,2-Dichloropropane	2021.00	50	15	2000.00	ND	101	70 - 117			
1,3,5-Trimethylbenzene	1789.00	50	13	2000.00	ND	89.4	71 - 125			
1,3-Dichlorobenzene	1680.00	50	16	2000.00	ND	84.0	81 - 116			
1,3-Dichloropropane	1835.00	50	21	2000.00	84.0000	87.6	69 - 124			
1,4-Dichlorobenzene	1733.00	50	17	2000.00	32.0000	85.0	80 - 114			
2,2-Dichloropropane	2201.00	50	38	2000.00	ND	110	58 - 132			
2-Chlorotoluene	1719.00	50	11	2000.00	ND	86.0	71 - 119			
4-Chlorotoluene	1712.00	50	12	2000.00	ND	85.6	72 - 122			
4-Isopropyltoluene	1742.00	50	11	2000.00	ND	87.1	69 - 126			
Benzene	4069.00	50	13	4000.00	ND	102	80 - 116			
Bromobenzene	1742.00	50	21	2000.00	79.0000	83.2	77 - 118			
Bromodichloromethane	2143.00	50	14	2000.00	44.0000	105	73 - 118			
Bromoform	1846.00	50	20	2000.00	199.000	82.4	65 - 133			
Bromomethane	2199.00	50	17	2000.00	ND	110	7 - 205			
Carbon tetrachloride	2053.00	50	9.2	2000.00	ND	103	63 - 133			
Chlorobenzene	1887.00	50	13	2000.00	25.0000	93.1	81 - 115			
Chloroethane	2207.00	50	15	2000.00	ND	110	66 - 141			
Chloroform	2309.00	50	11	2000.00	ND	115	63 - 127			
Chloromethane	1825.00	50	12	2000.00	ND	91.2	0 - 207			
cis-1,2-Dichloroethene	2177.00	50	14	2000.00	43.0000	107	64 - 126			
cis-1,3-Dichloropropene	2237.00	50	13	2000.00	ND	112	70 - 141			
Dibromochloromethane	1767.00	50	16	2000.00	170.000	79.8	67 - 135			
Dibromomethane	2247.00	50	19	2000.00	ND	112	74 - 118			
Dichlorodifluoromethane	1932.00	50	5.4	2000.00	ND	96.6	14 - 181			
Ethylbenzene	3583.00	50	13	4000.00	ND	89.6	77 - 118			
Hexachlorobutadiene	1623.00	50	15	2000.00	143.000	74.0	66 - 125			
Isopropylbenzene	1873.00	50	10	2000.00	ND	93.6	68 - 137			
m,p-Xylene	3798.00	100	19	4000.00	ND	95.0	78 - 126			
Methylene chloride	2781.00	100	71	2000.00	ND	139	51 - 149			B
n-Butylbenzene	1692.00	50	11	2000.00	ND	84.6	63 - 127			
n-Propylbenzene	1761.00	50	10	2000.00	ND	88.0	69 - 124			
Naphthalene	1496.00	50	41	2000.00	174.000	66.1	60 - 126			
o-Xylene	3862.00	50	13	4000.00	ND	96.6	79 - 126			
sec-Butylbenzene	1774.00	50	9.0	2000.00	ND	88.7	69 - 124			
Styrene	1949.00	50	13	2000.00	ND	97.4	80 - 127			
tert-Butylbenzene	1792.00	50	9.0	2000.00	ND	89.6	71 - 124			
Tetrachloroethene	1715.00	50	10	2000.00	ND	85.8	73 - 129			
Toluene	4198.00	50	12	4000.00	ND	105	78 - 121			
trans-1,2-Dichloroethene	2057.00	50	9.2	2000.00	42.0000	101	58 - 141			
Trichloroethene	1918.00	50	9.9	2000.00	12.0000	95.3	73 - 126			
Trichlorofluoromethane	2250.00	50	9.8	2000.00	ND	112	62 - 146			
Vinyl chloride	2093.00	50	5.3	2000.00	ND	105	61 - 137			



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0497 - MSVOA_LL_W (continued)

Matrix Spike (B9H0497-MS1) - Continued

Source: 1903058-03RE1

Prepared: 8/21/2019 Analyzed: 8/21/2019

Surrogate: 1,2-Dichloroethane-d4	30.48		25.0000		122	59 - 158			
Surrogate: 4-Bromofluorobenzene	26.27		25.0000		105	71 - 127			
Surrogate: Dibromofluoromethane	29.87		25.0000		119	66 - 147			
Surrogate: Toluene-d8	29.26		25.0000		117	77 - 138			

Matrix Spike Dup (B9H0497-MSD1)

Source: 1903058-03RE1

Prepared: 8/21/2019 Analyzed: 8/21/2019

1,1,1,2-Tetrachloroethane	1958.00	50	11	2000.00	127.000	91.6	71 - 133	4.06	20
1,1,1-Trichloroethane	2213.00	50	7.4	2000.00	ND	111	62 - 124	6.29	20
1,1,2,2-Tetrachloroethane	1988.00	50	36	2000.00	ND	99.4	50 - 131	4.63	20
1,1,2-Trichloroethane	2194.00	50	25	2000.00	ND	110	77 - 121	4.19	20
1,1-Dichloroethane	2380.00	50	9.2	2000.00	41.0000	117	52 - 130	6.02	20
1,1-Dichloroethene	3107.00	50	13	2000.00	968.000	107	61 - 136	7.44	20
1,1-Dichloropropene	2128.00	50	13	2000.00	ND	106	80 - 128	3.83	20
1,2,3-Trichloropropane	1958.00	50	39	2000.00	ND	97.9	59 - 126	9.36	20
1,2,3-Trichlorobenzene	1842.00	50	18	2000.00	ND	92.1	69 - 138	3.82	20
1,2,4-Trichlorobenzene	1743.00	50	16	2000.00	ND	87.2	78 - 125	6.70	20
1,2,4-Trimethylbenzene	1897.00	50	14	2000.00	ND	94.8	70 - 126	5.36	20
1,2-Dibromo-3-chloropropane	1929.00	50	41	2000.00	226.000	85.2	58 - 127	9.39	20
1,2-Dibromoethane	2180.00	50	24	2000.00	37.0000	107	76 - 120	0.644	20
1,2-Dichlorobenzene	1751.00	50	20	2000.00	ND	87.6	82 - 117	3.78	20
1,2-Dichloroethane	2218.00	50	20	2000.00	ND	111	66 - 126	4.45	20
1,2-Dichloropropane	2046.00	50	15	2000.00	ND	102	70 - 117	1.23	20
1,3,5-Trimethylbenzene	1864.00	50	13	2000.00	ND	93.2	71 - 125	4.11	20
1,3-Dichlorobenzene	1752.00	50	16	2000.00	ND	87.6	81 - 116	4.20	20
1,3-Dichloropropane	1875.00	50	21	2000.00	84.0000	89.6	69 - 124	2.16	20
1,4-Dichlorobenzene	1850.00	50	17	2000.00	32.0000	90.9	80 - 114	6.53	20
2,2-Dichloropropane	2236.00	50	38	2000.00	ND	112	58 - 132	1.58	20
2-Chlorotoluene	1761.00	50	11	2000.00	ND	88.0	71 - 119	2.41	20
4-Chlorotoluene	1793.00	50	12	2000.00	ND	89.6	72 - 122	4.62	20
4-Isopropyltoluene	1866.00	50	11	2000.00	ND	93.3	69 - 126	6.87	20
Benzene	4063.00	50	13	4000.00	ND	102	80 - 116	0.148	20
Bromobenzene	1795.00	50	21	2000.00	79.0000	85.8	77 - 118	3.00	20
Bromodichloromethane	2132.00	50	14	2000.00	44.0000	104	73 - 118	0.515	20
Bromoform	1888.00	50	20	2000.00	199.000	84.4	65 - 133	2.25	20
Bromomethane	2304.00	50	17	2000.00	ND	115	7 - 205	4.66	20
Carbon tetrachloride	2097.00	50	9.2	2000.00	ND	105	63 - 133	2.12	20
Chlorobenzene	1926.00	50	13	2000.00	25.0000	95.0	81 - 115	2.05	20
Chloroethane	2319.00	50	15	2000.00	ND	116	66 - 141	4.95	20
Chloroform	2398.00	50	11	2000.00	ND	120	63 - 127	3.78	20
Chloromethane	1848.00	50	12	2000.00	ND	92.4	0 - 207	1.25	20
cis-1,2-Dichloroethene	2299.00	50	14	2000.00	43.0000	113	64 - 126	5.45	20



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0497 - MSVOA_LL_W (continued)

Matrix Spike Dup (B9H0497-MSD1) - Continued

Source: 1903058-03RE1

Prepared: 8/21/2019 Analyzed: 8/21/2019

cis-1,3-Dichloropropene	2248.00	50	13	2000.00	ND	112	70 - 141	0.491	20	
Dibromochloromethane	1896.00	50	16	2000.00	170.000	86.3	67 - 135	7.04	20	
Dibromomethane	2182.00	50	19	2000.00	ND	109	74 - 118	2.94	20	
Dichlorodifluoromethane	1868.00	50	5.4	2000.00	ND	93.4	14 - 181	3.37	20	
Ethylbenzene	3629.00	50	13	4000.00	ND	90.7	77 - 118	1.28	20	
Hexachlorobutadiene	1789.00	50	15	2000.00	143.000	82.3	66 - 125	9.73	20	
Isopropylbenzene	1944.00	50	10	2000.00	ND	97.2	68 - 137	3.72	20	
m,p-Xylene	3878.00	100	19	4000.00	ND	97.0	78 - 126	2.08	20	
Methylene chloride	2901.00	100	71	2000.00	ND	145	51 - 149	4.22	20	B
n-Butylbenzene	1805.00	50	11	2000.00	ND	90.2	63 - 127	6.46	20	
n-Propylbenzene	1826.00	50	10	2000.00	ND	91.3	69 - 124	3.62	20	
Naphthalene	1634.00	50	41	2000.00	174.000	73.0	60 - 126	8.82	20	
o-Xylene	3929.00	50	13	4000.00	ND	98.2	79 - 126	1.72	20	
sec-Butylbenzene	1869.00	50	9.0	2000.00	ND	93.4	69 - 124	5.22	20	
Styrene	1982.00	50	13	2000.00	ND	99.1	80 - 127	1.68	20	
tert-Butylbenzene	1858.00	50	9.0	2000.00	ND	92.9	71 - 124	3.62	20	
Tetrachloroethene	1781.00	50	10	2000.00	ND	89.0	73 - 129	3.78	20	
Toluene	4185.00	50	12	4000.00	ND	105	78 - 121	0.310	20	
trans-1,2-Dichloroethene	2275.00	50	9.2	2000.00	42.0000	112	58 - 141	10.1	20	
Trichloroethene	1905.00	50	9.9	2000.00	12.0000	94.6	73 - 126	0.680	20	
Trichlorofluoromethane	2252.00	50	9.8	2000.00	ND	113	62 - 146	0.0888	20	
Vinyl chloride	2143.00	50	5.3	2000.00	ND	107	61 - 137	2.36	20	

Surrogate: 1,2-Dichloroethane-d4	30.16			25.0000		121	59 - 158			
Surrogate: 4-Bromofluorobenzene	26.40			25.0000		106	71 - 127			
Surrogate: Dibromofluoromethane	30.29			25.0000		121	66 - 147			
Surrogate: Toluene-d8	28.65			25.0000		115	77 - 138			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0467 - MSSEMI_W

Blank (B9H0467-BLK1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,4-Dioxane	ND	2.0	0.84							
Surrogate: 1,2-Dichlorobenzene-d	63.15			100.000		63.2	34 - 188			
Surrogate: 2-Fluorobiphenyl	65.01			100.000		65.0	39 - 108			
Surrogate: 4-Terphenyl-d14	99.03			100.000		99.0	71 - 131			
Surrogate: Nitrobenzene-d5	70.22			100.000		70.2	32 - 106			

LCS (B9H0467-BS1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,4-Dioxane	114.230	2.0	0.84	100.000		114	40 - 159			
Surrogate: 1,2-Dichlorobenzene-d	59.43			100.000		59.4	34 - 188			
Surrogate: 2-Fluorobiphenyl	71.59			100.000		71.6	39 - 108			
Surrogate: 4-Terphenyl-d14	101.4			100.000		101	71 - 131			
Surrogate: Nitrobenzene-d5	72.62			100.000		72.6	32 - 106			

Matrix Spike (B9H0467-MS1)

Source: 1903058-03

Prepared: 8/20/2019 Analyzed: 8/21/2019

1,4-Dioxane	612.920	4.0	1.7	100.000	507.880	105	40 - 159			
Surrogate: 1,2-Dichlorobenzene-d	64.66			100.000		64.7	34 - 188			
Surrogate: 2-Fluorobiphenyl	71.68			100.000		71.7	39 - 108			
Surrogate: 4-Terphenyl-d14	100.2			100.000		100	71 - 131			
Surrogate: Nitrobenzene-d5	72.84			100.000		72.8	32 - 106			

Matrix Spike Dup (B9H0467-MSD1)

Source: 1903058-03

Prepared: 8/20/2019 Analyzed: 8/21/2019

1,4-Dioxane	595.780	4.0	1.7	100.000	507.880	87.9	40 - 159	2.84	20	
Surrogate: 1,2-Dichlorobenzene-d	69.24			100.000		69.2	34 - 188			
Surrogate: 2-Fluorobiphenyl	80.34			100.000		80.3	39 - 108			
Surrogate: 4-Terphenyl-d14	112.8			100.000		113	71 - 131			
Surrogate: Nitrobenzene-d5	81.52			100.000		81.5	32 - 106			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0424 - EPA 1311_W (SVOA_GCMS)

Blank (B9H0424-BLK1)

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,4-Dioxane	ND	0.20	0.05							
Surrogate: 1,2-Dichlorobenzene-d	0.8044			1.00000		80.4	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.8500			1.00000		85.0	20 - 131			
Surrogate: 4-Terphenyl-d14	1.119			1.00000		112	24 - 135			
Surrogate: Nitrobenzene-d5	0.9408			1.00000		94.1	6 - 124			

LCS (B9H0424-BS1)

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,4-Dioxane	1.16743	0.20	0.05	1.00000		117	64 - 129			
Surrogate: 1,2-Dichlorobenzene-d	0.6379			1.00000		63.8	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.6706			1.00000		67.1	20 - 131			
Surrogate: 4-Terphenyl-d14	0.8311			1.00000		83.1	24 - 135			
Surrogate: Nitrobenzene-d5	0.7616			1.00000		76.2	6 - 124			

Matrix Spike (B9H0424-MS1)

Source: 1903038-04

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,4-Dioxane	2.16512	0.20	0.05	1.00000	0.839590	133	56 - 128			M2
Surrogate: 1,2-Dichlorobenzene-d	0.9112			1.00000		91.1	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.9417			1.00000		94.2	20 - 131			
Surrogate: 4-Terphenyl-d14	0.9509			1.00000		95.1	24 - 135			
Surrogate: Nitrobenzene-d5	1.080			1.00000		108	6 - 124			

Matrix Spike Dup (B9H0424-MSD1)

Source: 1903038-04

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,4-Dioxane	2.06784	0.20	0.05	1.00000	0.839590	123	56 - 128	4.60	20	
Surrogate: 1,2-Dichlorobenzene-d	0.9200			1.00000		92.0	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.9489			1.00000		94.9	20 - 131			
Surrogate: 4-Terphenyl-d14	0.9664			1.00000		96.6	24 - 135			
Surrogate: Nitrobenzene-d5	1.107			1.00000		111	6 - 124			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0468 - EPA 1311_W (SVOA_GCMS)

Blank (B9H0468-BLK1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,4-Dioxane	ND	0.20	0.05						
Surrogate: 1,2-Dichlorobenzene-d	0.8254			1.00000		82.5	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.9087			1.00000		90.9	20 - 131		
Surrogate: 4-Terphenyl-d14	1.063			1.00000		106	24 - 135		
Surrogate: Nitrobenzene-d5	0.9430			1.00000		94.3	6 - 124		

LCS (B9H0468-BS1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,4-Dioxane	1.23171	0.20	0.05	1.00000		123	64 - 129		
Surrogate: 1,2-Dichlorobenzene-d	0.5679			1.00000		56.8	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.6079			1.00000		60.8	20 - 131		
Surrogate: 4-Terphenyl-d14	0.7082			1.00000		70.8	24 - 135		
Surrogate: Nitrobenzene-d5	0.6828			1.00000		68.3	6 - 124		

LCS Dup (B9H0468-BSD1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,4-Dioxane	1.18038	0.20	0.05	1.00000		118	64 - 129	4.26	20
Surrogate: 1,2-Dichlorobenzene-d	0.5632			1.00000		56.3	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.6072			1.00000		60.7	20 - 131		
Surrogate: 4-Terphenyl-d14	0.7113			1.00000		71.1	24 - 135		
Surrogate: Nitrobenzene-d5	0.6796			1.00000		68.0	6 - 124		



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon FULLERTON, 532.30

Report To : Steve Netto

Reported : 08/22/2019

Notes and Definitions

R	RPD value outside acceptance criteria. Calculation is based on raw values.
M2	Matrix spike recovery outside of acceptance limit due to possible matrix interference. The analytical batch was validated by the laboratory control sample.
L4	Laboratory Control Sample outside of control limit but within Marginal Exceedance (ME) limit.
J	Analyte detected below the Practical Quantitation Limit but above or equal to the Method Detection Limit. Result is an estimated concentration.
B	Analyte detected in the associated method blank.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

8/15/19

Date: 8/13/2019
Page 1 of 2

PROJECT: Raytheon Main GETS Mid-Month Sample
FULLERTON

TASK NO.: 532.30

Project Manager Steve Netto

QA Manager Tyler Evans

Phone 858.455.6500

Fax 858.455.6533

Sampled By:

A. DONNELLY, A. JANZON

SAMPLE COLLECTION

LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prep	Hydrochloric	Nitric Acid	Sulfuric	Ice	40-ml VOC	125 mL	250 mL F	250 mL	1 L Poly	1L Amber	VOCs by	Bromate	Bromide	Alkalinity	Total Org	Total Sus	UV Abso	1,4-Diox	1,4-Diox	0 - 10	10 - 100	100 - 1,0	>1,000	STANDARD	24 hr TA	48 Hour	5 Day TA	Level IV	MS/MSD	REMARKS		
1903058-01	TB-081519	8/15/19	0800		X	X			X	3						X									X					X							
-02	MW-28		0838	X	X				X	3						X									X					X							Report J flags
	↓		↓	X					X						1								X							X							
-03	MW-21		0928	X		X			X	9						X													X	X						X	
	↓		↓	X					X						3								X						X	X						X	
-04	~~EW-22~~ EW-01		0953	X		X			X	3						X												X	X								
	↓		↓	X					X						1								X					X	X								
-05	MW-08		1351	X		X			X	3						X												X	X								
	↓		↓	X					X						1									X				X	X								
-06	MW-18		1550	X		X			X	3						X									X			X	X								
	↓		↓	X					X						1									X		X		X	X								

Total number of containers per analysis:

Total No. of Containers: 0

Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
AD only / H+A	8/15/19	ATL	8/15/19 1707
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
ATL	8/15/19 18:15	ATL	8/15/19 18:15

- ☐ No. of containers correct
☐ Received in good condition
☐ Custody seals secure
☐ Conforms to COC document

Send Results to:

Steve Netto

9171 Towne Centre Drive
Suite 275

San Diego, CA 92122

Ph: 858.455.6500

snetto@hargis.com

Instructions

- Fill out form completely and sign only after verified for completeness
- Complete in ballpoint pen. Draw one line through error, initial and date correction
- Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✗
- Note applicable preservatives, special instructions, and deviations from typical environmental samples.
- Consult project QA documents for specific instructions.

3.5°C, 4.0°C Temperature on receipt

PROJECT: Raytheon Main

TASK NO.: 532.30

Project Manager Steve Netto

QA Manager Tyler Evans

Phone 858.455.6500

Fax 858.455.6533

Sampled By:		SAMPLE COLLECTION		MATRIX		PRESERVATION		CONTAINERS		ANALYSIS REQUESTED				Expected Concentration Range (ppb) for VOA's				SPECIAL HANDLING				REMARKS		
LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)		Ice	40-ml VOA	1 L Amber	VOCs by EPA 8260B	1,4 Dioxane 8270 SIM	1,4-Dioxane 8270 MOD	10 - 10	10 - 100	100 - 1,000	>1,000	24 hr TAT	48 hr TAT	Standard TAT	Level IV Data Validation Requested		MS/MSD Requested	
190355V -07	MW-7A	8-15-09	445	X	X			X	3		X				X						X			Report J Flags
	↓	↓	↓	X				X		1		X			X					X				
	MW-40	↓	1255	X	X			X	3		X				X									
	↓	↓	↓	X				X		1		X												
	MW-04	↓	1640	X	X			X	3		X				X									
	↓	↓	↓	X				X		1		X												

Total number of containers per analysis:				Total No. of Containers:			
Relinquished By: / Company:		Date / Time	Received By: / Company		Date / Time		
A. D. Netto / H+H		8/15/09 1707	Tyler Evans / H+H		8/15/09 1707		
Relinquished By: / Company:		Date / Time	Received By: / Company		Date / Time		
Tyler Evans		8/15/09 1815	Steve Netto		8/15/09 1815		

- ☐ No. of containers correct
- ☐ Received in good condition
- ☐ Custody seals secure
- ☐ Conforms to COC document

Send Results to:
Steve Netto
9171 Towne Centre Drive
Suite 375
San Diego, CA 92122
Ph: 858.455.5400
snetto@hargis.com

Instructions

Fill out form completely and sign only after verified for completeness
Complete in ballpoint pen. Draw one line through error, initial and date correction
Indicate the number of sample containers in analytical request space; indicate choice with ✓ or x
Note applicable preservatives, special instructions, and deviations from typical environmental samples.
Consult project QA documents for specific instructions.

Temperature on receipt



August 26, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1903084
Client Reference : Raytheon Main, 532.30

Enclosed are the results for sample(s) received on August 19, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read "EC", with a small "En" written below it.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-081619	1903084-01	Lab prepared water	8/16/19 8:00	8/19/19 15:10
MW-15	1903084-02	Groundwater	8/16/19 12:03	8/19/19 15:10
MW-35C	1903084-03	Groundwater	8/16/19 12:37	8/19/19 15:10
MW-20	1903084-04	Groundwater	8/19/19 10:22	8/19/19 15:10
MW-16	1903084-05	Groundwater	8/19/19 12:59	8/19/19 15:10

CASE NARRATIVE

Results were J-flagged. "J" is used to flag those results that are between the PQL (Practical Quantitation Limit) and the calculated MDL (Method Detection Limit). Results that are "J" flagged are estimated values since it becomes difficult to accurately quantitate the analyte near the MDL.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

Client Sample ID: TB-081619

Lab ID: 1903084-01

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 18:53	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0545	08/23/2019	08/23/19 18:53	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0545	08/23/2019	08/23/19 18:53	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0545	08/23/2019	08/23/19 18:53	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 18:53	
1,1-Dichloroethene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 18:53	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 18:53	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0545	08/23/2019	08/23/19 18:53	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0545	08/23/2019	08/23/19 18:53	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0545	08/23/2019	08/23/19 18:53	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0545	08/23/2019	08/23/19 18:53	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0545	08/23/2019	08/23/19 18:53	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0545	08/23/2019	08/23/19 18:53	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0545	08/23/2019	08/23/19 18:53	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0545	08/23/2019	08/23/19 18:53	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0545	08/23/2019	08/23/19 18:53	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 18:53	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0545	08/23/2019	08/23/19 18:53	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0545	08/23/2019	08/23/19 18:53	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0545	08/23/2019	08/23/19 18:53	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0545	08/23/2019	08/23/19 18:53	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 18:53	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0545	08/23/2019	08/23/19 18:53	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 18:53	
Benzene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 18:53	
Bromobenzene	ND	0.50	0.21	1	B9H0545	08/23/2019	08/23/19 18:53	
Bromodichloromethane	ND	0.50	0.14	1	B9H0545	08/23/2019	08/23/19 18:53	
Bromoform	ND	0.50	0.20	1	B9H0545	08/23/2019	08/23/19 18:53	
Bromomethane	ND	0.50	0.17	1	B9H0545	08/23/2019	08/23/19 18:53	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 18:53	
Chlorobenzene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 18:53	
Chloroethane	ND	0.50	0.15	1	B9H0545	08/23/2019	08/23/19 18:53	
Chloroform	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 18:53	
Chloromethane	ND	0.50	0.12	1	B9H0545	08/23/2019	08/23/19 18:53	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0545	08/23/2019	08/23/19 18:53	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 18:53	
Dibromochloromethane	ND	0.50	0.16	1	B9H0545	08/23/2019	08/23/19 18:53	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

Client Sample ID: TB-081619

Lab ID: 1903084-01

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0545	08/23/2019	08/23/19 18:53	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0545	08/23/2019	08/23/19 18:53	
Ethylbenzene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 18:53	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0545	08/23/2019	08/23/19 18:53	
Isopropylbenzene	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 18:53	
m,p-Xylene	ND	1.0	0.19	1	B9H0545	08/23/2019	08/23/19 18:53	
Methylene chloride	ND	1.0	0.71	1	B9H0545	08/23/2019	08/23/19 18:53	
n-Butylbenzene	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 18:53	
n-Propylbenzene	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 18:53	
Naphthalene	ND	0.50	0.41	1	B9H0545	08/23/2019	08/23/19 18:53	
o-Xylene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 18:53	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 18:53	
Styrene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 18:53	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 18:53	
Tetrachloroethene	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 18:53	
Toluene	ND	0.50	0.12	1	B9H0545	08/23/2019	08/23/19 18:53	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 18:53	
Trichloroethene	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 18:53	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 18:53	
Vinyl chloride	ND	0.50	0.05	1	B9H0545	08/23/2019	08/23/19 18:53	
Surrogate: 1,2-Dichloroethane-d4	143 %		59 - 158		B9H0545	08/23/2019	08/23/19 18:53	
Surrogate: 4-Bromofluorobenzene	96.4 %		71 - 127		B9H0545	08/23/2019	08/23/19 18:53	
Surrogate: Dibromofluoromethane	141 %		66 - 147		B9H0545	08/23/2019	08/23/19 18:53	
Surrogate: Toluene-d8	130 %		77 - 138		B9H0545	08/23/2019	08/23/19 18:53	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

Client Sample ID: MW-15

Lab ID: 1903084-02

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 19:17	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0545	08/23/2019	08/23/19 19:17	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0545	08/23/2019	08/23/19 19:17	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0545	08/23/2019	08/23/19 19:17	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 19:17	
1,1-Dichloroethene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:17	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:17	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0545	08/23/2019	08/23/19 19:17	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0545	08/23/2019	08/23/19 19:17	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0545	08/23/2019	08/23/19 19:17	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0545	08/23/2019	08/23/19 19:17	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0545	08/23/2019	08/23/19 19:17	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0545	08/23/2019	08/23/19 19:17	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0545	08/23/2019	08/23/19 19:17	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0545	08/23/2019	08/23/19 19:17	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0545	08/23/2019	08/23/19 19:17	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:17	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0545	08/23/2019	08/23/19 19:17	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0545	08/23/2019	08/23/19 19:17	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0545	08/23/2019	08/23/19 19:17	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0545	08/23/2019	08/23/19 19:17	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 19:17	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0545	08/23/2019	08/23/19 19:17	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 19:17	
Benzene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:17	
Bromobenzene	ND	0.50	0.21	1	B9H0545	08/23/2019	08/23/19 19:17	
Bromodichloromethane	ND	0.50	0.14	1	B9H0545	08/23/2019	08/23/19 19:17	
Bromoform	ND	0.50	0.20	1	B9H0545	08/23/2019	08/23/19 19:17	
Bromomethane	ND	0.50	0.17	1	B9H0545	08/23/2019	08/23/19 19:17	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 19:17	
Chlorobenzene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:17	
Chloroethane	ND	0.50	0.15	1	B9H0545	08/23/2019	08/23/19 19:17	
Chloroform	0.17	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 19:17	J
Chloromethane	ND	0.50	0.12	1	B9H0545	08/23/2019	08/23/19 19:17	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0545	08/23/2019	08/23/19 19:17	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:17	
Dibromochloromethane	ND	0.50	0.16	1	B9H0545	08/23/2019	08/23/19 19:17	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

Client Sample ID: MW-15

Lab ID: 1903084-02

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0545	08/23/2019	08/23/19 19:17	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0545	08/23/2019	08/23/19 19:17	
Ethylbenzene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:17	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0545	08/23/2019	08/23/19 19:17	
Isopropylbenzene	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 19:17	
m,p-Xylene	ND	1.0	0.19	1	B9H0545	08/23/2019	08/23/19 19:17	
Methylene chloride	ND	1.0	0.71	1	B9H0545	08/23/2019	08/23/19 19:17	
n-Butylbenzene	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 19:17	
n-Propylbenzene	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 19:17	
Naphthalene	ND	0.50	0.41	1	B9H0545	08/23/2019	08/23/19 19:17	
o-Xylene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:17	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 19:17	
Styrene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:17	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 19:17	
Tetrachloroethene	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 19:17	
Toluene	ND	0.50	0.12	1	B9H0545	08/23/2019	08/23/19 19:17	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 19:17	
Trichloroethene	1.3	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 19:17	
Trichlorofluoromethane	11	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 19:17	
Vinyl chloride	ND	0.50	0.05	1	B9H0545	08/23/2019	08/23/19 19:17	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>146 %</i>		<i>59 - 158</i>		B9H0545	08/23/2019	<i>08/23/19 19:17</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>97.2 %</i>		<i>71 - 127</i>		B9H0545	08/23/2019	<i>08/23/19 19:17</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>141 %</i>		<i>66 - 147</i>		B9H0545	08/23/2019	<i>08/23/19 19:17</i>	
<i>Surrogate: Toluene-d8</i>	<i>128 %</i>		<i>77 - 138</i>		B9H0545	08/23/2019	<i>08/23/19 19:17</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

Client Sample ID: MW-35C

Lab ID: 1903084-03

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 19:42	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0545	08/23/2019	08/23/19 19:42	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0545	08/23/2019	08/23/19 19:42	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0545	08/23/2019	08/23/19 19:42	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 19:42	
1,1-Dichloroethene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:42	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:42	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0545	08/23/2019	08/23/19 19:42	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0545	08/23/2019	08/23/19 19:42	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0545	08/23/2019	08/23/19 19:42	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0545	08/23/2019	08/23/19 19:42	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0545	08/23/2019	08/23/19 19:42	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0545	08/23/2019	08/23/19 19:42	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0545	08/23/2019	08/23/19 19:42	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0545	08/23/2019	08/23/19 19:42	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0545	08/23/2019	08/23/19 19:42	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:42	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0545	08/23/2019	08/23/19 19:42	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0545	08/23/2019	08/23/19 19:42	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0545	08/23/2019	08/23/19 19:42	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0545	08/23/2019	08/23/19 19:42	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 19:42	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0545	08/23/2019	08/23/19 19:42	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 19:42	
Benzene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:42	
Bromobenzene	ND	0.50	0.21	1	B9H0545	08/23/2019	08/23/19 19:42	
Bromodichloromethane	ND	0.50	0.14	1	B9H0545	08/23/2019	08/23/19 19:42	
Bromoform	ND	0.50	0.20	1	B9H0545	08/23/2019	08/23/19 19:42	
Bromomethane	ND	0.50	0.17	1	B9H0545	08/23/2019	08/23/19 19:42	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 19:42	
Chlorobenzene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:42	
Chloroethane	ND	0.50	0.15	1	B9H0545	08/23/2019	08/23/19 19:42	
Chloroform	1.8	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 19:42	
Chloromethane	ND	0.50	0.12	1	B9H0545	08/23/2019	08/23/19 19:42	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0545	08/23/2019	08/23/19 19:42	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:42	
Dibromochloromethane	ND	0.50	0.16	1	B9H0545	08/23/2019	08/23/19 19:42	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

Client Sample ID: MW-35C

Lab ID: 1903084-03

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0545	08/23/2019	08/23/19 19:42	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0545	08/23/2019	08/23/19 19:42	
Ethylbenzene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:42	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0545	08/23/2019	08/23/19 19:42	
Isopropylbenzene	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 19:42	
m,p-Xylene	ND	1.0	0.19	1	B9H0545	08/23/2019	08/23/19 19:42	
Methylene chloride	ND	1.0	0.71	1	B9H0545	08/23/2019	08/23/19 19:42	
n-Butylbenzene	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 19:42	
n-Propylbenzene	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 19:42	
Naphthalene	ND	0.50	0.41	1	B9H0545	08/23/2019	08/23/19 19:42	
o-Xylene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:42	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 19:42	
Styrene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 19:42	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 19:42	
Tetrachloroethene	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 19:42	
Toluene	ND	0.50	0.12	1	B9H0545	08/23/2019	08/23/19 19:42	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 19:42	
Trichloroethene	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 19:42	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 19:42	
Vinyl chloride	ND	0.50	0.05	1	B9H0545	08/23/2019	08/23/19 19:42	
Surrogate: 1,2-Dichloroethane-d4	150 %		59 - 158		B9H0545	08/23/2019	08/23/19 19:42	
Surrogate: 4-Bromofluorobenzene	98.4 %		71 - 127		B9H0545	08/23/2019	08/23/19 19:42	
Surrogate: Dibromofluoromethane	146 %		66 - 147		B9H0545	08/23/2019	08/23/19 19:42	
Surrogate: Toluene-d8	132 %		77 - 138		B9H0545	08/23/2019	08/23/19 19:42	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

Client Sample ID: MW-35C

Lab ID: 1903084-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	0.05	1	B9H0468	08/20/2019	08/20/19 20:41	
Surrogate: 1,2-Dichlorobenzene-d4	78.0 %		22 - 117		B9H0468	08/20/2019	08/20/19 20:41	
Surrogate: 2-Fluorobiphenyl	79.7 %		20 - 131		B9H0468	08/20/2019	08/20/19 20:41	
Surrogate: 4-Terphenyl-d14	91.8 %		24 - 135		B9H0468	08/20/2019	08/20/19 20:41	
Surrogate: Nitrobenzene-d5	96.8 %		6 - 124		B9H0468	08/20/2019	08/20/19 20:41	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

Client Sample ID: MW-20

Lab ID: 1903084-04

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 20:06	
1,1,1-Trichloroethane	ND	0.50	0.07	1	B9H0545	08/23/2019	08/23/19 20:06	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36	1	B9H0545	08/23/2019	08/23/19 20:06	
1,1,2-Trichloroethane	ND	0.50	0.25	1	B9H0545	08/23/2019	08/23/19 20:06	
1,1-Dichloroethane	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 20:06	
1,1-Dichloroethene	2.2	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 20:06	
1,1-Dichloropropene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 20:06	
1,2,3-Trichloropropane	ND	0.50	0.39	1	B9H0545	08/23/2019	08/23/19 20:06	
1,2,3-Trichlorobenzene	ND	0.50	0.18	1	B9H0545	08/23/2019	08/23/19 20:06	
1,2,4-Trichlorobenzene	ND	0.50	0.16	1	B9H0545	08/23/2019	08/23/19 20:06	
1,2,4-Trimethylbenzene	ND	0.50	0.14	1	B9H0545	08/23/2019	08/23/19 20:06	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41	1	B9H0545	08/23/2019	08/23/19 20:06	
1,2-Dibromoethane	ND	0.50	0.24	1	B9H0545	08/23/2019	08/23/19 20:06	
1,2-Dichlorobenzene	ND	0.50	0.20	1	B9H0545	08/23/2019	08/23/19 20:06	
1,2-Dichloroethane	ND	0.50	0.20	1	B9H0545	08/23/2019	08/23/19 20:06	
1,2-Dichloropropane	ND	0.50	0.15	1	B9H0545	08/23/2019	08/23/19 20:06	
1,3,5-Trimethylbenzene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 20:06	
1,3-Dichlorobenzene	ND	0.50	0.16	1	B9H0545	08/23/2019	08/23/19 20:06	
1,3-Dichloropropane	ND	0.50	0.21	1	B9H0545	08/23/2019	08/23/19 20:06	
1,4-Dichlorobenzene	ND	0.50	0.17	1	B9H0545	08/23/2019	08/23/19 20:06	
2,2-Dichloropropane	ND	0.50	0.38	1	B9H0545	08/23/2019	08/23/19 20:06	
2-Chlorotoluene	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 20:06	
4-Chlorotoluene	ND	0.50	0.12	1	B9H0545	08/23/2019	08/23/19 20:06	
4-Isopropyltoluene	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 20:06	
Benzene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 20:06	
Bromobenzene	ND	0.50	0.21	1	B9H0545	08/23/2019	08/23/19 20:06	
Bromodichloromethane	ND	0.50	0.14	1	B9H0545	08/23/2019	08/23/19 20:06	
Bromoform	ND	0.50	0.20	1	B9H0545	08/23/2019	08/23/19 20:06	
Bromomethane	ND	0.50	0.17	1	B9H0545	08/23/2019	08/23/19 20:06	
Carbon tetrachloride	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 20:06	
Chlorobenzene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 20:06	
Chloroethane	ND	0.50	0.15	1	B9H0545	08/23/2019	08/23/19 20:06	
Chloroform	1.1	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 20:06	
Chloromethane	ND	0.50	0.12	1	B9H0545	08/23/2019	08/23/19 20:06	
cis-1,2-Dichloroethene	ND	0.50	0.14	1	B9H0545	08/23/2019	08/23/19 20:06	
cis-1,3-Dichloropropene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 20:06	
Dibromochloromethane	ND	0.50	0.16	1	B9H0545	08/23/2019	08/23/19 20:06	



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Client Sample ID: MW-20

Lab ID: 1903084-04

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	0.19	1	B9H0545	08/23/2019	08/23/19 20:06	
Dichlorodifluoromethane	ND	0.50	0.05	1	B9H0545	08/23/2019	08/23/19 20:06	
Ethylbenzene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 20:06	
Hexachlorobutadiene	ND	0.50	0.15	1	B9H0545	08/23/2019	08/23/19 20:06	
Isopropylbenzene	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 20:06	
m,p-Xylene	ND	1.0	0.19	1	B9H0545	08/23/2019	08/23/19 20:06	
Methylene chloride	ND	1.0	0.71	1	B9H0545	08/23/2019	08/23/19 20:06	
n-Butylbenzene	ND	0.50	0.11	1	B9H0545	08/23/2019	08/23/19 20:06	
n-Propylbenzene	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 20:06	
Naphthalene	ND	0.50	0.41	1	B9H0545	08/23/2019	08/23/19 20:06	
o-Xylene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 20:06	
sec-Butylbenzene	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 20:06	
Styrene	ND	0.50	0.13	1	B9H0545	08/23/2019	08/23/19 20:06	
tert-Butylbenzene	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 20:06	
Tetrachloroethene	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 20:06	
Toluene	ND	0.50	0.12	1	B9H0545	08/23/2019	08/23/19 20:06	
trans-1,2-Dichloroethene	ND	0.50	0.09	1	B9H0545	08/23/2019	08/23/19 20:06	
Trichloroethene	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 20:06	
Trichlorofluoromethane	ND	0.50	0.10	1	B9H0545	08/23/2019	08/23/19 20:06	
Vinyl chloride	ND	0.50	0.05	1	B9H0545	08/23/2019	08/23/19 20:06	
Surrogate: 1,2-Dichloroethane-d4	148 %		59 - 158		B9H0545	08/23/2019	08/23/19 20:06	
Surrogate: 4-Bromofluorobenzene	97.5 %		71 - 127		B9H0545	08/23/2019	08/23/19 20:06	
Surrogate: Dibromofluoromethane	143 %		66 - 147		B9H0545	08/23/2019	08/23/19 20:06	
Surrogate: Toluene-d8	133 %		77 - 138		B9H0545	08/23/2019	08/23/19 20:06	



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Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

Client Sample ID: MW-20

Lab ID: 1903084-04

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.09	0.20	0.05	1	B9H0468	08/20/2019	08/20/19 21:09	J
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>85.3 %</i>		<i>22 - 117</i>		B9H0468	08/20/2019	<i>08/20/19 21:09</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>92.5 %</i>		<i>20 - 131</i>		B9H0468	08/20/2019	<i>08/20/19 21:09</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>110 %</i>		<i>24 - 135</i>		B9H0468	08/20/2019	<i>08/20/19 21:09</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>108 %</i>		<i>6 - 124</i>		B9H0468	08/20/2019	<i>08/20/19 21:09</i>	



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Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

Client Sample ID: MW-16

Lab ID: 1903084-05

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	2.5	0.57	5	B9H0545	08/23/2019	08/23/19 20:54	
1,1,1-Trichloroethane	ND	2.5	0.37	5	B9H0545	08/23/2019	08/23/19 20:54	
1,1,2,2-Tetrachloroethane	ND	2.5	1.8	5	B9H0545	08/23/2019	08/23/19 20:54	
1,1,2-Trichloroethane	ND	2.5	1.3	5	B9H0545	08/23/2019	08/23/19 20:54	
1,1-Dichloroethane	11	2.5	0.46	5	B9H0545	08/23/2019	08/23/19 20:54	
1,1-Dichloroethene	1400	10	2.6	20	B9H0545	08/23/2019	08/23/19 20:30	
1,1-Dichloropropene	ND	2.5	0.65	5	B9H0545	08/23/2019	08/23/19 20:54	
1,2,3-Trichloropropane	ND	2.5	2.0	5	B9H0545	08/23/2019	08/23/19 20:54	
1,2,3-Trichlorobenzene	ND	2.5	0.90	5	B9H0545	08/23/2019	08/23/19 20:54	
1,2,4-Trichlorobenzene	ND	2.5	0.78	5	B9H0545	08/23/2019	08/23/19 20:54	
1,2,4-Trimethylbenzene	ND	2.5	0.71	5	B9H0545	08/23/2019	08/23/19 20:54	
1,2-Dibromo-3-chloropropane	ND	2.5	2.1	5	B9H0545	08/23/2019	08/23/19 20:54	
1,2-Dibromoethane	ND	2.5	1.2	5	B9H0545	08/23/2019	08/23/19 20:54	
1,2-Dichlorobenzene	ND	2.5	0.99	5	B9H0545	08/23/2019	08/23/19 20:54	
1,2-Dichloroethane	ND	2.5	0.98	5	B9H0545	08/23/2019	08/23/19 20:54	
1,2-Dichloropropane	ND	2.5	0.77	5	B9H0545	08/23/2019	08/23/19 20:54	
1,3,5-Trimethylbenzene	ND	2.5	0.64	5	B9H0545	08/23/2019	08/23/19 20:54	
1,3-Dichlorobenzene	ND	2.5	0.82	5	B9H0545	08/23/2019	08/23/19 20:54	
1,3-Dichloropropane	ND	2.5	1.0	5	B9H0545	08/23/2019	08/23/19 20:54	
1,4-Dichlorobenzene	ND	2.5	0.86	5	B9H0545	08/23/2019	08/23/19 20:54	
2,2-Dichloropropane	ND	2.5	1.9	5	B9H0545	08/23/2019	08/23/19 20:54	
2-Chlorotoluene	ND	2.5	0.56	5	B9H0545	08/23/2019	08/23/19 20:54	
4-Chlorotoluene	ND	2.5	0.61	5	B9H0545	08/23/2019	08/23/19 20:54	
4-Isopropyltoluene	ND	2.5	0.54	5	B9H0545	08/23/2019	08/23/19 20:54	
Benzene	ND	2.5	0.66	5	B9H0545	08/23/2019	08/23/19 20:54	
Bromobenzene	ND	2.5	1.0	5	B9H0545	08/23/2019	08/23/19 20:54	
Bromodichloromethane	ND	2.5	0.70	5	B9H0545	08/23/2019	08/23/19 20:54	
Bromoform	ND	2.5	0.98	5	B9H0545	08/23/2019	08/23/19 20:54	
Bromomethane	ND	2.5	0.85	5	B9H0545	08/23/2019	08/23/19 20:54	
Carbon tetrachloride	ND	2.5	0.46	5	B9H0545	08/23/2019	08/23/19 20:54	
Chlorobenzene	ND	2.5	0.65	5	B9H0545	08/23/2019	08/23/19 20:54	
Chloroethane	ND	2.5	0.77	5	B9H0545	08/23/2019	08/23/19 20:54	
Chloroform	ND	2.5	0.53	5	B9H0545	08/23/2019	08/23/19 20:54	
Chloromethane	ND	2.5	0.59	5	B9H0545	08/23/2019	08/23/19 20:54	
cis-1,2-Dichloroethene	ND	2.5	0.72	5	B9H0545	08/23/2019	08/23/19 20:54	
cis-1,3-Dichloropropene	ND	2.5	0.63	5	B9H0545	08/23/2019	08/23/19 20:54	
Dibromochloromethane	ND	2.5	0.82	5	B9H0545	08/23/2019	08/23/19 20:54	



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Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

Client Sample ID: MW-16

Lab ID: 1903084-05

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	2.5	0.96	5	B9H0545	08/23/2019	08/23/19 20:54	
Dichlorodifluoromethane	ND	2.5	0.27	5	B9H0545	08/23/2019	08/23/19 20:54	
Ethylbenzene	ND	2.5	0.67	5	B9H0545	08/23/2019	08/23/19 20:54	
Hexachlorobutadiene	ND	2.5	0.77	5	B9H0545	08/23/2019	08/23/19 20:54	
Isopropylbenzene	ND	2.5	0.52	5	B9H0545	08/23/2019	08/23/19 20:54	
m,p-Xylene	ND	5.0	0.93	5	B9H0545	08/23/2019	08/23/19 20:54	
Methylene chloride	ND	5.0	3.6	5	B9H0545	08/23/2019	08/23/19 20:54	
n-Butylbenzene	ND	2.5	0.53	5	B9H0545	08/23/2019	08/23/19 20:54	
n-Propylbenzene	ND	2.5	0.50	5	B9H0545	08/23/2019	08/23/19 20:54	
Naphthalene	ND	2.5	2.0	5	B9H0545	08/23/2019	08/23/19 20:54	
o-Xylene	ND	2.5	0.63	5	B9H0545	08/23/2019	08/23/19 20:54	
sec-Butylbenzene	ND	2.5	0.45	5	B9H0545	08/23/2019	08/23/19 20:54	
Styrene	ND	2.5	0.64	5	B9H0545	08/23/2019	08/23/19 20:54	
tert-Butylbenzene	ND	2.5	0.45	5	B9H0545	08/23/2019	08/23/19 20:54	
Tetrachloroethene	ND	2.5	0.50	5	B9H0545	08/23/2019	08/23/19 20:54	
Toluene	ND	2.5	0.61	5	B9H0545	08/23/2019	08/23/19 20:54	
trans-1,2-Dichloroethene	ND	2.5	0.46	5	B9H0545	08/23/2019	08/23/19 20:54	
Trichloroethene	7.8	2.5	0.50	5	B9H0545	08/23/2019	08/23/19 20:54	
Trichlorofluoromethane	ND	2.5	0.49	5	B9H0545	08/23/2019	08/23/19 20:54	
Vinyl chloride	ND	2.5	0.26	5	B9H0545	08/23/2019	08/23/19 20:54	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>152 %</i>		<i>59 - 158</i>		B9H0545	08/23/2019	<i>08/23/19 20:30</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>149 %</i>		<i>59 - 158</i>		B9H0545	08/23/2019	<i>08/23/19 20:54</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>98.3 %</i>		<i>71 - 127</i>		B9H0545	08/23/2019	<i>08/23/19 20:30</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>98.6 %</i>		<i>71 - 127</i>		B9H0545	08/23/2019	<i>08/23/19 20:54</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>146 %</i>		<i>66 - 147</i>		B9H0545	08/23/2019	<i>08/23/19 20:30</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>141 %</i>		<i>66 - 147</i>		B9H0545	08/23/2019	<i>08/23/19 20:54</i>	
<i>Surrogate: Toluene-d8</i>	<i>135 %</i>		<i>77 - 138</i>		B9H0545	08/23/2019	<i>08/23/19 20:54</i>	
<i>Surrogate: Toluene-d8</i>	<i>137 %</i>		<i>77 - 138</i>		B9H0545	08/23/2019	<i>08/23/19 20:30</i>	



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Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

Client Sample ID: MW-16

Lab ID: 1903084-05

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	89	2.0	0.84	1	B9H0529	08/22/2019	08/22/19 15:14	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>77.1 %</i>		<i>34 - 188</i>		B9H0529	08/22/2019	<i>08/22/19 15:14</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>86.9 %</i>		<i>39 - 108</i>		B9H0529	08/22/2019	<i>08/22/19 15:14</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>128 %</i>		<i>71 - 131</i>		B9H0529	08/22/2019	<i>08/22/19 15:14</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>93.3 %</i>		<i>32 - 106</i>		B9H0529	08/22/2019	<i>08/22/19 15:14</i>	



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QUALITY CONTROL SECTION

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0545 - MSVOA_LL_W

Blank (B9H0545-BLK1)

Prepared: 8/23/2019 Analyzed: 8/23/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,1,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0545 - MSVOA_LL_W (continued)

Blank (B9H0545-BLK1) - Continued

Prepared: 8/23/2019 Analyzed: 8/23/2019

Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15
Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	34.60		25.0000	138	59 - 158
Surrogate: 4-Bromofluorobenzene	24.88		25.0000	99.5	71 - 127
Surrogate: Dibromofluoromethane	34.79		25.0000	139	66 - 147
Surrogate: Toluene-d8	31.31		25.0000	125	77 - 138

LCS (B9H0545-BS1)

Prepared: 8/23/2019 Analyzed: 8/23/2019

1,1,1,2-Tetrachloroethane	20.9300	0.50	0.11	20.0000	105	71 - 133	
1,1,1-Trichloroethane	25.5000	0.50	0.07	20.0000	128	62 - 124	L3
1,1,2,2-Tetrachloroethane	21.1000	0.50	0.36	20.0000	106	50 - 131	
1,1,2-Trichloroethane	24.1100	0.50	0.25	20.0000	121	77 - 121	
1,1-Dichloroethane	26.4400	0.50	0.09	20.0000	132	52 - 130	L4
1,1-Dichloroethene	26.4900	0.50	0.13	20.0000	132	61 - 136	
1,1-Dichloropropene	24.0100	0.50	0.13	20.0000	120	80 - 128	
1,2,3-Trichloropropane	20.0600	0.50	0.39	20.0000	100	59 - 126	
1,2,3-Trichlorobenzene	19.8900	0.50	0.18	20.0000	99.4	69 - 138	
1,2,4-Trichlorobenzene	19.6200	0.50	0.16	20.0000	98.1	78 - 125	
1,2,4-Trimethylbenzene	20.9600	0.50	0.14	20.0000	105	70 - 126	
1,2-Dibromo-3-chloropropane	18.3200	0.50	0.41	20.0000	91.6	58 - 127	
1,2-Dibromoethane	24.1800	0.50	0.24	20.0000	121	76 - 120	L3
1,2-Dichlorobenzene	18.7000	0.50	0.20	20.0000	93.5	82 - 117	
1,2-Dichloroethane	23.9900	0.50	0.20	20.0000	120	66 - 126	
1,2-Dichloropropane	22.3000	0.50	0.15	20.0000	112	70 - 117	
1,3,5-Trimethylbenzene	20.8100	0.50	0.13	20.0000	104	71 - 125	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
Batch B9H0545 - MSVOA_LL_W (continued)									
LCS (B9H0545-BS1) - Continued					Prepared: 8/23/2019 Analyzed: 8/23/2019				
1,3-Dichlorobenzene	19.1000	0.50	0.16	20.0000		95.5	81 - 116		
1,3-Dichloropropane	19.8700	0.50	0.21	20.0000		99.4	69 - 124		
1,4-Dichlorobenzene	19.4900	0.50	0.17	20.0000		97.4	80 - 114		
2,2-Dichloropropane	29.3500	0.50	0.38	20.0000		147	58 - 132		L5
2-Chlorotoluene	20.1400	0.50	0.11	20.0000		101	71 - 119		
4-Chlorotoluene	19.8600	0.50	0.12	20.0000		99.3	72 - 122		
4-Isopropyltoluene	21.0700	0.50	0.11	20.0000		105	69 - 126		
Benzene	46.4000	0.50	0.13	40.0000		116	80 - 116		
Bromobenzene	20.1100	0.50	0.21	20.0000		101	77 - 118		
Bromodichloromethane	23.5900	0.50	0.14	20.0000		118	73 - 118		
Bromoform	19.3600	0.50	0.20	20.0000		96.8	65 - 133		
Bromomethane	26.3000	0.50	0.17	20.0000		132	7 - 205		
Carbon tetrachloride	24.8200	0.50	0.09	20.0000		124	63 - 133		
Chlorobenzene	20.2300	0.50	0.13	20.0000		101	86 - 113		
Chloroethane	25.6900	0.50	0.15	20.0000		128	66 - 141		
Chloroform	26.6600	0.50	0.11	20.0000		133	63 - 127		L4
Chloromethane	21.9900	0.50	0.12	20.0000		110	0 - 207		
cis-1,2-Dichloroethene	25.9000	0.50	0.14	20.0000		130	64 - 126		L3
cis-1,3-Dichloropropene	26.7600	0.50	0.13	20.0000		134	70 - 141		
Dibromochloromethane	19.8200	0.50	0.16	20.0000		99.1	67 - 135		
Dibromomethane	23.3600	0.50	0.19	20.0000		117	74 - 118		
Dichlorodifluoromethane	26.9300	0.50	0.05	20.0000		135	14 - 181		
Ethylbenzene	39.1800	0.50	0.13	40.0000		98.0	77 - 118		
Hexachlorobutadiene	20.4700	0.50	0.15	20.0000		102	66 - 125		
Isopropylbenzene	21.8500	0.50	0.10	20.0000		109	68 - 137		
m,p-Xylene	42.0200	1.0	0.19	40.0000		105	78 - 126		
Methylene chloride	29.7900	1.0	0.71	20.0000		149	51 - 149		
n-Butylbenzene	20.5200	0.50	0.11	20.0000		103	63 - 127		
n-Propylbenzene	20.3700	0.50	0.10	20.0000		102	69 - 124		
Naphthalene	17.4600	0.50	0.41	20.0000		87.3	60 - 126		
o-Xylene	42.3900	0.50	0.13	40.0000		106	79 - 126		
sec-Butylbenzene	20.6000	0.50	0.09	20.0000		103	69 - 124		
Styrene	21.1200	0.50	0.13	20.0000		106	80 - 127		
tert-Butylbenzene	20.7800	0.50	0.09	20.0000		104	71 - 124		
Tetrachloroethene	19.8000	0.50	0.10	20.0000		99.0	73 - 129		
Toluene	47.4800	0.50	0.12	40.0000		119	78 - 121		
trans-1,2-Dichloroethene	24.2500	0.50	0.09	20.0000		121	58 - 141		
Trichloroethene	21.7100	0.50	0.10	20.0000		109	73 - 126		
Trichlorofluoromethane	25.6000	0.50	0.10	20.0000		128	62 - 146		
Vinyl chloride	25.3300	0.50	0.05	20.0000		127	61 - 137		
Surrogate: 1,2-Dichloroethane-d4	30.66			25.0000		123	59 - 158		



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0545 - MSVOA_LL_W (continued)

LCS (B9H0545-BS1) - Continued

Prepared: 8/23/2019 Analyzed: 8/23/2019

Surrogate: 4-Bromofluorobenzene	25.64		25.0000		103	71 - 127			
Surrogate: Dibromofluoromethane	30.71		25.0000		123	66 - 147			
Surrogate: Toluene-d8	29.32		25.0000		117	77 - 138			

LCS Dup (B9H0545-BSD1)

Prepared: 8/23/2019 Analyzed: 8/23/2019

1,1,1,2-Tetrachloroethane	20.0600	0.50	0.11	20.0000	100	71 - 133	4.24	20	
1,1,1-Trichloroethane	23.9600	0.50	0.07	20.0000	120	62 - 124	6.23	20	
1,1,2,2-Tetrachloroethane	19.9000	0.50	0.36	20.0000	99.5	50 - 131	5.85	20	
1,1,2-Trichloroethane	22.8600	0.50	0.25	20.0000	114	77 - 121	5.32	20	
1,1-Dichloroethane	24.5300	0.50	0.09	20.0000	123	52 - 130	7.49	20	
1,1-Dichloroethene	25.2100	0.50	0.13	20.0000	126	61 - 136	4.95	20	
1,1-Dichloropropene	23.4700	0.50	0.13	20.0000	117	80 - 128	2.27	20	
1,2,3-Trichloropropane	19.6000	0.50	0.39	20.0000	98.0	59 - 126	2.32	20	
1,2,3-Trichlorobenzene	19.8700	0.50	0.18	20.0000	99.4	69 - 138	0.101	20	
1,2,4-Trichlorobenzene	18.6100	0.50	0.16	20.0000	93.0	78 - 125	5.28	20	
1,2,4-Trimethylbenzene	20.2400	0.50	0.14	20.0000	101	70 - 126	3.50	20	
1,2-Dibromo-3-chloropropane	18.2400	0.50	0.41	20.0000	91.2	58 - 127	0.438	20	
1,2-Dibromoethane	23.6100	0.50	0.24	20.0000	118	76 - 120	2.39	20	
1,2-Dichlorobenzene	17.9100	0.50	0.20	20.0000	89.6	82 - 117	4.32	20	
1,2-Dichloroethane	24.0900	0.50	0.20	20.0000	120	66 - 126	0.416	20	
1,2-Dichloropropane	21.9900	0.50	0.15	20.0000	110	70 - 117	1.40	20	
1,3,5-Trimethylbenzene	19.9100	0.50	0.13	20.0000	99.6	71 - 125	4.42	20	
1,3-Dichlorobenzene	18.6000	0.50	0.16	20.0000	93.0	81 - 116	2.65	20	
1,3-Dichloropropane	19.5500	0.50	0.21	20.0000	97.8	69 - 124	1.62	20	
1,4-Dichlorobenzene	18.4000	0.50	0.17	20.0000	92.0	80 - 114	5.75	20	
2,2-Dichloropropane	27.3700	0.50	0.38	20.0000	137	58 - 132	6.98	20	L4
2-Chlorotoluene	19.6700	0.50	0.11	20.0000	98.4	71 - 119	2.36	20	
4-Chlorotoluene	19.3800	0.50	0.12	20.0000	96.9	72 - 122	2.45	20	
4-Isopropyltoluene	20.1400	0.50	0.11	20.0000	101	69 - 126	4.51	20	
Benzene	45.1300	0.50	0.13	40.0000	113	80 - 116	2.78	20	
Bromobenzene	19.4200	0.50	0.21	20.0000	97.1	77 - 118	3.49	20	
Bromodichloromethane	23.0200	0.50	0.14	20.0000	115	73 - 118	2.45	20	
Bromoform	19.6000	0.50	0.20	20.0000	98.0	65 - 133	1.23	20	
Bromomethane	27.2800	0.50	0.17	20.0000	136	7 - 205	3.66	20	
Carbon tetrachloride	22.8200	0.50	0.09	20.0000	114	63 - 133	8.40	20	
Chlorobenzene	20.5200	0.50	0.13	20.0000	103	86 - 113	1.42	20	
Chloroethane	25.2200	0.50	0.15	20.0000	126	66 - 141	1.85	20	
Chloroform	25.8700	0.50	0.11	20.0000	129	63 - 127	3.01	20	L3
Chloromethane	21.7700	0.50	0.12	20.0000	109	0 - 207	1.01	20	
cis-1,2-Dichloroethene	24.2300	0.50	0.14	20.0000	121	64 - 126	6.66	20	
cis-1,3-Dichloropropene	26.5800	0.50	0.13	20.0000	133	70 - 141	0.675	20	
Dibromochloromethane	19.5900	0.50	0.16	20.0000	98.0	67 - 135	1.17	20	



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Reported : 08/26/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0545 - MSVOA_LL_W (continued)

LCS Dup (B9H0545-BSD1) - Continued

Prepared: 8/23/2019 Analyzed: 8/23/2019

Dibromomethane	23.5900	0.50	0.19	20.0000		118	74 - 118	0.980	20
Dichlorodifluoromethane	26.6600	0.50	0.05	20.0000		133	14 - 181	1.01	20
Ethylbenzene	38.5800	0.50	0.13	40.0000		96.4	77 - 118	1.54	20
Hexachlorobutadiene	19.4300	0.50	0.15	20.0000		97.2	66 - 125	5.21	20
Isopropylbenzene	21.3800	0.50	0.10	20.0000		107	68 - 137	2.17	20
m,p-Xylene	41.4600	1.0	0.19	40.0000		104	78 - 126	1.34	20
Methylene chloride	28.8700	1.0	0.71	20.0000		144	51 - 149	3.14	20
n-Butylbenzene	19.5600	0.50	0.11	20.0000		97.8	63 - 127	4.79	20
n-Propylbenzene	19.7200	0.50	0.10	20.0000		98.6	69 - 124	3.24	20
Naphthalene	17.1300	0.50	0.41	20.0000		85.6	60 - 126	1.91	20
o-Xylene	41.9500	0.50	0.13	40.0000		105	79 - 126	1.04	20
sec-Butylbenzene	19.7400	0.50	0.09	20.0000		98.7	69 - 124	4.26	20
Styrene	21.0100	0.50	0.13	20.0000		105	80 - 127	0.522	20
tert-Butylbenzene	20.2600	0.50	0.09	20.0000		101	71 - 124	2.53	20
Tetrachloroethene	18.8800	0.50	0.10	20.0000		94.4	73 - 129	4.76	20
Toluene	45.8600	0.50	0.12	40.0000		115	78 - 121	3.47	20
trans-1,2-Dichloroethene	23.8800	0.50	0.09	20.0000		119	58 - 141	1.54	20
Trichloroethene	21.4900	0.50	0.10	20.0000		107	73 - 126	1.02	20
Trichlorofluoromethane	25.3800	0.50	0.10	20.0000		127	62 - 146	0.863	20
Vinyl chloride	24.2700	0.50	0.05	20.0000		121	61 - 137	4.27	20
Surrogate: 1,2-Dichloroethane-d4	30.84			25.0000		123	59 - 158		
Surrogate: 4-Bromofluorobenzene	26.66			25.0000		107	71 - 127		
Surrogate: Dibromofluoromethane	30.14			25.0000		121	66 - 147		
Surrogate: Toluene-d8	29.99			25.0000		120	77 - 138		

Matrix Spike (B9H0545-MS1)

Source: 1903084-02

Prepared: 8/23/2019 Analyzed: 8/23/2019

1,1,1,2-Tetrachloroethane	22.5400	0.50	0.11	20.0000	ND	113	71 - 133		
1,1,1-Trichloroethane	28.4900	0.50	0.07	20.0000	ND	142	62 - 124		M2
1,1,2,2-Tetrachloroethane	21.9900	0.50	0.36	20.0000	ND	110	50 - 131		
1,1,2-Trichloroethane	27.3800	0.50	0.25	20.0000	ND	137	77 - 121		M2
1,1-Dichloroethane	28.2800	0.50	0.09	20.0000	ND	141	52 - 130		M2
1,1-Dichloroethene	27.7400	0.50	0.13	20.0000	ND	139	61 - 136		M2
1,1-Dichloropropene	23.7400	0.50	0.13	20.0000	ND	119	80 - 128		
1,2,3-Trichloropropane	20.6300	0.50	0.39	20.0000	ND	103	59 - 126		
1,2,3-Trichlorobenzene	20.2600	0.50	0.18	20.0000	ND	101	69 - 138		
1,2,4-Trichlorobenzene	18.6900	0.50	0.16	20.0000	ND	93.4	78 - 125		
1,2,4-Trimethylbenzene	20.6800	0.50	0.14	20.0000	ND	103	70 - 126		
1,2-Dibromo-3-chloropropane	19.5100	0.50	0.41	20.0000	ND	97.6	58 - 127		
1,2-Dibromoethane	27.2500	0.50	0.24	20.0000	ND	136	76 - 120		M2
1,2-Dichlorobenzene	19.1400	0.50	0.20	20.0000	ND	95.7	82 - 117		
1,2-Dichloroethane	27.5900	0.50	0.20	20.0000	ND	138	66 - 126		M2



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0545 - MSVOA_LL_W (continued)

Matrix Spike (B9H0545-MS1) - Continued

Source: 1903084-02

Prepared: 8/23/2019 Analyzed: 8/23/2019

1,2-Dichloropropane	24.7500	0.50	0.15	20.0000	ND	124	70 - 117			M2
1,3,5-Trimethylbenzene	20.3300	0.50	0.13	20.0000	ND	102	71 - 125			
1,3-Dichlorobenzene	19.1000	0.50	0.16	20.0000	ND	95.5	81 - 116			
1,3-Dichloropropane	21.5800	0.50	0.21	20.0000	ND	108	69 - 124			
1,4-Dichlorobenzene	20.2400	0.50	0.17	20.0000	ND	101	80 - 114			
2,2-Dichloropropane	29.7600	0.50	0.38	20.0000	ND	149	58 - 132			M2
2-Chlorotoluene	20.0800	0.50	0.11	20.0000	ND	100	71 - 119			
4-Chlorotoluene	19.4700	0.50	0.12	20.0000	ND	97.4	72 - 122			
4-Isopropyltoluene	20.0700	0.50	0.11	20.0000	ND	100	69 - 126			
Benzene	24.5900	0.50	0.13	20.0000	ND	123	80 - 116			M2
Bromobenzene	20.1100	0.50	0.21	20.0000	ND	101	77 - 118			
Bromodichloromethane	27.1700	0.50	0.14	20.0000	ND	136	73 - 118			M2
Bromoform	21.4800	0.50	0.20	20.0000	ND	107	65 - 133			
Bromomethane	29.6800	0.50	0.17	20.0000	ND	148	7 - 205			
Carbon tetrachloride	26.3000	0.50	0.09	20.0000	ND	132	63 - 133			
Chlorobenzene	21.5700	0.50	0.13	20.0000	ND	108	81 - 115			
Chloroethane	25.9100	0.50	0.15	20.0000	ND	130	66 - 141			
Chloroform	30.6200	0.50	0.11	20.0000	0.170000	152	63 - 127			M2
Chloromethane	24.5700	0.50	0.12	20.0000	ND	123	0 - 207			
cis-1,2-Dichloroethene	28.7600	0.50	0.14	20.0000	ND	144	64 - 126			M2
cis-1,3-Dichloropropene	23.8300	0.50	0.13	20.0000	ND	119	70 - 141			
Dibromochloromethane	20.8400	0.50	0.16	20.0000	ND	104	67 - 135			
Dibromomethane	26.6400	0.50	0.19	20.0000	ND	133	74 - 118			M2
Dichlorodifluoromethane	27.3700	0.50	0.05	20.0000	ND	137	14 - 181			
Ethylbenzene	21.1400	0.50	0.13	20.0000	ND	106	77 - 118			
Hexachlorobutadiene	18.7700	0.50	0.15	20.0000	ND	93.8	66 - 125			
Isopropylbenzene	20.3200	0.50	0.10	20.0000	ND	102	68 - 137			
m,p-Xylene	44.7700	1.0	0.19	40.0000	ND	112	78 - 126			
Methylene chloride	29.2300	1.0	0.71	20.0000	ND	146	51 - 149			
n-Butylbenzene	19.2000	0.50	0.11	20.0000	ND	96.0	63 - 127			
n-Propylbenzene	19.9200	0.50	0.10	20.0000	ND	99.6	69 - 124			
Naphthalene	17.6300	0.50	0.41	20.0000	ND	88.2	60 - 126			
o-Xylene	22.2800	0.50	0.13	20.0000	ND	111	79 - 126			
sec-Butylbenzene	20.3000	0.50	0.09	20.0000	ND	102	69 - 124			
Styrene	20.9800	0.50	0.13	20.0000	ND	105	80 - 127			
tert-Butylbenzene	20.4000	0.50	0.09	20.0000	ND	102	71 - 124			
Tetrachloroethene	19.6300	0.50	0.10	20.0000	ND	98.2	73 - 129			
Toluene	26.2800	0.50	0.12	20.0000	ND	131	78 - 121			M2
trans-1,2-Dichloroethene	27.7200	0.50	0.09	20.0000	ND	139	58 - 141			
Trichloroethene	26.3100	0.50	0.10	20.0000	1.28000	125	73 - 126			
Trichlorofluoromethane	36.0400	0.50	0.10	20.0000	11.0900	125	62 - 146			
Vinyl chloride	24.8600	0.50	0.05	20.0000	ND	124	61 - 137			



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0545 - MSVOA_LL_W (continued)

Matrix Spike (B9H0545-MS1) - Continued

Source: 1903084-02

Prepared: 8/23/2019 Analyzed: 8/23/2019

Surrogate: 1,2-Dichloroethane-d4	34.48		25.0000		138	59 - 158			
Surrogate: 4-Bromofluorobenzene	26.63		25.0000		107	71 - 127			
Surrogate: Dibromofluoromethane	33.18		25.0000		133	66 - 147			
Surrogate: Toluene-d8	30.84		25.0000		123	77 - 138			

Matrix Spike Dup (B9H0545-MSD1)

Source: 1903084-02

Prepared: 8/23/2019 Analyzed: 8/23/2019

1,1,1,2-Tetrachloroethane	22.1200	0.50	0.11	20.0000	ND	111	71 - 133	1.88	20	
1,1,1-Trichloroethane	27.8700	0.50	0.07	20.0000	ND	139	62 - 124	2.20	20	M2
1,1,2,2-Tetrachloroethane	22.7900	0.50	0.36	20.0000	ND	114	50 - 131	3.57	20	
1,1,2-Trichloroethane	27.2800	0.50	0.25	20.0000	ND	136	77 - 121	0.366	20	M2
1,1-Dichloroethane	28.1600	0.50	0.09	20.0000	ND	141	52 - 130	0.425	20	M2
1,1-Dichloroethene	28.7000	0.50	0.13	20.0000	ND	144	61 - 136	3.40	20	M2
1,1-Dichloropropene	24.9600	0.50	0.13	20.0000	ND	125	80 - 128	5.01	20	
1,2,3-Trichloropropane	21.7700	0.50	0.39	20.0000	ND	109	59 - 126	5.38	20	
1,2,3-Trichlorobenzene	21.6700	0.50	0.18	20.0000	ND	108	69 - 138	6.73	20	
1,2,4-Trichlorobenzene	20.1000	0.50	0.16	20.0000	ND	100	78 - 125	7.27	20	
1,2,4-Trimethylbenzene	21.4800	0.50	0.14	20.0000	ND	107	70 - 126	3.80	20	
1,2-Dibromo-3-chloropropane	18.5100	0.50	0.41	20.0000	ND	92.6	58 - 127	5.26	20	
1,2-Dibromoethane	25.7200	0.50	0.24	20.0000	ND	129	76 - 120	5.78	20	M2
1,2-Dichlorobenzene	19.7200	0.50	0.20	20.0000	ND	98.6	82 - 117	2.99	20	
1,2-Dichloroethane	27.2800	0.50	0.20	20.0000	ND	136	66 - 126	1.13	20	M2
1,2-Dichloropropane	23.9600	0.50	0.15	20.0000	ND	120	70 - 117	3.24	20	M2
1,3,5-Trimethylbenzene	21.5800	0.50	0.13	20.0000	ND	108	71 - 125	5.97	20	
1,3-Dichlorobenzene	19.6700	0.50	0.16	20.0000	ND	98.4	81 - 116	2.94	20	
1,3-Dichloropropane	21.2000	0.50	0.21	20.0000	ND	106	69 - 124	1.78	20	
1,4-Dichlorobenzene	20.4200	0.50	0.17	20.0000	ND	102	80 - 114	0.885	20	
2,2-Dichloropropane	29.3900	0.50	0.38	20.0000	ND	147	58 - 132	1.25	20	M2
2-Chlorotoluene	20.8900	0.50	0.11	20.0000	ND	104	71 - 119	3.95	20	
4-Chlorotoluene	20.2600	0.50	0.12	20.0000	ND	101	72 - 122	3.98	20	
4-Isopropyltoluene	21.4300	0.50	0.11	20.0000	ND	107	69 - 126	6.55	20	
Benzene	24.4100	0.50	0.13	20.0000	ND	122	80 - 116	0.735	20	M2
Bromobenzene	21.0400	0.50	0.21	20.0000	ND	105	77 - 118	4.52	20	
Bromodichloromethane	26.9100	0.50	0.14	20.0000	ND	135	73 - 118	0.962	20	M2
Bromoform	21.7700	0.50	0.20	20.0000	ND	109	65 - 133	1.34	20	
Bromomethane	30.1500	0.50	0.17	20.0000	ND	151	7 - 205	1.57	20	
Carbon tetrachloride	25.4600	0.50	0.09	20.0000	ND	127	63 - 133	3.25	20	
Chlorobenzene	22.0800	0.50	0.13	20.0000	ND	110	81 - 115	2.34	20	
Chloroethane	26.6100	0.50	0.15	20.0000	ND	133	66 - 141	2.67	20	
Chloroform	30.3300	0.50	0.11	20.0000	0.170000	151	63 - 127	0.952	20	M2
Chloromethane	24.4200	0.50	0.12	20.0000	ND	122	0 - 207	0.612	20	
cis-1,2-Dichloroethene	29.3500	0.50	0.14	20.0000	ND	147	64 - 126	2.03	20	M2



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0545 - MSVOA_LL_W (continued)

Matrix Spike Dup (B9H0545-MSD1) - Continued

Source: 1903084-02

Prepared: 8/23/2019 Analyzed: 8/23/2019

cis-1,3-Dichloropropene	24.3500	0.50	0.13	20.0000	ND	122	70 - 141	2.16	20	
Dibromochloromethane	21.4400	0.50	0.16	20.0000	ND	107	67 - 135	2.84	20	
Dibromomethane	26.6900	0.50	0.19	20.0000	ND	133	74 - 118	0.188	20	M2
Dichlorodifluoromethane	27.3400	0.50	0.05	20.0000	ND	137	14 - 181	0.110	20	
Ethylbenzene	21.3800	0.50	0.13	20.0000	ND	107	77 - 118	1.13	20	
Hexachlorobutadiene	20.5900	0.50	0.15	20.0000	ND	103	66 - 125	9.25	20	
Isopropylbenzene	21.0200	0.50	0.10	20.0000	ND	105	68 - 137	3.39	20	
m,p-Xylene	44.7500	1.0	0.19	40.0000	ND	112	78 - 126	0.0447	20	
Methylene chloride	28.6100	1.0	0.71	20.0000	ND	143	51 - 149	2.14	20	
n-Butylbenzene	20.4900	0.50	0.11	20.0000	ND	102	63 - 127	6.50	20	
n-Propylbenzene	20.8700	0.50	0.10	20.0000	ND	104	69 - 124	4.66	20	
Naphthalene	18.7700	0.50	0.41	20.0000	ND	93.8	60 - 126	6.26	20	
o-Xylene	22.2100	0.50	0.13	20.0000	ND	111	79 - 126	0.315	20	
sec-Butylbenzene	20.8100	0.50	0.09	20.0000	ND	104	69 - 124	2.48	20	
Styrene	21.2400	0.50	0.13	20.0000	ND	106	80 - 127	1.23	20	
tert-Butylbenzene	21.5000	0.50	0.09	20.0000	ND	108	71 - 124	5.25	20	
Tetrachloroethene	20.2100	0.50	0.10	20.0000	ND	101	73 - 129	2.91	20	
Toluene	25.6300	0.50	0.12	20.0000	ND	128	78 - 121	2.50	20	M2
trans-1,2-Dichloroethene	28.3800	0.50	0.09	20.0000	ND	142	58 - 141	2.35	20	M2
Trichloroethene	26.7200	0.50	0.10	20.0000	1.28000	127	73 - 126	1.55	20	M2
Trichlorofluoromethane	35.7700	0.50	0.10	20.0000	11.0900	123	62 - 146	0.752	20	
Vinyl chloride	25.1400	0.50	0.05	20.0000	ND	126	61 - 137	1.12	20	
Surrogate: 1,2-Dichloroethane-d4	33.14			25.0000		133	59 - 158			
Surrogate: 4-Bromofluorobenzene	26.00			25.0000		104	71 - 127			
Surrogate: Dibromofluoromethane	32.67			25.0000		131	66 - 147			
Surrogate: Toluene-d8	29.40			25.0000		118	77 - 138			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0529 - MSSEMI_W

Blank (B9H0529-BLK1)

Prepared: 8/22/2019 Analyzed: 8/22/2019

1,4-Dioxane	ND	2.0	0.84						
Surrogate: 1,2-Dichlorobenzene-d	77.93			100.000		77.9	34 - 188		
Surrogate: 2-Fluorobiphenyl	82.09			100.000		82.1	39 - 108		
Surrogate: 4-Terphenyl-d14	124.0			100.000		124	71 - 131		
Surrogate: Nitrobenzene-d5	90.65			100.000		90.6	32 - 106		

LCS (B9H0529-BS1)

Prepared: 8/22/2019 Analyzed: 8/22/2019

1,4-Dioxane	122.160	2.0	0.84	100.000		122	40 - 159		
Surrogate: 1,2-Dichlorobenzene-d	68.27			100.000		68.3	34 - 188		
Surrogate: 2-Fluorobiphenyl	79.63			100.000		79.6	39 - 108		
Surrogate: 4-Terphenyl-d14	114.8			100.000		115	71 - 131		
Surrogate: Nitrobenzene-d5	85.87			100.000		85.9	32 - 106		

LCS Dup (B9H0529-BS1)

Prepared: 8/22/2019 Analyzed: 8/22/2019

1,4-Dioxane	115.350	2.0	0.84	100.000		115	40 - 159	5.73	20
Surrogate: 1,2-Dichlorobenzene-d	67.79			100.000		67.8	34 - 188		
Surrogate: 2-Fluorobiphenyl	79.90			100.000		79.9	39 - 108		
Surrogate: 4-Terphenyl-d14	113.7			100.000		114	71 - 131		
Surrogate: Nitrobenzene-d5	88.91			100.000		88.9	32 - 106		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0468 - EPA 1311_W (SVOA_GCMS)

Blank (B9H0468-BLK1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,4-Dioxane	ND	0.20	0.05						
Surrogate: 1,2-Dichlorobenzene-d	0.8254			1.00000		82.5	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.9087			1.00000		90.9	20 - 131		
Surrogate: 4-Terphenyl-d14	1.063			1.00000		106	24 - 135		
Surrogate: Nitrobenzene-d5	0.9430			1.00000		94.3	6 - 124		

LCS (B9H0468-BS1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,4-Dioxane	1.23171	0.20	0.05	1.00000		123	64 - 129		
Surrogate: 1,2-Dichlorobenzene-d	0.5679			1.00000		56.8	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.6079			1.00000		60.8	20 - 131		
Surrogate: 4-Terphenyl-d14	0.7082			1.00000		70.8	24 - 135		
Surrogate: Nitrobenzene-d5	0.6828			1.00000		68.3	6 - 124		

LCS Dup (B9H0468-BS1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,4-Dioxane	1.18038	0.20	0.05	1.00000		118	64 - 129	4.26	20
Surrogate: 1,2-Dichlorobenzene-d	0.5632			1.00000		56.3	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.6072			1.00000		60.7	20 - 131		
Surrogate: 4-Terphenyl-d14	0.7113			1.00000		71.1	24 - 135		
Surrogate: Nitrobenzene-d5	0.6796			1.00000		68.0	6 - 124		



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Main, 532.30

Report To : Steve Netto

Reported : 08/26/2019

Notes and Definitions

M2	Matrix spike recovery outside of acceptance limit due to possible matrix interference. The analytical batch was validated by the laboratory control sample.
L5	Laboratory Control Sample high biased. Sample result/s was non-detect (ND) for the target analyte; therefore reanalysis was not necessary.
L4	Laboratory Control Sample outside of control limit but within Marginal Exceedance (ME) limit.
L3	Laboratory control sample outside in-house established limits but within method criteria.
J	Analyte detected below the Practical Quantitation Limit but above or equal to the Method Detection Limit. Result is an estimated concentration.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

GROUNDWATER EXTRACTION AND TREATMENT SYSTEM ANALYTICAL RESULTS



June 27, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1902251

Client Reference : Raytheon Main GETS Monthly Sample, 532.15

Enclosed are the results for sample(s) received on June 06, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read "Edgar Caballero", with a small "En" written below the main signature.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-060619	1902251-01	Lab prepared water	6/06/19 8:00	6/06/19 16:27
CEFF	1902251-02	Groundwater	6/06/19 9:19	6/06/19 16:27
CBT	1902251-03	Groundwater	6/06/19 9:41	6/06/19 16:27
POX	1902251-04	Groundwater	6/06/19 9:49	6/06/19 16:27
PF	1902251-05	Groundwater	6/06/19 10:06	6/06/19 16:27
INF	1902251-06	Groundwater	6/06/19 10:14	6/06/19 16:27
EW-02	1902251-07	Groundwater	6/06/19 10:55	6/06/19 16:27
MW-29	1902251-08	Groundwater	6/06/19 11:22	6/06/19 16:27

CASE NARRATIVE

The samples for Bromate by IC-MS/MS analysis were subcontracted to Exova, Inc. with ELAP Cert.# 2652.

Sample Receiving/General Comments:

The following analytes lists were taken from sample containers: Alkalinity - Hydroxide, Bicarbonate, Carbonate, and Total.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID TB-060619

Lab ID: 1902251-01

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,1,1-Trichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,1,2-Trichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,1-Dichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,1-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,1-Dichloropropene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,2,3-Trichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,2,3-Trichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,2,4-Trichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,2,4-Trimethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,2-Dibromoethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,2-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,2-Dichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,2-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,3,5-Trimethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,3-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,3-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
1,4-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
2,2-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
2-Chlorotoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
4-Chlorotoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
4-Isopropyltoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Benzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Bromobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Bromodichloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Bromoform	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Bromomethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Carbon tetrachloride	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Chlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Chloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Chloroform	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Chloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
cis-1,2-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
cis-1,3-Dichloropropene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Dibromochloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID TB-060619

Lab ID: 1902251-01

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Dichlorodifluoromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Ethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Hexachlorobutadiene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Isopropylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
m,p-Xylene	ND	1.0	1	B9F0348	06/13/2019	06/13/19 15:32	
Methylene chloride	ND	1.0	1	B9F0348	06/13/2019	06/13/19 15:32	
n-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
n-Propylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Naphthalene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
o-Xylene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
sec-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Styrene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
tert-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Tetrachloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Toluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
trans-1,2-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Trichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Trichlorofluoromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Vinyl chloride	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:32	
Surrogate: 1,2-Dichloroethane-d4	118 %	57 - 152		B9F0348	06/13/2019	06/13/19 15:32	
Surrogate: 4-Bromofluorobenzene	96.4 %	62 - 134		B9F0348	06/13/2019	06/13/19 15:32	
Surrogate: Dibromofluoromethane	117 %	56 - 167		B9F0348	06/13/2019	06/13/19 15:32	
Surrogate: Toluene-d8	121 %	33 - 170		B9F0348	06/13/2019	06/13/19 15:32	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID CEFF

Lab ID: 1902251-02

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,1,1-Trichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,1,2-Trichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,1-Dichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,1-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,1-Dichloropropene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,2,3-Trichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,2,3-Trichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,2,4-Trichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,2,4-Trimethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,2-Dibromoethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,2-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,2-Dichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,2-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,3,5-Trimethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,3-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,3-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
1,4-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
2,2-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
2-Chlorotoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
4-Chlorotoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
4-Isopropyltoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Benzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Bromobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Bromodichloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Bromoform	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Bromomethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Carbon tetrachloride	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Chlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Chloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Chloroform	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Chloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
cis-1,2-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
cis-1,3-Dichloropropene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Dibromochloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID CEFF

Lab ID: 1902251-02

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Dichlorodifluoromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Ethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Hexachlorobutadiene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Isopropylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
m,p-Xylene	ND	1.0	1	B9F0348	06/13/2019	06/13/19 15:57	
Methylene chloride	ND	1.0	1	B9F0348	06/13/2019	06/13/19 15:57	
n-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
n-Propylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Naphthalene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
o-Xylene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
sec-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Styrene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
tert-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Tetrachloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Toluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
trans-1,2-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Trichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Trichlorofluoromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Vinyl chloride	ND	0.50	1	B9F0348	06/13/2019	06/13/19 15:57	
Surrogate: 1,2-Dichloroethane-d4	122 %	57 - 152		B9F0348	06/13/2019	06/13/19 15:57	
Surrogate: 4-Bromofluorobenzene	99.8 %	62 - 134		B9F0348	06/13/2019	06/13/19 15:57	
Surrogate: Dibromofluoromethane	118 %	56 - 167		B9F0348	06/13/2019	06/13/19 15:57	
Surrogate: Toluene-d8	119 %	33 - 170		B9F0348	06/13/2019	06/13/19 15:57	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID CEFF

Lab ID: 1902251-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9F0328	06/12/2019	06/12/19 21:52	
Surrogate: 1,2-Dichlorobenzene-d4	0.0700 %	22 - 117		B9F0328	06/12/2019	06/12/19 21:52	S1
Surrogate: 2-Fluorobiphenyl	37.0 %	20 - 131		B9F0328	06/12/2019	06/12/19 21:52	
Surrogate: 4-Terphenyl-d14	0%	24 - 135		B9F0328	06/12/2019	06/12/19 21:52	S1
Surrogate: Nitrobenzene-d5	0.340 %	6 - 124		B9F0328	06/12/2019	06/12/19 21:52	S1



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID CBT

Lab ID: 1902251-03

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,1,1-Trichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,1,2-Trichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,1-Dichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,1-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,1-Dichloropropene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,2,3-Trichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,2,3-Trichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,2,4-Trichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,2,4-Trimethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,2-Dibromoethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,2-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,2-Dichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,2-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,3,5-Trimethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,3-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,3-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
1,4-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
2,2-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
2-Chlorotoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
4-Chlorotoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
4-Isopropyltoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Benzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Bromobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Bromodichloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Bromoform	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Bromomethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Carbon tetrachloride	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Chlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Chloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Chloroform	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Chloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
cis-1,2-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
cis-1,3-Dichloropropene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Dibromochloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID CBT

Lab ID: 1902251-03

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Dichlorodifluoromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Ethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Hexachlorobutadiene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Isopropylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
m,p-Xylene	ND	1.0	1	B9F0348	06/13/2019	06/13/19 16:21	
Methylene chloride	ND	1.0	1	B9F0348	06/13/2019	06/13/19 16:21	
n-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
n-Propylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Naphthalene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
o-Xylene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
sec-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Styrene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
tert-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Tetrachloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Toluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
trans-1,2-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Trichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Trichlorofluoromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Vinyl chloride	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:21	
Surrogate: 1,2-Dichloroethane-d4	130 %	57 - 152		B9F0348	06/13/2019	06/13/19 16:21	
Surrogate: 4-Bromofluorobenzene	95.2 %	62 - 134		B9F0348	06/13/2019	06/13/19 16:21	
Surrogate: Dibromofluoromethane	121 %	56 - 167		B9F0348	06/13/2019	06/13/19 16:21	
Surrogate: Toluene-d8	117 %	33 - 170		B9F0348	06/13/2019	06/13/19 16:21	



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID CBT

Lab ID: 1902251-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9F0328	06/12/2019	06/12/19 22:19	
Surrogate: 1,2-Dichlorobenzene-d4	0.0790 %	22 - 117		B9F0328	06/12/2019	06/12/19 22:19	S1
Surrogate: 2-Fluorobiphenyl	9.26 %	20 - 131		B9F0328	06/12/2019	06/12/19 22:19	S1
Surrogate: 4-Terphenyl-d14	233 %	24 - 135		B9F0328	06/12/2019	06/12/19 22:19	S1
Surrogate: Nitrobenzene-d5	0%	6 - 124		B9F0328	06/12/2019	06/12/19 22:19	S1



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID POX

Lab ID: 1902251-04

Alkalinity, Speciated by SM 2320B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO ₃)	220	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	
Alkalinity, Total (as CaCO ₃)	220	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	

Total Organic Carbon by SM 5310B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9F0280	06/10/2019	06/10/19 22:37	

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,1,1-Trichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,1,2-Trichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,1-Dichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,1-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,1-Dichloropropene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,2,3-Trichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,2,3-Trichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,2,4-Trichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,2,4-Trimethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,2-Dibromoethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,2-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,2-Dichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,2-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,3,5-Trimethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,3-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,3-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
1,4-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
2,2-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
2-Chlorotoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID POX

Lab ID: 1902251-04

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
4-Chlorotoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
4-Isopropyltoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Benzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Bromobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Bromodichloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Bromoform	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Bromomethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Carbon tetrachloride	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Chlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Chloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Chloroform	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Chloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
cis-1,2-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
cis-1,3-Dichloropropene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Dibromochloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Dibromomethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Dichlorodifluoromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Ethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Hexachlorobutadiene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Isopropylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
m,p-Xylene	ND	1.0	1	B9F0348	06/13/2019	06/13/19 16:45	
Methylene chloride	ND	1.0	1	B9F0348	06/13/2019	06/13/19 16:45	
n-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
n-Propylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Naphthalene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
o-Xylene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
sec-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Styrene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
tert-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Tetrachloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Toluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
trans-1,2-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Trichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Trichlorofluoromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	
Vinyl chloride	ND	0.50	1	B9F0348	06/13/2019	06/13/19 16:45	

Surrogate: 1,2-Dichloroethane-d4

128 %

57 - 152

B9F0348

06/13/2019

06/13/19 16:45

Surrogate: 4-Bromofluorobenzene

96.6 %

62 - 134

B9F0348

06/13/2019

06/13/19 16:45



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID POX

Lab ID: 1902251-04

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: Dibromofluoromethane	122 %	56 - 167		B9F0348	06/13/2019	06/13/19 16:45	
Surrogate: Toluene-d8	119 %	33 - 170		B9F0348	06/13/2019	06/13/19 16:45	

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9F0328	06/12/2019	06/12/19 22:45	
Surrogate: 1,2-Dichlorobenzene-d4	0.0870 %	22 - 117		B9F0328	06/12/2019	06/12/19 22:45	S1
Surrogate: 2-Fluorobiphenyl	74.0 %	20 - 131		B9F0328	06/12/2019	06/12/19 22:45	
Surrogate: 4-Terphenyl-d14	77.7 %	24 - 135		B9F0328	06/12/2019	06/12/19 22:45	
Surrogate: Nitrobenzene-d5	0.638 %	6 - 124		B9F0328	06/12/2019	06/12/19 22:45	S1



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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID PF

Lab ID: 1902251-05

UV Absorption by EPA 415.3

Analyst: BL

Analyte	Result (1/cm)	PQL (1/cm)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
UV Absorption	ND	0.01	1	B9F0197	06/07/2019	06/07/19 11:58	

Alkalinity, Speciated by SM 2320B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO ₃)	220	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	
Alkalinity, Total (as CaCO ₃)	220	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	

Total Suspended Solids (Residue, Non-Filtrable) by SM 2540D

Analyst: BL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Residue, Suspended	ND	3.3	1	B9F0246	06/07/2019	06/10/19 11:40	

Total Organic Carbon by SM 5310B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9F0280	06/10/2019	06/10/19 22:50	



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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID INF

Lab ID: 1902251-06

Bromide by Ion Chromatography EPA 300

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.27	0.10	2	B9F0245	06/11/2019	06/11/19 11:47	

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,1,1-Trichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,1,2-Trichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,1-Dichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,1-Dichloroethene	55	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,1-Dichloropropene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,2,3-Trichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,2,3-Trichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,2,4-Trichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,2,4-Trimethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,2-Dibromoethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,2-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,2-Dichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,2-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,3,5-Trimethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,3-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,3-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
1,4-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
2,2-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
2-Chlorotoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
4-Chlorotoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
4-Isopropyltoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Benzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Bromobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Bromodichloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Bromoform	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Bromomethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Carbon tetrachloride	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Chlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID INF

Lab ID: 1902251-06

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Chloroform	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Chloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
cis-1,2-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
cis-1,3-Dichloropropene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Dibromochloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Dibromomethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Dichlorodifluoromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Ethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Hexachlorobutadiene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Isopropylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
m,p-Xylene	ND	1.0	1	B9F0348	06/13/2019	06/13/19 17:09	
Methylene chloride	ND	1.0	1	B9F0348	06/13/2019	06/13/19 17:09	
n-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
n-Propylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Naphthalene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
o-Xylene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
sec-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Styrene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
tert-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Tetrachloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Toluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
trans-1,2-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Trichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Trichlorofluoromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Vinyl chloride	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:09	
Surrogate: 1,2-Dichloroethane-d4	130 %	57 - 152		B9F0348	06/13/2019	06/13/19 17:09	
Surrogate: 4-Bromofluorobenzene	97.2 %	62 - 134		B9F0348	06/13/2019	06/13/19 17:09	
Surrogate: Dibromofluoromethane	125 %	56 - 167		B9F0348	06/13/2019	06/13/19 17:09	
Surrogate: Toluene-d8	120 %	33 - 170		B9F0348	06/13/2019	06/13/19 17:09	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID INF

Lab ID: 1902251-06

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	19	2.0	1	B9F0205	06/07/2019	06/10/19 18:34	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>59.3 %</i>	<i>34 - 188</i>		B9F0205	06/07/2019	<i>06/10/19 18:34</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>70.9 %</i>	<i>39 - 108</i>		B9F0205	06/07/2019	<i>06/10/19 18:34</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>103 %</i>	<i>71 - 131</i>		B9F0205	06/07/2019	<i>06/10/19 18:34</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>72.0 %</i>	<i>32 - 106</i>		B9F0205	06/07/2019	<i>06/10/19 18:34</i>	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID EW-02

Lab ID: 1902251-07

Bromide by Ion Chromatography EPA 300

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.22	0.10	2	B9F0245	06/11/2019	06/11/19 11:59	

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,1,1-Trichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,1,2-Trichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,1-Dichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,1-Dichloroethene	14	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,1-Dichloropropene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,2,3-Trichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,2,3-Trichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,2,4-Trichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,2,4-Trimethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,2-Dibromoethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,2-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,2-Dichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,2-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,3,5-Trimethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,3-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,3-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
1,4-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
2,2-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
2-Chlorotoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
4-Chlorotoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
4-Isopropyltoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Benzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Bromobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Bromodichloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Bromoform	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Bromomethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Carbon tetrachloride	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Chlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID EW-02

Lab ID: 1902251-07

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Chloroform	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Chloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
cis-1,2-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
cis-1,3-Dichloropropene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Dibromochloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Dibromomethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Dichlorodifluoromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Ethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Hexachlorobutadiene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Isopropylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
m,p-Xylene	ND	1.0	1	B9F0348	06/13/2019	06/13/19 17:33	
Methylene chloride	ND	1.0	1	B9F0348	06/13/2019	06/13/19 17:33	
n-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
n-Propylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Naphthalene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
o-Xylene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
sec-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Styrene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
tert-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Tetrachloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Toluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
trans-1,2-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Trichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Trichlorofluoromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Vinyl chloride	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:33	
Surrogate: 1,2-Dichloroethane-d4	137 %	57 - 152		B9F0348	06/13/2019	06/13/19 17:33	
Surrogate: 4-Bromofluorobenzene	95.9 %	62 - 134		B9F0348	06/13/2019	06/13/19 17:33	
Surrogate: Dibromofluoromethane	130 %	56 - 167		B9F0348	06/13/2019	06/13/19 17:33	
Surrogate: Toluene-d8	120 %	33 - 170		B9F0348	06/13/2019	06/13/19 17:33	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID EW-02

Lab ID: 1902251-07

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	7.2	2.0	1	B9F0205	06/07/2019	06/10/19 19:00	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>61.6 %</i>	<i>34 - 188</i>		<i>B9F0205</i>	<i>06/07/2019</i>	<i>06/10/19 19:00</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>73.4 %</i>	<i>39 - 108</i>		<i>B9F0205</i>	<i>06/07/2019</i>	<i>06/10/19 19:00</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>103 %</i>	<i>71 - 131</i>		<i>B9F0205</i>	<i>06/07/2019</i>	<i>06/10/19 19:00</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>70.9 %</i>	<i>32 - 106</i>		<i>B9F0205</i>	<i>06/07/2019</i>	<i>06/10/19 19:00</i>	



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID MW-29

Lab ID: 1902251-08

Bromide by Ion Chromatography EPA 300

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.38	0.10	2	B9F0245	06/11/2019	06/11/19 12:10	

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,1,1-Trichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,1,2-Trichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,1-Dichloroethane	1.5	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,1-Dichloroethene	130	5.0	10	B9F0319	06/12/2019	06/12/19 16:30	
1,1-Dichloropropene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,2,3-Trichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,2,3-Trichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,2,4-Trichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,2,4-Trimethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,2-Dibromoethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,2-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,2-Dichloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,2-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,3,5-Trimethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,3-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,3-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
1,4-Dichlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
2,2-Dichloropropane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
2-Chlorotoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
4-Chlorotoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
4-Isopropyltoluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Benzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Bromobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Bromodichloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Bromoform	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Bromomethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Carbon tetrachloride	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Chlorobenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID MW-29

Lab ID: 1902251-08

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Chloroform	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Chloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
cis-1,2-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
cis-1,3-Dichloropropene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Dibromochloromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Dibromomethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Dichlorodifluoromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Ethylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Hexachlorobutadiene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Isopropylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
m,p-Xylene	ND	1.0	1	B9F0348	06/13/2019	06/13/19 17:58	
Methylene chloride	ND	1.0	1	B9F0348	06/13/2019	06/13/19 17:58	
n-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
n-Propylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Naphthalene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
o-Xylene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
sec-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Styrene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
tert-Butylbenzene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Tetrachloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Toluene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
trans-1,2-Dichloroethene	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Trichloroethene	1.5	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Trichlorofluoromethane	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
Vinyl chloride	ND	0.50	1	B9F0348	06/13/2019	06/13/19 17:58	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>115 %</i>	<i>57 - 152</i>		B9F0319	06/12/2019	<i>06/12/19 16:30</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>126 %</i>	<i>57 - 152</i>		B9F0348	06/13/2019	<i>06/13/19 17:58</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>96.6 %</i>	<i>62 - 134</i>		B9F0319	06/12/2019	<i>06/12/19 16:30</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>95.4 %</i>	<i>62 - 134</i>		B9F0348	06/13/2019	<i>06/13/19 17:58</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>113 %</i>	<i>56 - 167</i>		B9F0319	06/12/2019	<i>06/12/19 16:30</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>118 %</i>	<i>56 - 167</i>		B9F0348	06/13/2019	<i>06/13/19 17:58</i>	
<i>Surrogate: Toluene-d8</i>	<i>119 %</i>	<i>33 - 170</i>		B9F0348	06/13/2019	<i>06/13/19 17:58</i>	
<i>Surrogate: Toluene-d8</i>	<i>126 %</i>	<i>33 - 170</i>		B9F0319	06/12/2019	<i>06/12/19 16:30</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID MW-29

Lab ID: 1902251-08

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	100	2.0	1	B9F0205	06/07/2019	06/10/19 19:27	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>60.1 %</i>	<i>34 - 188</i>		B9F0205	06/07/2019	<i>06/10/19 19:27</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>69.6 %</i>	<i>39 - 108</i>		B9F0205	06/07/2019	<i>06/10/19 19:27</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>99.3 %</i>	<i>71 - 131</i>		B9F0205	06/07/2019	<i>06/10/19 19:27</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>67.3 %</i>	<i>32 - 106</i>		B9F0205	06/07/2019	<i>06/10/19 19:27</i>	



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9171 Towne Centre Drive, Suite 375

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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

QUALITY CONTROL SECTION

Alkalinity, Speciated by SM 2320B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0332 - No_Prep_WC1_W

Blank (B9F0332-BLK1)

Prepared: 6/12/2019 Analyzed: 6/12/2019

Alkalinity, Bicarbonate (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Total (as CaCO ₃)	ND	5.0	3.4

LCS (B9F0332-BS1)

Prepared: 6/12/2019 Analyzed: 6/12/2019

Alkalinity, Total (as CaCO ₃)	103.380	5.0	3.4	99.9580	103	80 - 120

Matrix Spike (B9F0332-MS1)

Source: 1902251-04

Prepared: 6/12/2019 Analyzed: 6/12/2019

Alkalinity, Total (as CaCO ₃)	318.570	5.0	3.4	99.9580	217.300	101	80 - 120

Matrix Spike Dup (B9F0332-MSD1)

Source: 1902251-04

Prepared: 6/12/2019 Analyzed: 6/12/2019

Alkalinity, Total (as CaCO ₃)	316.460	5.0	3.4	99.9580	217.300	99.2	80 - 120	0.665	20



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Total Suspended Solids (Residue, Non-Filtrable) by SM 2540D - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0246 - No_Prep_WC1_W

Blank (B9F0246-BLK1)

Prepared: 6/7/2019 Analyzed: 6/10/2019

Residue, Suspended ND 1.0 1.0

LCS (B9F0246-BS1)

Prepared: 6/7/2019 Analyzed: 6/10/2019

Residue, Suspended 85.0000 10 10 90.4000 94.0 80 - 120

Duplicate (B9F0246-DUP1)

Source: 1902261-01

Prepared: 6/7/2019 Analyzed: 6/10/2019

Residue, Suspended 23.6667 3.3 3.3 25.3333 6.80 10



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Bromide by Ion Chromatography EPA 300 - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0245 - No_Prep_IC1_W

Blank (B9F0245-BLK1)

Prepared: 6/11/2019 Analyzed: 6/11/2019

Bromide ND 0.05 0.02

LCS (B9F0245-BS1)

Prepared: 6/11/2019 Analyzed: 6/11/2019

Bromide 0.981600 0.05 0.02 1.00000 98.2 90 - 110

Duplicate (B9F0245-DUP1)

Source: 1902295-02

Prepared: 6/11/2019 Analyzed: 6/11/2019

Bromide 0.754000 0.50 0.16 0.771000 2.23 20

Matrix Spike (B9F0245-MS1)

Source: 1902295-02

Prepared: 6/11/2019 Analyzed: 6/11/2019

Bromide 2.68430 2.50000 0.0771 104 80 - 120

Matrix Spike (B9F0245-MS2)

Source: 1902307-04

Prepared: 6/11/2019 Analyzed: 6/11/2019

Bromide 2.73010 2.50000 0.0615 107 80 - 120

Matrix Spike Dup (B9F0245-MSD1)

Source: 1902295-02

Prepared: 6/11/2019 Analyzed: 6/11/2019

Bromide 2.65190 2.50000 0.0771 103 80 - 120 1.21 20



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

UV Absorption by EPA 415.3 - Quality Control

Analyte	Result (1/cm)	PQL (1/cm)	MDL (1/cm)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0197 - No_Prep_II_W

Duplicate (B9F0197-DUP1)			Source: 1902251-05	Prepared: 6/7/2019 Analyzed: 6/7/2019		
UV Absorption	ND	0.01	0.01	ND		20
Duplicate (B9F0197-DUP2)			Source: 1902254-02	Prepared: 6/7/2019 Analyzed: 6/7/2019		
UV Absorption	ND	0.01	0.01	ND	NR	20
Duplicate (B9F0197-DUP3)			Source: 1902254-03	Prepared: 6/7/2019 Analyzed: 6/7/2019		
UV Absorption	ND	0.01	0.01	ND		20
Duplicate (B9F0197-DUP4)			Source: 1902254-04	Prepared: 6/7/2019 Analyzed: 6/7/2019		
UV Absorption	ND	0.01	0.01	ND	NR	20
Duplicate (B9F0197-DUP5)			Source: 1902254-05	Prepared: 6/7/2019 Analyzed: 6/7/2019		
UV Absorption	ND	0.01	0.01	ND	NR	20



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Total Organic Carbon by SM 5310B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0280 - No_Prep_II_W

Blank (B9F0280-BLK1)

Prepared: 6/10/2019 Analyzed: 6/10/2019

Organic Carbon, Total ND 3.0 0.28

LCS (B9F0280-BS1)

Prepared: 6/10/2019 Analyzed: 6/10/2019

Organic Carbon, Total 18.7100 3.0 0.28 20.0000 93.6 80 - 120

LCS Dup (B9F0280-BSD1)

Prepared: 6/10/2019 Analyzed: 6/10/2019

Organic Carbon, Total 19.0300 3.0 0.28 20.0000 95.2 80 - 120 1.70 20



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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0319 - MSVOA_W

Blank (B9F0319-BLK1)

Prepared: 6/12/2019 Analyzed: 6/12/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0319 - MSVOA_W (continued)

Blank (B9F0319-BLK1) - Continued

Prepared: 6/12/2019 Analyzed: 6/12/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	29.24		25.0000	117	57 - 152
Surrogate: 4-Bromofluorobenzene	24.58		25.0000	98.3	62 - 134
Surrogate: Dibromofluoromethane	27.64		25.0000	111	56 - 167
Surrogate: Toluene-d8	29.86		25.0000	119	33 - 170

LCS (B9F0319-BS1)

Prepared: 6/12/2019 Analyzed: 6/12/2019

1,1,1,2-Tetrachloroethane	21.4600	0.50	0.11	20.0000	107	80 - 137
1,1,1-Trichloroethane	20.5800	0.50	0.07	20.0000	103	75 - 148
1,1,2,2-Tetrachloroethane	21.2600	0.50	0.36	20.0000	106	64 - 118
1,1,2-Trichloroethane	20.6400	0.50	0.25	20.0000	103	77 - 113
1,1-Dichloroethane	18.1700	0.50	0.09	20.0000	90.8	72 - 131
1,1-Dichloroethene	22.1100	0.50	0.13	20.0000	111	75 - 132
1,1-Dichloropropene	21.6500	0.50	0.13	20.0000	108	84 - 141
1,2,3-Trichloropropane	19.2600	0.50	0.39	20.0000	96.3	65 - 111
1,2,3-Trichlorobenzene	21.4400	0.50	0.18	20.0000	107	79 - 117
1,2,4-Trichlorobenzene	21.0900	0.50	0.16	20.0000	105	78 - 121
1,2,4-Trimethylbenzene	19.8500	0.50	0.14	20.0000	99.2	83 - 125
1,2-Dibromo-3-chloropropane	18.7700	0.50	0.41	20.0000	93.8	54 - 116
1,2-Dibromoethane	20.2100	0.50	0.24	20.0000	101	79 - 118
1,2-Dichlorobenzene	20.6100	0.50	0.20	20.0000	103	82 - 115
1,2-Dichloroethane	19.5000	0.50	0.20	20.0000	97.5	76 - 115
1,2-Dichloropropane	19.4500	0.50	0.15	20.0000	97.2	74 - 113
1,3,5-Trimethylbenzene	20.5300	0.50	0.13	20.0000	103	83 - 126
1,3-Dichlorobenzene	20.5900	0.50	0.16	20.0000	103	84 - 118
1,3-Dichloropropane	20.7500	0.50	0.21	20.0000	104	72 - 116



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0319 - MSVOA_W (continued)

LCS (B9F0319-BS1) - Continued

Prepared: 6/12/2019 Analyzed: 6/12/2019

1,4-Dichlorobenzene	19.7000	0.50	0.17	20.0000		98.5	83 - 112		
2,2-Dichloropropane	19.9200	0.50	0.38	20.0000		99.6	72 - 150		
2-Chlorotoluene	21.3500	0.50	0.11	20.0000		107	82 - 120		
4-Chlorotoluene	21.5000	0.50	0.12	20.0000		108	81 - 121		
4-Isopropyltoluene	19.8100	0.50	0.11	20.0000		99.0	86 - 124		
Benzene	42.9900	0.50	0.13	40.0000		107	81 - 118		
Bromobenzene	20.6700	0.50	0.21	20.0000		103	82 - 117		
Bromodichloromethane	20.0800	0.50	0.14	20.0000		100	80 - 122		
Bromoform	21.7600	0.50	0.20	20.0000		109	53 - 145		
Bromomethane	22.6400	0.50	0.17	20.0000		113	30 - 204		
Carbon tetrachloride	20.5500	0.50	0.09	20.0000		103	77 - 157		
Chlorobenzene	20.3200	0.50	0.13	20.0000		102	86 - 113		
Chloroethane	20.4600	0.50	0.15	20.0000		102	70 - 160		
Chloroform	20.7900	0.50	0.11	20.0000		104	66 - 136		
Chloromethane	18.2500	0.50	0.12	20.0000		91.2	52 - 138		
cis-1,2-Dichloroethene	22.3500	0.50	0.14	20.0000		112	71 - 128		
cis-1,3-Dichloropropene	23.7700	0.50	0.13	20.0000		119	71 - 123		
Dibromochloromethane	21.2700	0.50	0.16	20.0000		106	78 - 140		
Dibromomethane	19.8400	0.50	0.19	20.0000		99.2	78 - 109		
Dichlorodifluoromethane	13.1100	0.50	0.05	20.0000		65.6	64 - 144		
Ethylbenzene	41.7100	0.50	0.13	40.0000		104	90 - 116		
Hexachlorobutadiene	20.5200	0.50	0.15	20.0000		103	81 - 129		
Isopropylbenzene	21.9600	0.50	0.10	20.0000		110	83 - 129		
m,p-Xylene	42.6000	1.0	0.19	40.0000		106	88 - 124		
Methylene chloride	21.6700	1.0	0.71	20.0000		108	76 - 137		
n-Butylbenzene	21.5200	0.50	0.11	20.0000		108	83 - 129		
n-Propylbenzene	21.6900	0.50	0.10	20.0000		108	85 - 124		
Naphthalene	17.7100	0.50	0.41	20.0000		88.6	67 - 113		
o-Xylene	41.0200	0.50	0.13	40.0000		103	82 - 129		
sec-Butylbenzene	22.0000	0.50	0.09	20.0000		110	86 - 127		
Styrene	19.6000	0.50	0.13	20.0000		98.0	83 - 122		
tert-Butylbenzene	22.5400	0.50	0.09	20.0000		113	84 - 130		
Tetrachloroethene	21.2100	0.50	0.10	20.0000		106	87 - 123		
Toluene	44.6600	0.50	0.12	40.0000		112	84 - 115		
trans-1,2-Dichloroethene	17.6000	0.50	0.09	20.0000		88.0	60 - 148		
Trichloroethene	19.8700	0.50	0.10	20.0000		99.4	79 - 129		
Trichlorofluoromethane	20.7600	0.50	0.10	20.0000		104	68 - 162		
Vinyl chloride	16.7100	0.50	0.05	20.0000		83.6	73 - 128		
Surrogate: 1,2-Dichloroethane-d4	27.12			25.0000		108	57 - 152		
Surrogate: 4-Bromofluorobenzene	27.99			25.0000		112	62 - 134		
Surrogate: Dibromofluoromethane	27.63			25.0000		111	56 - 167		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0319 - MSVOA_W (continued)

LCS (B9F0319-BS1) - Continued

Prepared: 6/12/2019 Analyzed: 6/12/2019

Surrogate: Toluene-d8 29.95 25.0000 120 33 - 170

LCS Dup (B9F0319-BS1)

Prepared: 6/12/2019 Analyzed: 6/12/2019

1,1,1,2-Tetrachloroethane	21.3200	0.50	0.11	20.0000	107	80 - 137	0.655	20	
1,1,1-Trichloroethane	19.7400	0.50	0.07	20.0000	98.7	75 - 148	4.17	20	
1,1,2,2-Tetrachloroethane	21.7300	0.50	0.36	20.0000	109	64 - 118	2.19	20	
1,1,2-Trichloroethane	20.9200	0.50	0.25	20.0000	105	77 - 113	1.35	20	
1,1-Dichloroethane	17.1100	0.50	0.09	20.0000	85.6	72 - 131	6.01	20	
1,1-Dichloroethene	20.5400	0.50	0.13	20.0000	103	75 - 132	7.36	20	
1,1-Dichloropropene	21.5700	0.50	0.13	20.0000	108	84 - 141	0.370	20	
1,2,3-Trichloropropane	19.8000	0.50	0.39	20.0000	99.0	65 - 111	2.76	20	
1,2,3-Trichlorobenzene	21.8300	0.50	0.18	20.0000	109	79 - 117	1.80	20	
1,2,4-Trichlorobenzene	21.4900	0.50	0.16	20.0000	107	78 - 121	1.88	20	
1,2,4-Trimethylbenzene	19.9900	0.50	0.14	20.0000	100	83 - 125	0.703	20	
1,2-Dibromo-3-chloropropane	20.8900	0.50	0.41	20.0000	104	54 - 116	10.7	20	
1,2-Dibromoethane	20.8100	0.50	0.24	20.0000	104	79 - 118	2.93	20	
1,2-Dichlorobenzene	20.7100	0.50	0.20	20.0000	104	82 - 115	0.484	20	
1,2-Dichloroethane	19.6300	0.50	0.20	20.0000	98.2	76 - 115	0.664	20	
1,2-Dichloropropane	19.2400	0.50	0.15	20.0000	96.2	74 - 113	1.09	20	
1,3,5-Trimethylbenzene	20.4500	0.50	0.13	20.0000	102	83 - 126	0.390	20	
1,3-Dichlorobenzene	20.4500	0.50	0.16	20.0000	102	84 - 118	0.682	20	
1,3-Dichloropropane	21.0200	0.50	0.21	20.0000	105	72 - 116	1.29	20	
1,4-Dichlorobenzene	19.6900	0.50	0.17	20.0000	98.4	83 - 112	0.0508	20	
2,2-Dichloropropane	18.6600	0.50	0.38	20.0000	93.3	72 - 150	6.53	20	
2-Chlorotoluene	21.2900	0.50	0.11	20.0000	106	82 - 120	0.281	20	
4-Chlorotoluene	21.3200	0.50	0.12	20.0000	107	81 - 121	0.841	20	
4-Isopropyltoluene	19.7700	0.50	0.11	20.0000	98.8	86 - 124	0.202	20	
Benzene	42.8700	0.50	0.13	40.0000	107	81 - 118	0.280	20	
Bromobenzene	20.6700	0.50	0.21	20.0000	103	82 - 117	0.00	20	
Bromodichloromethane	20.0300	0.50	0.14	20.0000	100	80 - 122	0.249	20	
Bromoform	22.5600	0.50	0.20	20.0000	113	53 - 145	3.61	20	
Bromomethane	22.0200	0.50	0.17	20.0000	110	30 - 204	2.78	20	
Carbon tetrachloride	20.3700	0.50	0.09	20.0000	102	77 - 157	0.880	20	
Chlorobenzene	20.2200	0.50	0.13	20.0000	101	86 - 113	0.493	20	
Chloroethane	19.6400	0.50	0.15	20.0000	98.2	70 - 160	4.09	20	
Chloroform	19.2700	0.50	0.11	20.0000	96.4	66 - 136	7.59	20	
Chloromethane	18.0700	0.50	0.12	20.0000	90.4	52 - 138	0.991	20	
cis-1,2-Dichloroethene	20.9700	0.50	0.14	20.0000	105	71 - 128	6.37	20	
cis-1,3-Dichloropropene	24.1900	0.50	0.13	20.0000	121	71 - 123	1.75	20	
Dibromochloromethane	21.5600	0.50	0.16	20.0000	108	78 - 140	1.35	20	
Dibromomethane	19.9600	0.50	0.19	20.0000	99.8	78 - 109	0.603	20	
Dichlorodifluoromethane	12.6200	0.50	0.05	20.0000	63.1	64 - 144	3.81	20	L4



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0319 - MSVOA_W (continued)

LCS Dup (B9F0319-BSD1) - Continued

Prepared: 6/12/2019 Analyzed: 6/12/2019

Ethylbenzene	41.2500	0.50	0.13	40.0000		103	90 - 116	1.11	20
Hexachlorobutadiene	20.5000	0.50	0.15	20.0000		102	81 - 129	0.0975	20
Isopropylbenzene	21.9000	0.50	0.10	20.0000		110	83 - 129	0.274	20
m,p-Xylene	42.1700	1.0	0.19	40.0000		105	88 - 124	1.01	20
Methylene chloride	20.5300	1.0	0.71	20.0000		103	76 - 137	5.40	20
n-Butylbenzene	21.4100	0.50	0.11	20.0000		107	83 - 129	0.512	20
n-Propylbenzene	21.6700	0.50	0.10	20.0000		108	85 - 124	0.0923	20
Naphthalene	18.7000	0.50	0.41	20.0000		93.5	67 - 113	5.44	20
o-Xylene	40.9300	0.50	0.13	40.0000		102	82 - 129	0.220	20
sec-Butylbenzene	21.9800	0.50	0.09	20.0000		110	86 - 127	0.0910	20
Styrene	19.4400	0.50	0.13	20.0000		97.2	83 - 122	0.820	20
tert-Butylbenzene	22.5300	0.50	0.09	20.0000		113	84 - 130	0.0444	20
Tetrachloroethene	20.8500	0.50	0.10	20.0000		104	87 - 123	1.71	20
Toluene	44.9400	0.50	0.12	40.0000		112	84 - 115	0.625	20
trans-1,2-Dichloroethene	16.3700	0.50	0.09	20.0000		81.8	60 - 148	7.24	20
Trichloroethene	19.3400	0.50	0.10	20.0000		96.7	79 - 129	2.70	20
Trichlorofluoromethane	19.3800	0.50	0.10	20.0000		96.9	68 - 162	6.88	20
Vinyl chloride	16.1200	0.50	0.05	20.0000		80.6	73 - 128	3.59	20
Surrogate: 1,2-Dichloroethane-d4	26.22			25.0000		105	57 - 152		
Surrogate: 4-Bromofluorobenzene	28.12			25.0000		112	62 - 134		
Surrogate: Dibromofluoromethane	26.34			25.0000		105	56 - 167		
Surrogate: Toluene-d8	30.13			25.0000		121	33 - 170		

Matrix Spike (B9F0319-MS1)

Source: 1902251-08RE1

Prepared: 6/12/2019 Analyzed: 6/12/2019

1,1,1,2-Tetrachloroethane	210.600	5.0	1.1	200.000	ND	105	80 - 137		
1,1,1-Trichloroethane	201.000	5.0	0.74	200.000	ND	100	75 - 148		
1,1,2,2-Tetrachloroethane	211.100	5.0	3.6	200.000	ND	106	64 - 118		
1,1,2-Trichloroethane	210.500	5.0	2.5	200.000	ND	105	77 - 113		
1,1-Dichloroethane	174.700	5.0	0.92	200.000	1.50000	86.6	72 - 131		
1,1-Dichloroethene	366.400	5.0	1.3	200.000	133.000	117	75 - 132		
1,1-Dichloropropene	219.000	5.0	1.3	200.000	ND	110	84 - 141		
1,2,3-Trichloropropane	195.500	5.0	3.9	200.000	ND	97.8	65 - 111		
1,2,3-Trichlorobenzene	209.300	5.0	1.8	200.000	3.70000	103	79 - 117		
1,2,4-Trichlorobenzene	202.700	5.0	1.6	200.000	3.70000	99.5	78 - 121		
1,2,4-Trimethylbenzene	194.100	5.0	1.4	200.000	2.70000	95.7	83 - 125		
1,2-Dibromo-3-chloropropane	189.200	5.0	4.1	200.000	ND	94.6	54 - 116		
1,2-Dibromoethane	222.100	5.0	2.4	200.000	ND	111	79 - 118		
1,2-Dichlorobenzene	203.200	5.0	2.0	200.000	ND	102	82 - 115		
1,2-Dichloroethane	202.300	5.0	2.0	200.000	ND	101	76 - 115		
1,2-Dichloropropane	196.500	5.0	1.5	200.000	ND	98.2	74 - 113		
1,3,5-Trimethylbenzene	198.800	5.0	1.3	200.000	ND	99.4	83 - 126		



Certificate of Analysis

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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0319 - MSVOA_W (continued)

Matrix Spike (B9F0319-MS1) - Continued

Source: 1902251-08RE1

Prepared: 6/12/2019 Analyzed: 6/12/2019

1,3-Dichlorobenzene	198.800	5.0	1.6	200.000	ND	99.4	84 - 118			
1,3-Dichloropropane	213.500	5.0	2.1	200.000	ND	107	72 - 116			
1,4-Dichlorobenzene	193.400	5.0	1.7	200.000	2.50000	95.4	83 - 112			
2,2-Dichloropropane	190.400	5.0	3.8	200.000	ND	95.2	72 - 150			
2-Chlorotoluene	207.400	5.0	1.1	200.000	ND	104	82 - 120			
4-Chlorotoluene	207.200	5.0	1.2	200.000	1.50000	103	81 - 121			
4-Isopropyltoluene	192.000	5.0	1.1	200.000	4.00000	94.0	86 - 124			
Benzene	439.400	5.0	1.3	400.000	ND	110	81 - 118			
Bromobenzene	199.500	5.0	2.1	200.000	ND	99.8	82 - 117			
Bromodichloromethane	201.600	5.0	1.4	200.000	ND	101	80 - 122			
Bromoform	221.500	5.0	2.0	200.000	ND	111	53 - 145			
Bromomethane	236.500	5.0	1.7	200.000	ND	118	30 - 204			
Carbon tetrachloride	203.700	5.0	0.92	200.000	ND	102	77 - 157			
Chlorobenzene	201.500	5.0	1.3	200.000	ND	101	86 - 113			
Chloroethane	202.000	5.0	1.5	200.000	ND	101	70 - 160			
Chloroform	200.200	5.0	1.1	200.000	ND	100	66 - 136			
Chloromethane	182.200	5.0	1.2	200.000	ND	91.1	52 - 138			
cis-1,2-Dichloroethene	210.700	5.0	1.4	200.000	ND	105	71 - 128			
cis-1,3-Dichloropropene	235.500	5.0	1.3	200.000	ND	118	71 - 123			
Dibromochloromethane	214.000	5.0	1.6	200.000	ND	107	78 - 140			
Dibromomethane	205.400	5.0	1.9	200.000	ND	103	78 - 109			
Dichlorodifluoromethane	127.700	5.0	0.54	200.000	ND	63.8	64 - 144			M2
Ethylbenzene	411.400	5.0	1.3	400.000	1.50000	102	90 - 116			
Hexachlorobutadiene	195.600	5.0	1.5	200.000	6.10000	94.8	81 - 129			
Isopropylbenzene	213.200	5.0	1.0	200.000	1.80000	106	83 - 129			
m,p-Xylene	425.700	10	1.9	400.000	ND	106	88 - 124			
Methylene chloride	210.000	10	7.1	200.000	ND	105	76 - 137			
n-Butylbenzene	204.700	5.0	1.1	200.000	3.00000	101	83 - 129			
n-Propylbenzene	211.200	5.0	1.0	200.000	1.60000	105	85 - 124			
Naphthalene	172.100	5.0	4.1	200.000	18.2000	77.0	67 - 113			
o-Xylene	412.200	5.0	1.3	400.000	2.00000	103	82 - 129			
sec-Butylbenzene	213.200	5.0	0.90	200.000	1.20000	106	86 - 127			
Styrene	194.200	5.0	1.3	200.000	7.40000	93.4	83 - 122			
tert-Butylbenzene	218.800	5.0	0.90	200.000	ND	109	84 - 130			
Tetrachloroethene	209.500	5.0	1.0	200.000	ND	105	87 - 123			
Toluene	463.800	5.0	1.2	400.000	ND	116	84 - 115			M2
trans-1,2-Dichloroethene	164.800	5.0	0.92	200.000	ND	82.4	60 - 148			
Trichloroethene	191.800	5.0	0.99	200.000	2.50000	94.6	79 - 129			
Trichlorofluoromethane	198.000	5.0	0.98	200.000	ND	99.0	68 - 162			
Vinyl chloride	162.100	5.0	0.53	200.000	ND	81.0	73 - 128			

Surrogate: 1,2-Dichloroethane-d4

27.17

25.0000

109

57 - 152



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0319 - MSVOA_W (continued)

Matrix Spike (B9F0319-MS1) - Continued

Source: 1902251-08RE1

Prepared: 6/12/2019 Analyzed: 6/12/2019

Surrogate: 4-Bromofluorobenzene	28.43		25.0000		114	62 - 134			
Surrogate: Dibromofluoromethane	26.76		25.0000		107	56 - 167			
Surrogate: Toluene-d8	30.88		25.0000		124	33 - 170			

Matrix Spike Dup (B9F0319-MSD1)

Source: 1902251-08RE1

Prepared: 6/12/2019 Analyzed: 6/12/2019

1,1,1,2-Tetrachloroethane	214.400	5.0	1.1	200.000	ND	107	80 - 137	1.79	20
1,1,1-Trichloroethane	197.700	5.0	0.74	200.000	ND	98.8	75 - 148	1.66	20
1,1,2,2-Tetrachloroethane	220.100	5.0	3.6	200.000	ND	110	64 - 118	4.17	20
1,1,2-Trichloroethane	211.400	5.0	2.5	200.000	ND	106	77 - 113	0.427	20
1,1-Dichloroethane	170.800	5.0	0.92	200.000	1.50000	84.6	72 - 131	2.26	20
1,1-Dichloroethene	360.900	5.0	1.3	200.000	133.000	114	75 - 132	1.51	20
1,1-Dichloropropene	213.900	5.0	1.3	200.000	ND	107	84 - 141	2.36	20
1,2,3-Trichloropropane	198.600	5.0	3.9	200.000	ND	99.3	65 - 111	1.57	20
1,2,3-Trichlorobenzene	221.000	5.0	1.8	200.000	3.70000	109	79 - 117	5.44	20
1,2,4-Trichlorobenzene	215.800	5.0	1.6	200.000	3.70000	106	78 - 121	6.26	20
1,2,4-Trimethylbenzene	199.600	5.0	1.4	200.000	2.70000	98.4	83 - 125	2.79	20
1,2-Dibromo-3-chloropropane	194.600	5.0	4.1	200.000	ND	97.3	54 - 116	2.81	20
1,2-Dibromoethane	214.200	5.0	2.4	200.000	ND	107	79 - 118	3.62	20
1,2-Dichlorobenzene	208.500	5.0	2.0	200.000	ND	104	82 - 115	2.57	20
1,2-Dichloroethane	196.800	5.0	2.0	200.000	ND	98.4	76 - 115	2.76	20
1,2-Dichloropropane	196.100	5.0	1.5	200.000	ND	98.0	74 - 113	0.204	20
1,3,5-Trimethylbenzene	205.200	5.0	1.3	200.000	ND	103	83 - 126	3.17	20
1,3-Dichlorobenzene	205.400	5.0	1.6	200.000	ND	103	84 - 118	3.27	20
1,3-Dichloropropane	214.500	5.0	2.1	200.000	ND	107	72 - 116	0.467	20
1,4-Dichlorobenzene	197.300	5.0	1.7	200.000	2.50000	97.4	83 - 112	2.00	20
2,2-Dichloropropane	185.300	5.0	3.8	200.000	ND	92.6	72 - 150	2.71	20
2-Chlorotoluene	214.600	5.0	1.1	200.000	ND	107	82 - 120	3.41	20
4-Chlorotoluene	213.300	5.0	1.2	200.000	1.50000	106	81 - 121	2.90	20
4-Isopropyltoluene	197.200	5.0	1.1	200.000	4.00000	96.6	86 - 124	2.67	20
Benzene	430.900	5.0	1.3	400.000	ND	108	81 - 118	1.95	20
Bromobenzene	205.800	5.0	2.1	200.000	ND	103	82 - 117	3.11	20
Bromodichloromethane	195.800	5.0	1.4	200.000	ND	97.9	80 - 122	2.92	20
Bromoform	225.000	5.0	2.0	200.000	ND	112	53 - 145	1.57	20
Bromomethane	234.800	5.0	1.7	200.000	ND	117	30 - 204	0.721	20
Carbon tetrachloride	201.700	5.0	0.92	200.000	ND	101	77 - 157	0.987	20
Chlorobenzene	205.200	5.0	1.3	200.000	ND	103	86 - 113	1.82	20
Chloroethane	194.300	5.0	1.5	200.000	ND	97.2	70 - 160	3.89	20
Chloroform	193.200	5.0	1.1	200.000	ND	96.6	66 - 136	3.56	20
Chloromethane	180.700	5.0	1.2	200.000	ND	90.4	52 - 138	0.827	20
cis-1,2-Dichloroethene	208.900	5.0	1.4	200.000	ND	104	71 - 128	0.858	20
cis-1,3-Dichloropropene	230.500	5.0	1.3	200.000	ND	115	71 - 123	2.15	20
Dibromochloromethane	215.800	5.0	1.6	200.000	ND	108	78 - 140	0.838	20



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0319 - MSVOA_W (continued)

Matrix Spike Dup (B9F0319-MSD1) - Continued

Source: 1902251-08RE1

Prepared: 6/12/2019 Analyzed: 6/12/2019

Dibromomethane	202.300	5.0	1.9	200.000	ND	101	78 - 109	1.52	20	L4
Dichlorodifluoromethane	125.600	5.0	0.54	200.000	ND	62.8	64 - 144	1.66	20	
Ethylbenzene	416.900	5.0	1.3	400.000	1.50000	104	90 - 116	1.33	20	
Hexachlorobutadiene	204.400	5.0	1.5	200.000	6.10000	99.2	81 - 129	4.40	20	
Isopropylbenzene	219.000	5.0	1.0	200.000	1.80000	109	83 - 129	2.68	20	
m,p-Xylene	425.900	10	1.9	400.000	ND	106	88 - 124	0.0470	20	
Methylene chloride	206.400	10	7.1	200.000	ND	103	76 - 137	1.73	20	
n-Butylbenzene	212.600	5.0	1.1	200.000	3.00000	105	83 - 129	3.79	20	
n-Propylbenzene	218.100	5.0	1.0	200.000	1.60000	108	85 - 124	3.21	20	
Naphthalene	185.500	5.0	4.1	200.000	18.2000	83.6	67 - 113	7.49	20	
o-Xylene	419.600	5.0	1.3	400.000	2.00000	104	82 - 129	1.78	20	
sec-Butylbenzene	218.800	5.0	0.90	200.000	1.20000	109	86 - 127	2.59	20	
Styrene	199.300	5.0	1.3	200.000	7.40000	96.0	83 - 122	2.59	20	
tert-Butylbenzene	224.500	5.0	0.90	200.000	ND	112	84 - 130	2.57	20	
Tetrachloroethene	213.700	5.0	1.0	200.000	ND	107	87 - 123	1.98	20	
Toluene	453.900	5.0	1.2	400.000	ND	113	84 - 115	2.16	20	
trans-1,2-Dichloroethene	164.000	5.0	0.92	200.000	ND	82.0	60 - 148	0.487	20	
Trichloroethene	197.200	5.0	0.99	200.000	2.50000	97.4	79 - 129	2.78	20	
Trichlorofluoromethane	193.000	5.0	0.98	200.000	ND	96.5	68 - 162	2.56	20	
Vinyl chloride	160.100	5.0	0.53	200.000	ND	80.0	73 - 128	1.24	20	
Surrogate: 1,2-Dichloroethane-d4	26.79			25.0000		107	57 - 152			
Surrogate: 4-Bromofluorobenzene	28.68			25.0000		115	62 - 134			
Surrogate: Dibromofluoromethane	26.54			25.0000		106	56 - 167			
Surrogate: Toluene-d8	30.27			25.0000		121	33 - 170			



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Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0348 - MSVOA_W

Blank (B9F0348-BLK1)

Prepared: 6/13/2019 Analyzed: 6/13/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0348 - MSVOA_W (continued)

Blank (B9F0348-BLK1) - Continued

Prepared: 6/13/2019 Analyzed: 6/13/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	30.86		25.0000	123	57 - 152
Surrogate: 4-Bromofluorobenzene	24.00		25.0000	96.0	62 - 134
Surrogate: Dibromofluoromethane	30.08		25.0000	120	56 - 167
Surrogate: Toluene-d8	29.17		25.0000	117	33 - 170

LCS (B9F0348-BS1)

Prepared: 6/13/2019 Analyzed: 6/13/2019

1,1,1,2-Tetrachloroethane	21.8100	0.50	0.11	20.0000	109	80 - 137
1,1,1-Trichloroethane	21.2000	0.50	0.07	20.0000	106	75 - 148
1,1,2,2-Tetrachloroethane	21.9100	0.50	0.36	20.0000	110	64 - 118
1,1,2-Trichloroethane	20.9900	0.50	0.25	20.0000	105	77 - 113
1,1-Dichloroethane	18.3200	0.50	0.09	20.0000	91.6	72 - 131
1,1-Dichloroethene	22.6700	0.50	0.13	20.0000	113	75 - 132
1,1-Dichloropropene	21.8800	0.50	0.13	20.0000	109	84 - 141
1,2,3-Trichloropropane	19.9400	0.50	0.39	20.0000	99.7	65 - 111
1,2,3-Trichlorobenzene	21.7200	0.50	0.18	20.0000	109	79 - 117
1,2,4-Trichlorobenzene	21.4400	0.50	0.16	20.0000	107	78 - 121
1,2,4-Trimethylbenzene	20.2000	0.50	0.14	20.0000	101	83 - 125
1,2-Dibromo-3-chloropropane	19.9900	0.50	0.41	20.0000	100	54 - 116
1,2-Dibromoethane	21.0700	0.50	0.24	20.0000	105	79 - 118
1,2-Dichlorobenzene	20.7700	0.50	0.20	20.0000	104	82 - 115
1,2-Dichloroethane	19.8100	0.50	0.20	20.0000	99.0	76 - 115
1,2-Dichloropropane	19.9500	0.50	0.15	20.0000	99.8	74 - 113
1,3,5-Trimethylbenzene	20.4300	0.50	0.13	20.0000	102	83 - 126
1,3-Dichlorobenzene	20.4100	0.50	0.16	20.0000	102	84 - 118
1,3-Dichloropropane	21.4900	0.50	0.21	20.0000	107	72 - 116



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0348 - MSVOA_W (continued)

LCS (B9F0348-BS1) - Continued

Prepared: 6/13/2019 Analyzed: 6/13/2019

1,4-Dichlorobenzene	19.7500	0.50	0.17	20.0000		98.8	83 - 112		
2,2-Dichloropropane	20.1900	0.50	0.38	20.0000		101	72 - 150		
2-Chlorotoluene	21.3400	0.50	0.11	20.0000		107	82 - 120		
4-Chlorotoluene	21.1800	0.50	0.12	20.0000		106	81 - 121		
4-Isopropyltoluene	19.9500	0.50	0.11	20.0000		99.8	86 - 124		
Benzene	43.2300	0.50	0.13	40.0000		108	81 - 118		
Bromobenzene	20.6900	0.50	0.21	20.0000		103	82 - 117		
Bromodichloromethane	20.2500	0.50	0.14	20.0000		101	80 - 122		
Bromoform	23.2700	0.50	0.20	20.0000		116	53 - 145		
Bromomethane	21.0400	0.50	0.17	20.0000		105	30 - 204		
Carbon tetrachloride	20.7300	0.50	0.09	20.0000		104	77 - 157		
Chlorobenzene	20.5600	0.50	0.13	20.0000		103	86 - 113		
Chloroethane	20.9200	0.50	0.15	20.0000		105	70 - 160		
Chloroform	21.0000	0.50	0.11	20.0000		105	66 - 136		
Chloromethane	18.1600	0.50	0.12	20.0000		90.8	52 - 138		
cis-1,2-Dichloroethene	22.7200	0.50	0.14	20.0000		114	71 - 128		
cis-1,3-Dichloropropene	24.3200	0.50	0.13	20.0000		122	71 - 123		
Dibromochloromethane	22.6000	0.50	0.16	20.0000		113	78 - 140		
Dibromomethane	20.5200	0.50	0.19	20.0000		103	78 - 109		
Dichlorodifluoromethane	13.2700	0.50	0.05	20.0000		66.4	64 - 144		
Ethylbenzene	42.1100	0.50	0.13	40.0000		105	90 - 116		
Hexachlorobutadiene	20.5700	0.50	0.15	20.0000		103	81 - 129		
Isopropylbenzene	21.9000	0.50	0.10	20.0000		110	83 - 129		
m,p-Xylene	43.1000	1.0	0.19	40.0000		108	88 - 124		
Methylene chloride	22.5300	1.0	0.71	20.0000		113	76 - 137		
n-Butylbenzene	21.4500	0.50	0.11	20.0000		107	83 - 129		
n-Propylbenzene	21.8600	0.50	0.10	20.0000		109	85 - 124		
Naphthalene	18.4300	0.50	0.41	20.0000		92.2	67 - 113		
o-Xylene	41.5100	0.50	0.13	40.0000		104	82 - 129		
sec-Butylbenzene	22.0100	0.50	0.09	20.0000		110	86 - 127		
Styrene	19.9400	0.50	0.13	20.0000		99.7	83 - 122		
tert-Butylbenzene	22.5700	0.50	0.09	20.0000		113	84 - 130		
Tetrachloroethene	21.2800	0.50	0.10	20.0000		106	87 - 123		
Toluene	45.1000	0.50	0.12	40.0000		113	84 - 115		
trans-1,2-Dichloroethene	17.6900	0.50	0.09	20.0000		88.4	60 - 148		
Trichloroethene	19.8200	0.50	0.10	20.0000		99.1	79 - 129		
Trichlorofluoromethane	20.9600	0.50	0.10	20.0000		105	68 - 162		
Vinyl chloride	16.7900	0.50	0.05	20.0000		84.0	73 - 128		
Surrogate: 1,2-Dichloroethane-d4	28.71			25.0000		115	57 - 152		
Surrogate: 4-Bromofluorobenzene	28.13			25.0000		113	62 - 134		
Surrogate: Dibromofluoromethane	28.64			25.0000		115	56 - 167		



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0348 - MSVOA_W (continued)

LCS (B9F0348-BS1) - Continued

Prepared: 6/13/2019 Analyzed: 6/13/2019

Surrogate: Toluene-d8 30.02 25.0000 120 33 - 170

LCS Dup (B9F0348-BS1)

Prepared: 6/13/2019 Analyzed: 6/13/2019

1,1,1,2-Tetrachloroethane	21.8100	0.50	0.11	20.0000	109	80 - 137	0.00	20	
1,1,1-Trichloroethane	20.1100	0.50	0.07	20.0000	101	75 - 148	5.28	20	
1,1,2,2-Tetrachloroethane	22.2800	0.50	0.36	20.0000	111	64 - 118	1.67	20	
1,1,2-Trichloroethane	21.1100	0.50	0.25	20.0000	106	77 - 113	0.570	20	
1,1-Dichloroethane	17.1300	0.50	0.09	20.0000	85.6	72 - 131	6.71	20	
1,1-Dichloroethene	20.4900	0.50	0.13	20.0000	102	75 - 132	10.1	20	
1,1-Dichloropropene	21.8900	0.50	0.13	20.0000	109	84 - 141	0.0457	20	
1,2,3-Trichloropropane	20.3200	0.50	0.39	20.0000	102	65 - 111	1.89	20	
1,2,3-Trichlorobenzene	22.4300	0.50	0.18	20.0000	112	79 - 117	3.22	20	
1,2,4-Trichlorobenzene	22.0600	0.50	0.16	20.0000	110	78 - 121	2.85	20	
1,2,4-Trimethylbenzene	20.6700	0.50	0.14	20.0000	103	83 - 125	2.30	20	
1,2-Dibromo-3-chloropropane	21.1800	0.50	0.41	20.0000	106	54 - 116	5.78	20	
1,2-Dibromoethane	21.7700	0.50	0.24	20.0000	109	79 - 118	3.27	20	
1,2-Dichlorobenzene	21.2200	0.50	0.20	20.0000	106	82 - 115	2.14	20	
1,2-Dichloroethane	19.7700	0.50	0.20	20.0000	98.8	76 - 115	0.202	20	
1,2-Dichloropropane	19.7900	0.50	0.15	20.0000	99.0	74 - 113	0.805	20	
1,3,5-Trimethylbenzene	21.0100	0.50	0.13	20.0000	105	83 - 126	2.80	20	
1,3-Dichlorobenzene	21.0700	0.50	0.16	20.0000	105	84 - 118	3.18	20	
1,3-Dichloropropane	21.4900	0.50	0.21	20.0000	107	72 - 116	0.00	20	
1,4-Dichlorobenzene	20.2100	0.50	0.17	20.0000	101	83 - 112	2.30	20	
2,2-Dichloropropane	18.6500	0.50	0.38	20.0000	93.2	72 - 150	7.93	20	
2-Chlorotoluene	22.0800	0.50	0.11	20.0000	110	82 - 120	3.41	20	
4-Chlorotoluene	21.9200	0.50	0.12	20.0000	110	81 - 121	3.43	20	
4-Isopropyltoluene	20.5000	0.50	0.11	20.0000	102	86 - 124	2.72	20	
Benzene	43.5900	0.50	0.13	40.0000	109	81 - 118	0.829	20	
Bromobenzene	21.2500	0.50	0.21	20.0000	106	82 - 117	2.67	20	
Bromodichloromethane	20.5900	0.50	0.14	20.0000	103	80 - 122	1.67	20	
Bromoform	23.1700	0.50	0.20	20.0000	116	53 - 145	0.431	20	
Bromomethane	20.9500	0.50	0.17	20.0000	105	30 - 204	0.429	20	
Carbon tetrachloride	20.6300	0.50	0.09	20.0000	103	77 - 157	0.484	20	
Chlorobenzene	20.7100	0.50	0.13	20.0000	104	86 - 113	0.727	20	
Chloroethane	20.0100	0.50	0.15	20.0000	100	70 - 160	4.45	20	
Chloroform	19.4500	0.50	0.11	20.0000	97.2	66 - 136	7.66	20	
Chloromethane	18.1400	0.50	0.12	20.0000	90.7	52 - 138	0.110	20	
cis-1,2-Dichloroethene	20.8700	0.50	0.14	20.0000	104	71 - 128	8.49	20	
cis-1,3-Dichloropropene	25.0300	0.50	0.13	20.0000	125	71 - 123	2.88	20	L3
Dibromochloromethane	22.2000	0.50	0.16	20.0000	111	78 - 140	1.79	20	
Dibromomethane	20.5900	0.50	0.19	20.0000	103	78 - 109	0.341	20	
Dichlorodifluoromethane	12.5600	0.50	0.05	20.0000	62.8	64 - 144	5.50	20	L4



Certificate of Analysis

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Project Number : Raytheon Main GETS Monthly Sample, 5

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Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0348 - MSVOA_W (continued)

LCS Dup (B9F0348-BSD1) - Continued

Prepared: 6/13/2019 Analyzed: 6/13/2019

Ethylbenzene	42.4800	0.50	0.13	40.0000		106	90 - 116	0.875	20
Hexachlorobutadiene	21.2100	0.50	0.15	20.0000		106	81 - 129	3.06	20
Isopropylbenzene	22.3000	0.50	0.10	20.0000		112	83 - 129	1.81	20
m,p-Xylene	43.4900	1.0	0.19	40.0000		109	88 - 124	0.901	20
Methylene chloride	21.1400	1.0	0.71	20.0000		106	76 - 137	6.37	20
n-Butylbenzene	22.0400	0.50	0.11	20.0000		110	83 - 129	2.71	20
n-Propylbenzene	22.3200	0.50	0.10	20.0000		112	85 - 124	2.08	20
Naphthalene	19.3200	0.50	0.41	20.0000		96.6	67 - 113	4.72	20
o-Xylene	41.8700	0.50	0.13	40.0000		105	82 - 129	0.864	20
sec-Butylbenzene	22.5800	0.50	0.09	20.0000		113	86 - 127	2.56	20
Styrene	20.2000	0.50	0.13	20.0000		101	83 - 122	1.30	20
tert-Butylbenzene	23.1000	0.50	0.09	20.0000		116	84 - 130	2.32	20
Tetrachloroethene	21.6100	0.50	0.10	20.0000		108	87 - 123	1.54	20
Toluene	45.6500	0.50	0.12	40.0000		114	84 - 115	1.21	20
trans-1,2-Dichloroethene	16.5000	0.50	0.09	20.0000		82.5	60 - 148	6.96	20
Trichloroethene	19.2900	0.50	0.10	20.0000		96.4	79 - 129	2.71	20
Trichlorofluoromethane	19.4300	0.50	0.10	20.0000		97.2	68 - 162	7.58	20
Vinyl chloride	16.1800	0.50	0.05	20.0000		80.9	73 - 128	3.70	20
Surrogate: 1,2-Dichloroethane-d4	26.40			25.0000		106	57 - 152		
Surrogate: 4-Bromofluorobenzene	28.10			25.0000		112	62 - 134		
Surrogate: Dibromofluoromethane	26.50			25.0000		106	56 - 167		
Surrogate: Toluene-d8	29.62			25.0000		118	33 - 170		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0205 - MSSEMI_W

Blank (B9F0205-BLK1)

Prepared: 6/7/2019 Analyzed: 6/10/2019

1,4-Dioxane	ND	2.0	0.84						
Surrogate: 1,2-Dichlorobenzene-d	66.07			100.000	66.1	34 - 188			
Surrogate: 2-Fluorobiphenyl	77.71			100.000	77.7	39 - 108			
Surrogate: 4-Terphenyl-d14	106.8			100.000	107	71 - 131			
Surrogate: Nitrobenzene-d5	76.20			100.000	76.2	32 - 106			

LCS (B9F0205-BS1)

Prepared: 6/7/2019 Analyzed: 6/10/2019

1,4-Dioxane	115.850	2.0	0.84	100.000	116	40 - 159			
Surrogate: 1,2-Dichlorobenzene-d	76.93			100.000	76.9	34 - 188			
Surrogate: 2-Fluorobiphenyl	91.92			100.000	91.9	39 - 108			
Surrogate: 4-Terphenyl-d14	100.5			100.000	100	71 - 131			
Surrogate: Nitrobenzene-d5	87.59			100.000	87.6	32 - 106			

LCS Dup (B9F0205-BS1)

Prepared: 6/7/2019 Analyzed: 6/10/2019

1,4-Dioxane	79.0800	2.0	0.84	100.000	79.1	40 - 159	37.7	20	R
Surrogate: 1,2-Dichlorobenzene-d	73.98			100.000	74.0	34 - 188			
Surrogate: 2-Fluorobiphenyl	91.75			100.000	91.8	39 - 108			
Surrogate: 4-Terphenyl-d14	95.08			100.000	95.1	71 - 131			
Surrogate: Nitrobenzene-d5	85.30			100.000	85.3	32 - 106			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0328 - MSSEMI_W

Blank (B9F0328-BLK1)

Prepared: 6/12/2019 Analyzed: 6/12/2019

1,4-Dioxane	ND	0.20	0.05							
Surrogate: 1,2-Dichlorobenzene-d	8.000E-4			1.00000		0.0800	22 - 117			S1
Surrogate: 2-Fluorobiphenyl	0.1234			1.00000		12.3	20 - 131			S1
Surrogate: 4-Terphenyl-d14	0.7771			1.00000		77.7	24 - 135			
Surrogate: Nitrobenzene-d5	0.003240			1.00000		0.324	6 - 124			S1

LCS (B9F0328-BS1)

Prepared: 6/12/2019 Analyzed: 6/12/2019

1,4-Dioxane	1.27151	0.20	0.05	1.00000		127	64 - 129			
Surrogate: 1,2-Dichlorobenzene-d	0.001530			1.00000		0.153	22 - 117			S1
Surrogate: 2-Fluorobiphenyl	0.07405			1.00000		7.40	20 - 131			S1
Surrogate: 4-Terphenyl-d14	3.108			1.00000		311	24 - 135			S1
Surrogate: Nitrobenzene-d5	0.004980			1.00000		0.498	6 - 124			S1

LCS Dup (B9F0328-BSD1)

Prepared: 6/12/2019 Analyzed: 6/12/2019

1,4-Dioxane	1.20196	0.20	0.05	1.00000		120	64 - 129	5.62	20	
Surrogate: 1,2-Dichlorobenzene-d	0.001370			1.00000		0.137	22 - 117			S1
Surrogate: 2-Fluorobiphenyl	0.09256			1.00000		9.26	20 - 131			S1
Surrogate: 4-Terphenyl-d14	0.2590			1.00000		25.9	24 - 135			
Surrogate: Nitrobenzene-d5	0.002780			1.00000		0.278	6 - 124			S1



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 06/27/2019

Notes and Definitions

S1	Surrogate recovery was above laboratory acceptance limit. No target analyte was detected in the sample.
R	RPD value outside acceptance criteria. Calculation is based on raw values.
M2	Matrix spike recovery outside of acceptance limit due to possible matrix interference. The analytical batch was validated by the laboratory control sample.
L4	Laboratory Control Sample outside of control limit but within Marginal Exceedance (ME) limit.
L3	Laboratory control sample outside in-house established limits but within method criteria.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

Laboratory Report

June 26, 2019

Advanced Technology Laboratories
PO Box 92797
Long Beach, CA 90809-2797

Attn: Rachelle Arada

Element Job No: 231864
Purchase Order: PAID – CREDIT CARD
Project Name: 1902251 / Groundwater
Samples Received: 2
Date Received: 06-07-19

Analysis

Page

Bromate by SOP 5600, Rev 3

2

John Rowan
Senior ChemistIshika Lokuge
Senior Chemist

Bromate by SOP 5600, Rev 3
Ion Chromatography-Tandem Mass Spectrometry

Sample preparation: An aliquot of sample was spiked with internal standard (bromate-¹⁸O₃), and diluted with water. The sample solutions were analyzed using IC-MS/MS.

Parts Per Billion (µg/L)

<u>Sample ID</u>	<u>Result</u>
ATL Lab#: 1902251-04 / POX	ND
ATL Lab#: 1902251-06 / INF	ND
Method Blank	ND
Detection Limit	0.5
Date Analyzed: 06-19-19	

Quality Control Summary

Sample ID: ATL Lab#: 1902251-04 / POX

<u>Analyte</u>	<u>Sample Result</u>	<u>Spike Conc</u>	<u>Spike Result</u>	<u>Spike % Rec</u>	<u>Spike Duplicate</u>	<u>Duplicate % Rec</u>	<u>RPD</u>
Bromate	ND	10.0	10.5	105	10.1	101	4
QC Guidelines				80-120		80-120	NMT 15

ADVANCED TECHNOLOGY
LABORATORIES

SUBCONTRACT ORDER

Work Order: 1902251

SENDING LABORATORY:

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Phone: 562.989.4045
Fax: 562.989.6348
Project Manager: Rachelle Arada
(Rachelle.Arada@atlglobal.com)

Sampler: Ross Horton

RECEIVING LABORATORY:

Exova Inc.
9240 Santa Fe Springs Road
Santa Fe Springs, CA 90670
Phone : (562) 948-2225
Fax: (562) 948-5850
PO#: SC13806- STANDARD TAT

gm

IMPORTANT : Please include Work Order # and PO # in your invoice.

Analysis	Due	Expires	Sampled	Comments
ATL Lab#: 1902251-04 / POX Bromate_ICMS/MS_SUB [Bromate by IC-MS/MS] 1-Poly Unpres - 125mL	06/21/19 17:00	07/04/19 09:49	06/06/19 09:49	
ATL Lab#: 1902251-06 / INF Bromate_ICMS/MS_SUB [Bromate by IC-MS/MS] 1-Poly Unpres - 125mL	06/21/19 17:00	07/04/19 10:14	06/06/19 10:14	

06-07-19 AND
Also has: ① H
② F

Released By *[Signature]* Date 06/07/19 11:08 Received By *Juanita Rodriguez* Date 6/7/19 11:08
Released By *Juanita Rodriguez* Date 6/7/19 11:53 Received By *Jani Lopez* Date 06-07-19 11:53AM

231864

Page 1 of 1

Page 47 of 48

PROJECT: Raytheon Main GETS Monthly Sample

TASK NO.: 532.15

Project Manager Steve Netto

QA Manager Ross Horton

Phone 858.455.6500

Fax 858.455.6533

Sampled By:		SAMPLE COLLECTION		MATRIX		PRESERVATION		CONTAINERS		ANALYSIS REQUESTED										Expected Concentration Range (ppb) for VOAs				SPECIAL HANDLING				REMARKS								
LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Ice	40-ml VOA	125 mL Poly	250 mL Poly	250 mL Glass	1 L Poly	1L Amber	VOCs by EPA 8260B	Bromate by EPA 317	Bromide by EPA 300	Alkalinity by SM2320B	Total Organic Carbon by SM5310B	Total Suspended Solids by SM2540D	UV Absorption EPA 415.3 @254 nm	1,4-Dioxane by EPA 8270C MOD	1,4-Dioxane by EPA 8270 SIM	0 - 10	10 - 100	100 - 1,000	>1,000	24 hr TAT	48 Hour TAT	5 Day TAT	Level IV Data Validation Requested	MS/MSD Requested			
190225 (1-6)	TB-060619	6/6/2019	8:00	X	X	X			X	2						X									X											
-02	CEFF	6/6/2019	9:19	X	X	X			X	3					1	X								X	X											
-07	CBT	6/6/2019	9:41	X	X	X			X	3					1	X								X	X											
-04	POX	6/6/2019	9:49	X	X			X	X	5	1	1			1	X	X		X	X				X	X											
-05	PF	6/6/2019	10:06	X				X	X	2		1	1	1					X	X	X	X														
-06	INF	6/6/2019	10:14	X		X			X	3	2				1	X	X	X					X			X										
-07	EW-02	6/6/2019	10:55	X		X			X	3	1				1	X	X						X			X										
-08	MW-29	6/6/2019	11:22	X		X			X	3	1				1	X	X						X			X										

Total number of containers per analysis:				24	5	2	1	1	6	Total No. of Containers: 39			
Relinquished By: / Company:		Date / Time	Received By: / Company		Date / Time		☐ No. of containers correct ☒ Received in good condition ☐ Custody seals secure ☐ Conforms to COC document						
Relinquished By: / Company:		Date / Time	Received By: / Company		Date / Time								
Relinquished By: / Company:		Date / Time	Received By: / Company		Date / Time								

Instructions

1. Fill out form completely and sign only after verified for completeness

- Complete in ballpoint pen. Draw one line through error, initial and date correction
- Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✗
- Note applicable preservatives, special instructions, and deviations from typical environmental samples.
- Consult project QA documents for specific instructions.

0.8, 0.6 Temperature on receipt

Send Results to:
Steve Netto & Ross Horton
 9171 Towne Centre Drive
 Suite 375
 San Diego, CA 92122
 Ph: 858.455.6500
snetto@hargis.com
rhorton@hargis.com



June 11, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1902252

Client Reference : Raytheon Main GETS OCSD Quarterly Sample, 532.15

Enclosed are the results for sample(s) received on June 06, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read "Edgar Caballero", with a small "Ar" written below it.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS OCSD Quarterly S

Report To : Steve Netto

Reported : 06/11/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-060619	1902252-01	Lab prepared water	6/06/19 8:00	6/06/19 16:27
CEFF	1902252-02	Groundwater	6/06/19 9:19	6/06/19 16:27



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS OCSD Quarterly S

Report To : Steve Netto

Reported : 06/11/2019

Client Sample ID TB-060619

Lab ID: 1902252-01

Volatile Organic Compounds by EPA 624

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1-Trichloroethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
1,1,2-Trichloroethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
1,1-Dichloroethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
1,1-Dichloroethene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
1,2-Dichlorobenzene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
1,2-Dichloroethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
1,2-Dichloropropane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
1,3-Dichlorobenzene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
1,4-Dichlorobenzene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
2-Chloroethyl vinyl ether	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
Acrolein	ND	10	1	B9F0173	06/07/2019	06/07/19 14:49	
Acrylonitrile	ND	10	1	B9F0173	06/07/2019	06/07/19 14:49	
Benzene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
Bromodichloromethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
Bromoform	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
Bromomethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
Carbon tetrachloride	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
Chlorobenzene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
Chloroethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
Chloroform	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
Chloromethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
cis-1,3-Dichloropropene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
Dibromochloromethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
Ethylbenzene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
m,p-Xylene	ND	1.0	1	B9F0173	06/07/2019	06/07/19 14:49	
Methylene chloride	ND	1.0	1	B9F0173	06/07/2019	06/07/19 14:49	
o-Xylene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
Tetrachloroethene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
Toluene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
trans-1,2-Dichloroethene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
trans-1,3-Dichloropropene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
Trichloroethene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
Trichlorofluoromethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	
Vinyl chloride	ND	0.50	1	B9F0173	06/07/2019	06/07/19 14:49	

Surrogate: 1,2-Dichloroethane-d4 89.7 % 69 - 124 B9F0173 06/07/2019 06/07/19 14:49

Surrogate: 4-Bromofluorobenzene 98.6 % 78 - 111 B9F0173 06/07/2019 06/07/19 14:49



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS OCSD Quarterly S

Report To : Steve Netto

Reported : 06/11/2019

Client Sample ID TB-060619

Lab ID: 1902252-01

Volatile Organic Compounds by EPA 624

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
<i>Surrogate: Dibromofluoromethane</i>	<i>97.4 %</i>	<i>65 - 134</i>		B9F0173	06/07/2019	<i>06/07/19 14:49</i>	
<i>Surrogate: Toluene-d8</i>	<i>114 %</i>	<i>78 - 117</i>		B9F0173	06/07/2019	<i>06/07/19 14:49</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS OCSQ Quarterly S

Report To : Steve Netto

Reported : 06/11/2019

Client Sample ID CEFF

Lab ID: 1902252-02

Volatile Organic Compounds by EPA 624

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1-Trichloroethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
1,1,2-Trichloroethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
1,1-Dichloroethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
1,1-Dichloroethene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
1,2-Dichlorobenzene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
1,2-Dichloroethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
1,2-Dichloropropane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
1,3-Dichlorobenzene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
1,4-Dichlorobenzene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
2-Chloroethyl vinyl ether	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Acrolein	ND	10	1	B9F0173	06/07/2019	06/07/19 15:13	
Acrylonitrile	ND	10	1	B9F0173	06/07/2019	06/07/19 15:13	
Benzene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Bromodichloromethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Bromoform	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Bromomethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Carbon tetrachloride	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Chlorobenzene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Chloroethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Chloroform	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Chloromethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
cis-1,3-Dichloropropene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Dibromochloromethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Ethylbenzene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
m,p-Xylene	ND	1.0	1	B9F0173	06/07/2019	06/07/19 15:13	
Methylene chloride	ND	1.0	1	B9F0173	06/07/2019	06/07/19 15:13	
o-Xylene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Tetrachloroethene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Toluene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
trans-1,2-Dichloroethene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
trans-1,3-Dichloropropene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Trichloroethene	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Trichlorofluoromethane	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Vinyl chloride	ND	0.50	1	B9F0173	06/07/2019	06/07/19 15:13	
Surrogate: 1,2-Dichloroethane-d4	93.8 %	69 - 124		B9F0173	06/07/2019	06/07/19 15:13	
Surrogate: 4-Bromofluorobenzene	97.8 %	78 - 111		B9F0173	06/07/2019	06/07/19 15:13	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS OCSD Quarterly S

Report To : Steve Netto

Reported : 06/11/2019

Client Sample ID CEFF

Lab ID: 1902252-02

Volatile Organic Compounds by EPA 624

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
<i>Surrogate: Dibromofluoromethane</i>	98.4 %	65 - 134		B9F0173	06/07/2019	06/07/19 15:13	
<i>Surrogate: Toluene-d8</i>	116 %	78 - 117		B9F0173	06/07/2019	06/07/19 15:13	

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	2.0	1	B9F0205	06/07/2019	06/10/19 18:08	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	57.6 %	34 - 188		B9F0205	06/07/2019	06/10/19 18:08	
<i>Surrogate: 2-Fluorobiphenyl</i>	63.3 %	39 - 108		B9F0205	06/07/2019	06/10/19 18:08	
<i>Surrogate: 4-Terphenyl-d14</i>	85.4 %	71 - 131		B9F0205	06/07/2019	06/10/19 18:08	
<i>Surrogate: Nitrobenzene-d5</i>	65.2 %	32 - 106		B9F0205	06/07/2019	06/10/19 18:08	



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Project Number : Raytheon Main GETS OCSD Quarterly S

Report To : Steve Netto

Reported : 06/11/2019

QUALITY CONTROL SECTION

Volatile Organic Compounds by EPA 624 - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0173 - MSVOA_W

Blank (B9F0173-BLK1)

Prepared: 6/7/2019 Analyzed: 6/7/2019

1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3-Dichlorobenzene	ND	0.50	0.16
1,4-Dichlorobenzene	ND	0.50	0.17
2-Chloroethyl vinyl ether	ND	0.50	0.31
Acrolein	ND	10	1.9
Acrylonitrile	ND	10	2.3
Benzene	ND	0.50	0.13
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Ethylbenzene	ND	0.50	0.13
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
o-Xylene	ND	0.50	0.13
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
trans-1,3-Dichloropropene	ND	0.50	0.23
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	22.12	25.0000	88.5	69 - 124
Surrogate: 4-Bromofluorobenzene	24.43	25.0000	97.7	78 - 111
Surrogate: Dibromofluoromethane	23.68	25.0000	94.7	65 - 134
Surrogate: Toluene-d8	28.99	25.0000	116	78 - 117



Certificate of Analysis

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Project Number : Raytheon Main GETS OCSD Quarterly S

Report To : Steve Netto

Reported : 06/11/2019

Volatile Organic Compounds by EPA 624 - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0173 - MSVOA_W (continued)

LCS (B9F0173-BS1)

Prepared: 6/7/2019 Analyzed: 6/7/2019

1,1,1-Trichloroethane	16.5200	0.50	0.07	20.0000		82.6	61 - 130		
1,1,2,2-Tetrachloroethane	15.4900	0.50	0.36	20.0000		77.4	69 - 125		
1,1,2-Trichloroethane	19.0700	0.50	0.25	20.0000		95.4	74 - 116		
1,1-Dichloroethane	17.9500	0.50	0.09	20.0000		89.8	68 - 125		
1,1-Dichloroethene	17.7000	0.50	0.13	20.0000		88.5	66 - 131		
1,2-Dichlorobenzene	20.6900	0.50	0.20	20.0000		103	85 - 111		
1,2-Dichloroethane	19.9600	0.50	0.20	20.0000		99.8	68 - 114		
1,2-Dichloropropane	17.2900	0.50	0.15	20.0000		86.4	75 - 116		
1,3-Dichlorobenzene	21.3700	0.50	0.16	20.0000		107	85 - 111		
1,4-Dichlorobenzene	20.4300	0.50	0.17	20.0000		102	85 - 108		
2-Chloroethyl vinyl ether	3.19000	0.50	0.31	20.0000		16.0	0 - 128		
Acrolein	120.440	10	1.9	200.000		60.2	0 - 189		
Acrylonitrile	149.160	10	2.3	200.000		74.6	43 - 143		
Benzene	39.4300	0.50	0.13	40.0000		98.6	84 - 111		
Bromodichloromethane	17.8700	0.50	0.14	20.0000		89.4	65 - 124		
Bromoform	18.8300	0.50	0.20	20.0000		94.2	50 - 134		
Bromomethane	10.3800	0.50	0.17	20.0000		51.9	11 - 218		
Carbon tetrachloride	18.0800	0.50	0.09	20.0000		90.4	41 - 154		
Chlorobenzene	21.4000	0.50	0.13	20.0000		107	87 - 108		
Chloroethane	22.7200	0.50	0.15	20.0000		114	51 - 161		
Chloroform	17.6400	0.50	0.11	20.0000		88.2	70 - 121		
Chloromethane	17.8800	0.50	0.12	20.0000		89.4	24 - 166		
cis-1,3-Dichloropropene	21.1200	0.50	0.13	20.0000		106	66 - 122		
Dibromochloromethane	17.9700	0.50	0.16	20.0000		89.8	64 - 125		
Ethylbenzene	41.2200	0.50	0.13	40.0000		103	83 - 116		
m,p-Xylene	44.4300	1.0	0.19	40.0000		111	82 - 122		
Methylene chloride	22.0500	1.0	0.71	20.0000		110	67 - 147		
o-Xylene	45.7800	0.50	0.13	40.0000		114	82 - 118		
Tetrachloroethene	20.7100	0.50	0.10	20.0000		104	79 - 116		
Toluene	47.2200	0.50	0.12	40.0000		118	82 - 114		L3
trans-1,2-Dichloroethene	17.2500	0.50	0.09	20.0000		86.2	66 - 136		
trans-1,3-Dichloropropene	21.0800	0.50	0.23	20.0000		105	56 - 129		
Trichloroethene	17.9200	0.50	0.10	20.0000		89.6	77 - 111		
Trichlorofluoromethane	19.6100	0.50	0.10	20.0000		98.0	56 - 137		
Vinyl chloride	16.3400	0.50	0.05	20.0000		81.7	63 - 129		
Surrogate: 1,2-Dichloroethane-d4	20.87			25.0000		83.5	69 - 124		
Surrogate: 4-Bromofluorobenzene	27.40			25.0000		110	78 - 111		
Surrogate: Dibromofluoromethane	22.71			25.0000		90.8	65 - 134		
Surrogate: Toluene-d8	28.04			25.0000		112	78 - 117		

LCS Dup (B9F0173-BS1)

Prepared: 6/7/2019 Analyzed: 6/7/2019

1,1,1-Trichloroethane	15.7900	0.50	0.07	20.0000		79.0	61 - 130	4.52	20



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS OCSD Quarterly S

Report To : Steve Netto

Reported : 06/11/2019

Volatile Organic Compounds by EPA 624 - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0173 - MSVOA_W (continued)

LCS Dup (B9F0173-BSD1) - Continued

Prepared: 6/7/2019 Analyzed: 6/7/2019

1,1,2,2-Tetrachloroethane	15.3100	0.50	0.36	20.0000		76.6	69 - 125	1.17	20	
1,1,2-Trichloroethane	19.0900	0.50	0.25	20.0000		95.4	74 - 116	0.105	20	
1,1-Dichloroethane	17.2700	0.50	0.09	20.0000		86.4	68 - 125	3.86	20	
1,1-Dichloroethene	16.9500	0.50	0.13	20.0000		84.8	66 - 131	4.33	20	
1,2-Dichlorobenzene	20.2400	0.50	0.20	20.0000		101	85 - 111	2.20	20	
1,2-Dichloroethane	19.4600	0.50	0.20	20.0000		97.3	68 - 114	2.54	20	
1,2-Dichloropropane	17.0500	0.50	0.15	20.0000		85.2	75 - 116	1.40	20	
1,3-Dichlorobenzene	20.4000	0.50	0.16	20.0000		102	85 - 111	4.64	20	
1,4-Dichlorobenzene	19.8600	0.50	0.17	20.0000		99.3	85 - 108	2.83	20	
2-Chloroethyl vinyl ether	2.95000	0.50	0.31	20.0000		14.8	0 - 128	7.82	20	
Acrolein	125.860	10	1.9	200.000		62.9	0 - 189	4.40	20	
Acrylonitrile	151.960	10	2.3	200.000		76.0	43 - 143	1.86	20	
Benzene	38.2200	0.50	0.13	40.0000		95.6	84 - 111	3.12	20	
Bromodichloromethane	17.3700	0.50	0.14	20.0000		86.8	65 - 124	2.84	20	
Bromoform	18.8300	0.50	0.20	20.0000		94.2	50 - 134	0.00	20	
Bromomethane	10.8000	0.50	0.17	20.0000		54.0	11 - 218	3.97	20	
Carbon tetrachloride	16.8600	0.50	0.09	20.0000		84.3	41 - 154	6.98	20	
Chlorobenzene	21.0000	0.50	0.13	20.0000		105	87 - 108	1.89	20	
Chloroethane	22.5200	0.50	0.15	20.0000		113	51 - 161	0.884	20	
Chloroform	17.0200	0.50	0.11	20.0000		85.1	70 - 121	3.58	20	
Chloromethane	17.1700	0.50	0.12	20.0000		85.8	24 - 166	4.05	20	
cis-1,3-Dichloropropene	20.3900	0.50	0.13	20.0000		102	66 - 122	3.52	20	
Dibromochloromethane	17.8000	0.50	0.16	20.0000		89.0	64 - 125	0.951	20	
Ethylbenzene	40.6800	0.50	0.13	40.0000		102	83 - 116	1.32	20	
m,p-Xylene	43.3300	1.0	0.19	40.0000		108	82 - 122	2.51	20	
Methylene chloride	21.3800	1.0	0.71	20.0000		107	67 - 147	3.09	20	
o-Xylene	45.2200	0.50	0.13	40.0000		113	82 - 118	1.23	20	
Tetrachloroethene	20.7800	0.50	0.10	20.0000		104	79 - 116	0.337	20	
Toluene	46.5200	0.50	0.12	40.0000		116	82 - 114	1.49	20	L3
trans-1,2-Dichloroethene	16.6300	0.50	0.09	20.0000		83.2	66 - 136	3.66	20	
trans-1,3-Dichloropropene	20.4000	0.50	0.23	20.0000		102	56 - 129	3.28	20	
Trichloroethene	17.6600	0.50	0.10	20.0000		88.3	77 - 111	1.46	20	
Trichlorofluoromethane	18.3800	0.50	0.10	20.0000		91.9	56 - 137	6.48	20	
Vinyl chloride	16.0200	0.50	0.05	20.0000		80.1	63 - 129	1.98	20	
Surrogate: 1,2-Dichloroethane-d4	20.64			25.0000		82.6	69 - 124			
Surrogate: 4-Bromofluorobenzene	27.26			25.0000		109	78 - 111			
Surrogate: Dibromofluoromethan	22.43			25.0000		89.7	65 - 134			
Surrogate: Toluene-d8	28.61			25.0000		114	78 - 117			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS OCSD Quarterly S

Report To : Steve Netto

Reported : 06/11/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0205 - MSSEMI_W

Blank (B9F0205-BLK1)

Prepared: 6/7/2019 Analyzed: 6/10/2019

1,4-Dioxane	ND	2.0	0.84						
Surrogate: 1,2-Dichlorobenzene-d	66.07			100.000		66.1	34 - 188		
Surrogate: 2-Fluorobiphenyl	77.71			100.000		77.7	39 - 108		
Surrogate: 4-Terphenyl-d14	106.8			100.000		107	71 - 131		
Surrogate: Nitrobenzene-d5	76.20			100.000		76.2	32 - 106		

LCS (B9F0205-BS1)

Prepared: 6/7/2019 Analyzed: 6/10/2019

1,4-Dioxane	115.850	2.0	0.84	100.000		116	40 - 159		
Surrogate: 1,2-Dichlorobenzene-d	76.93			100.000		76.9	34 - 188		
Surrogate: 2-Fluorobiphenyl	91.92			100.000		91.9	39 - 108		
Surrogate: 4-Terphenyl-d14	100.5			100.000		100	71 - 131		
Surrogate: Nitrobenzene-d5	87.59			100.000		87.6	32 - 106		

LCS Dup (B9F0205-BS1)

Prepared: 6/7/2019 Analyzed: 6/10/2019

1,4-Dioxane	79.0800	2.0	0.84	100.000		79.1	40 - 159	37.7	20 R
Surrogate: 1,2-Dichlorobenzene-d	73.98			100.000		74.0	34 - 188		
Surrogate: 2-Fluorobiphenyl	91.75			100.000		91.8	39 - 108		
Surrogate: 4-Terphenyl-d14	95.08			100.000		95.1	71 - 131		
Surrogate: Nitrobenzene-d5	85.30			100.000		85.3	32 - 106		



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Report To : Steve Netto

Reported : 06/11/2019

Notes and Definitions

R	RPD value outside acceptance criteria. Calculation is based on raw values.
L3	Laboratory control sample outside in-house established limits but within method criteria.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.



June 13, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1902254

Client Reference : Raytheon Main GETS Quarterly Sample, 532.15

Enclosed are the results for sample(s) received on June 06, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read "Edgar Caballero", with a small mark below the first letter.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.

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Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
CEFF	1902254-01	Groundwater	6/06/19 9:19	6/06/19 16:27
POX	1902254-02	Groundwater	6/06/19 9:49	6/06/19 16:27
INF	1902254-03	Groundwater	6/06/19 10:14	6/06/19 16:27
EW-02	1902254-04	Groundwater	6/06/19 10:55	6/06/19 16:27
MW-29	1902254-05	Groundwater	6/06/19 11:22	6/06/19 16:27

CASE NARRATIVE

Sample Receiving/General Comments:

The following analytes lists were taken from sample containers:

Alkalinity - Hydroxide, Bicarbonate, Carbonate, and Total

Dissolved metals - Se, Fe, Mn, Ca, Na, Mg

Anions - Cl, SO₄, NO₃, NO₂, PO₄



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San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

Client Sample ID CEFF

Lab ID: 1902254-01

Total Dissolved Solids (Residue, Filterable) by SM 2540C

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Residue, Dissolved	660	10	1	B9F0288	06/07/2019	06/10/19 15:40	



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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

Client Sample ID POX

Lab ID: 1902254-02

Anions Scan by Ion Chromatography EPA 300.0

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloride	110	5.0	10	B9F0236	06/07/2019	06/07/19 16:10	
Nitrate, as N	4.5	0.50	5	B9F0236	06/07/2019	06/07/19 13:54	
Nitrite, as N	ND	0.50	5	B9F0236	06/07/2019	06/07/19 13:54	D6
ortho-Phosphate, as P	ND	0.25	5	B9F0236	06/07/2019	06/07/19 13:54	D6
Sulfate	150	5.0	5	B9F0236	06/07/2019	06/07/19 13:54	

UV Absorption by EPA 415.3

Analyst: BL

Analyte	Result (1/cm)	PQL (1/cm)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
UV Absorption	ND	0.01	1	B9F0197	06/07/2019	06/07/19 11:58	

Total Dissolved Solids (Residue, Filterable) by SM 2540C

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Residue, Dissolved	670	11	1	B9F0288	06/07/2019	06/10/19 15:40	

Chemical Oxygen Demand by EPA 410.4

Analyst: DT

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chemical Oxygen Demand	5.3	5.0	1	B9F0298	06/12/2019	06/12/19 12:45	



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San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

Client Sample ID INF

Lab ID: 1902254-03

Anions Scan by Ion Chromatography EPA 300.0

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloride	110	5.0	10	B9F0236	06/07/2019	06/07/19 16:22	
Nitrate, as N	4.6	0.50	5	B9F0236	06/07/2019	06/07/19 14:05	
Nitrite, as N	ND	0.50	5	B9F0236	06/07/2019	06/07/19 14:05	D6
ortho-Phosphate, as P	ND	0.25	5	B9F0236	06/07/2019	06/07/19 14:05	D6
Sulfate	150	5.0	5	B9F0236	06/07/2019	06/07/19 14:05	

UV Absorption by EPA 415.3

Analyst: BL

Analyte	Result (1/cm)	PQL (1/cm)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
UV Absorption	ND	0.01	1	B9F0197	06/07/2019	06/07/19 11:58	

Alkalinity, Speciated by SM 2320B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO₃)	220	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	
Alkalinity, Total (as CaCO₃)	220	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	

Total Dissolved Solids (Residue, Filterable) by SM 2540C

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Residue, Dissolved	670	10	1	B9F0288	06/07/2019	06/10/19 15:40	

Total Organic Carbon by SM 5310B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9F0280	06/10/2019	06/10/19 23:05	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

Client Sample ID INF

Lab ID: 1902254-03

Chemical Oxygen Demand by EPA 410.4

Analyst: DT

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chemical Oxygen Demand	ND	5.0	1	B9F0298	06/12/2019	06/12/19 12:45	

Total Metals by ICP-AES EPA 6010B

Analyst: KEK

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Selenium	ND	0.010	1	B9F0227	06/11/2019	06/12/19 16:05	

Dissolved Metals by ICP-AES EPA 6010B

Analyst: KEK

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Calcium	88	0.50	1	B9F0272	06/11/2019	06/12/19 15:06	
Iron	ND	0.50	1	B9F0272	06/11/2019	06/12/19 15:06	
Magnesium	28	0.10	1	B9F0272	06/11/2019	06/12/19 15:06	
Manganese	ND	0.50	1	B9F0272	06/11/2019	06/12/19 15:06	
Selenium	ND	0.010	1	B9F0272	06/11/2019	06/12/19 15:06	
Sodium	57	1.0	1	B9F0272	06/11/2019	06/12/19 15:06	



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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

Client Sample ID EW-02

Lab ID: 1902254-04

Anions Scan by Ion Chromatography EPA 300.0

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloride	94	5.0	10	B9F0236	06/07/2019	06/07/19 16:33	
Nitrate, as N	4.2	1.0	10	B9F0236	06/07/2019	06/07/19 16:33	
Nitrite, as N	ND	1.0	10	B9F0236	06/07/2019	06/07/19 16:33	D6
ortho-Phosphate, as P	ND	0.50	10	B9F0236	06/07/2019	06/07/19 16:33	D6
Sulfate	150	10	10	B9F0236	06/07/2019	06/07/19 16:33	

UV Absorption by EPA 415.3

Analyst: BL

Analyte	Result (1/cm)	PQL (1/cm)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
UV Absorption	ND	0.01	1	B9F0197	06/07/2019	06/07/19 11:58	

Alkalinity, Speciated by SM 2320B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO₃)	210	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	
Alkalinity, Total (as CaCO₃)	210	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	

Total Dissolved Solids (Residue, Filterable) by SM 2540C

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Residue, Dissolved	630	10	1	B9F0288	06/07/2019	06/10/19 15:40	

Total Organic Carbon by SM 5310B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9F0280	06/10/2019	06/10/19 23:21	



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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

Client Sample ID EW-02

Lab ID: 1902254-04

Chemical Oxygen Demand by EPA 410.4

Analyst: DT

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chemical Oxygen Demand	6.4	5.0	1	B9F0298	06/12/2019	06/12/19 12:45	

Total Metals by ICP-AES EPA 6010B

Analyst: KEK

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Selenium	ND	0.010	1	B9F0227	06/11/2019	06/12/19 16:06	

Dissolved Metals by ICP-AES EPA 6010B

Analyst: KEK

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Calcium	83	0.50	1	B9F0272	06/11/2019	06/12/19 15:10	
Iron	ND	0.50	1	B9F0272	06/11/2019	06/12/19 15:10	
Magnesium	25	0.10	1	B9F0272	06/11/2019	06/12/19 15:10	
Manganese	ND	0.50	1	B9F0272	06/11/2019	06/12/19 15:10	
Selenium	ND	0.010	1	B9F0272	06/11/2019	06/12/19 15:10	
Sodium	54	1.0	1	B9F0272	06/11/2019	06/12/19 15:10	



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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

Client Sample ID MW-29

Lab ID: 1902254-05

Anions Scan by Ion Chromatography EPA 300.0

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloride	230	10	20	B9F0245	06/11/2019	06/11/19 11:13	
Nitrate, as N	6.6	0.50	5	B9F0236	06/07/2019	06/07/19 14:28	
Nitrite, as N	ND	0.50	5	B9F0236	06/07/2019	06/07/19 14:28	D6
ortho-Phosphate, as P	ND	0.25	5	B9F0236	06/07/2019	06/07/19 14:28	D6
Sulfate	140	5.0	5	B9F0236	06/07/2019	06/07/19 14:28	

UV Absorption by EPA 415.3

Analyst: BL

Analyte	Result (1/cm)	PQL (1/cm)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
UV Absorption	ND	0.01	1	B9F0197	06/07/2019	06/07/19 11:58	

Alkalinity, Speciated by SM 2320B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO₃)	250	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	
Alkalinity, Total (as CaCO₃)	250	5.0	1	B9F0332	06/12/2019	06/12/19 12:56	

Total Dissolved Solids (Residue, Filterable) by SM 2540C

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Residue, Dissolved	780	10	1	B9F0288	06/07/2019	06/10/19 15:40	

Total Organic Carbon by SM 5310B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9F0280	06/10/2019	06/10/19 23:34	



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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

Client Sample ID MW-29

Lab ID: 1902254-05

Chemical Oxygen Demand by EPA 410.4

Analyst: DT

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chemical Oxygen Demand	ND	5.0	1	B9F0298	06/12/2019	06/12/19 12:45	

Total Metals by ICP-AES EPA 6010B

Analyst: KEK

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Selenium	ND	0.010	1	B9F0227	06/11/2019	06/12/19 16:10	

Dissolved Metals by ICP-AES EPA 6010B

Analyst: KEK

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Calcium	100	0.50	1	B9F0272	06/11/2019	06/12/19 15:11	
Iron	ND	0.50	1	B9F0272	06/11/2019	06/12/19 15:11	
Magnesium	30	0.10	1	B9F0272	06/11/2019	06/12/19 15:11	
Manganese	ND	0.50	1	B9F0272	06/11/2019	06/12/19 15:11	
Selenium	ND	0.010	1	B9F0272	06/11/2019	06/12/19 15:11	
Sodium	70	1.0	1	B9F0272	06/11/2019	06/12/19 15:11	



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Project Number : Raytheon Main GETS Quarterly Sample,

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Reported : 06/13/2019

QUALITY CONTROL SECTION

Alkalinity, Speciated by SM 2320B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0332 - No_Prep_WC1_W

Blank (B9F0332-BLK1)

Prepared: 6/12/2019 Analyzed: 6/12/2019

Alkalinity, Bicarbonate (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Total (as CaCO ₃)	ND	5.0	3.4

LCS (B9F0332-BS1)

Prepared: 6/12/2019 Analyzed: 6/12/2019

Alkalinity, Total (as CaCO ₃)	103.380	5.0	3.4	99.9580	103	80 - 120

Matrix Spike (B9F0332-MS1)

Source: 1902251-04

Prepared: 6/12/2019 Analyzed: 6/12/2019

Alkalinity, Total (as CaCO ₃)	318.570	5.0	3.4	99.9580	217.300	101	80 - 120

Matrix Spike Dup (B9F0332-MSD1)

Source: 1902251-04

Prepared: 6/12/2019 Analyzed: 6/12/2019

Alkalinity, Total (as CaCO ₃)	316.460	5.0	3.4	99.9580	217.300	99.2	80 - 120	0.665	20



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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

Total Dissolved Solids (Residue, Filterable) by SM 2540C - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0288 - No_Prep_WC1_W

Blank (B9F0288-BLK1)

Prepared: 6/7/2019 Analyzed: 6/10/2019

Residue, Dissolved ND 10 10

LCS (B9F0288-BS1)

Prepared: 6/7/2019 Analyzed: 6/10/2019

Residue, Dissolved 999.000 10 10 977.000 102 80 - 120

Duplicate (B9F0288-DUP1)

Source: 1902235-01

Prepared: 6/7/2019 Analyzed: 6/10/2019

Residue, Dissolved 372.000 10 10 373.000 0.268 10



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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

Anions Scan by Ion Chromatography EPA 300.0 - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0236 - No_Prep_IC1_W

Blank (B9F0236-BLK1)

Prepared: 6/7/2019 Analyzed: 6/7/2019

Chloride	ND	0.50	0.07
Nitrate, as N	ND	0.10	0.05
Nitrite, as N	ND	0.10	0.006
ortho-Phosphate, as P	ND	0.05	0.05
Sulfate	ND	1.0	0.06

LCS (B9F0236-BS1)

Prepared: 6/7/2019 Analyzed: 6/7/2019

Chloride	0.990200	0.50	0.07	1.00000	99.0	90 - 110
Nitrate, as N	0.974900	0.10	0.05	1.00000	97.5	90 - 110
Nitrite, as N	0.995900	0.10	0.006	1.00000	99.6	90 - 110
ortho-Phosphate, as P	0.964600	0.05	0.05	1.00000	96.5	90 - 110
Sulfate	1.97250	1.0	0.06	2.00000	98.6	90 - 110

Duplicate (B9F0236-DUP1)

Source: 1902254-04

Prepared: 6/7/2019 Analyzed: 6/7/2019

Chloride	93.4250	5.0	0.71	94.3850	1.02	20
Nitrate, as N	4.11900	1.0	0.48	4.15700	0.918	20
Nitrite, as N	ND	1.0	0.06	ND		20
ortho-Phosphate, as P	ND	0.50	0.47	ND		20
Sulfate	145.804	10	0.63	145.849	0.0309	20

Matrix Spike (B9F0236-MS1)

Source: 1902254-04

Prepared: 6/7/2019 Analyzed: 6/7/2019

Chloride	12.0887	2.50000	9.43850	106	80 - 120	
Nitrate, as N	3.01260	2.50000	0.415700	104	80 - 120	
Nitrite, as N	2.68250	2.50000	0.00000	107	80 - 120	
ortho-Phosphate, as P	3.23090	2.50000	0.00000	129	80 - 120	M1
Sulfate	20.6360	5.00000	14.5849	121	80 - 120	M1

Matrix Spike Dup (B9F0236-MSD1)

Source: 1902254-04

Prepared: 6/7/2019 Analyzed: 6/7/2019

Chloride	12.0278	2.50000	9.43850	104	80 - 120	0.505	20
Nitrate, as N	3.00910	2.50000	0.415700	104	80 - 120	0.116	20
Nitrite, as N	2.67520	2.50000	0.00000	107	80 - 120	0.273	20
ortho-Phosphate, as P	3.30100	2.50000	0.00000	132	80 - 120	2.15	20
Sulfate	20.5732	5.00000	14.5849	120	80 - 120	0.305	20



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San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

Anions Scan by Ion Chromatography EPA 300.0 - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0245 - No_Prep_IC1_W

Blank (B9F0245-BLK1)

Prepared: 6/11/2019 Analyzed: 6/11/2019

Chloride	ND	0.50	0.07	
Nitrate, as N	ND	0.10	0.05	
Nitrite, as N	ND	0.10	0.006	
ortho-Phosphate, as P	ND	0.05	0.05	
Sulfate	ND	1.0	0.06	

LCS (B9F0245-BS1)

Prepared: 6/11/2019 Analyzed: 6/11/2019

Chloride	0.985100	0.50	0.07	1.00000	98.5	90 - 110
Nitrate, as N	0.959400	0.10	0.05	1.00000	95.9	90 - 110
Nitrite, as N	0.981700	0.10	0.006	1.00000	98.2	90 - 110
ortho-Phosphate, as P	0.963900	0.05	0.05	1.00000	96.4	90 - 110
Sulfate	1.95740	1.0	0.06	2.00000	97.9	90 - 110

Duplicate (B9F0245-DUP1)

Source: 1902295-02

Prepared: 6/11/2019 Analyzed: 6/11/2019

Chloride	55.6890	5.0	0.71	55.0820	1.10	20
Nitrate, as N	ND	1.0	0.48	ND	NR	20
Nitrite, as N	ND	1.0	0.06	ND		20
ortho-Phosphate, as P	0.641000	0.50	0.47	0.647000	0.932	20
Sulfate	165.406	10	0.63	165.820	0.250	20

Matrix Spike (B9F0245-MS1)

Source: 1902295-02

Prepared: 6/11/2019 Analyzed: 6/11/2019

Chloride	8.02330	2.50000	5.50820	101	80 - 120
Nitrate, as N	2.70620	2.50000	0.0471	106	80 - 120
Nitrite, as N	2.69240	2.50000	0.00000	108	80 - 120
ortho-Phosphate, as P	3.02410	2.50000	0.0647	118	80 - 120
Sulfate	22.3577	5.00000	16.5820	116	80 - 120

Matrix Spike (B9F0245-MS2)

Source: 1902307-04

Prepared: 6/11/2019 Analyzed: 6/11/2019

Chloride	11.5397	2.50000	9.21610	92.9	80 - 120
Nitrate, as N	2.70490	2.50000	0.00000	108	80 - 120
Nitrite, as N	2.70240	2.50000	0.00000	108	80 - 120
ortho-Phosphate, as P	2.86420	2.50000	0.0473	113	80 - 120
Sulfate	5.64820	5.00000	0.140400	110	80 - 120

Matrix Spike Dup (B9F0245-MSD1)

Source: 1902295-02

Prepared: 6/11/2019 Analyzed: 6/11/2019

Chloride	7.99780	2.50000	5.50820	99.6	80 - 120	0.318	20
Nitrate, as N	2.68530	2.50000	0.0471	106	80 - 120	0.775	20
Nitrite, as N	2.67670	2.50000	0.00000	107	80 - 120	0.585	20
ortho-Phosphate, as P	3.01990	2.50000	0.0647	118	80 - 120	0.139	20
Sulfate	22.1498	5.00000	16.5820	111	80 - 120	0.934	20



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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

UV Absorption by EPA 415.3 - Quality Control

Analyte	Result (1/cm)	PQL (1/cm)	MDL (1/cm)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0197 - No_Prep_II_W

Duplicate (B9F0197-DUP1)		Source: 1902251-05		Prepared: 6/7/2019 Analyzed: 6/7/2019					
UV Absorption	ND	0.01	0.01		ND			20	
Duplicate (B9F0197-DUP2)		Source: 1902254-02		Prepared: 6/7/2019 Analyzed: 6/7/2019					
UV Absorption	ND	0.01	0.01		ND		NR	20	
Duplicate (B9F0197-DUP3)		Source: 1902254-03		Prepared: 6/7/2019 Analyzed: 6/7/2019					
UV Absorption	ND	0.01	0.01		ND			20	
Duplicate (B9F0197-DUP4)		Source: 1902254-04		Prepared: 6/7/2019 Analyzed: 6/7/2019					
UV Absorption	ND	0.01	0.01		ND		NR	20	
Duplicate (B9F0197-DUP5)		Source: 1902254-05		Prepared: 6/7/2019 Analyzed: 6/7/2019					
UV Absorption	ND	0.01	0.01		ND		NR	20	



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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

Total Organic Carbon by SM 5310B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0280 - No_Prep_II_W

Blank (B9F0280-BLK1)

Prepared: 6/10/2019 Analyzed: 6/10/2019

Organic Carbon, Total ND 3.0 0.28

LCS (B9F0280-BS1)

Prepared: 6/10/2019 Analyzed: 6/10/2019

Organic Carbon, Total 18.7100 3.0 0.28 20.0000 93.6 80 - 120

LCS Dup (B9F0280-BSD1)

Prepared: 6/10/2019 Analyzed: 6/10/2019

Organic Carbon, Total 19.0300 3.0 0.28 20.0000 95.2 80 - 120 1.70 20



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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

Chemical Oxygen Demand by EPA 410.4 - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0298 - Prep_WC1_W

Blank (B9F0298-BLK1)

Prepared: 6/12/2019 Analyzed: 6/12/2019

Chemical Oxygen Demand ND 5.0 4.0

LCS (B9F0298-BS1)

Prepared: 6/12/2019 Analyzed: 6/12/2019

Chemical Oxygen Demand 519.134 5.0 4.0 501.500 104 80 - 120

Matrix Spike (B9F0298-MS1)

Source: 1902254-02

Prepared: 6/12/2019 Analyzed: 6/12/2019

Chemical Oxygen Demand 521.927 5.0 4.0 501.500 5.32800 103 80 - 120

Matrix Spike Dup (B9F0298-MSD1)

Source: 1902254-02

Prepared: 6/12/2019 Analyzed: 6/12/2019

Chemical Oxygen Demand 512.694 5.0 4.0 501.500 5.32800 101 80 - 120 1.78 20



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Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

Total Metals by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9F0227 - EPA 3010A_W										
Blank (B9F0227-BLK1)					Prepared: 6/11/2019 Analyzed: 6/12/2019					
Selenium	ND	0.010	0.0093							
LCS (B9F0227-BS1)					Prepared: 6/11/2019 Analyzed: 6/12/2019					
Selenium	0.881494	0.010	0.0093	1.00000		88.1	80 - 120			
Duplicate (B9F0227-DUP1)					Source: 1902254-05 Prepared: 6/11/2019 Analyzed: 6/12/2019					
Selenium	ND	0.010	0.0093		ND			NR	20	
Matrix Spike (B9F0227-MS1)					Source: 1902254-05 Prepared: 6/11/2019 Analyzed: 6/12/2019					
Selenium	2.34832	0.010	0.0093	2.50000	ND	93.9	60 - 122			
Matrix Spike Dup (B9F0227-MSD1)					Source: 1902254-05 Prepared: 6/11/2019 Analyzed: 6/12/2019					
Selenium	2.23962	0.010	0.0093	2.50000	ND	89.6	60 - 122	4.74	20	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

Dissolved Metals by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0272 - EPA 3010A_W

Blank (B9F0272-BLK1)

Prepared: 6/11/2019 Analyzed: 6/12/2019

Calcium	ND	0.50	0.12
Iron	ND	0.50	0.011
Magnesium	ND	0.10	0.021
Manganese	ND	0.50	0.0046
Selenium	ND	0.010	0.0093
Sodium	ND	1.0	0.12

LCS (B9F0272-BS1)

Prepared: 6/11/2019 Analyzed: 6/12/2019

Calcium	20.6868	0.50	0.12	20.0000	103	80 - 120
Iron	19.4461	0.50	0.011	20.0000	97.2	80 - 120
Magnesium	19.3283	0.10	0.021	20.0000	96.6	80 - 120
Manganese	9.19034	0.50	0.0046	10.0000	91.9	80 - 120
Selenium	0.935107	0.010	0.0093	1.00000	93.5	80 - 120
Sodium	16.0850	1.0	0.12	20.0000	80.4	80 - 120

Matrix Spike (B9F0272-MS1)

Source: 1902254-03

Prepared: 6/11/2019 Analyzed: 6/12/2019

Calcium	99.8775	0.50	0.12	20.0000	87.6761	61.0	0 - 244
Iron	17.6740	0.50	0.011	20.0000	0.180450	87.5	34 - 165
Magnesium	41.8224	0.10	0.021	20.0000	27.6685	70.8	0 - 255
Manganese	8.80235	0.50	0.0046	10.0000	ND	88.0	73 - 119
Selenium	2.09423	0.010	0.0093	2.50000	ND	83.8	55 - 136
Sodium	69.1631	1.0	0.12	19.9000	57.1538	60.3	0 - 366

Matrix Spike Dup (B9F0272-MSD1)

Source: 1902254-03

Prepared: 6/11/2019 Analyzed: 6/12/2019

Calcium	99.1452	0.50	0.12	20.0000	87.6761	57.3	0 - 244	0.736	20
Iron	18.0277	0.50	0.011	20.0000	0.180450	89.2	34 - 165	1.98	20
Magnesium	42.0212	0.10	0.021	20.0000	27.6685	71.8	0 - 255	0.474	20
Manganese	8.97755	0.50	0.0046	10.0000	ND	89.8	73 - 119	1.97	20
Selenium	2.12959	0.010	0.0093	2.50000	ND	85.2	55 - 136	1.67	20
Sodium	68.9820	1.0	0.12	19.9000	57.1538	59.4	0 - 366	0.262	20



Certificate of Analysis

Hargis & Associates, Inc.

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San Diego , CA 92122

Project Number : Raytheon Main GETS Quarterly Sample,

Report To : Steve Netto

Reported : 06/13/2019

Notes and Definitions

M1	Matrix spike recovery outside of acceptance limit. The analytical batch was validated by the laboratory control sample.
D6	Sample required dilution due to high concentration of target analyte.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

PROJECT: Raytheon Main GETS Quarterly Sample

TASK NO.: 532.15

Project Manager Steve Netto
QA Manager Ross Horton
Phone 858.455.6500
Fax 858.455.6533

Sampled By:		SAMPLE COLLECTION		MATRIX					PRESERVATION					CONTAINERS					ANALYSIS REQUESTED										Expected Concentration Range (ppt) for VOAs				SPECIAL HANDLING					REMARKS
LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Ice	40-ml VOA	125 mL Poly	250 mL Poly	500 mL Poly	250 mL Glass	Alkalinity by SM2320B	Anions by EPA 300	COD by EPA 410.4	Dissolved Metals by EPA 6010B	Total Dissolved Solids by SM2540C	Total Organic Carbon by SM5310B	Total Se by EPA 6010B	UV Absorption EPA 415.3 @254 nm	0 - 10	10 - 100	100 - 1,000	>1,000	24 hr TAT	48 Hour TAT	5 Day TAT	Level IV Data Validation Requested	MS/MSD Requested							
1902254-01	CEFF	6/6/2019	9:19	X					X	1									X																			
	POX	6/6/2019	9:49	X				X	X	3				1		X	X		X			X														Lab to filter dissolved		
	INF	6/6/2019	10:14	X		X		X	X	3	3	1	2	1	X	X	X	X	X	X	X	X															metals, and anions	
	EW-02	6/6/2019	10:55	X		X		X	X	3	3	1	2	1	X	X	X	X	X	X	X	X																
	MW-29	6/6/2019	11:22	X		X		X	X	3	3	1	2	1	X	X	X	X	X	X	X	X																

Total number of containers per analysis:

9 13 3 6 4

Total No. of Containers: 35

Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
Steve Netto H+A	6-6-19 13:08	Ross Horton H+A	6-6-19 13:08
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
Ross Horton H+A	6-6-19 16:21	ATL	6-6-19 16:27

- ☐ No. of containers correct
☐ Received in good condition
☐ Custody seals secure
☐ Conforms to COC document

Send Results to:
Steve Netto & Ross Horton
 9171 Towne Centre Drive
 Suite 375
 San Diego, CA 92122
 Ph: 858.455.6500
snetto@hargis.com
horton@hargis.com

Instructions

Fill out form completely and sign only after verified for completeness
 Complete in ballpoint pen. Draw one line through error, initial and date correction
 Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✗
 Note applicable preservatives, special instructions, and deviations from typical environmental samples.
 Consult project QA documents for specific instructions.

0.8, 26 Temperature on receipt



June 27, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1902427

Client Reference : Raytheon Main GETS Mid Month Sample, 532.15

Enclosed are the results for sample(s) received on June 20, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read "Edgar Caballero", with a small "En" written below the main signature.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-062019	1902427-01	Lab prepared water	6/20/19 8:00	6/20/19 12:48
CEFF	1902427-02	Groundwater	6/20/19 10:05	6/20/19 12:48
CBT	1902427-03	Groundwater	6/20/19 10:10	6/20/19 12:48
POX	1902427-04	Groundwater	6/20/19 10:15	6/20/19 12:48
INF	1902427-05	Groundwater	6/20/19 10:20	6/20/19 12:48
EW-02	1902427-06	Groundwater	6/20/19 11:05	6/20/19 12:48
MW-29	1902427-07	Groundwater	6/20/19 11:15	6/20/19 12:48



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID TB-062019

Lab ID: 1902427-01

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,1,1-Trichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,1,2-Trichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,1-Dichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,1-Dichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,1-Dichloropropene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,2,3-Trichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,2,3-Trichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,2,4-Trichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,2,4-Trimethylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,2-Dibromoethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,2-Dichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,2-Dichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,2-Dichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,3,5-Trimethylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,3-Dichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,3-Dichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
1,4-Dichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
2,2-Dichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
2-Chlorotoluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
4-Chlorotoluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
4-Isopropyltoluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Benzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Bromobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Bromodichloromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Bromoform	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Bromomethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Carbon tetrachloride	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Chlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Chloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Chloroform	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Chloromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
cis-1,2-Dichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
cis-1,3-Dichloropropene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Dibromochloromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID TB-062019

Lab ID: 1902427-01

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Dichlorodifluoromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Ethylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Hexachlorobutadiene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Isopropylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
m,p-Xylene	ND	1.0	1	B9F0616	06/21/2019	06/21/19 18:40	
Methylene chloride	ND	1.0	1	B9F0616	06/21/2019	06/21/19 18:40	
n-Butylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
n-Propylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Naphthalene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
o-Xylene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
sec-Butylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Styrene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
tert-Butylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Tetrachloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Toluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
trans-1,2-Dichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Trichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Trichlorofluoromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Vinyl chloride	ND	0.50	1	B9F0616	06/21/2019	06/21/19 18:40	
Surrogate: 1,2-Dichloroethane-d4	128 %	57 - 152		B9F0616	06/21/2019	06/21/19 18:40	
Surrogate: 4-Bromofluorobenzene	97.8 %	62 - 134		B9F0616	06/21/2019	06/21/19 18:40	
Surrogate: Dibromofluoromethane	123 %	56 - 167		B9F0616	06/21/2019	06/21/19 18:40	
Surrogate: Toluene-d8	120 %	33 - 170		B9F0616	06/21/2019	06/21/19 18:40	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID CEFF

Lab ID: 1902427-02

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,1,1-Trichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,1,2-Trichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,1-Dichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,1-Dichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,1-Dichloropropene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,2,3-Trichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,2,3-Trichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,2,4-Trichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,2,4-Trimethylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,2-Dibromoethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,2-Dichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,2-Dichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,2-Dichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,3,5-Trimethylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,3-Dichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,3-Dichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
1,4-Dichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
2,2-Dichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
2-Chlorotoluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
4-Chlorotoluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
4-Isopropyltoluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Benzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Bromobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Bromodichloromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Bromoform	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Bromomethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Carbon tetrachloride	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Chlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Chloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Chloroform	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Chloromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
cis-1,2-Dichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
cis-1,3-Dichloropropene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Dibromochloromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID CEFF

Lab ID: 1902427-02

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Dichlorodifluoromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Ethylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Hexachlorobutadiene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Isopropylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
m,p-Xylene	ND	1.0	1	B9F0616	06/21/2019	06/21/19 19:04	
Methylene chloride	ND	1.0	1	B9F0616	06/21/2019	06/21/19 19:04	
n-Butylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
n-Propylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Naphthalene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
o-Xylene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
sec-Butylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Styrene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
tert-Butylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Tetrachloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Toluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
trans-1,2-Dichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Trichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Trichlorofluoromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Vinyl chloride	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:04	
Surrogate: 1,2-Dichloroethane-d4	126 %	57 - 152		B9F0616	06/21/2019	06/21/19 19:04	
Surrogate: 4-Bromofluorobenzene	97.5 %	62 - 134		B9F0616	06/21/2019	06/21/19 19:04	
Surrogate: Dibromofluoromethane	119 %	56 - 167		B9F0616	06/21/2019	06/21/19 19:04	
Surrogate: Toluene-d8	120 %	33 - 170		B9F0616	06/21/2019	06/21/19 19:04	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID CEFF

Lab ID: 1902427-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9F0711	06/25/2019	06/25/19 21:51	
Surrogate: 1,2-Dichlorobenzene-d4	75.5 %	22 - 117		B9F0711	06/25/2019	06/25/19 21:51	
Surrogate: 2-Fluorobiphenyl	82.0 %	20 - 131		B9F0711	06/25/2019	06/25/19 21:51	
Surrogate: 4-Terphenyl-d14	95.0 %	24 - 135		B9F0711	06/25/2019	06/25/19 21:51	
Surrogate: Nitrobenzene-d5	75.4 %	6 - 124		B9F0711	06/25/2019	06/25/19 21:51	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID CBT

Lab ID: 1902427-03

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,1,1-Trichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,1,2-Trichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,1-Dichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,1-Dichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,1-Dichloropropene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,2,3-Trichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,2,3-Trichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,2,4-Trichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,2,4-Trimethylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,2-Dibromoethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,2-Dichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,2-Dichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,2-Dichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,3,5-Trimethylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,3-Dichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,3-Dichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
1,4-Dichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
2,2-Dichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
2-Chlorotoluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
4-Chlorotoluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
4-Isopropyltoluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Benzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Bromobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Bromodichloromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Bromoform	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Bromomethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Carbon tetrachloride	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Chlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Chloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Chloroform	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Chloromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
cis-1,2-Dichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
cis-1,3-Dichloropropene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Dibromochloromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID CBT

Lab ID: 1902427-03

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Dichlorodifluoromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Ethylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Hexachlorobutadiene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Isopropylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
m,p-Xylene	ND	1.0	1	B9F0616	06/21/2019	06/21/19 19:29	
Methylene chloride	ND	1.0	1	B9F0616	06/21/2019	06/21/19 19:29	
n-Butylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
n-Propylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Naphthalene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
o-Xylene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
sec-Butylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Styrene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
tert-Butylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Tetrachloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Toluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
trans-1,2-Dichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Trichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Trichlorofluoromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Vinyl chloride	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:29	
Surrogate: 1,2-Dichloroethane-d4	127 %	57 - 152		B9F0616	06/21/2019	06/21/19 19:29	
Surrogate: 4-Bromofluorobenzene	100 %	62 - 134		B9F0616	06/21/2019	06/21/19 19:29	
Surrogate: Dibromofluoromethane	124 %	56 - 167		B9F0616	06/21/2019	06/21/19 19:29	
Surrogate: Toluene-d8	121 %	33 - 170		B9F0616	06/21/2019	06/21/19 19:29	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID CBT

Lab ID: 1902427-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9F0711	06/25/2019	06/25/19 22:17	
Surrogate: 1,2-Dichlorobenzene-d4	76.0 %	22 - 117		B9F0711	06/25/2019	06/25/19 22:17	
Surrogate: 2-Fluorobiphenyl	85.4 %	20 - 131		B9F0711	06/25/2019	06/25/19 22:17	
Surrogate: 4-Terphenyl-d14	97.9 %	24 - 135		B9F0711	06/25/2019	06/25/19 22:17	
Surrogate: Nitrobenzene-d5	76.0 %	6 - 124		B9F0711	06/25/2019	06/25/19 22:17	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID POX

Lab ID: 1902427-04

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,1,1-Trichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,1,2-Trichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,1-Dichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,1-Dichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,1-Dichloropropene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,2,3-Trichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,2,3-Trichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,2,4-Trichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,2,4-Trimethylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,2-Dibromoethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,2-Dichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,2-Dichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,2-Dichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,3,5-Trimethylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,3-Dichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,3-Dichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
1,4-Dichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
2,2-Dichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
2-Chlorotoluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
4-Chlorotoluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
4-Isopropyltoluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Benzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Bromobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Bromodichloromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Bromoform	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Bromomethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Carbon tetrachloride	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Chlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Chloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Chloroform	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Chloromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
cis-1,2-Dichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
cis-1,3-Dichloropropene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Dibromochloromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID POX

Lab ID: 1902427-04

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Dichlorodifluoromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Ethylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Hexachlorobutadiene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Isopropylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
m,p-Xylene	ND	1.0	1	B9F0616	06/21/2019	06/21/19 19:53	
Methylene chloride	ND	1.0	1	B9F0616	06/21/2019	06/21/19 19:53	
n-Butylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
n-Propylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Naphthalene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
o-Xylene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
sec-Butylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Styrene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
tert-Butylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Tetrachloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Toluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
trans-1,2-Dichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Trichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Trichlorofluoromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Vinyl chloride	ND	0.50	1	B9F0616	06/21/2019	06/21/19 19:53	
Surrogate: 1,2-Dichloroethane-d4	125 %	57 - 152		B9F0616	06/21/2019	06/21/19 19:53	
Surrogate: 4-Bromofluorobenzene	96.1 %	62 - 134		B9F0616	06/21/2019	06/21/19 19:53	
Surrogate: Dibromofluoromethane	121 %	56 - 167		B9F0616	06/21/2019	06/21/19 19:53	
Surrogate: Toluene-d8	119 %	33 - 170		B9F0616	06/21/2019	06/21/19 19:53	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID POX

Lab ID: 1902427-04

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9F0711	06/25/2019	06/25/19 22:44	
Surrogate: 1,2-Dichlorobenzene-d4	72.9 %	22 - 117		B9F0711	06/25/2019	06/25/19 22:44	
Surrogate: 2-Fluorobiphenyl	76.6 %	20 - 131		B9F0711	06/25/2019	06/25/19 22:44	
Surrogate: 4-Terphenyl-d14	81.4 %	24 - 135		B9F0711	06/25/2019	06/25/19 22:44	
Surrogate: Nitrobenzene-d5	73.5 %	6 - 124		B9F0711	06/25/2019	06/25/19 22:44	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID INF

Lab ID: 1902427-05

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,1,1-Trichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,1,2-Trichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,1-Dichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,1-Dichloroethene	54	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,1-Dichloropropene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,2,3-Trichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,2,3-Trichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,2,4-Trichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,2,4-Trimethylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,2-Dibromoethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,2-Dichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,2-Dichloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,2-Dichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,3,5-Trimethylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,3-Dichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,3-Dichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
1,4-Dichlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
2,2-Dichloropropane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
2-Chlorotoluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
4-Chlorotoluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
4-Isopropyltoluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Benzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Bromobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Bromodichloromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Bromoform	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Bromomethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Carbon tetrachloride	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Chlorobenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Chloroethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Chloroform	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Chloromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
cis-1,2-Dichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
cis-1,3-Dichloropropene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Dibromochloromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID INF

Lab ID: 1902427-05

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Dichlorodifluoromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Ethylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Hexachlorobutadiene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Isopropylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
m,p-Xylene	ND	1.0	1	B9F0616	06/21/2019	06/21/19 20:17	
Methylene chloride	ND	1.0	1	B9F0616	06/21/2019	06/21/19 20:17	
n-Butylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
n-Propylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Naphthalene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
o-Xylene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
sec-Butylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Styrene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
tert-Butylbenzene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Tetrachloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Toluene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
trans-1,2-Dichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Trichloroethene	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Trichlorofluoromethane	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Vinyl chloride	ND	0.50	1	B9F0616	06/21/2019	06/21/19 20:17	
Surrogate: 1,2-Dichloroethane-d4	126 %	57 - 152		B9F0616	06/21/2019	06/21/19 20:17	
Surrogate: 4-Bromofluorobenzene	94.2 %	62 - 134		B9F0616	06/21/2019	06/21/19 20:17	
Surrogate: Dibromofluoromethane	118 %	56 - 167		B9F0616	06/21/2019	06/21/19 20:17	
Surrogate: Toluene-d8	118 %	33 - 170		B9F0616	06/21/2019	06/21/19 20:17	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID INF

Lab ID: 1902427-05

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	31	2.0	1	B9F0663	06/24/2019	06/26/19 16:24	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>54.9 %</i>	<i>34 - 188</i>		B9F0663	06/24/2019	<i>06/26/19 16:24</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>62.8 %</i>	<i>39 - 108</i>		B9F0663	06/24/2019	<i>06/26/19 16:24</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>106 %</i>	<i>71 - 131</i>		B9F0663	06/24/2019	<i>06/26/19 16:24</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>58.7 %</i>	<i>32 - 106</i>		B9F0663	06/24/2019	<i>06/26/19 16:24</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID EW-02

Lab ID: 1902427-06

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,1,1-Trichloroethane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,1,2-Trichloroethane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,1-Dichloroethane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,1-Dichloroethene	13	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,1-Dichloropropene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,2,3-Trichloropropane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,2,3-Trichlorobenzene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,2,4-Trichlorobenzene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,2,4-Trimethylbenzene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,2-Dibromoethane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,2-Dichlorobenzene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,2-Dichloroethane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,2-Dichloropropane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,3,5-Trimethylbenzene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,3-Dichlorobenzene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,3-Dichloropropane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
1,4-Dichlorobenzene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
2,2-Dichloropropane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
2-Chlorotoluene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
4-Chlorotoluene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
4-Isopropyltoluene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Benzene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Bromobenzene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Bromodichloromethane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Bromoform	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Bromomethane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Carbon tetrachloride	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Chlorobenzene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Chloroethane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Chloroform	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Chloromethane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
cis-1,2-Dichloroethene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
cis-1,3-Dichloropropene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Dibromochloromethane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID EW-02

Lab ID: 1902427-06

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Dichlorodifluoromethane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Ethylbenzene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Hexachlorobutadiene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Isopropylbenzene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
m,p-Xylene	ND	1.0	1	B9F0688	06/25/2019	06/25/19 16:49	
Methylene chloride	ND	1.0	1	B9F0688	06/25/2019	06/25/19 16:49	
n-Butylbenzene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
n-Propylbenzene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Naphthalene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
o-Xylene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
sec-Butylbenzene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Styrene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
tert-Butylbenzene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Tetrachloroethene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Toluene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
trans-1,2-Dichloroethene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Trichloroethene	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Trichlorofluoromethane	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Vinyl chloride	ND	0.50	1	B9F0688	06/25/2019	06/25/19 16:49	
Surrogate: 1,2-Dichloroethane-d4	107 %	57 - 152		B9F0688	06/25/2019	06/25/19 16:49	
Surrogate: 4-Bromofluorobenzene	105 %	62 - 134		B9F0688	06/25/2019	06/25/19 16:49	
Surrogate: Dibromofluoromethane	106 %	56 - 167		B9F0688	06/25/2019	06/25/19 16:49	
Surrogate: Toluene-d8	111 %	33 - 170		B9F0688	06/25/2019	06/25/19 16:49	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID EW-02

Lab ID: 1902427-06

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	13	2.0	1	B9F0663	06/24/2019	06/26/19 16:50	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>50.8 %</i>	<i>34 - 188</i>		B9F0663	06/24/2019	<i>06/26/19 16:50</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>66.0 %</i>	<i>39 - 108</i>		B9F0663	06/24/2019	<i>06/26/19 16:50</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>119 %</i>	<i>71 - 131</i>		B9F0663	06/24/2019	<i>06/26/19 16:50</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>54.8 %</i>	<i>32 - 106</i>		B9F0663	06/24/2019	<i>06/26/19 16:50</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID MW-29

Lab ID: 1902427-07

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,1,1-Trichloroethane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,1,2-Trichloroethane	0.64	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,1-Dichloroethane	1.3	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,1-Dichloroethene	150	5.0	10	B9F0636	06/22/2019	06/22/19 13:42	
1,1-Dichloropropene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,2,3-Trichloropropane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,2,3-Trichlorobenzene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,2,4-Trichlorobenzene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,2,4-Trimethylbenzene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,2-Dibromoethane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,2-Dichlorobenzene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,2-Dichloroethane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,2-Dichloropropane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,3,5-Trimethylbenzene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,3-Dichlorobenzene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,3-Dichloropropane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
1,4-Dichlorobenzene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
2,2-Dichloropropane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
2-Chlorotoluene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
4-Chlorotoluene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
4-Isopropyltoluene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Benzene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Bromobenzene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Bromodichloromethane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Bromoform	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Bromomethane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Carbon tetrachloride	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Chlorobenzene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Chloroethane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Chloroform	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Chloromethane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
cis-1,2-Dichloroethene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
cis-1,3-Dichloropropene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Dibromochloromethane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID MW-29

Lab ID: 1902427-07

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Dichlorodifluoromethane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Ethylbenzene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Hexachlorobutadiene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Isopropylbenzene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
m,p-Xylene	ND	1.0	1	B9F0636	06/22/2019	06/22/19 13:17	
Methylene chloride	ND	1.0	1	B9F0636	06/22/2019	06/22/19 13:17	
n-Butylbenzene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
n-Propylbenzene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Naphthalene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
o-Xylene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
sec-Butylbenzene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Styrene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
tert-Butylbenzene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Tetrachloroethene	0.50	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Toluene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
trans-1,2-Dichloroethene	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Trichloroethene	1.8	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Trichlorofluoromethane	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	
Vinyl chloride	ND	0.50	1	B9F0636	06/22/2019	06/22/19 13:17	

Surrogate: 1,2-Dichloroethane-d4	128 %	57 - 152	B9F0636	06/22/2019	06/22/19 13:42
Surrogate: 1,2-Dichloroethane-d4	127 %	57 - 152	B9F0636	06/22/2019	06/22/19 13:17
Surrogate: 4-Bromofluorobenzene	94.7 %	62 - 134	B9F0636	06/22/2019	06/22/19 13:42
Surrogate: 4-Bromofluorobenzene	94.5 %	62 - 134	B9F0636	06/22/2019	06/22/19 13:17
Surrogate: Dibromofluoromethane	124 %	56 - 167	B9F0636	06/22/2019	06/22/19 13:42
Surrogate: Dibromofluoromethane	121 %	56 - 167	B9F0636	06/22/2019	06/22/19 13:17
Surrogate: Toluene-d8	119 %	33 - 170	B9F0636	06/22/2019	06/22/19 13:17
Surrogate: Toluene-d8	119 %	33 - 170	B9F0636	06/22/2019	06/22/19 13:42



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Client Sample ID MW-29

Lab ID: 1902427-07

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	92	2.0	1	B9F0663	06/24/2019	06/26/19 17:16	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>75.7 %</i>	<i>34 - 188</i>		B9F0663	06/24/2019	<i>06/26/19 17:16</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>89.2 %</i>	<i>39 - 108</i>		B9F0663	06/24/2019	<i>06/26/19 17:16</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>119 %</i>	<i>71 - 131</i>		B9F0663	06/24/2019	<i>06/26/19 17:16</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>75.2 %</i>	<i>32 - 106</i>		B9F0663	06/24/2019	<i>06/26/19 17:16</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

QUALITY CONTROL SECTION

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0616 - MSVOA_W

Blank (B9F0616-BLK1)

Prepared: 6/21/2019 Analyzed: 6/21/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0616 - MSVOA_W (continued)

Blank (B9F0616-BLK1) - Continued

Prepared: 6/21/2019 Analyzed: 6/21/2019

Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15
Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	31.20		25.0000	125	57 - 152
Surrogate: 4-Bromofluorobenzene	23.66		25.0000	94.6	62 - 134
Surrogate: Dibromofluoromethane	29.00		25.0000	116	56 - 167
Surrogate: Toluene-d8	28.93		25.0000	116	33 - 170

LCS (B9F0616-BS1)

Prepared: 6/21/2019 Analyzed: 6/21/2019

1,1,1,2-Tetrachloroethane	21.4800	0.50	0.11	20.0000	107	80 - 137
1,1,1-Trichloroethane	21.5000	0.50	0.07	20.0000	108	75 - 148
1,1,2,2-Tetrachloroethane	19.9100	0.50	0.36	20.0000	99.6	64 - 118
1,1,2-Trichloroethane	20.9000	0.50	0.25	20.0000	104	77 - 113
1,1-Dichloroethane	15.9400	0.50	0.09	20.0000	79.7	72 - 131
1,1-Dichloroethene	20.7200	0.50	0.13	20.0000	104	75 - 132
1,1-Dichloropropene	24.4300	0.50	0.13	20.0000	122	84 - 141
1,2,3-Trichloropropane	18.7500	0.50	0.39	20.0000	93.8	65 - 111
1,2,3-Trichlorobenzene	22.9500	0.50	0.18	20.0000	115	79 - 117
1,2,4-Trichlorobenzene	22.6800	0.50	0.16	20.0000	113	78 - 121
1,2,4-Trimethylbenzene	20.7200	0.50	0.14	20.0000	104	83 - 125
1,2-Dibromo-3-chloropropane	19.8200	0.50	0.41	20.0000	99.1	54 - 116
1,2-Dibromoethane	23.0800	0.50	0.24	20.0000	115	79 - 118
1,2-Dichlorobenzene	21.0600	0.50	0.20	20.0000	105	82 - 115
1,2-Dichloroethane	19.9100	0.50	0.20	20.0000	99.6	76 - 115
1,2-Dichloropropane	20.3500	0.50	0.15	20.0000	102	74 - 113
1,3,5-Trimethylbenzene	21.1400	0.50	0.13	20.0000	106	83 - 126



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
Batch B9F0616 - MSVOA_W (continued)									
LCS (B9F0616-BS1) - Continued					Prepared: 6/21/2019 Analyzed: 6/21/2019				
1,3-Dichlorobenzene	21.4500	0.50	0.16	20.0000		107	84 - 118		
1,3-Dichloropropane	21.0600	0.50	0.21	20.0000		105	72 - 116		
1,4-Dichlorobenzene	20.1400	0.50	0.17	20.0000		101	83 - 112		
2,2-Dichloropropane	18.1200	0.50	0.38	20.0000		90.6	72 - 150		
2-Chlorotoluene	22.3700	0.50	0.11	20.0000		112	82 - 120		
4-Chlorotoluene	21.9500	0.50	0.12	20.0000		110	81 - 121		
4-Isopropyltoluene	20.8200	0.50	0.11	20.0000		104	86 - 124		
Benzene	46.0900	0.50	0.13	40.0000		115	81 - 118		
Bromobenzene	21.1500	0.50	0.21	20.0000		106	82 - 117		
Bromodichloromethane	20.9000	0.50	0.14	20.0000		104	80 - 122		
Bromoform	22.3700	0.50	0.20	20.0000		112	53 - 145		
Bromomethane	19.5200	0.50	0.17	20.0000		97.6	30 - 204		
Carbon tetrachloride	22.3200	0.50	0.09	20.0000		112	77 - 157		
Chlorobenzene	20.9600	0.50	0.13	20.0000		105	86 - 113		
Chloroethane	19.7400	0.50	0.15	20.0000		98.7	70 - 160		
Chloroform	18.3900	0.50	0.11	20.0000		92.0	66 - 136		
Chloromethane	23.2500	0.50	0.12	20.0000		116	52 - 138		
cis-1,2-Dichloroethene	19.5000	0.50	0.14	20.0000		97.5	71 - 128		
cis-1,3-Dichloropropene	24.2900	0.50	0.13	20.0000		121	71 - 123		
Dibromochloromethane	22.2300	0.50	0.16	20.0000		111	78 - 140		
Dibromomethane	20.6900	0.50	0.19	20.0000		103	78 - 109		
Dichlorodifluoromethane	29.4300	0.50	0.05	20.0000		147	64 - 144		L4
Ethylbenzene	43.0400	0.50	0.13	40.0000		108	90 - 116		
Hexachlorobutadiene	22.7200	0.50	0.15	20.0000		114	81 - 129		
Isopropylbenzene	22.4600	0.50	0.10	20.0000		112	83 - 129		
m,p-Xylene	44.5100	1.0	0.19	40.0000		111	88 - 124		
Methylene chloride	19.1300	1.0	0.71	20.0000		95.6	76 - 137		
n-Butylbenzene	22.7900	0.50	0.11	20.0000		114	83 - 129		
n-Propylbenzene	22.7600	0.50	0.10	20.0000		114	85 - 124		
Naphthalene	17.9100	0.50	0.41	20.0000		89.6	67 - 113		
o-Xylene	41.9700	0.50	0.13	40.0000		105	82 - 129		
sec-Butylbenzene	23.1300	0.50	0.09	20.0000		116	86 - 127		
Styrene	20.3800	0.50	0.13	20.0000		102	83 - 122		
tert-Butylbenzene	23.9100	0.50	0.09	20.0000		120	84 - 130		
Tetrachloroethene	22.8100	0.50	0.10	20.0000		114	87 - 123		
Toluene	46.9600	0.50	0.12	40.0000		117	84 - 115		L3
trans-1,2-Dichloroethene	16.1200	0.50	0.09	20.0000		80.6	60 - 148		
Trichloroethene	21.7900	0.50	0.10	20.0000		109	79 - 129		
Trichlorofluoromethane	20.2300	0.50	0.10	20.0000		101	68 - 162		
Vinyl chloride	18.7200	0.50	0.05	20.0000		93.6	73 - 128		
Surrogate: 1,2-Dichloroethane-d4	25.97			25.0000		104	57 - 152		



Certificate of Analysis

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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0616 - MSVOA_W (continued)

LCS (B9F0616-BS1) - Continued

Prepared: 6/21/2019 Analyzed: 6/21/2019

Surrogate: 4-Bromofluorobenzene	27.32		25.0000		109	62 - 134			
Surrogate: Dibromofluoromethane	26.97		25.0000		108	56 - 167			
Surrogate: Toluene-d8	30.12		25.0000		120	33 - 170			

LCS Dup (B9F0616-BSD1)

Prepared: 6/21/2019 Analyzed: 6/21/2019

1,1,1,2-Tetrachloroethane	20.9200	0.50	0.11	20.0000	105	80 - 137	2.64	20	
1,1,1-Trichloroethane	20.4400	0.50	0.07	20.0000	102	75 - 148	5.05	20	
1,1,2,2-Tetrachloroethane	22.0400	0.50	0.36	20.0000	110	64 - 118	10.2	20	
1,1,2-Trichloroethane	21.2800	0.50	0.25	20.0000	106	77 - 113	1.80	20	
1,1-Dichloroethane	15.5300	0.50	0.09	20.0000	77.6	72 - 131	2.61	20	
1,1-Dichloroethene	19.7100	0.50	0.13	20.0000	98.6	75 - 132	5.00	20	
1,1-Dichloropropene	22.6000	0.50	0.13	20.0000	113	84 - 141	7.78	20	
1,2,3-Trichloropropane	19.8800	0.50	0.39	20.0000	99.4	65 - 111	5.85	20	
1,2,3-Trichlorobenzene	22.8500	0.50	0.18	20.0000	114	79 - 117	0.437	20	
1,2,4-Trichlorobenzene	22.2500	0.50	0.16	20.0000	111	78 - 121	1.91	20	
1,2,4-Trimethylbenzene	19.9000	0.50	0.14	20.0000	99.5	83 - 125	4.04	20	
1,2-Dibromo-3-chloropropane	22.6900	0.50	0.41	20.0000	113	54 - 116	13.5	20	
1,2-Dibromoethane	23.6700	0.50	0.24	20.0000	118	79 - 118	2.52	20	L3
1,2-Dichlorobenzene	20.8600	0.50	0.20	20.0000	104	82 - 115	0.954	20	
1,2-Dichloroethane	19.5500	0.50	0.20	20.0000	97.8	76 - 115	1.82	20	
1,2-Dichloropropane	19.3500	0.50	0.15	20.0000	96.8	74 - 113	5.04	20	
1,3,5-Trimethylbenzene	20.1700	0.50	0.13	20.0000	101	83 - 126	4.70	20	
1,3-Dichlorobenzene	20.7200	0.50	0.16	20.0000	104	84 - 118	3.46	20	
1,3-Dichloropropane	21.5700	0.50	0.21	20.0000	108	72 - 116	2.39	20	
1,4-Dichlorobenzene	19.8300	0.50	0.17	20.0000	99.2	83 - 112	1.55	20	
2,2-Dichloropropane	17.0600	0.50	0.38	20.0000	85.3	72 - 150	6.03	20	
2-Chlorotoluene	21.2600	0.50	0.11	20.0000	106	82 - 120	5.09	20	
4-Chlorotoluene	21.1000	0.50	0.12	20.0000	106	81 - 121	3.95	20	
4-Isopropyltoluene	19.6700	0.50	0.11	20.0000	98.4	86 - 124	5.68	20	
Benzene	42.9400	0.50	0.13	40.0000	107	81 - 118	7.08	20	
Bromobenzene	20.5800	0.50	0.21	20.0000	103	82 - 117	2.73	20	
Bromodichloromethane	19.9800	0.50	0.14	20.0000	99.9	80 - 122	4.50	20	
Bromoform	23.3200	0.50	0.20	20.0000	117	53 - 145	4.16	20	
Bromomethane	18.0300	0.50	0.17	20.0000	90.2	30 - 204	7.94	20	
Carbon tetrachloride	20.2500	0.50	0.09	20.0000	101	77 - 157	9.73	20	
Chlorobenzene	20.2700	0.50	0.13	20.0000	101	86 - 113	3.35	20	
Chloroethane	18.9100	0.50	0.15	20.0000	94.6	70 - 160	4.29	20	
Chloroform	17.8500	0.50	0.11	20.0000	89.2	66 - 136	2.98	20	
Chloromethane	23.7600	0.50	0.12	20.0000	119	52 - 138	2.17	20	
cis-1,2-Dichloroethene	19.3100	0.50	0.14	20.0000	96.6	71 - 128	0.979	20	
cis-1,3-Dichloropropene	23.8800	0.50	0.13	20.0000	119	71 - 123	1.70	20	
Dibromochloromethane	22.2500	0.50	0.16	20.0000	111	78 - 140	0.0899	20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0616 - MSVOA_W (continued)

LCS Dup (B9F0616-BSD1) - Continued

Prepared: 6/21/2019 Analyzed: 6/21/2019

Dibromomethane	20.5300	0.50	0.19	20.0000		103	78 - 109	0.776	20
Dichlorodifluoromethane	28.0500	0.50	0.05	20.0000		140	64 - 144	4.80	20
Ethylbenzene	41.0800	0.50	0.13	40.0000		103	90 - 116	4.66	20
Hexachlorobutadiene	21.0400	0.50	0.15	20.0000		105	81 - 129	7.68	20
Isopropylbenzene	21.4600	0.50	0.10	20.0000		107	83 - 129	4.55	20
m,p-Xylene	42.5800	1.0	0.19	40.0000		106	88 - 124	4.43	20
Methylene chloride	19.0200	1.0	0.71	20.0000		95.1	76 - 137	0.577	20
n-Butylbenzene	21.2000	0.50	0.11	20.0000		106	83 - 129	7.23	20
n-Propylbenzene	21.5300	0.50	0.10	20.0000		108	85 - 124	5.55	20
Naphthalene	19.4300	0.50	0.41	20.0000		97.2	67 - 113	8.14	20
o-Xylene	40.5000	0.50	0.13	40.0000		101	82 - 129	3.56	20
sec-Butylbenzene	21.7600	0.50	0.09	20.0000		109	86 - 127	6.10	20
Styrene	20.0300	0.50	0.13	20.0000		100	83 - 122	1.73	20
tert-Butylbenzene	22.8100	0.50	0.09	20.0000		114	84 - 130	4.71	20
Tetrachloroethene	21.0800	0.50	0.10	20.0000		105	87 - 123	7.88	20
Toluene	44.4300	0.50	0.12	40.0000		111	84 - 115	5.54	20
trans-1,2-Dichloroethene	15.4800	0.50	0.09	20.0000		77.4	60 - 148	4.05	20
Trichloroethene	19.6400	0.50	0.10	20.0000		98.2	79 - 129	10.4	20
Trichlorofluoromethane	19.0100	0.50	0.10	20.0000		95.0	68 - 162	6.22	20
Vinyl chloride	18.3500	0.50	0.05	20.0000		91.8	73 - 128	2.00	20
Surrogate: 1,2-Dichloroethane-d4	27.27			25.0000		109	57 - 152		
Surrogate: 4-Bromofluorobenzene	27.92			25.0000		112	62 - 134		
Surrogate: Dibromofluoromethane	27.34			25.0000		109	56 - 167		
Surrogate: Toluene-d8	29.92			25.0000		120	33 - 170		

Duplicate (B9F0616-DUP1)

Source: 1902426-01

Prepared: 6/21/2019 Analyzed: 6/21/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11		ND				20
1,1,1-Trichloroethane	ND	0.50	0.07		ND				20
1,1,2,2-Tetrachloroethane	ND	0.50	0.36		ND				20
1,1,2-Trichloroethane	ND	0.50	0.25		ND				20
1,1-Dichloroethane	ND	0.50	0.09		ND				20
1,1-Dichloroethene	ND	0.50	0.13		ND				20
1,1-Dichloropropene	ND	0.50	0.13		ND				20
1,2,3-Trichloropropane	ND	0.50	0.39		ND				20
1,2,3-Trichlorobenzene	ND	0.50	0.18		ND				20
1,2,4-Trichlorobenzene	ND	0.50	0.16		ND				20
1,2,4-Trimethylbenzene	ND	0.50	0.14		ND				20
1,2-Dibromo-3-chloropropane	ND	0.50	0.41		ND				20
1,2-Dibromoethane	ND	0.50	0.24		ND				20
1,2-Dichlorobenzene	ND	0.50	0.20		ND				20
1,2-Dichloroethane	0.780000	0.50	0.20		0.780000			0.00	20



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0616 - MSVOA_W (continued)

Duplicate (B9F0616-DUP1) - Continued

Source: 1902426-01

Prepared: 6/21/2019 Analyzed: 6/21/2019

1,2-Dichloropropane	ND	0.50	0.15		ND				20	
1,3,5-Trimethylbenzene	ND	0.50	0.13		ND				20	
1,3-Dichlorobenzene	ND	0.50	0.16		ND				20	
1,3-Dichloropropane	ND	0.50	0.21		ND				20	
1,4-Dichlorobenzene	ND	0.50	0.17		ND				20	
2,2-Dichloropropane	ND	0.50	0.38		ND				20	
2-Chlorotoluene	ND	0.50	0.11		ND				20	
4-Chlorotoluene	ND	0.50	0.12		ND				20	
4-Isopropyltoluene	ND	0.50	0.11		ND				20	
Benzene	ND	0.50	0.13		ND				20	
Bromobenzene	ND	0.50	0.21		ND				20	
Bromodichloromethane	ND	0.50	0.14		ND				20	
Bromoform	ND	0.50	0.20		ND				20	
Bromomethane	ND	0.50	0.17		ND				20	
Carbon tetrachloride	ND	0.50	0.09		ND				20	
Chlorobenzene	ND	0.50	0.13		ND				20	
Chloroethane	ND	0.50	0.15		ND				20	
Chloroform	ND	0.50	0.11		ND				20	
Chloromethane	ND	0.50	0.12		ND				20	
cis-1,2-Dichloroethene	ND	0.50	0.14		ND				20	
cis-1,3-Dichloropropene	ND	0.50	0.13		ND				20	
Dibromochloromethane	ND	0.50	0.16		ND				20	
Dibromomethane	ND	0.50	0.19		ND				20	
Dichlorodifluoromethane	ND	0.50	0.05		ND				20	
Ethylbenzene	ND	0.50	0.13		ND				20	
Hexachlorobutadiene	ND	0.50	0.15		ND				20	
Isopropylbenzene	ND	0.50	0.10		ND				20	
m,p-Xylene	ND	1.0	0.19		ND				20	
Methylene chloride	ND	1.0	0.71		ND				20	
n-Butylbenzene	ND	0.50	0.11		ND				20	
n-Propylbenzene	ND	0.50	0.10		ND				20	
Naphthalene	ND	0.50	0.41		ND				20	
o-Xylene	ND	0.50	0.13		ND				20	
sec-Butylbenzene	ND	0.50	0.09		ND				20	
Styrene	ND	0.50	0.13		ND				20	
tert-Butylbenzene	ND	0.50	0.09		ND				20	
Tetrachloroethene	13.5700	0.50	0.10		16.2400			17.9	20	
Toluene	1.08000	0.50	0.12		1.29000			17.7	20	
trans-1,2-Dichloroethene	ND	0.50	0.09		ND				20	
Trichloroethene	3.62000	0.50	0.10		4.06000			11.5	20	
Trichlorofluoromethane	ND	0.50	0.10		ND				20	
Vinyl chloride	ND	0.50	0.05		ND				20	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0616 - MSVOA_W (continued)

Duplicate (B9F0616-DUP1) - Continued

Source: 1902426-01

Prepared: 6/21/2019 Analyzed: 6/21/2019

Surrogate: 1,2-Dichloroethane-d4	31.12	25.0000	124	57 - 152
Surrogate: 4-Bromofluorobenzene	24.32	25.0000	97.3	62 - 134
Surrogate: Dibromofluoromethan	30.38	25.0000	122	56 - 167
Surrogate: Toluene-d8	30.00	25.0000	120	33 - 170



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Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0636 - MSVOA_W

Blank (B9F0636-BLK1)

Prepared: 6/22/2019 Analyzed: 6/22/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0636 - MSVOA_W (continued)

Blank (B9F0636-BLK1) - Continued

Prepared: 6/22/2019 Analyzed: 6/22/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	31.02		25.0000	124	57 - 152
Surrogate: 4-Bromofluorobenzene	23.92		25.0000	95.7	62 - 134
Surrogate: Dibromofluoromethane	30.52		25.0000	122	56 - 167
Surrogate: Toluene-d8	30.23		25.0000	121	33 - 170

LCS (B9F0636-BS1)

Prepared: 6/22/2019 Analyzed: 6/22/2019

1,1,1,2-Tetrachloroethane	21.6500	0.50	0.11	20.0000	108	80 - 137
1,1,1-Trichloroethane	21.7100	0.50	0.07	20.0000	109	75 - 148
1,1,2,2-Tetrachloroethane	22.3900	0.50	0.36	20.0000	112	64 - 118
1,1,2-Trichloroethane	22.2200	0.50	0.25	20.0000	111	77 - 113
1,1-Dichloroethane	16.0100	0.50	0.09	20.0000	80.0	72 - 131
1,1-Dichloroethene	20.2700	0.50	0.13	20.0000	101	75 - 132
1,1-Dichloropropene	23.2800	0.50	0.13	20.0000	116	84 - 141
1,2,3-Trichloropropane	20.5100	0.50	0.39	20.0000	103	65 - 111
1,2,3-Trichlorobenzene	23.8300	0.50	0.18	20.0000	119	79 - 117
1,2,4-Trichlorobenzene	22.7700	0.50	0.16	20.0000	114	78 - 121
1,2,4-Trimethylbenzene	20.3100	0.50	0.14	20.0000	102	83 - 125
1,2-Dibromo-3-chloropropane	22.8500	0.50	0.41	20.0000	114	54 - 116
1,2-Dibromoethane	24.9500	0.50	0.24	20.0000	125	79 - 118
1,2-Dichlorobenzene	21.4900	0.50	0.20	20.0000	107	82 - 115
1,2-Dichloroethane	20.5300	0.50	0.20	20.0000	103	76 - 115
1,2-Dichloropropane	20.1800	0.50	0.15	20.0000	101	74 - 113
1,3,5-Trimethylbenzene	20.5500	0.50	0.13	20.0000	103	83 - 126
1,3-Dichlorobenzene	21.2000	0.50	0.16	20.0000	106	84 - 118
1,3-Dichloropropane	22.4000	0.50	0.21	20.0000	112	72 - 116



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0636 - MSVOA_W (continued)

LCS (B9F0636-BS1) - Continued

Prepared: 6/22/2019 Analyzed: 6/22/2019

1,4-Dichlorobenzene	20.2900	0.50	0.17	20.0000		101	83 - 112		
2,2-Dichloropropane	17.5600	0.50	0.38	20.0000		87.8	72 - 150		
2-Chlorotoluene	21.8500	0.50	0.11	20.0000		109	82 - 120		
4-Chlorotoluene	21.4500	0.50	0.12	20.0000		107	81 - 121		
4-Isopropyltoluene	20.0100	0.50	0.11	20.0000		100	86 - 124		
Benzene	45.6100	0.50	0.13	40.0000		114	81 - 118		
Bromobenzene	21.2500	0.50	0.21	20.0000		106	82 - 117		
Bromodichloromethane	21.4300	0.50	0.14	20.0000		107	80 - 122		
Bromoform	23.8200	0.50	0.20	20.0000		119	53 - 145		
Bromomethane	20.7000	0.50	0.17	20.0000		104	30 - 204		
Carbon tetrachloride	21.4200	0.50	0.09	20.0000		107	77 - 157		
Chlorobenzene	20.9900	0.50	0.13	20.0000		105	86 - 113		
Chloroethane	19.3700	0.50	0.15	20.0000		96.8	70 - 160		
Chloroform	18.7700	0.50	0.11	20.0000		93.8	66 - 136		
Chloromethane	25.6700	0.50	0.12	20.0000		128	52 - 138		
cis-1,2-Dichloroethene	19.9600	0.50	0.14	20.0000		99.8	71 - 128		
cis-1,3-Dichloropropene	24.6100	0.50	0.13	20.0000		123	71 - 123		L3
Dibromochloromethane	23.0900	0.50	0.16	20.0000		115	78 - 140		
Dibromomethane	21.9900	0.50	0.19	20.0000		110	78 - 109		L3
Dichlorodifluoromethane	29.7400	0.50	0.05	20.0000		149	64 - 144		L4
Ethylbenzene	42.5300	0.50	0.13	40.0000		106	90 - 116		
Hexachlorobutadiene	21.4000	0.50	0.15	20.0000		107	81 - 129		
Isopropylbenzene	21.9100	0.50	0.10	20.0000		110	83 - 129		
m,p-Xylene	44.0500	1.0	0.19	40.0000		110	88 - 124		
Methylene chloride	20.2900	1.0	0.71	20.0000		101	76 - 137		
n-Butylbenzene	21.5700	0.50	0.11	20.0000		108	83 - 129		
n-Propylbenzene	21.9300	0.50	0.10	20.0000		110	85 - 124		
Naphthalene	19.7200	0.50	0.41	20.0000		98.6	67 - 113		
o-Xylene	42.1100	0.50	0.13	40.0000		105	82 - 129		
sec-Butylbenzene	22.1400	0.50	0.09	20.0000		111	86 - 127		
Styrene	20.5800	0.50	0.13	20.0000		103	83 - 122		
tert-Butylbenzene	23.2300	0.50	0.09	20.0000		116	84 - 130		
Tetrachloroethene	22.3200	0.50	0.10	20.0000		112	87 - 123		
Toluene	47.0800	0.50	0.12	40.0000		118	84 - 115		L3
trans-1,2-Dichloroethene	15.8900	0.50	0.09	20.0000		79.4	60 - 148		
Trichloroethene	20.8800	0.50	0.10	20.0000		104	79 - 129		
Trichlorofluoromethane	20.3500	0.50	0.10	20.0000		102	68 - 162		
Vinyl chloride	19.1100	0.50	0.05	20.0000		95.6	73 - 128		
Surrogate: 1,2-Dichloroethane-d4	28.10			25.0000		112	57 - 152		
Surrogate: 4-Bromofluorobenzene	27.98			25.0000		112	62 - 134		
Surrogate: Dibromofluoromethane	28.43			25.0000		114	56 - 167		



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0636 - MSVOA_W (continued)

LCS (B9F0636-BS1) - Continued

Prepared: 6/22/2019 Analyzed: 6/22/2019

Surrogate: Toluene-d8 30.42 25.0000 122 33 - 170

LCS Dup (B9F0636-BS1)

Prepared: 6/22/2019 Analyzed: 6/22/2019

1,1,1,2-Tetrachloroethane	20.7600	0.50	0.11	20.0000	104	80 - 137	4.20	20	
1,1,1-Trichloroethane	20.4900	0.50	0.07	20.0000	102	75 - 148	5.78	20	
1,1,2,2-Tetrachloroethane	21.5900	0.50	0.36	20.0000	108	64 - 118	3.64	20	
1,1,2-Trichloroethane	21.9100	0.50	0.25	20.0000	110	77 - 113	1.40	20	
1,1-Dichloroethane	15.3500	0.50	0.09	20.0000	76.8	72 - 131	4.21	20	
1,1-Dichloroethene	19.4200	0.50	0.13	20.0000	97.1	75 - 132	4.28	20	
1,1-Dichloropropene	22.8600	0.50	0.13	20.0000	114	84 - 141	1.82	20	
1,2,3-Trichloropropane	19.7100	0.50	0.39	20.0000	98.6	65 - 111	3.98	20	
1,2,3-Trichlorobenzene	22.6200	0.50	0.18	20.0000	113	79 - 117	5.21	20	
1,2,4-Trichlorobenzene	21.6000	0.50	0.16	20.0000	108	78 - 121	5.27	20	
1,2,4-Trimethylbenzene	19.0000	0.50	0.14	20.0000	95.0	83 - 125	6.66	20	
1,2-Dibromo-3-chloropropane	22.1000	0.50	0.41	20.0000	110	54 - 116	3.34	20	
1,2-Dibromoethane	24.4200	0.50	0.24	20.0000	122	79 - 118	2.15	20	L3
1,2-Dichlorobenzene	20.4000	0.50	0.20	20.0000	102	82 - 115	5.20	20	
1,2-Dichloroethane	19.8800	0.50	0.20	20.0000	99.4	76 - 115	3.22	20	
1,2-Dichloropropane	19.3600	0.50	0.15	20.0000	96.8	74 - 113	4.15	20	
1,3,5-Trimethylbenzene	19.2100	0.50	0.13	20.0000	96.0	83 - 126	6.74	20	
1,3-Dichlorobenzene	19.8600	0.50	0.16	20.0000	99.3	84 - 118	6.53	20	
1,3-Dichloropropane	21.5600	0.50	0.21	20.0000	108	72 - 116	3.82	20	
1,4-Dichlorobenzene	19.0400	0.50	0.17	20.0000	95.2	83 - 112	6.36	20	
2,2-Dichloropropane	16.6000	0.50	0.38	20.0000	83.0	72 - 150	5.62	20	
2-Chlorotoluene	20.3200	0.50	0.11	20.0000	102	82 - 120	7.26	20	
4-Chlorotoluene	20.2600	0.50	0.12	20.0000	101	81 - 121	5.71	20	
4-Isopropyltoluene	18.7400	0.50	0.11	20.0000	93.7	86 - 124	6.55	20	
Benzene	43.6800	0.50	0.13	40.0000	109	81 - 118	4.32	20	
Bromobenzene	20.2900	0.50	0.21	20.0000	101	82 - 117	4.62	20	
Bromodichloromethane	20.4700	0.50	0.14	20.0000	102	80 - 122	4.58	20	
Bromoform	23.1100	0.50	0.20	20.0000	116	53 - 145	3.03	20	
Bromomethane	19.6200	0.50	0.17	20.0000	98.1	30 - 204	5.36	20	
Carbon tetrachloride	20.6000	0.50	0.09	20.0000	103	77 - 157	3.90	20	
Chlorobenzene	19.9300	0.50	0.13	20.0000	99.6	86 - 113	5.18	20	
Chloroethane	18.0200	0.50	0.15	20.0000	90.1	70 - 160	7.22	20	
Chloroform	17.6500	0.50	0.11	20.0000	88.2	66 - 136	6.15	20	
Chloromethane	23.8400	0.50	0.12	20.0000	119	52 - 138	7.39	20	
cis-1,2-Dichloroethene	18.7300	0.50	0.14	20.0000	93.6	71 - 128	6.36	20	
cis-1,3-Dichloropropene	23.7100	0.50	0.13	20.0000	119	71 - 123	3.73	20	
Dibromochloromethane	22.1300	0.50	0.16	20.0000	111	78 - 140	4.25	20	
Dibromomethane	21.2200	0.50	0.19	20.0000	106	78 - 109	3.56	20	
Dichlorodifluoromethane	27.5600	0.50	0.05	20.0000	138	64 - 144	7.61	20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
Batch B9F0636 - MSVOA_W (continued)									
LCS Dup (B9F0636-BSD1) - Continued					Prepared: 6/22/2019 Analyzed: 6/22/2019				
Ethylbenzene	40.3900	0.50	0.13	40.0000		101	90 - 116	5.16	20
Hexachlorobutadiene	19.9700	0.50	0.15	20.0000		99.8	81 - 129	6.91	20
Isopropylbenzene	20.4200	0.50	0.10	20.0000		102	83 - 129	7.04	20
m,p-Xylene	41.5500	1.0	0.19	40.0000		104	88 - 124	5.84	20
Methylene chloride	19.1300	1.0	0.71	20.0000		95.6	76 - 137	5.89	20
n-Butylbenzene	20.2500	0.50	0.11	20.0000		101	83 - 129	6.31	20
n-Propylbenzene	20.4400	0.50	0.10	20.0000		102	85 - 124	7.03	20
Naphthalene	19.1000	0.50	0.41	20.0000		95.5	67 - 113	3.19	20
o-Xylene	39.8200	0.50	0.13	40.0000		99.6	82 - 129	5.59	20
sec-Butylbenzene	20.6400	0.50	0.09	20.0000		103	86 - 127	7.01	20
Styrene	19.4700	0.50	0.13	20.0000		97.4	83 - 122	5.54	20
tert-Butylbenzene	21.8200	0.50	0.09	20.0000		109	84 - 130	6.26	20
Tetrachloroethene	21.2600	0.50	0.10	20.0000		106	87 - 123	4.86	20
Toluene	44.9000	0.50	0.12	40.0000		112	84 - 115	4.74	20
trans-1,2-Dichloroethene	15.1900	0.50	0.09	20.0000		76.0	60 - 148	4.50	20
Trichloroethene	20.0300	0.50	0.10	20.0000		100	79 - 129	4.16	20
Trichlorofluoromethane	19.3400	0.50	0.10	20.0000		96.7	68 - 162	5.09	20
Vinyl chloride	17.9300	0.50	0.05	20.0000		89.6	73 - 128	6.37	20
Surrogate: 1,2-Dichloroethane-d4	28.17			25.0000		113	57 - 152		
Surrogate: 4-Bromofluorobenzene	27.41			25.0000		110	62 - 134		
Surrogate: Dibromofluoromethane	28.02			25.0000		112	56 - 167		
Surrogate: Toluene-d8	30.17			25.0000		121	33 - 170		



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Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0688 - MSVOA_W

Blank (B9F0688-BLK1)

Prepared: 6/25/2019 Analyzed: 6/25/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0688 - MSVOA_W (continued)

Blank (B9F0688-BLK1) - Continued

Prepared: 6/25/2019 Analyzed: 6/25/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	26.42		25.0000	106	57 - 152
Surrogate: 4-Bromofluorobenzene	25.81		25.0000	103	62 - 134
Surrogate: Dibromofluoromethane	26.27		25.0000	105	56 - 167
Surrogate: Toluene-d8	27.24		25.0000	109	33 - 170

LCS (B9F0688-BS1)

Prepared: 6/25/2019 Analyzed: 6/25/2019

1,1,1,2-Tetrachloroethane	21.7100	0.50	0.11	20.0000	109	80 - 137
1,1,1-Trichloroethane	19.9500	0.50	0.07	20.0000	99.8	75 - 148
1,1,2,2-Tetrachloroethane	20.3000	0.50	0.36	20.0000	102	64 - 118
1,1,2-Trichloroethane	20.1400	0.50	0.25	20.0000	101	77 - 113
1,1-Dichloroethane	19.5200	0.50	0.09	20.0000	97.6	72 - 131
1,1-Dichloroethene	18.8300	0.50	0.13	20.0000	94.2	75 - 132
1,1-Dichloropropene	20.9100	0.50	0.13	20.0000	105	84 - 141
1,2,3-Trichloropropane	20.1900	0.50	0.39	20.0000	101	65 - 111
1,2,3-Trichlorobenzene	22.4000	0.50	0.18	20.0000	112	79 - 117
1,2,4-Trichlorobenzene	21.8400	0.50	0.16	20.0000	109	78 - 121
1,2,4-Trimethylbenzene	21.6700	0.50	0.14	20.0000	108	83 - 125
1,2-Dibromo-3-chloropropane	24.0700	0.50	0.41	20.0000	120	54 - 116
1,2-Dibromoethane	21.2600	0.50	0.24	20.0000	106	79 - 118
1,2-Dichlorobenzene	22.2100	0.50	0.20	20.0000	111	82 - 115
1,2-Dichloroethane	20.5000	0.50	0.20	20.0000	102	76 - 115
1,2-Dichloropropane	20.2600	0.50	0.15	20.0000	101	74 - 113
1,3,5-Trimethylbenzene	21.4400	0.50	0.13	20.0000	107	83 - 126
1,3-Dichlorobenzene	22.0700	0.50	0.16	20.0000	110	84 - 118
1,3-Dichloropropane	21.5600	0.50	0.21	20.0000	108	72 - 116

L3



Certificate of Analysis

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Project Number : Raytheon Main GETS Mid Month Sample

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Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0688 - MSVOA_W (continued)

LCS (B9F0688-BS1) - Continued

Prepared: 6/25/2019 Analyzed: 6/25/2019

1,4-Dichlorobenzene	20.7900	0.50	0.17	20.0000		104	83 - 112		
2,2-Dichloropropane	20.2400	0.50	0.38	20.0000		101	72 - 150		
2-Chlorotoluene	22.6000	0.50	0.11	20.0000		113	82 - 120		
4-Chlorotoluene	22.9000	0.50	0.12	20.0000		114	81 - 121		
4-Isopropyltoluene	21.7500	0.50	0.11	20.0000		109	86 - 124		
Benzene	41.3100	0.50	0.13	40.0000		103	81 - 118		
Bromobenzene	21.5700	0.50	0.21	20.0000		108	82 - 117		
Bromodichloromethane	19.7100	0.50	0.14	20.0000		98.6	80 - 122		
Bromoform	21.3800	0.50	0.20	20.0000		107	53 - 145		
Bromomethane	35.0300	0.50	0.17	20.0000		175	30 - 204		
Carbon tetrachloride	19.9000	0.50	0.09	20.0000		99.5	77 - 157		
Chlorobenzene	20.3300	0.50	0.13	20.0000		102	86 - 113		
Chloroethane	20.4400	0.50	0.15	20.0000		102	70 - 160		
Chloroform	19.0400	0.50	0.11	20.0000		95.2	66 - 136		
Chloromethane	20.7500	0.50	0.12	20.0000		104	52 - 138		
cis-1,2-Dichloroethene	19.2400	0.50	0.14	20.0000		96.2	71 - 128		
cis-1,3-Dichloropropene	21.9500	0.50	0.13	20.0000		110	71 - 123		
Dibromochloromethane	21.2600	0.50	0.16	20.0000		106	78 - 140		
Dibromomethane	19.6800	0.50	0.19	20.0000		98.4	78 - 109		
Dichlorodifluoromethane	17.4600	0.50	0.05	20.0000		87.3	64 - 144		
Ethylbenzene	42.5700	0.50	0.13	40.0000		106	90 - 116		
Hexachlorobutadiene	22.4600	0.50	0.15	20.0000		112	81 - 129		
Isopropylbenzene	22.2000	0.50	0.10	20.0000		111	83 - 129		
m,p-Xylene	46.2200	1.0	0.19	40.0000		116	88 - 124		
Methylene chloride	20.1100	1.0	0.71	20.0000		101	76 - 137		
n-Butylbenzene	22.0200	0.50	0.11	20.0000		110	83 - 129		
n-Propylbenzene	23.4200	0.50	0.10	20.0000		117	85 - 124		
Naphthalene	20.6300	0.50	0.41	20.0000		103	67 - 113		
o-Xylene	42.2900	0.50	0.13	40.0000		106	82 - 129		
sec-Butylbenzene	21.4900	0.50	0.09	20.0000		107	86 - 127		
Styrene	21.5900	0.50	0.13	20.0000		108	83 - 122		
tert-Butylbenzene	21.2200	0.50	0.09	20.0000		106	84 - 130		
Tetrachloroethene	20.8600	0.50	0.10	20.0000		104	87 - 123		
Toluene	43.4000	0.50	0.12	40.0000		108	84 - 115		
trans-1,2-Dichloroethene	18.5500	0.50	0.09	20.0000		92.8	60 - 148		
Trichloroethene	19.9600	0.50	0.10	20.0000		99.8	79 - 129		
Trichlorofluoromethane	18.4100	0.50	0.10	20.0000		92.0	68 - 162		
Vinyl chloride	19.3200	0.50	0.05	20.0000		96.6	73 - 128		

Surrogate: 1,2-Dichloroethane-d4 23.92 25.0000 95.7 57 - 152

Surrogate: 4-Bromofluorobenzene 27.37 25.0000 109 62 - 134

Surrogate: Dibromofluoromethane 24.11 25.0000 96.4 56 - 167



Certificate of Analysis

Hargis & Associates, Inc.

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San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0688 - MSVOA_W (continued)

LCS (B9F0688-BS1) - Continued

Prepared: 6/25/2019 Analyzed: 6/25/2019

Surrogate: Toluene-d8 27.22 25.0000 109 33 - 170

LCS Dup (B9F0688-BS1)

Prepared: 6/25/2019 Analyzed: 6/25/2019

1,1,1,2-Tetrachloroethane	21.5400	0.50	0.11	20.0000	108	80 - 137	0.786	20	
1,1,1-Trichloroethane	20.4200	0.50	0.07	20.0000	102	75 - 148	2.33	20	
1,1,2,2-Tetrachloroethane	21.2800	0.50	0.36	20.0000	106	64 - 118	4.71	20	
1,1,2-Trichloroethane	20.3600	0.50	0.25	20.0000	102	77 - 113	1.09	20	
1,1-Dichloroethane	19.6200	0.50	0.09	20.0000	98.1	72 - 131	0.511	20	
1,1-Dichloroethene	19.1100	0.50	0.13	20.0000	95.6	75 - 132	1.48	20	
1,1-Dichloropropene	21.2500	0.50	0.13	20.0000	106	84 - 141	1.61	20	
1,2,3-Trichloropropane	21.1600	0.50	0.39	20.0000	106	65 - 111	4.69	20	
1,2,3-Trichlorobenzene	21.2100	0.50	0.18	20.0000	106	79 - 117	5.46	20	
1,2,4-Trichlorobenzene	20.9300	0.50	0.16	20.0000	105	78 - 121	4.26	20	
1,2,4-Trimethylbenzene	21.3000	0.50	0.14	20.0000	106	83 - 125	1.72	20	
1,2-Dibromo-3-chloropropane	23.9300	0.50	0.41	20.0000	120	54 - 116	0.583	20	L3
1,2-Dibromoethane	21.0900	0.50	0.24	20.0000	105	79 - 118	0.803	20	
1,2-Dichlorobenzene	21.7500	0.50	0.20	20.0000	109	82 - 115	2.09	20	
1,2-Dichloroethane	20.7000	0.50	0.20	20.0000	104	76 - 115	0.971	20	
1,2-Dichloropropane	20.3200	0.50	0.15	20.0000	102	74 - 113	0.296	20	
1,3,5-Trimethylbenzene	21.5500	0.50	0.13	20.0000	108	83 - 126	0.512	20	
1,3-Dichlorobenzene	21.8000	0.50	0.16	20.0000	109	84 - 118	1.23	20	
1,3-Dichloropropane	21.8300	0.50	0.21	20.0000	109	72 - 116	1.24	20	
1,4-Dichlorobenzene	20.5000	0.50	0.17	20.0000	102	83 - 112	1.40	20	
2,2-Dichloropropane	20.1600	0.50	0.38	20.0000	101	72 - 150	0.396	20	
2-Chlorotoluene	22.9000	0.50	0.11	20.0000	114	82 - 120	1.32	20	
4-Chlorotoluene	22.9900	0.50	0.12	20.0000	115	81 - 121	0.392	20	
4-Isopropyltoluene	21.4300	0.50	0.11	20.0000	107	86 - 124	1.48	20	
Benzene	41.5000	0.50	0.13	40.0000	104	81 - 118	0.459	20	
Bromobenzene	22.1100	0.50	0.21	20.0000	111	82 - 117	2.47	20	
Bromodichloromethane	20.0800	0.50	0.14	20.0000	100	80 - 122	1.86	20	
Bromoform	21.4500	0.50	0.20	20.0000	107	53 - 145	0.327	20	
Bromomethane	29.3900	0.50	0.17	20.0000	147	30 - 204	17.5	20	
Carbon tetrachloride	20.2000	0.50	0.09	20.0000	101	77 - 157	1.50	20	
Chlorobenzene	20.1600	0.50	0.13	20.0000	101	86 - 113	0.840	20	
Chloroethane	20.8300	0.50	0.15	20.0000	104	70 - 160	1.89	20	
Chloroform	19.3000	0.50	0.11	20.0000	96.5	66 - 136	1.36	20	
Chloromethane	20.3900	0.50	0.12	20.0000	102	52 - 138	1.75	20	
cis-1,2-Dichloroethene	19.1200	0.50	0.14	20.0000	95.6	71 - 128	0.626	20	
cis-1,3-Dichloropropene	21.9600	0.50	0.13	20.0000	110	71 - 123	0.0455	20	
Dibromochloromethane	21.6600	0.50	0.16	20.0000	108	78 - 140	1.86	20	
Dibromomethane	20.0100	0.50	0.19	20.0000	100	78 - 109	1.66	20	
Dichlorodifluoromethane	21.2300	0.50	0.05	20.0000	106	64 - 144	19.5	20	



Certificate of Analysis

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Project Number : Raytheon Main GETS Mid Month Sample

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Reported : 06/27/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes
Batch B9F0688 - MSVOA_W (continued)									
LCS Dup (B9F0688-BSD1) - Continued					Prepared: 6/25/2019 Analyzed: 6/25/2019				
Ethylbenzene	42.1600	0.50	0.13	40.0000		105	90 - 116	0.968	20
Hexachlorobutadiene	21.5900	0.50	0.15	20.0000		108	81 - 129	3.95	20
Isopropylbenzene	22.9800	0.50	0.10	20.0000		115	83 - 129	3.45	20
m,p-Xylene	46.0600	1.0	0.19	40.0000		115	88 - 124	0.347	20
Methylene chloride	20.1900	1.0	0.71	20.0000		101	76 - 137	0.397	20
n-Butylbenzene	21.5200	0.50	0.11	20.0000		108	83 - 129	2.30	20
n-Propylbenzene	23.7200	0.50	0.10	20.0000		119	85 - 124	1.27	20
Naphthalene	19.9000	0.50	0.41	20.0000		99.5	67 - 113	3.60	20
o-Xylene	42.1000	0.50	0.13	40.0000		105	82 - 129	0.450	20
sec-Butylbenzene	21.7000	0.50	0.09	20.0000		108	86 - 127	0.972	20
Styrene	21.3400	0.50	0.13	20.0000		107	83 - 122	1.16	20
tert-Butylbenzene	21.5300	0.50	0.09	20.0000		108	84 - 130	1.45	20
Tetrachloroethene	20.8700	0.50	0.10	20.0000		104	87 - 123	0.0479	20
Toluene	43.4100	0.50	0.12	40.0000		109	84 - 115	0.0230	20
trans-1,2-Dichloroethene	18.5600	0.50	0.09	20.0000		92.8	60 - 148	0.0539	20
Trichloroethene	19.8700	0.50	0.10	20.0000		99.4	79 - 129	0.452	20
Trichlorofluoromethane	18.9400	0.50	0.10	20.0000		94.7	68 - 162	2.84	20
Vinyl chloride	19.5000	0.50	0.05	20.0000		97.5	73 - 128	0.927	20
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>24.80</i>			<i>25.0000</i>		<i>99.2</i>	<i>57 - 152</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>27.17</i>			<i>25.0000</i>		<i>109</i>	<i>62 - 134</i>		
<i>Surrogate: Dibromofluoromethane</i>	<i>25.12</i>			<i>25.0000</i>		<i>100</i>	<i>56 - 167</i>		
<i>Surrogate: Toluene-d8</i>	<i>27.55</i>			<i>25.0000</i>		<i>110</i>	<i>33 - 170</i>		



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0663 - MSSEMI_W

Blank (B9F0663-BLK2)

Prepared: 6/24/2019 Analyzed: 6/26/2019

1,4-Dioxane	ND	2.0	0.84						
Surrogate: 1,2-Dichlorobenzene-d	51.82			100.000	51.8	34 - 188			
Surrogate: 2-Fluorobiphenyl	65.93			100.000	65.9	39 - 108			
Surrogate: 4-Terphenyl-d14	123.9			100.000	124	71 - 131			
Surrogate: Nitrobenzene-d5	59.06			100.000	59.1	32 - 106			

LCS (B9F0663-BS2)

Prepared: 6/24/2019 Analyzed: 6/26/2019

1,4-Dioxane	104.890	2.0	0.84	100.000	105	40 - 159			
Surrogate: 1,2-Dichlorobenzene-d	67.13			100.000	67.1	34 - 188			
Surrogate: 2-Fluorobiphenyl	74.09			100.000	74.1	39 - 108			
Surrogate: 4-Terphenyl-d14	78.37			100.000	78.4	71 - 131			
Surrogate: Nitrobenzene-d5	68.96			100.000	69.0	32 - 106			

LCS Dup (B9F0663-BSD2)

Prepared: 6/24/2019 Analyzed: 6/26/2019

1,4-Dioxane	113.570	2.0	0.84	100.000	114	40 - 159	7.95	20	
Surrogate: 1,2-Dichlorobenzene-d	68.92			100.000	68.9	34 - 188			
Surrogate: 2-Fluorobiphenyl	75.58			100.000	75.6	39 - 108			
Surrogate: 4-Terphenyl-d14	75.25			100.000	75.2	71 - 131			
Surrogate: Nitrobenzene-d5	69.35			100.000	69.4	32 - 106			



Certificate of Analysis

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Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 06/27/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9F0711 - MSSEMI_W

Blank (B9F0711-BLK1)

Prepared: 6/25/2019 Analyzed: 6/25/2019

1,4-Dioxane	ND	0.20	0.05						
Surrogate: 1,2-Dichlorobenzene-d	0.8896			1.00000		89.0	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.8960			1.00000		89.6	20 - 131		
Surrogate: 4-Terphenyl-d14	0.9654			1.00000		96.5	24 - 135		
Surrogate: Nitrobenzene-d5	0.7179			1.00000		71.8	6 - 124		

LCS (B9F0711-BS1)

Prepared: 6/25/2019 Analyzed: 6/25/2019

1,4-Dioxane	1.21718	0.20	0.05	1.00000		122	64 - 129		
Surrogate: 1,2-Dichlorobenzene-d	0.8292			1.00000		82.9	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.8464			1.00000		84.6	20 - 131		
Surrogate: 4-Terphenyl-d14	0.9319			1.00000		93.2	24 - 135		
Surrogate: Nitrobenzene-d5	0.7444			1.00000		74.4	6 - 124		

LCS Dup (B9F0711-BSD1)

Prepared: 6/25/2019 Analyzed: 6/25/2019

1,4-Dioxane	1.23847	0.20	0.05	1.00000		124	64 - 129	1.73	20
Surrogate: 1,2-Dichlorobenzene-d	0.7703			1.00000		77.0	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.8078			1.00000		80.8	20 - 131		
Surrogate: 4-Terphenyl-d14	0.9138			1.00000		91.4	24 - 135		
Surrogate: Nitrobenzene-d5	0.6488			1.00000		64.9	6 - 124		



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Report To : Steve Netto

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Notes and Definitions

L4	Laboratory Control Sample outside of control limit but within Marginal Exceedance (ME) limit.
L3	Laboratory control sample outside in-house established limits but within method criteria.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

PROJECT: Raytheon Main GETS Mid Month Sample

TASK NO.: 532.15

Project Manager Steve Netto

QA Manager Ross Horton

Phone 858.455.6500

Fax 858.455.6533

Sampled By:		SAMPLE COLLECTION		MATRIX		PRESERVATION		CONTAINERS		ANALYSIS REQUESTED										Expected Concentration Range (ppb) for VOAs		SPECIAL HANDLING		Laboratory													
LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Ice	40-ml VOA	125 mL Poly	250 mL Poly	250 mL Glass	1 L Poly	1L Amber	VOCs by EPA 8260B	Bromate by EPA 317	Bromide by EPA 300	Alkalinity by SM2320B	Total Organic Carbon by SM5310B	Total Suspended Solids by SM2540D	UV Absorption EPA 415.3 @254 nm	1,4-Dioxane by EPA 8270C MOD	1,4-Dioxane by EPA 8270C SIM	0 - 10	10 - 100	100 - 1,000	>1,000	24 hr TAT	48 Hour TAT	5 Day TAT	Level IV Data Validation Requested	MS/MSD Requested	REMARKS			
1902427-01	TB-062019	6/20/2019	8:00		X	X			X	2						X																					
	CEFF	6/20/2019	10:05	X		X				3					1	X								X	X												
	CBT	6/20/2019	10:10	X		X				3					1	X								X	X												
	POX	6/20/2019	10:15	X		X				3					1	X								X	X												
	INF	6/20/2019	10:20	X		X				3					1	X							X				X										
	EW-02	6/20/2019	11:05	X		X				3					1	X							X			X											
	MW-29	6/20/2019	11:15	X		X				3					1	X							X			X											
Total number of containers per analysis:										20					6											Total No. of Containers: 26											
Relinquished By: / Company:		Date / Time	Received By: / Company		Date / Time																																
Steve Netto H+IA		6/20/19 12:48	F. Brown		6/20/19 1:42																																
Relinquished By: / Company:		Date / Time	Received By: / Company		Date / Time																																

- ☒ No. of containers correct
☒ Received in good condition
☐ Custody seals secure
☒ Conforms to COC document

Send Results to:
Steve Netto & Ross Horton
 9171 Towne Centre Drive
 Suite 375
 San Diego, CA 92122
 Ph: 858.455.6500
snetto@hargis.com
horton@hargis.com

Instructions

- Fill out form completely and sign only after verified for completeness
- Complete in ballpoint pen. Draw one line through error, initial and date correction
- Indicate the number of sample containers in analytical request space; indicate choice with ✓ or x
- Note applicable preservatives, special instructions, and deviations from typical environmental samples.
- Consult project QA documents for specific instructions.

0.4°C Temperature on receipt



July 22, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1902564

Client Reference : Raytheon Main GETS Monthly Sample, 532.15

Enclosed are the results for sample(s) received on July 03, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read 'Edgar Caballero', with a small 'En' written below the main signature.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-070319	1902564-01	Lab prepared water	7/03/19 8:00	7/03/19 12:53
CEFF	1902564-02	Groundwater	7/03/19 10:00	7/03/19 12:53
CBT	1902564-03	Groundwater	7/03/19 10:10	7/03/19 12:53
POX	1902564-04	Groundwater	7/03/19 10:15	7/03/19 12:53
PF	1902564-05	Groundwater	7/03/19 10:25	7/03/19 12:53
INF	1902564-06	Groundwater	7/03/19 10:35	7/03/19 12:53
EW-02	1902564-07	Groundwater	7/03/19 11:15	7/03/19 12:53
MW-29	1902564-08	Groundwater	7/03/19 11:30	7/03/19 12:53

CASE NARRATIVE

The samples for Bromate by IC-MS/MS analysis were subcontracted to Exova, Inc. with ELAP Cert.# 2652.

Sample Receiving/General Comments:

The following analytes lists were taken from sample containers: Alkalinity - Hydroxide, Bicarbonate, Carbonate, and Total.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID TB-070319

Lab ID: 1902564-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,1,1-Trichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,1,2-Trichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,1-Dichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,1-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,1-Dichloropropene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,2,3-Trichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,2,3-Trichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,2,4-Trichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,2,4-Trimethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,2-Dibromoethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,2-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,2-Dichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,2-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,3,5-Trimethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,3-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,3-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
1,4-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
2,2-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
2-Chlorotoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
4-Chlorotoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
4-Isopropyltoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Benzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Bromobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Bromodichloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Bromoform	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Bromomethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Carbon tetrachloride	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Chlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Chloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Chloroform	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Chloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
cis-1,2-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
cis-1,3-Dichloropropene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Dibromochloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID TB-070319

Lab ID: 1902564-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Dichlorodifluoromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Ethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Hexachlorobutadiene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Isopropylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
m,p-Xylene	ND	1.0	1	B9G0176	07/08/2019	07/08/19 20:23	
Methylene chloride	ND	1.0	1	B9G0176	07/08/2019	07/08/19 20:23	
n-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
n-Propylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Naphthalene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
o-Xylene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
sec-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Styrene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
tert-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Tetrachloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Toluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
trans-1,2-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Trichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Trichlorofluoromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Vinyl chloride	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:23	
Surrogate: 1,2-Dichloroethane-d4	108 %	57 - 152		B9G0176	07/08/2019	07/08/19 20:23	
Surrogate: 4-Bromofluorobenzene	102 %	62 - 134		B9G0176	07/08/2019	07/08/19 20:23	
Surrogate: Dibromofluoromethane	114 %	56 - 167		B9G0176	07/08/2019	07/08/19 20:23	
Surrogate: Toluene-d8	107 %	33 - 170		B9G0176	07/08/2019	07/08/19 20:23	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID CEFF

Lab ID: 1902564-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,1,1-Trichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,1,2-Trichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,1-Dichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,1-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,1-Dichloropropene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,2,3-Trichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,2,3-Trichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,2,4-Trichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,2,4-Trimethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,2-Dibromoethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,2-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,2-Dichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,2-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,3,5-Trimethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,3-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,3-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
1,4-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
2,2-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
2-Chlorotoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
4-Chlorotoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
4-Isopropyltoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Benzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Bromobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Bromodichloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Bromoform	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Bromomethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Carbon tetrachloride	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Chlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Chloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Chloroform	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Chloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
cis-1,2-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
cis-1,3-Dichloropropene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Dibromochloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID CEFF

Lab ID: 1902564-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Dichlorodifluoromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Ethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Hexachlorobutadiene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Isopropylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
m,p-Xylene	ND	1.0	1	B9G0176	07/08/2019	07/08/19 20:46	
Methylene chloride	ND	1.0	1	B9G0176	07/08/2019	07/08/19 20:46	
n-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
n-Propylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Naphthalene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
o-Xylene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
sec-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Styrene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
tert-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Tetrachloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Toluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
trans-1,2-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Trichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Trichlorofluoromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Vinyl chloride	ND	0.50	1	B9G0176	07/08/2019	07/08/19 20:46	
Surrogate: 1,2-Dichloroethane-d4	108 %	57 - 152		B9G0176	07/08/2019	07/08/19 20:46	
Surrogate: 4-Bromofluorobenzene	102 %	62 - 134		B9G0176	07/08/2019	07/08/19 20:46	
Surrogate: Dibromofluoromethane	106 %	56 - 167		B9G0176	07/08/2019	07/08/19 20:46	
Surrogate: Toluene-d8	107 %	33 - 170		B9G0176	07/08/2019	07/08/19 20:46	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID CEFF

Lab ID: 1902564-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.82	0.20	1	B9G0241	07/09/2019	07/11/19 19:47	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	85.5 %	22 - 117		B9G0241	07/09/2019	07/11/19 19:47	
<i>Surrogate: 2-Fluorobiphenyl</i>	89.9 %	20 - 131		B9G0241	07/09/2019	07/11/19 19:47	
<i>Surrogate: 4-Terphenyl-d14</i>	98.7 %	24 - 135		B9G0241	07/09/2019	07/11/19 19:47	
<i>Surrogate: Nitrobenzene-d5</i>	80.3 %	6 - 124		B9G0241	07/09/2019	07/11/19 19:47	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID CBT

Lab ID: 1902564-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,1,1-Trichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,1,2-Trichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,1-Dichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,1-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,1-Dichloropropene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,2,3-Trichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,2,3-Trichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,2,4-Trichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,2,4-Trimethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,2-Dibromoethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,2-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,2-Dichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,2-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,3,5-Trimethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,3-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,3-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
1,4-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
2,2-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
2-Chlorotoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
4-Chlorotoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
4-Isopropyltoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Benzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Bromobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Bromodichloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Bromoform	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Bromomethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Carbon tetrachloride	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Chlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Chloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Chloroform	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Chloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
cis-1,2-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
cis-1,3-Dichloropropene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Dibromochloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID CBT

Lab ID: 1902564-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Dichlorodifluoromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Ethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Hexachlorobutadiene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Isopropylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
m,p-Xylene	ND	1.0	1	B9G0176	07/08/2019	07/08/19 21:10	
Methylene chloride	ND	1.0	1	B9G0176	07/08/2019	07/08/19 21:10	
n-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
n-Propylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Naphthalene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
o-Xylene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
sec-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Styrene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
tert-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Tetrachloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Toluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
trans-1,2-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Trichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Trichlorofluoromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Vinyl chloride	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:10	
Surrogate: 1,2-Dichloroethane-d4	114 %	57 - 152		B9G0176	07/08/2019	07/08/19 21:10	
Surrogate: 4-Bromofluorobenzene	103 %	62 - 134		B9G0176	07/08/2019	07/08/19 21:10	
Surrogate: Dibromofluoromethane	109 %	56 - 167		B9G0176	07/08/2019	07/08/19 21:10	
Surrogate: Toluene-d8	107 %	33 - 170		B9G0176	07/08/2019	07/08/19 21:10	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID CBT

Lab ID: 1902564-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	0.97	0.20	1	B9G0241	07/09/2019	07/11/19 20:14	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	86.8 %	22 - 117		B9G0241	07/09/2019	07/11/19 20:14	
<i>Surrogate: 2-Fluorobiphenyl</i>	88.3 %	20 - 131		B9G0241	07/09/2019	07/11/19 20:14	
<i>Surrogate: 4-Terphenyl-d14</i>	91.9 %	24 - 135		B9G0241	07/09/2019	07/11/19 20:14	
<i>Surrogate: Nitrobenzene-d5</i>	80.4 %	6 - 124		B9G0241	07/09/2019	07/11/19 20:14	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID POX

Lab ID: 1902564-04

Alkalinity, Speciated by SM 2320B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO ₃)	240	5.0	1	B9G0240	07/10/2019	07/10/19 12:08	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9G0240	07/10/2019	07/10/19 12:08	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9G0240	07/10/2019	07/10/19 12:08	
Alkalinity, Total (as CaCO ₃)	240	5.0	1	B9G0240	07/10/2019	07/10/19 12:08	

Total Organic Carbon by SM 5310B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9G0234	07/09/2019	07/09/19 17:01	

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,1,1-Trichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,1,2-Trichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,1-Dichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,1-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,1-Dichloropropene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,2,3-Trichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,2,3-Trichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,2,4-Trichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,2,4-Trimethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,2-Dibromoethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,2-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,2-Dichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,2-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,3,5-Trimethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,3-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,3-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
1,4-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
2,2-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
2-Chlorotoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID POX

Lab ID: 1902564-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
4-Chlorotoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
4-Isopropyltoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Benzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Bromobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Bromodichloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Bromoform	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Bromomethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Carbon tetrachloride	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Chlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Chloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Chloroform	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Chloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
cis-1,2-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
cis-1,3-Dichloropropene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Dibromochloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Dibromomethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Dichlorodifluoromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Ethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Hexachlorobutadiene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Isopropylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
m,p-Xylene	ND	1.0	1	B9G0176	07/08/2019	07/08/19 21:33	
Methylene chloride	ND	1.0	1	B9G0176	07/08/2019	07/08/19 21:33	
n-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
n-Propylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Naphthalene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
o-Xylene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
sec-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Styrene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
tert-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Tetrachloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Toluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
trans-1,2-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Trichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Trichlorofluoromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	
Vinyl chloride	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:33	

Surrogate: 1,2-Dichloroethane-d4

113 %

57 - 152

B9G0176

07/08/2019

07/08/19 21:33

Surrogate: 4-Bromofluorobenzene

101 %

62 - 134

B9G0176

07/08/2019

07/08/19 21:33



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID POX

Lab ID: 1902564-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Surrogate: Dibromofluoromethane	106 %	56 - 167		B9G0176	07/08/2019	07/08/19 21:33	
Surrogate: Toluene-d8	107 %	33 - 170		B9G0176	07/08/2019	07/08/19 21:33	

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	1.2	0.20	1	B9G0241	07/09/2019	07/11/19 20:42	
Surrogate: 1,2-Dichlorobenzene-d4	87.2 %	22 - 117		B9G0241	07/09/2019	07/11/19 20:42	
Surrogate: 2-Fluorobiphenyl	89.5 %	20 - 131		B9G0241	07/09/2019	07/11/19 20:42	
Surrogate: 4-Terphenyl-d14	93.0 %	24 - 135		B9G0241	07/09/2019	07/11/19 20:42	
Surrogate: Nitrobenzene-d5	80.4 %	6 - 124		B9G0241	07/09/2019	07/11/19 20:42	



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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

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Client Sample ID PF

Lab ID: 1902564-05

UV Absorption by EPA 415.3

Analyst: BL

Analyte	Result (1/cm)	PQL (1/cm)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
UV Absorption	ND	0.01	1	B9G0119	07/03/2019	07/03/19 15:35	

Alkalinity, Speciated by SM 2320B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO ₃)	250	5.0	1	B9G0240	07/10/2019	07/10/19 12:08	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9G0240	07/10/2019	07/10/19 12:08	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9G0240	07/10/2019	07/10/19 12:08	
Alkalinity, Total (as CaCO ₃)	250	5.0	1	B9G0240	07/10/2019	07/10/19 12:08	

Total Suspended Solids (Residue, Non-Filtrable) by SM 2540D

Analyst: BL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Residue, Suspended	ND	1.0	1	B9G0208	07/08/2019	07/09/19 10:22	

Total Organic Carbon by SM 5310B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9G0234	07/09/2019	07/09/19 17:14	



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID INF

Lab ID: 1902564-06

Bromide by Ion Chromatography EPA 300

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.25	0.10	2	B9G0209	07/08/2019	07/08/19 12:42	

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,1,1-Trichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,1,2-Trichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,1-Dichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,1-Dichloroethene	49	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,1-Dichloropropene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,2,3-Trichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,2,3-Trichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,2,4-Trichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,2,4-Trimethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,2-Dibromoethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,2-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,2-Dichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,2-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,3,5-Trimethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,3-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,3-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
1,4-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
2,2-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
2-Chlorotoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
4-Chlorotoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
4-Isopropyltoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Benzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Bromobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Bromodichloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Bromoform	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Bromomethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Carbon tetrachloride	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Chlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID INF

Lab ID: 1902564-06

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Chloroform	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Chloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
cis-1,2-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
cis-1,3-Dichloropropene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Dibromochloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Dibromomethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Dichlorodifluoromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Ethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Hexachlorobutadiene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Isopropylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
m,p-Xylene	ND	1.0	1	B9G0176	07/08/2019	07/08/19 21:56	
Methylene chloride	ND	1.0	1	B9G0176	07/08/2019	07/08/19 21:56	
n-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
n-Propylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Naphthalene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
o-Xylene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
sec-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Styrene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
tert-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Tetrachloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Toluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
trans-1,2-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Trichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Trichlorofluoromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Vinyl chloride	ND	0.50	1	B9G0176	07/08/2019	07/08/19 21:56	
Surrogate: 1,2-Dichloroethane-d4	111 %	57 - 152		B9G0176	07/08/2019	07/08/19 21:56	
Surrogate: 4-Bromofluorobenzene	101 %	62 - 134		B9G0176	07/08/2019	07/08/19 21:56	
Surrogate: Dibromofluoromethane	113 %	56 - 167		B9G0176	07/08/2019	07/08/19 21:56	
Surrogate: Toluene-d8	102 %	33 - 170		B9G0176	07/08/2019	07/08/19 21:56	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID INF

Lab ID: 1902564-06

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	32	2.0	1	B9G0239	07/09/2019	07/10/19 22:28	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	73.6 %	34 - 188		B9G0239	07/09/2019	07/10/19 22:28	
<i>Surrogate: 2-Fluorobiphenyl</i>	82.5 %	39 - 108		B9G0239	07/09/2019	07/10/19 22:28	
<i>Surrogate: 4-Terphenyl-d14</i>	102 %	71 - 131		B9G0239	07/09/2019	07/10/19 22:28	
<i>Surrogate: Nitrobenzene-d5</i>	79.9 %	32 - 106		B9G0239	07/09/2019	07/10/19 22:28	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID EW-02

Lab ID: 1902564-07

Bromide by Ion Chromatography EPA 300

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.21	0.10	2	B9G0209	07/08/2019	07/08/19 12:54	

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,1,1-Trichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,1,2-Trichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,1-Dichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,1-Dichloroethene	9.8	0.50	1	B9G0174	07/09/2019	07/09/19 17:14	
1,1-Dichloropropene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,2,3-Trichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,2,3-Trichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,2,4-Trichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,2,4-Trimethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,2-Dibromoethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,2-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,2-Dichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,2-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,3,5-Trimethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,3-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,3-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
1,4-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
2,2-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
2-Chlorotoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
4-Chlorotoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
4-Isopropyltoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Benzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Bromobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Bromodichloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Bromoform	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Bromomethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Carbon tetrachloride	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Chlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID EW-02

Lab ID: 1902564-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Chloroform	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Chloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
cis-1,2-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
cis-1,3-Dichloropropene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Dibromochloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Dibromomethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Dichlorodifluoromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Ethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Hexachlorobutadiene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Isopropylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
m,p-Xylene	ND	1.0	1	B9G0176	07/08/2019	07/08/19 22:19	
Methylene chloride	ND	1.0	1	B9G0176	07/08/2019	07/08/19 22:19	
n-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
n-Propylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Naphthalene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
o-Xylene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
sec-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Styrene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
tert-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Tetrachloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Toluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
trans-1,2-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Trichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Trichlorofluoromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
Vinyl chloride	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:19	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>141 %</i>	<i>57 - 152</i>		B9G0174	07/09/2019	<i>07/09/19 17:14</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>111 %</i>	<i>57 - 152</i>		B9G0176	07/08/2019	<i>07/08/19 22:19</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>103 %</i>	<i>62 - 134</i>		B9G0174	07/09/2019	<i>07/09/19 17:14</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>99.5 %</i>	<i>62 - 134</i>		B9G0176	07/08/2019	<i>07/08/19 22:19</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>106 %</i>	<i>56 - 167</i>		B9G0176	07/08/2019	<i>07/08/19 22:19</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>131 %</i>	<i>56 - 167</i>		B9G0174	07/09/2019	<i>07/09/19 17:14</i>	
<i>Surrogate: Toluene-d8</i>	<i>120 %</i>	<i>33 - 170</i>		B9G0174	07/09/2019	<i>07/09/19 17:14</i>	
<i>Surrogate: Toluene-d8</i>	<i>107 %</i>	<i>33 - 170</i>		B9G0176	07/08/2019	<i>07/08/19 22:19</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID EW-02

Lab ID: 1902564-07

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	8.0	2.0	1	B9G0239	07/09/2019	07/10/19 22:54	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>76.6 %</i>	<i>34 - 188</i>		<i>B9G0239</i>	<i>07/09/2019</i>	<i>07/10/19 22:54</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>81.8 %</i>	<i>39 - 108</i>		<i>B9G0239</i>	<i>07/09/2019</i>	<i>07/10/19 22:54</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>96.8 %</i>	<i>71 - 131</i>		<i>B9G0239</i>	<i>07/09/2019</i>	<i>07/10/19 22:54</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>80.4 %</i>	<i>32 - 106</i>		<i>B9G0239</i>	<i>07/09/2019</i>	<i>07/10/19 22:54</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID MW-29

Lab ID: 1902564-08

Bromide by Ion Chromatography EPA 300

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.36	0.10	2	B9G0209	07/08/2019	07/08/19 13:05	

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,1,1-Trichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,1,2-Trichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,1-Dichloroethane	1.6	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,1-Dichloroethene	99	5.0	10	B9G0174	07/09/2019	07/09/19 17:38	
1,1-Dichloropropene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,2,3-Trichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,2,3-Trichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,2,4-Trichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,2,4-Trimethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,2-Dibromoethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,2-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,2-Dichloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,2-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,3,5-Trimethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,3-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,3-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
1,4-Dichlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
2,2-Dichloropropane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
2-Chlorotoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
4-Chlorotoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
4-Isopropyltoluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Benzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Bromobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Bromodichloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Bromoform	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Bromomethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Carbon tetrachloride	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Chlorobenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID MW-29

Lab ID: 1902564-08

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Chloroform	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Chloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
cis-1,2-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
cis-1,3-Dichloropropene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Dibromochloromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Dibromomethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Dichlorodifluoromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Ethylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Hexachlorobutadiene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Isopropylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
m,p-Xylene	ND	1.0	1	B9G0176	07/08/2019	07/08/19 22:42	
Methylene chloride	ND	1.0	1	B9G0176	07/08/2019	07/08/19 22:42	
n-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
n-Propylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Naphthalene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
o-Xylene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
sec-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Styrene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
tert-Butylbenzene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Tetrachloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Toluene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
trans-1,2-Dichloroethene	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Trichloroethene	1.7	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Trichlorofluoromethane	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Vinyl chloride	ND	0.50	1	B9G0176	07/08/2019	07/08/19 22:42	
Surrogate: 1,2-Dichloroethane-d4	144 %	57 - 152		B9G0174	07/09/2019	07/09/19 17:38	
Surrogate: 1,2-Dichloroethane-d4	111 %	57 - 152		B9G0176	07/08/2019	07/08/19 22:42	
Surrogate: 4-Bromofluorobenzene	106 %	62 - 134		B9G0174	07/09/2019	07/09/19 17:38	
Surrogate: 4-Bromofluorobenzene	106 %	62 - 134		B9G0176	07/08/2019	07/08/19 22:42	
Surrogate: Dibromofluoromethane	106 %	56 - 167		B9G0176	07/08/2019	07/08/19 22:42	
Surrogate: Dibromofluoromethane	137 %	56 - 167		B9G0174	07/09/2019	07/09/19 17:38	
Surrogate: Toluene-d8	107 %	33 - 170		B9G0176	07/08/2019	07/08/19 22:42	
Surrogate: Toluene-d8	120 %	33 - 170		B9G0174	07/09/2019	07/09/19 17:38	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Client Sample ID MW-29

Lab ID: 1902564-08

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	100	2.0	1	B9G0239	07/09/2019	07/10/19 23:20	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	76.9 %	34 - 188		B9G0239	07/09/2019	07/10/19 23:20	
<i>Surrogate: 2-Fluorobiphenyl</i>	85.7 %	39 - 108		B9G0239	07/09/2019	07/10/19 23:20	
<i>Surrogate: 4-Terphenyl-d14</i>	102 %	71 - 131		B9G0239	07/09/2019	07/10/19 23:20	
<i>Surrogate: Nitrobenzene-d5</i>	82.6 %	32 - 106		B9G0239	07/09/2019	07/10/19 23:20	



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QUALITY CONTROL SECTION

Alkalinity, Speciated by SM 2320B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0240 - No_Prep_WC1_W

Blank (B9G0240-BLK1)

Prepared: 7/10/2019 Analyzed: 7/10/2019

Alkalinity, Bicarbonate (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Total (as CaCO ₃)	ND	5.0	3.4

LCS (B9G0240-BS1)

Prepared: 7/10/2019 Analyzed: 7/10/2019

Alkalinity, Total (as CaCO ₃)	111.610	5.0	3.4	99.9580	112	80 - 120

Matrix Spike (B9G0240-MS1)

Source: 1902564-05

Prepared: 7/10/2019 Analyzed: 7/10/2019

Alkalinity, Total (as CaCO ₃)	357.140	5.0	3.4	99.9580	245.540	112	80 - 120

Matrix Spike Dup (B9G0240-MSD1)

Source: 1902564-05

Prepared: 7/10/2019 Analyzed: 7/10/2019

Alkalinity, Total (as CaCO ₃)	354.910	5.0	3.4	99.9580	245.540	109	80 - 120	0.626	20



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Total Suspended Solids (Residue, Non-Filtrable) by SM 2540D - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0208 - No_Prep_WC1_W

Blank (B9G0208-BLK1)

Prepared: 7/8/2019 Analyzed: 7/9/2019

Residue, Suspended ND 1.0 1.0

LCS (B9G0208-BS1)

Prepared: 7/8/2019 Analyzed: 7/9/2019

Residue, Suspended 91.0000 10 10 90.4000 101 80 - 120

Duplicate (B9G0208-DUP1)

Source: 1902591-02

Prepared: 7/8/2019 Analyzed: 7/9/2019

Residue, Suspended 679.000 10 10 667.000 1.78 10



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Bromide by Ion Chromatography EPA 300 - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0209 - No_Prep_IC1_W

Blank (B9G0209-BLK1)

Prepared: 7/8/2019 Analyzed: 7/8/2019

Bromide ND 0.05 0.02

LCS (B9G0209-BS1)

Prepared: 7/8/2019 Analyzed: 7/8/2019

Bromide 0.936900 0.05 0.02 1.00000 93.7 90 - 110

Duplicate (B9G0209-DUP1)

Source: 1902591-02

Prepared: 7/8/2019 Analyzed: 7/8/2019

Bromide 0.750000 0.50 0.16 0.791000 5.32 20

Matrix Spike (B9G0209-MS1)

Source: 1902591-02

Prepared: 7/8/2019 Analyzed: 7/8/2019

Bromide 2.54390 2.50000 0.0791 98.6 80 - 120

Matrix Spike Dup (B9G0209-MSD1)

Source: 1902591-02

Prepared: 7/8/2019 Analyzed: 7/8/2019

Bromide 2.60030 2.50000 0.0791 101 80 - 120 2.19 20



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UV Absorption by EPA 415.3 - Quality Control

Analyte	Result (1/cm)	PQL (1/cm)	MDL (1/cm)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0119 - No_Prep_II_W

Duplicate (B9G0119-DUP1)

Source: 1902564-05

Prepared: 7/3/2019 Analyzed: 7/3/2019

UV Absorption	ND	0.01	0.01	ND	NR	20



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Project Number : Raytheon Main GETS Monthly Sample, 5

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Reported : 07/22/2019

Total Organic Carbon by SM 5310B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0234 - No_Prep_II_W

Blank (B9G0234-BLK1)

Prepared: 7/9/2019 Analyzed: 7/9/2019

Organic Carbon, Total ND 3.0 0.28

LCS (B9G0234-BS1)

Prepared: 7/9/2019 Analyzed: 7/9/2019

Organic Carbon, Total 19.5100 3.0 0.28 20.0000 97.6 80 - 120

LCS Dup (B9G0234-BSD1)

Prepared: 7/9/2019 Analyzed: 7/9/2019

Organic Carbon, Total 19.4600 3.0 0.28 20.0000 97.3 80 - 120 0.257 20



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Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0174 - MSVOA_W

Blank (B9G0174-BLK1)

Prepared: 7/9/2019 Analyzed: 7/9/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0174 - MSVOA_W (continued)

Blank (B9G0174-BLK1) - Continued

Prepared: 7/9/2019 Analyzed: 7/9/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	34.01		25.0000	136	57 - 152
Surrogate: 4-Bromofluorobenzene	25.69		25.0000	103	62 - 134
Surrogate: Dibromofluoromethane	32.56		25.0000	130	56 - 167
Surrogate: Toluene-d8	29.14		25.0000	117	33 - 170

LCS (B9G0174-BS1)

Prepared: 7/9/2019 Analyzed: 7/9/2019

1,1,1,2-Tetrachloroethane	24.5900	0.50	0.11	20.0000	123	80 - 137
1,1,1-Trichloroethane	25.3000	0.50	0.07	20.0000	126	75 - 148
1,1,2,2-Tetrachloroethane	17.5100	0.50	0.36	20.0000	87.6	64 - 118
1,1,2-Trichloroethane	20.6300	0.50	0.25	20.0000	103	77 - 113
1,1-Dichloroethane	22.8500	0.50	0.09	20.0000	114	72 - 131
1,1-Dichloroethene	22.2900	0.50	0.13	20.0000	111	75 - 132
1,1-Dichloropropene	23.7500	0.50	0.13	20.0000	119	84 - 141
1,2,3-Trichloropropane	18.0700	0.50	0.39	20.0000	90.4	65 - 111
1,2,3-Trichlorobenzene	20.4600	0.50	0.18	20.0000	102	79 - 117
1,2,4-Trichlorobenzene	19.2100	0.50	0.16	20.0000	96.0	78 - 121
1,2,4-Trimethylbenzene	20.3400	0.50	0.14	20.0000	102	83 - 125
1,2-Dibromo-3-chloropropane	21.7200	0.50	0.41	20.0000	109	54 - 116
1,2-Dibromoethane	22.6700	0.50	0.24	20.0000	113	79 - 118
1,2-Dichlorobenzene	21.2300	0.50	0.20	20.0000	106	82 - 115
1,2-Dichloroethane	23.4700	0.50	0.20	20.0000	117	76 - 115
1,2-Dichloropropane	18.3300	0.50	0.15	20.0000	91.6	74 - 113
1,3,5-Trimethylbenzene	20.6800	0.50	0.13	20.0000	103	83 - 126
1,3-Dichlorobenzene	21.2500	0.50	0.16	20.0000	106	84 - 118
1,3-Dichloropropane	19.6600	0.50	0.21	20.0000	98.3	72 - 116

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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0174 - MSVOA_W (continued)

LCS (B9G0174-BS1) - Continued

Prepared: 7/9/2019 Analyzed: 7/9/2019

1,4-Dichlorobenzene	19.9300	0.50	0.17	20.0000		99.6	83 - 112		
2,2-Dichloropropane	26.5800	0.50	0.38	20.0000		133	72 - 150		
2-Chlorotoluene	21.2200	0.50	0.11	20.0000		106	82 - 120		
4-Chlorotoluene	21.6300	0.50	0.12	20.0000		108	81 - 121		
4-Isopropyltoluene	20.0800	0.50	0.11	20.0000		100	86 - 124		
Benzene	41.7400	0.50	0.13	40.0000		104	81 - 118		
Bromobenzene	21.3300	0.50	0.21	20.0000		107	82 - 117		
Bromodichloromethane	22.2100	0.50	0.14	20.0000		111	80 - 122		
Bromoform	23.1300	0.50	0.20	20.0000		116	53 - 145		
Bromomethane	30.8700	0.50	0.17	20.0000		154	30 - 204		
Carbon tetrachloride	25.6100	0.50	0.09	20.0000		128	77 - 157		
Chlorobenzene	20.5300	0.50	0.13	20.0000		103	86 - 113		
Chloroethane	22.0000	0.50	0.15	20.0000		110	70 - 160		
Chloroform	23.5900	0.50	0.11	20.0000		118	66 - 136		
Chloromethane	16.4700	0.50	0.12	20.0000		82.4	52 - 138		
cis-1,2-Dichloroethene	23.1700	0.50	0.14	20.0000		116	71 - 128		
cis-1,3-Dichloropropene	22.1000	0.50	0.13	20.0000		110	71 - 123		
Dibromochloromethane	22.9700	0.50	0.16	20.0000		115	78 - 140		
Dibromomethane	20.8600	0.50	0.19	20.0000		104	78 - 109		
Dichlorodifluoromethane	23.6500	0.50	0.05	20.0000		118	64 - 144		
Ethylbenzene	42.0500	0.50	0.13	40.0000		105	90 - 116		
Hexachlorobutadiene	23.6300	0.50	0.15	20.0000		118	81 - 129		
Isopropylbenzene	21.6700	0.50	0.10	20.0000		108	83 - 129		
m,p-Xylene	46.5600	1.0	0.19	40.0000		116	88 - 124		
Methylene chloride	22.1900	1.0	0.71	20.0000		111	76 - 137		
n-Butylbenzene	18.1000	0.50	0.11	20.0000		90.5	83 - 129		
n-Propylbenzene	21.2700	0.50	0.10	20.0000		106	85 - 124		
Naphthalene	15.9800	0.50	0.41	20.0000		79.9	67 - 113		
o-Xylene	42.6900	0.50	0.13	40.0000		107	82 - 129		
sec-Butylbenzene	19.8400	0.50	0.09	20.0000		99.2	86 - 127		
Styrene	20.9500	0.50	0.13	20.0000		105	83 - 122		
tert-Butylbenzene	20.7200	0.50	0.09	20.0000		104	84 - 130		
Tetrachloroethene	23.3900	0.50	0.10	20.0000		117	87 - 123		
Toluene	45.1800	0.50	0.12	40.0000		113	84 - 115		
trans-1,2-Dichloroethene	21.9100	0.50	0.09	20.0000		110	60 - 148		
Trichloroethene	22.6800	0.50	0.10	20.0000		113	79 - 129		
Trichlorofluoromethane	24.9700	0.50	0.10	20.0000		125	68 - 162		
Vinyl chloride	17.2800	0.50	0.05	20.0000		86.4	73 - 128		

Surrogate: 1,2-Dichloroethane-d4 28.51 25.0000 114 57 - 152

Surrogate: 4-Bromofluorobenzene 27.77 25.0000 111 62 - 134

Surrogate: Dibromofluoromethane 28.75 25.0000 115 56 - 167



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0174 - MSVOA_W (continued)

LCS (B9G0174-BS1) - Continued

Prepared: 7/9/2019 Analyzed: 7/9/2019

Surrogate: Toluene-d8 29.44 25.0000 118 33 - 170

LCS Dup (B9G0174-BS1)

Prepared: 7/9/2019 Analyzed: 7/9/2019

1,1,1,2-Tetrachloroethane	23.2700	0.50	0.11	20.0000	116	80 - 137	5.52	20	
1,1,1-Trichloroethane	25.5200	0.50	0.07	20.0000	128	75 - 148	0.866	20	
1,1,2,2-Tetrachloroethane	16.2500	0.50	0.36	20.0000	81.2	64 - 118	7.46	20	
1,1,2-Trichloroethane	19.8400	0.50	0.25	20.0000	99.2	77 - 113	3.90	20	
1,1-Dichloroethane	24.1900	0.50	0.09	20.0000	121	72 - 131	5.70	20	
1,1-Dichloroethene	23.8000	0.50	0.13	20.0000	119	75 - 132	6.55	20	
1,1-Dichloropropene	24.3100	0.50	0.13	20.0000	122	84 - 141	2.33	20	
1,2,3-Trichloropropane	17.2000	0.50	0.39	20.0000	86.0	65 - 111	4.93	20	
1,2,3-Trichlorobenzene	19.5600	0.50	0.18	20.0000	97.8	79 - 117	4.50	20	
1,2,4-Trichlorobenzene	18.9200	0.50	0.16	20.0000	94.6	78 - 121	1.52	20	
1,2,4-Trimethylbenzene	20.2900	0.50	0.14	20.0000	101	83 - 125	0.246	20	
1,2-Dibromo-3-chloropropane	19.9700	0.50	0.41	20.0000	99.8	54 - 116	8.40	20	
1,2-Dibromoethane	22.2200	0.50	0.24	20.0000	111	79 - 118	2.00	20	
1,2-Dichlorobenzene	20.9200	0.50	0.20	20.0000	105	82 - 115	1.47	20	
1,2-Dichloroethane	23.7000	0.50	0.20	20.0000	118	76 - 115	0.975	20	L4
1,2-Dichloropropane	18.2500	0.50	0.15	20.0000	91.2	74 - 113	0.437	20	
1,3,5-Trimethylbenzene	20.7300	0.50	0.13	20.0000	104	83 - 126	0.241	20	
1,3-Dichlorobenzene	21.0600	0.50	0.16	20.0000	105	84 - 118	0.898	20	
1,3-Dichloropropane	18.8800	0.50	0.21	20.0000	94.4	72 - 116	4.05	20	
1,4-Dichlorobenzene	19.4300	0.50	0.17	20.0000	97.2	83 - 112	2.54	20	
2,2-Dichloropropane	27.5600	0.50	0.38	20.0000	138	72 - 150	3.62	20	
2-Chlorotoluene	21.3700	0.50	0.11	20.0000	107	82 - 120	0.704	20	
4-Chlorotoluene	21.5000	0.50	0.12	20.0000	108	81 - 121	0.603	20	
4-Isopropyltoluene	20.2600	0.50	0.11	20.0000	101	86 - 124	0.892	20	
Benzene	42.1500	0.50	0.13	40.0000	105	81 - 118	0.977	20	
Bromobenzene	21.1600	0.50	0.21	20.0000	106	82 - 117	0.800	20	
Bromodichloromethane	22.5200	0.50	0.14	20.0000	113	80 - 122	1.39	20	
Bromoform	21.6500	0.50	0.20	20.0000	108	53 - 145	6.61	20	
Bromomethane	32.6300	0.50	0.17	20.0000	163	30 - 204	5.54	20	
Carbon tetrachloride	25.9200	0.50	0.09	20.0000	130	77 - 157	1.20	20	
Chlorobenzene	20.1100	0.50	0.13	20.0000	101	86 - 113	2.07	20	
Chloroethane	23.0600	0.50	0.15	20.0000	115	70 - 160	4.70	20	
Chloroform	25.1000	0.50	0.11	20.0000	126	66 - 136	6.20	20	
Chloromethane	16.6900	0.50	0.12	20.0000	83.4	52 - 138	1.33	20	
cis-1,2-Dichloroethene	22.9500	0.50	0.14	20.0000	115	71 - 128	0.954	20	
cis-1,3-Dichloropropene	21.3500	0.50	0.13	20.0000	107	71 - 123	3.45	20	
Dibromochloromethane	21.7700	0.50	0.16	20.0000	109	78 - 140	5.36	20	
Dibromomethane	21.2200	0.50	0.19	20.0000	106	78 - 109	1.71	20	
Dichlorodifluoromethane	24.7300	0.50	0.05	20.0000	124	64 - 144	4.46	20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0174 - MSVOA_W (continued)

LCS Dup (B9G0174-BSD1) - Continued

Prepared: 7/9/2019 Analyzed: 7/9/2019

Ethylbenzene	41.6900	0.50	0.13	40.0000		104	90 - 116	0.860	20	
Hexachlorobutadiene	24.0200	0.50	0.15	20.0000		120	81 - 129	1.64	20	
Isopropylbenzene	21.6200	0.50	0.10	20.0000		108	83 - 129	0.231	20	
m,p-Xylene	46.0300	1.0	0.19	40.0000		115	88 - 124	1.14	20	
Methylene chloride	23.4900	1.0	0.71	20.0000		117	76 - 137	5.69	20	
n-Butylbenzene	18.4000	0.50	0.11	20.0000		92.0	83 - 129	1.64	20	
n-Propylbenzene	21.3500	0.50	0.10	20.0000		107	85 - 124	0.375	20	
Naphthalene	15.2000	0.50	0.41	20.0000		76.0	67 - 113	5.00	20	
o-Xylene	41.9900	0.50	0.13	40.0000		105	82 - 129	1.65	20	
sec-Butylbenzene	19.8700	0.50	0.09	20.0000		99.4	86 - 127	0.151	20	
Styrene	20.3200	0.50	0.13	20.0000		102	83 - 122	3.05	20	
tert-Butylbenzene	20.8300	0.50	0.09	20.0000		104	84 - 130	0.529	20	
Tetrachloroethene	22.3700	0.50	0.10	20.0000		112	87 - 123	4.46	20	
Toluene	46.1700	0.50	0.12	40.0000		115	84 - 115	2.17	20	L4
trans-1,2-Dichloroethene	22.8700	0.50	0.09	20.0000		114	60 - 148	4.29	20	
Trichloroethene	22.8800	0.50	0.10	20.0000		114	79 - 129	0.878	20	
Trichlorofluoromethane	26.5000	0.50	0.10	20.0000		132	68 - 162	5.95	20	
Vinyl chloride	18.1100	0.50	0.05	20.0000		90.6	73 - 128	4.69	20	
Surrogate: 1,2-Dichloroethane-d4	28.30			25.0000		113	57 - 152			
Surrogate: 4-Bromofluorobenzene	27.08			25.0000		108	62 - 134			
Surrogate: Dibromofluoromethane	28.55			25.0000		114	56 - 167			
Surrogate: Toluene-d8	29.58			25.0000		118	33 - 170			

Duplicate (B9G0174-DUP1)

Source: 1902523-02

Prepared: 7/9/2019 Analyzed: 7/9/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11		ND				20	
1,1,1-Trichloroethane	ND	0.50	0.07		ND				20	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36		ND				20	
1,1,2-Trichloroethane	ND	0.50	0.25		ND				20	
1,1-Dichloroethane	ND	0.50	0.09		ND				20	
1,1-Dichloroethene	ND	0.50	0.13		ND				20	
1,1-Dichloropropene	ND	0.50	0.13		ND				20	
1,2,3-Trichloropropane	ND	0.50	0.39		ND				20	
1,2,3-Trichlorobenzene	ND	0.50	0.18		ND				20	
1,2,4-Trichlorobenzene	ND	0.50	0.16		ND				20	
1,2,4-Trimethylbenzene	ND	0.50	0.14		ND				20	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41		ND				20	
1,2-Dibromoethane	ND	0.50	0.24		ND				20	
1,2-Dichlorobenzene	ND	0.50	0.20		ND				20	
1,2-Dichloroethane	ND	0.50	0.20		ND				20	
1,2-Dichloropropane	ND	0.50	0.15		ND				20	
1,3,5-Trimethylbenzene	ND	0.50	0.13		ND				20	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0174 - MSVOA_W (continued)

Duplicate (B9G0174-DUP1) - Continued

Source: 1902523-02

Prepared: 7/9/2019 Analyzed: 7/9/2019

1,3-Dichlorobenzene	ND	0.50	0.16		ND				20	
1,3-Dichloropropane	ND	0.50	0.21		ND				20	
1,4-Dichlorobenzene	ND	0.50	0.17		ND				20	
2,2-Dichloropropane	ND	0.50	0.38		ND				20	
2-Chlorotoluene	ND	0.50	0.11		ND				20	
4-Chlorotoluene	ND	0.50	0.12		ND				20	
4-Isopropyltoluene	ND	0.50	0.11		ND				20	
Benzene	ND	0.50	0.13		ND				20	
Bromobenzene	ND	0.50	0.21		ND				20	
Bromodichloromethane	ND	0.50	0.14		ND				20	
Bromoform	ND	0.50	0.20		ND				20	
Bromomethane	ND	0.50	0.17		ND				20	
Carbon tetrachloride	ND	0.50	0.09		ND				20	
Chlorobenzene	ND	0.50	0.13		ND				20	
Chloroethane	ND	0.50	0.15		ND				20	
Chloroform	ND	0.50	0.11		ND				20	
Chloromethane	ND	0.50	0.12		ND				20	
cis-1,2-Dichloroethene	ND	0.50	0.14		ND				20	
cis-1,3-Dichloropropene	ND	0.50	0.13		ND				20	
Dibromochloromethane	ND	0.50	0.16		ND				20	
Dibromomethane	ND	0.50	0.19		ND				20	
Dichlorodifluoromethane	ND	0.50	0.05		ND				20	
Ethylbenzene	ND	0.50	0.13		ND				20	
Hexachlorobutadiene	ND	0.50	0.15		ND				20	
Isopropylbenzene	ND	0.50	0.10		ND				20	
m,p-Xylene	ND	1.0	0.19		ND				20	
Methylene chloride	ND	1.0	0.71		ND				20	
n-Butylbenzene	ND	0.50	0.11		ND				20	
n-Propylbenzene	ND	0.50	0.10		ND				20	
Naphthalene	ND	0.50	0.41		ND				20	
o-Xylene	ND	0.50	0.13		ND				20	
sec-Butylbenzene	ND	0.50	0.09		ND				20	
Styrene	ND	0.50	0.13		ND				20	
tert-Butylbenzene	ND	0.50	0.09		ND				20	
Tetrachloroethene	ND	0.50	0.10		ND				20	
Toluene	ND	0.50	0.12		ND				20	
trans-1,2-Dichloroethene	ND	0.50	0.09		ND				20	
Trichloroethene	ND	0.50	0.10		ND				20	
Trichlorofluoromethane	ND	0.50	0.10		ND				20	
Vinyl chloride	ND	0.50	0.05		ND				20	

Surrogate: 1,2-Dichloroethane-d4

36.03

25.0000

144

57 - 152



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0174 - MSVOA_W (continued)

Duplicate (B9G0174-DUP1) - Continued

Source: 1902523-02

Prepared: 7/9/2019 Analyzed: 7/9/2019

Surrogate: 4-Bromofluorobenzene	26.31	25.0000	105	62 - 134
Surrogate: Dibromofluoromethan	33.32	25.0000	133	56 - 167
Surrogate: Toluene-d8	29.18	25.0000	117	33 - 170



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Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0176 - MSVOA_W

Blank (B9G0176-BLK1)

Prepared: 7/8/2019 Analyzed: 7/8/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0176 - MSVOA_W (continued)

Blank (B9G0176-BLK1) - Continued

Prepared: 7/8/2019 Analyzed: 7/8/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	25.93		25.0000	104	57 - 152
Surrogate: 4-Bromofluorobenzene	26.94		25.0000	108	62 - 134
Surrogate: Dibromofluoromethane	27.53		25.0000	110	56 - 167
Surrogate: Toluene-d8	26.75		25.0000	107	33 - 170

LCS (B9G0176-BS1)

Prepared: 7/8/2019 Analyzed: 7/8/2019

1,1,1,2-Tetrachloroethane	20.7300	0.50	0.11	20.0000	104	80 - 137
1,1,1-Trichloroethane	23.6600	0.50	0.07	20.0000	118	75 - 148
1,1,2,2-Tetrachloroethane	19.1300	0.50	0.36	20.0000	95.6	64 - 118
1,1,2-Trichloroethane	19.7900	0.50	0.25	20.0000	99.0	77 - 113
1,1-Dichloroethane	25.4600	0.50	0.09	20.0000	127	72 - 131
1,1-Dichloroethene	22.9000	0.50	0.13	20.0000	114	75 - 132
1,1-Dichloropropene	23.0500	0.50	0.13	20.0000	115	84 - 141
1,2,3-Trichloropropane	17.1100	0.50	0.39	20.0000	85.6	65 - 111
1,2,3-Trichlorobenzene	18.7300	0.50	0.18	20.0000	93.6	79 - 117
1,2,4-Trichlorobenzene	20.4100	0.50	0.16	20.0000	102	78 - 121
1,2,4-Trimethylbenzene	19.7100	0.50	0.14	20.0000	98.6	83 - 125
1,2-Dibromo-3-chloropropane	16.1300	0.50	0.41	20.0000	80.6	54 - 116
1,2-Dibromoethane	19.2300	0.50	0.24	20.0000	96.2	79 - 118
1,2-Dichlorobenzene	18.7900	0.50	0.20	20.0000	94.0	82 - 115
1,2-Dichloroethane	23.2300	0.50	0.20	20.0000	116	76 - 115
1,2-Dichloropropane	20.6600	0.50	0.15	20.0000	103	74 - 113
1,3,5-Trimethylbenzene	19.5300	0.50	0.13	20.0000	97.6	83 - 126
1,3-Dichlorobenzene	20.1200	0.50	0.16	20.0000	101	84 - 118
1,3-Dichloropropane	19.6600	0.50	0.21	20.0000	98.3	72 - 116

L4



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0176 - MSVOA_W (continued)

LCS (B9G0176-BS1) - Continued

Prepared: 7/8/2019 Analyzed: 7/8/2019

1,4-Dichlorobenzene	19.9600	0.50	0.17	20.0000		99.8	83 - 112		
2,2-Dichloropropane	25.9600	0.50	0.38	20.0000		130	72 - 150		
2-Chlorotoluene	20.8100	0.50	0.11	20.0000		104	82 - 120		
4-Chlorotoluene	19.5500	0.50	0.12	20.0000		97.8	81 - 121		
4-Isopropyltoluene	19.9800	0.50	0.11	20.0000		99.9	86 - 124		
Benzene	44.8300	0.50	0.13	40.0000		112	81 - 118		
Bromobenzene	18.4400	0.50	0.21	20.0000		92.2	82 - 117		
Bromodichloromethane	19.5800	0.50	0.14	20.0000		97.9	80 - 122		
Bromoform	19.2000	0.50	0.20	20.0000		96.0	53 - 145		
Bromomethane	32.6200	0.50	0.17	20.0000		163	30 - 204		
Carbon tetrachloride	22.7200	0.50	0.09	20.0000		114	77 - 157		
Chlorobenzene	18.8600	0.50	0.13	20.0000		94.3	86 - 113		
Chloroethane	26.8700	0.50	0.15	20.0000		134	70 - 160		
Chloroform	23.2800	0.50	0.11	20.0000		116	66 - 136		
Chloromethane	27.6200	0.50	0.12	20.0000		138	52 - 138		L4
cis-1,2-Dichloroethene	22.7500	0.50	0.14	20.0000		114	71 - 128		
cis-1,3-Dichloropropene	24.0100	0.50	0.13	20.0000		120	71 - 123		
Dibromochloromethane	20.0500	0.50	0.16	20.0000		100	78 - 140		
Dibromomethane	19.9900	0.50	0.19	20.0000		100	78 - 109		
Dichlorodifluoromethane	31.4600	0.50	0.05	20.0000		157	64 - 144		L4
Ethylbenzene	38.2200	0.50	0.13	40.0000		95.6	90 - 116		
Hexachlorobutadiene	19.8000	0.50	0.15	20.0000		99.0	81 - 129		
Isopropylbenzene	21.4700	0.50	0.10	20.0000		107	83 - 129		
m,p-Xylene	40.9500	1.0	0.19	40.0000		102	88 - 124		
Methylene chloride	23.8200	1.0	0.71	20.0000		119	76 - 137		
n-Butylbenzene	20.2800	0.50	0.11	20.0000		101	83 - 129		
n-Propylbenzene	19.8700	0.50	0.10	20.0000		99.4	85 - 124		
Naphthalene	18.0200	0.50	0.41	20.0000		90.1	67 - 113		
o-Xylene	39.1700	0.50	0.13	40.0000		97.9	82 - 129		
sec-Butylbenzene	20.0600	0.50	0.09	20.0000		100	86 - 127		
Styrene	20.9300	0.50	0.13	20.0000		105	83 - 122		
tert-Butylbenzene	19.4300	0.50	0.09	20.0000		97.2	84 - 130		
Tetrachloroethene	19.5800	0.50	0.10	20.0000		97.9	87 - 123		
Toluene	39.7000	0.50	0.12	40.0000		99.2	84 - 115		
trans-1,2-Dichloroethene	20.8200	0.50	0.09	20.0000		104	60 - 148		
Trichloroethene	20.5900	0.50	0.10	20.0000		103	79 - 129		
Trichlorofluoromethane	23.3900	0.50	0.10	20.0000		117	68 - 162		
Vinyl chloride	25.1700	0.50	0.05	20.0000		126	73 - 128		
Surrogate: 1,2-Dichloroethane-d4	31.32			25.0000		125	57 - 152		
Surrogate: 4-Bromofluorobenzene	26.44			25.0000		106	62 - 134		
Surrogate: Dibromofluoromethane	28.89			25.0000		116	56 - 167		



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0176 - MSVOA_W (continued)

LCS (B9G0176-BS1) - Continued

Prepared: 7/8/2019 Analyzed: 7/8/2019

Surrogate: Toluene-d8 26.78 25.0000 107 33 - 170

LCS Dup (B9G0176-BS1)

Prepared: 7/8/2019 Analyzed: 7/8/2019

1,1,1,2-Tetrachloroethane	21.9900	0.50	0.11	20.0000	110	80 - 137	5.90	20	
1,1,1-Trichloroethane	22.3900	0.50	0.07	20.0000	112	75 - 148	5.52	20	
1,1,2,2-Tetrachloroethane	20.8400	0.50	0.36	20.0000	104	64 - 118	8.56	20	
1,1,2-Trichloroethane	20.6800	0.50	0.25	20.0000	103	77 - 113	4.40	20	
1,1-Dichloroethane	22.0400	0.50	0.09	20.0000	110	72 - 131	14.4	20	
1,1-Dichloroethene	22.1900	0.50	0.13	20.0000	111	75 - 132	3.15	20	
1,1-Dichloropropene	21.6100	0.50	0.13	20.0000	108	84 - 141	6.45	20	
1,2,3-Trichloropropane	18.9200	0.50	0.39	20.0000	94.6	65 - 111	10.0	20	
1,2,3-Trichlorobenzene	19.4800	0.50	0.18	20.0000	97.4	79 - 117	3.93	20	
1,2,4-Trichlorobenzene	20.6300	0.50	0.16	20.0000	103	78 - 121	1.07	20	
1,2,4-Trimethylbenzene	19.6800	0.50	0.14	20.0000	98.4	83 - 125	0.152	20	
1,2-Dibromo-3-chloropropane	20.0700	0.50	0.41	20.0000	100	54 - 116	21.8	20	R
1,2-Dibromoethane	20.2400	0.50	0.24	20.0000	101	79 - 118	5.12	20	
1,2-Dichlorobenzene	19.3900	0.50	0.20	20.0000	97.0	82 - 115	3.14	20	
1,2-Dichloroethane	21.5300	0.50	0.20	20.0000	108	76 - 115	7.60	20	
1,2-Dichloropropane	21.2200	0.50	0.15	20.0000	106	74 - 113	2.67	20	
1,3,5-Trimethylbenzene	19.3400	0.50	0.13	20.0000	96.7	83 - 126	0.978	20	
1,3-Dichlorobenzene	20.3400	0.50	0.16	20.0000	102	84 - 118	1.09	20	
1,3-Dichloropropane	20.6900	0.50	0.21	20.0000	103	72 - 116	5.11	20	
1,4-Dichlorobenzene	20.3800	0.50	0.17	20.0000	102	83 - 112	2.08	20	
2,2-Dichloropropane	24.2200	0.50	0.38	20.0000	121	72 - 150	6.94	20	
2-Chlorotoluene	20.8400	0.50	0.11	20.0000	104	82 - 120	0.144	20	
4-Chlorotoluene	19.8100	0.50	0.12	20.0000	99.0	81 - 121	1.32	20	
4-Isopropyltoluene	20.1600	0.50	0.11	20.0000	101	86 - 124	0.897	20	
Benzene	40.2400	0.50	0.13	40.0000	101	81 - 118	10.8	20	
Bromobenzene	19.2700	0.50	0.21	20.0000	96.4	82 - 117	4.40	20	
Bromodichloromethane	20.1500	0.50	0.14	20.0000	101	80 - 122	2.87	20	
Bromoform	19.5700	0.50	0.20	20.0000	97.8	53 - 145	1.91	20	
Bromomethane	29.4900	0.50	0.17	20.0000	147	30 - 204	10.1	20	
Carbon tetrachloride	21.3600	0.50	0.09	20.0000	107	77 - 157	6.17	20	
Chlorobenzene	19.6900	0.50	0.13	20.0000	98.4	86 - 113	4.31	20	
Chloroethane	24.7500	0.50	0.15	20.0000	124	70 - 160	8.21	20	
Chloroform	21.9200	0.50	0.11	20.0000	110	66 - 136	6.02	20	
Chloromethane	25.3500	0.50	0.12	20.0000	127	52 - 138	8.57	20	
cis-1,2-Dichloroethene	21.1600	0.50	0.14	20.0000	106	71 - 128	7.24	20	
cis-1,3-Dichloropropene	22.3500	0.50	0.13	20.0000	112	71 - 123	7.16	20	
Dibromochloromethane	21.7300	0.50	0.16	20.0000	109	78 - 140	8.04	20	
Dibromomethane	21.5500	0.50	0.19	20.0000	108	78 - 109	7.51	20	
Dichlorodifluoromethane	30.7900	0.50	0.05	20.0000	154	64 - 144	2.15	20	L4



Certificate of Analysis

Hargis & Associates, Inc.

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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0176 - MSVOA_W (continued)

LCS Dup (B9G0176-BSD1) - Continued

Prepared: 7/8/2019 Analyzed: 7/8/2019

Ethylbenzene	38.4200	0.50	0.13	40.0000		96.0	90 - 116	0.522	20	
Hexachlorobutadiene	20.2700	0.50	0.15	20.0000		101	81 - 129	2.35	20	
Isopropylbenzene	21.4800	0.50	0.10	20.0000		107	83 - 129	0.0466	20	
m,p-Xylene	40.1100	1.0	0.19	40.0000		100	88 - 124	2.07	20	
Methylene chloride	22.3400	1.0	0.71	20.0000		112	76 - 137	6.41	20	
n-Butylbenzene	20.3400	0.50	0.11	20.0000		102	83 - 129	0.295	20	
n-Propylbenzene	20.3400	0.50	0.10	20.0000		102	85 - 124	2.34	20	
Naphthalene	19.8100	0.50	0.41	20.0000		99.0	67 - 113	9.46	20	
o-Xylene	39.8300	0.50	0.13	40.0000		99.6	82 - 129	1.67	20	
sec-Butylbenzene	20.0800	0.50	0.09	20.0000		100	86 - 127	0.0997	20	
Styrene	21.1400	0.50	0.13	20.0000		106	83 - 122	0.998	20	
tert-Butylbenzene	19.8400	0.50	0.09	20.0000		99.2	84 - 130	2.09	20	
Tetrachloroethene	20.0700	0.50	0.10	20.0000		100	87 - 123	2.47	20	
Toluene	39.0600	0.50	0.12	40.0000		97.6	84 - 115	1.63	20	
trans-1,2-Dichloroethene	27.3100	0.50	0.09	20.0000		137	60 - 148	27.0	20	R
Trichloroethene	20.0400	0.50	0.10	20.0000		100	79 - 129	2.71	20	
Trichlorofluoromethane	22.5500	0.50	0.10	20.0000		113	68 - 162	3.66	20	
Vinyl chloride	24.8300	0.50	0.05	20.0000		124	73 - 128	1.36	20	
Surrogate: 1,2-Dichloroethane-d4	27.22			25.0000		109	57 - 152			
Surrogate: 4-Bromofluorobenzene	26.45			25.0000		106	62 - 134			
Surrogate: Dibromofluoromethane	27.95			25.0000		112	56 - 167			
Surrogate: Toluene-d8	26.71			25.0000		107	33 - 170			

Duplicate (B9G0176-DUP1)

Source: 1902523-01

Prepared: 7/8/2019 Analyzed: 7/8/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11		ND				20	
1,1,1-Trichloroethane	ND	0.50	0.07		ND				20	
1,1,2,2-Tetrachloroethane	ND	0.50	0.36		ND				20	
1,1,2-Trichloroethane	ND	0.50	0.25		ND				20	
1,1-Dichloroethane	ND	0.50	0.09		ND				20	
1,1-Dichloroethene	ND	0.50	0.13		ND				20	
1,1-Dichloropropene	ND	0.50	0.13		ND				20	
1,2,3-Trichloropropane	ND	0.50	0.39		ND				20	
1,2,3-Trichlorobenzene	ND	0.50	0.18		ND				20	
1,2,4-Trichlorobenzene	ND	0.50	0.16		ND				20	
1,2,4-Trimethylbenzene	ND	0.50	0.14		ND				20	
1,2-Dibromo-3-chloropropane	ND	0.50	0.41		ND				20	
1,2-Dibromoethane	ND	0.50	0.24		ND				20	
1,2-Dichlorobenzene	ND	0.50	0.20		ND				20	
1,2-Dichloroethane	ND	0.50	0.20		ND				20	
1,2-Dichloropropane	ND	0.50	0.15		ND				20	
1,3,5-Trimethylbenzene	ND	0.50	0.13		ND				20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0176 - MSVOA_W (continued)

Duplicate (B9G0176-DUP1) - Continued

Source: 1902523-01

Prepared: 7/8/2019 Analyzed: 7/8/2019

1,3-Dichlorobenzene	ND	0.50	0.16		ND				20	
1,3-Dichloropropane	ND	0.50	0.21		ND				20	
1,4-Dichlorobenzene	ND	0.50	0.17		ND				20	
2,2-Dichloropropane	ND	0.50	0.38		ND				20	
2-Chlorotoluene	ND	0.50	0.11		ND				20	
4-Chlorotoluene	ND	0.50	0.12		ND				20	
4-Isopropyltoluene	ND	0.50	0.11		ND				20	
Benzene	ND	0.50	0.13		ND				20	
Bromobenzene	ND	0.50	0.21		ND				20	
Bromodichloromethane	ND	0.50	0.14		ND				20	
Bromoform	ND	0.50	0.20		ND				20	
Bromomethane	ND	0.50	0.17		ND				20	
Carbon tetrachloride	ND	0.50	0.09		ND				20	
Chlorobenzene	ND	0.50	0.13		ND				20	
Chloroethane	ND	0.50	0.15		ND				20	
Chloroform	ND	0.50	0.11		ND				20	
Chloromethane	ND	0.50	0.12		ND				20	
cis-1,2-Dichloroethene	1.49000	0.50	0.14		1.64000			9.58	20	
cis-1,3-Dichloropropene	ND	0.50	0.13		ND				20	
Dibromochloromethane	ND	0.50	0.16		ND				20	
Dibromomethane	ND	0.50	0.19		ND				20	
Dichlorodifluoromethane	ND	0.50	0.05		ND				20	
Ethylbenzene	ND	0.50	0.13		ND				20	
Hexachlorobutadiene	ND	0.50	0.15		ND				20	
Isopropylbenzene	ND	0.50	0.10		ND				20	
m,p-Xylene	ND	1.0	0.19		ND				20	
Methylene chloride	ND	1.0	0.71		ND				20	
n-Butylbenzene	ND	0.50	0.11		ND				20	
n-Propylbenzene	ND	0.50	0.10		ND				20	
Naphthalene	ND	0.50	0.41		ND				20	
o-Xylene	ND	0.50	0.13		ND				20	
sec-Butylbenzene	ND	0.50	0.09		ND				20	
Styrene	ND	0.50	0.13		ND				20	
tert-Butylbenzene	ND	0.50	0.09		ND				20	
Tetrachloroethene	12.0500	0.50	0.10		11.8800			1.42	20	
Toluene	ND	0.50	0.12		ND				20	
trans-1,2-Dichloroethene	ND	0.50	0.09		ND				20	
Trichloroethene	4.26000	0.50	0.10		ND			NR	20	
Trichlorofluoromethane	ND	0.50	0.10		ND				20	
Vinyl chloride	ND	0.50	0.05		ND				20	

Surrogate: 1,2-Dichloroethane-d4

25.91

25.0000

104

57 - 152



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0176 - MSVOA_W (continued)

Duplicate (B9G0176-DUP1) - Continued

Source: 1902523-01

Prepared: 7/8/2019 Analyzed: 7/8/2019

Surrogate: 4-Bromofluorobenzene	25.86		25.0000		103	62 - 134			
Surrogate: Dibromofluoromethane	27.39		25.0000		110	56 - 167			
Surrogate: Toluene-d8	26.50		25.0000		106	33 - 170			

Matrix Spike (B9G0176-MS1)

Source: 1902523-01

Prepared: 7/8/2019 Analyzed: 7/8/2019

1,1,1,2-Tetrachloroethane	20.3500	0.50	0.11	20.0000	ND	102	80 - 137		
1,1,1-Trichloroethane	22.0600	0.50	0.07	20.0000	ND	110	75 - 148		
1,1,2,2-Tetrachloroethane	20.2900	0.50	0.36	20.0000	ND	101	64 - 118		
1,1,2-Trichloroethane	20.4800	0.50	0.25	20.0000	ND	102	77 - 113		
1,1-Dichloroethane	21.3300	0.50	0.09	20.0000	ND	107	72 - 131		
1,1-Dichloroethene	20.8300	0.50	0.13	20.0000	ND	104	75 - 132		
1,1-Dichloropropene	21.3600	0.50	0.13	20.0000	ND	107	84 - 141		
1,2,3-Trichloropropane	17.9800	0.50	0.39	20.0000	ND	89.9	65 - 111		
1,2,3-Trichlorobenzene	19.1400	0.50	0.18	20.0000	ND	95.7	79 - 117		
1,2,4-Trichlorobenzene	20.5300	0.50	0.16	20.0000	ND	103	78 - 121		
1,2,4-Trimethylbenzene	19.4100	0.50	0.14	20.0000	ND	97.0	83 - 125		
1,2-Dibromo-3-chloropropane	18.9700	0.50	0.41	20.0000	ND	94.8	54 - 116		
1,2-Dibromoethane	19.9000	0.50	0.24	20.0000	ND	99.5	79 - 118		
1,2-Dichlorobenzene	18.6800	0.50	0.20	20.0000	ND	93.4	82 - 115		
1,2-Dichloroethane	20.6300	0.50	0.20	20.0000	ND	103	76 - 115		
1,2-Dichloropropane	20.6000	0.50	0.15	20.0000	ND	103	74 - 113		
1,3,5-Trimethylbenzene	19.3600	0.50	0.13	20.0000	ND	96.8	83 - 126		
1,3-Dichlorobenzene	20.6500	0.50	0.16	20.0000	ND	103	84 - 118		
1,3-Dichloropropane	19.1600	0.50	0.21	20.0000	ND	95.8	72 - 116		
1,4-Dichlorobenzene	20.4300	0.50	0.17	20.0000	ND	102	83 - 112		
2,2-Dichloropropane	23.1600	0.50	0.38	20.0000	ND	116	72 - 150		
2-Chlorotoluene	21.0500	0.50	0.11	20.0000	ND	105	82 - 120		
4-Chlorotoluene	19.7300	0.50	0.12	20.0000	ND	98.6	81 - 121		
4-Isopropyltoluene	19.6600	0.50	0.11	20.0000	ND	98.3	86 - 124		
Benzene	39.5100	0.50	0.13	40.0000	ND	98.8	81 - 118		
Bromobenzene	19.1700	0.50	0.21	20.0000	ND	95.8	82 - 117		
Bromodichloromethane	19.9400	0.50	0.14	20.0000	ND	99.7	80 - 122		
Bromoform	19.2000	0.50	0.20	20.0000	ND	96.0	53 - 145		
Bromomethane	26.4700	0.50	0.17	20.0000	ND	132	30 - 204		
Carbon tetrachloride	20.8600	0.50	0.09	20.0000	ND	104	77 - 157		
Chlorobenzene	18.8200	0.50	0.13	20.0000	ND	94.1	86 - 113		
Chloroethane	25.8300	0.50	0.15	20.0000	ND	129	70 - 160		
Chloroform	21.3300	0.50	0.11	20.0000	ND	107	66 - 136		
Chloromethane	26.1400	0.50	0.12	20.0000	ND	131	52 - 138		
cis-1,2-Dichloroethene	22.1900	0.50	0.14	20.0000	1.64000	103	71 - 128		
cis-1,3-Dichloropropene	22.2200	0.50	0.13	20.0000	ND	111	71 - 123		
Dibromochloromethane	19.2100	0.50	0.16	20.0000	ND	96.0	78 - 140		



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0176 - MSVOA_W (continued)

Matrix Spike (B9G0176-MS1) - Continued

Source: 1902523-01

Prepared: 7/8/2019 Analyzed: 7/8/2019

Dibromomethane	19.8900	0.50	0.19	20.0000	ND	99.4	78 - 109			
Dichlorodifluoromethane	27.7300	0.50	0.05	20.0000	ND	139	64 - 144			
Ethylbenzene	37.1100	0.50	0.13	40.0000	ND	92.8	90 - 116			
Hexachlorobutadiene	19.5500	0.50	0.15	20.0000	ND	97.8	81 - 129			
Isopropylbenzene	21.1400	0.50	0.10	20.0000	ND	106	83 - 129			
m,p-Xylene	39.3700	1.0	0.19	40.0000	ND	98.4	88 - 124			
Methylene chloride	21.4700	1.0	0.71	20.0000	ND	107	76 - 137			
n-Butylbenzene	20.1500	0.50	0.11	20.0000	ND	101	83 - 129			
n-Propylbenzene	19.7600	0.50	0.10	20.0000	ND	98.8	85 - 124			
Naphthalene	18.5000	0.50	0.41	20.0000	ND	92.5	67 - 113			
o-Xylene	37.4600	0.50	0.13	40.0000	ND	93.6	82 - 129			
sec-Butylbenzene	19.2700	0.50	0.09	20.0000	ND	96.4	86 - 127			
Styrene	19.3800	0.50	0.13	20.0000	ND	96.9	83 - 122			
tert-Butylbenzene	19.2100	0.50	0.09	20.0000	ND	96.0	84 - 130			
Tetrachloroethene	29.5900	0.50	0.10	20.0000	11.8800	88.6	87 - 123			
Toluene	38.6400	0.50	0.12	40.0000	ND	96.6	84 - 115			
trans-1,2-Dichloroethene	22.4000	0.50	0.09	20.0000	ND	112	60 - 148			
Trichloroethene	24.2400	0.50	0.10	20.0000	ND	121	79 - 129			
Trichlorofluoromethane	20.4200	0.50	0.10	20.0000	ND	102	68 - 162			
Vinyl chloride	22.9400	0.50	0.05	20.0000	ND	115	73 - 128			

Surrogate: 1,2-Dichloroethane-d4	26.01			25.0000		104	57 - 152			
Surrogate: 4-Bromofluorobenzene	26.61			25.0000		106	62 - 134			
Surrogate: Dibromofluoromethane	27.79			25.0000		111	56 - 167			
Surrogate: Toluene-d8	27.11			25.0000		108	33 - 170			

Matrix Spike Dup (B9G0176-MSD1)

Source: 1902523-01

Prepared: 7/8/2019 Analyzed: 7/8/2019

1,1,1,2-Tetrachloroethane	22.4000	0.50	0.11	20.0000	ND	112	80 - 137	9.59	20	
1,1,1-Trichloroethane	21.7700	0.50	0.07	20.0000	ND	109	75 - 148	1.32	20	
1,1,2,2-Tetrachloroethane	21.8000	0.50	0.36	20.0000	ND	109	64 - 118	7.18	20	
1,1,2-Trichloroethane	21.4700	0.50	0.25	20.0000	ND	107	77 - 113	4.72	20	
1,1-Dichloroethane	22.2900	0.50	0.09	20.0000	ND	111	72 - 131	4.40	20	
1,1-Dichloroethene	21.5400	0.50	0.13	20.0000	ND	108	75 - 132	3.35	20	
1,1-Dichloropropene	21.9500	0.50	0.13	20.0000	ND	110	84 - 141	2.72	20	
1,2,3-Trichloropropane	20.1700	0.50	0.39	20.0000	ND	101	65 - 111	11.5	20	
1,2,3-Trichlorobenzene	20.2900	0.50	0.18	20.0000	ND	101	79 - 117	5.83	20	
1,2,4-Trichlorobenzene	20.8600	0.50	0.16	20.0000	ND	104	78 - 121	1.59	20	
1,2,4-Trimethylbenzene	19.9100	0.50	0.14	20.0000	ND	99.6	83 - 125	2.54	20	
1,2-Dibromo-3-chloropropane	19.4300	0.50	0.41	20.0000	ND	97.2	54 - 116	2.40	20	
1,2-Dibromoethane	20.9600	0.50	0.24	20.0000	ND	105	79 - 118	5.19	20	
1,2-Dichlorobenzene	19.5400	0.50	0.20	20.0000	ND	97.7	82 - 115	4.50	20	
1,2-Dichloroethane	22.0700	0.50	0.20	20.0000	ND	110	76 - 115	6.74	20	



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0176 - MSVOA_W (continued)

Matrix Spike Dup (B9G0176-MSD1) - Continued

Source: 1902523-01

Prepared: 7/8/2019 Analyzed: 7/8/2019

1,2-Dichloropropane	21.4700	0.50	0.15	20.0000	ND	107	74 - 113	4.14	20	
1,3,5-Trimethylbenzene	19.7500	0.50	0.13	20.0000	ND	98.8	83 - 126	1.99	20	
1,3-Dichlorobenzene	20.9400	0.50	0.16	20.0000	ND	105	84 - 118	1.39	20	
1,3-Dichloropropane	21.4600	0.50	0.21	20.0000	ND	107	72 - 116	11.3	20	
1,4-Dichlorobenzene	20.6600	0.50	0.17	20.0000	ND	103	83 - 112	1.12	20	
2,2-Dichloropropane	24.5200	0.50	0.38	20.0000	ND	123	72 - 150	5.70	20	
2-Chlorotoluene	20.9100	0.50	0.11	20.0000	ND	105	82 - 120	0.667	20	
4-Chlorotoluene	19.9300	0.50	0.12	20.0000	ND	99.6	81 - 121	1.01	20	
4-Isopropyltoluene	20.2800	0.50	0.11	20.0000	ND	101	86 - 124	3.10	20	
Benzene	40.7100	0.50	0.13	40.0000	ND	102	81 - 118	2.99	20	
Bromobenzene	18.8300	0.50	0.21	20.0000	ND	94.2	82 - 117	1.79	20	
Bromodichloromethane	21.0200	0.50	0.14	20.0000	ND	105	80 - 122	5.27	20	
Bromoform	22.3000	0.50	0.20	20.0000	ND	112	53 - 145	14.9	20	
Bromomethane	28.1200	0.50	0.17	20.0000	ND	141	30 - 204	6.05	20	
Carbon tetrachloride	21.5200	0.50	0.09	20.0000	ND	108	77 - 157	3.11	20	
Chlorobenzene	19.3900	0.50	0.13	20.0000	ND	97.0	86 - 113	2.98	20	
Chloroethane	25.0300	0.50	0.15	20.0000	ND	125	70 - 160	3.15	20	
Chloroform	21.7100	0.50	0.11	20.0000	ND	109	66 - 136	1.77	20	
Chloromethane	25.9300	0.50	0.12	20.0000	ND	130	52 - 138	0.807	20	
cis-1,2-Dichloroethene	22.7300	0.50	0.14	20.0000	1.64000	105	71 - 128	2.40	20	
cis-1,3-Dichloropropene	23.8500	0.50	0.13	20.0000	ND	119	71 - 123	7.08	20	
Dibromochloromethane	20.5400	0.50	0.16	20.0000	ND	103	78 - 140	6.69	20	
Dibromomethane	22.2700	0.50	0.19	20.0000	ND	111	78 - 109	11.3	20	M1
Dichlorodifluoromethane	28.8400	0.50	0.05	20.0000	ND	144	64 - 144	3.92	20	M1
Ethylbenzene	39.1400	0.50	0.13	40.0000	ND	97.8	90 - 116	5.32	20	
Hexachlorobutadiene	19.6900	0.50	0.15	20.0000	ND	98.4	81 - 129	0.714	20	
Isopropylbenzene	21.0900	0.50	0.10	20.0000	ND	105	83 - 129	0.237	20	
m,p-Xylene	41.1700	1.0	0.19	40.0000	ND	103	88 - 124	4.47	20	
Methylene chloride	21.9400	1.0	0.71	20.0000	ND	110	76 - 137	2.17	20	
n-Butylbenzene	20.4800	0.50	0.11	20.0000	ND	102	83 - 129	1.62	20	
n-Propylbenzene	20.2700	0.50	0.10	20.0000	ND	101	85 - 124	2.55	20	
Naphthalene	20.3000	0.50	0.41	20.0000	ND	102	67 - 113	9.28	20	
o-Xylene	40.0700	0.50	0.13	40.0000	ND	100	82 - 129	6.73	20	
sec-Butylbenzene	19.8900	0.50	0.09	20.0000	ND	99.4	86 - 127	3.17	20	
Styrene	20.8700	0.50	0.13	20.0000	ND	104	83 - 122	7.40	20	
tert-Butylbenzene	19.6100	0.50	0.09	20.0000	ND	98.0	84 - 130	2.06	20	
Tetrachloroethene	31.5000	0.50	0.10	20.0000	11.8800	98.1	87 - 123	6.25	20	
Toluene	40.3400	0.50	0.12	40.0000	ND	101	84 - 115	4.30	20	
trans-1,2-Dichloroethene	29.3500	0.50	0.09	20.0000	ND	147	60 - 148	26.9	20	R
Trichloroethene	24.0000	0.50	0.10	20.0000	ND	120	79 - 129	0.995	20	
Trichlorofluoromethane	21.4900	0.50	0.10	20.0000	ND	107	68 - 162	5.11	20	
Vinyl chloride	23.5000	0.50	0.05	20.0000	ND	118	73 - 128	2.41	20	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0176 - MSVOA_W (continued)

Matrix Spike Dup (B9G0176-MSD1) - Continued

Source: 1902523-01

Prepared: 7/8/2019 Analyzed: 7/8/2019

Surrogate: 1,2-Dichloroethane-d4	26.84	25.0000	107	57 - 152
Surrogate: 4-Bromofluorobenzene	27.15	25.0000	109	62 - 134
Surrogate: Dibromofluoromethan	27.56	25.0000	110	56 - 167
Surrogate: Toluene-d8	26.94	25.0000	108	33 - 170



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0239 - MSSEMI_W

Blank (B9G0239-BLK1)

Prepared: 7/10/2019 Analyzed: 7/10/2019

1,4-Dioxane	ND	2.0	0.84						
Surrogate: 1,2-Dichlorobenzene-d	72.17			100.000		72.2	34 - 188		
Surrogate: 2-Fluorobiphenyl	80.69			100.000		80.7	39 - 108		
Surrogate: 4-Terphenyl-d14	94.13			100.000		94.1	71 - 131		
Surrogate: Nitrobenzene-d5	77.06			100.000		77.1	32 - 106		

LCS (B9G0239-BS1)

Prepared: 7/10/2019 Analyzed: 7/10/2019

1,4-Dioxane	96.1100	2.0	0.84	100.000		96.1	40 - 159		
Surrogate: 1,2-Dichlorobenzene-d	71.92			100.000		71.9	34 - 188		
Surrogate: 2-Fluorobiphenyl	86.43			100.000		86.4	39 - 108		
Surrogate: 4-Terphenyl-d14	94.88			100.000		94.9	71 - 131		
Surrogate: Nitrobenzene-d5	81.38			100.000		81.4	32 - 106		

LCS Dup (B9G0239-BS1)

Prepared: 7/10/2019 Analyzed: 7/10/2019

1,4-Dioxane	102.500	2.0	0.84	100.000		102	40 - 159	6.43	20
Surrogate: 1,2-Dichlorobenzene-d	72.79			100.000		72.8	34 - 188		
Surrogate: 2-Fluorobiphenyl	88.47			100.000		88.5	39 - 108		
Surrogate: 4-Terphenyl-d14	95.40			100.000		95.4	71 - 131		
Surrogate: Nitrobenzene-d5	82.66			100.000		82.7	32 - 106		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0241 - MSSEMI_W

Blank (B9G0241-BLK1)

Prepared: 7/10/2019 Analyzed: 7/11/2019

1,4-Dioxane	ND	0.20	0.05						
Surrogate: 1,2-Dichlorobenzene-d	0.7370			1.00000		73.7	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.7303			1.00000		73.0	20 - 131		
Surrogate: 4-Terphenyl-d14	1.054			1.00000		105	24 - 135		
Surrogate: Nitrobenzene-d5	0.6767			1.00000		67.7	6 - 124		

LCS (B9G0241-BS1)

Prepared: 7/10/2019 Analyzed: 7/11/2019

1,4-Dioxane	1.29030	0.20	0.05	1.00000		129	64 - 129		
Surrogate: 1,2-Dichlorobenzene-d	0.8649			1.00000		86.5	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.9373			1.00000		93.7	20 - 131		
Surrogate: 4-Terphenyl-d14	1.158			1.00000		116	24 - 135		
Surrogate: Nitrobenzene-d5	0.8421			1.00000		84.2	6 - 124		

LCS Dup (B9G0241-BS1)

Prepared: 7/10/2019 Analyzed: 7/11/2019

1,4-Dioxane	1.24455	0.20	0.05	1.00000		124	64 - 129	3.61	20
Surrogate: 1,2-Dichlorobenzene-d	0.8225			1.00000		82.2	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.8512			1.00000		85.1	20 - 131		
Surrogate: 4-Terphenyl-d14	1.113			1.00000		111	24 - 135		
Surrogate: Nitrobenzene-d5	0.7913			1.00000		79.1	6 - 124		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 07/22/2019

Notes and Definitions

R	RPD value outside acceptance criteria. Calculation is based on raw values.
M1	Matrix spike recovery outside of acceptance limit. The analytical batch was validated by the laboratory control sample.
L4	Laboratory Control Sample outside of control limit but within Marginal Exceedance (ME) limit.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

Laboratory Report

July 19, 2019

Advanced Technology Laboratories
PO Box 92797
Long Beach, CA 90809-2797

Attn: Rachelle Arada

Element Job No: 232524
Purchase Order: COD - CC
Project Name: 1902564 / Groundwater
Samples Received: 2
Date Received: 07-05-19

Analysis	Page

Bromate by SOP 5600, Rev 3	2



Michael Shelton
Technical Director



Ishika Lokuge
Senior Chemist

Bromate by SOP 5600, Rev 3
Ion Chromatography-Tandem Mass Spectrometry

Sample preparation: An aliquot of sample was spiked with internal standard (bromate-¹⁸O₃), and diluted with water. The sample solutions were analyzed using IC-MS/MS.

Parts Per Billion (µg/L)

<u>Sample ID</u>	<u>Result</u>
ATL Lab#: 1902564-04 / POX	ND
ATL Lab#: 1902564-06 / INF	ND
Method Blank	ND
Detection Limit	0.5

Date Analyzed: 07-18-19

Quality Control Summary

Sample ID: ATL Lab#: 1902564-04 / POX

<u>Analyte</u>	<u>Sample Result</u>	<u>Spike Conc</u>	<u>Spike Result</u>	<u>Spike % Rec</u>	<u>Spike Duplicate</u>	<u>Duplicate % Rec</u>	<u>RPD</u>
Bromate	ND	10.0	11.1	111	10.3	103	8
QC Guidelines				80-120		80-120	NMT 15

 ADVANCED TECHNOLOGY
 LABORATORIES

SUBCONTRACT ORDER

Work Order: 1902564

SENDING LABORATORY:

Advanced Technology Laboratories
 3275 Walnut Avenue
 Signal Hill, CA 90755
 Phone: 562.989.4045
 Fax: 562.989.6348
 Project Manager: Rachelle Arada
 (Rachelle.Arada@atlglobal.com)

RECEIVING LABORATORY:

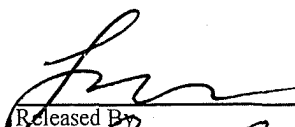
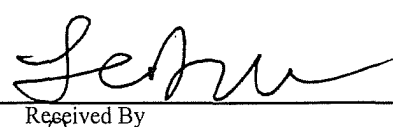
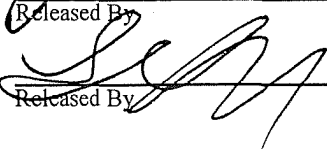
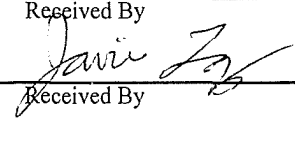
Element Materials Technology
 9240 Santa Fe Springs Road
 Santa Fe Springs, CA 90670
 Phone: (562) 948-2225
 Fax: (562) 948-5850
 PO#: SC13861- STANDARD TAT *OK*

Sampler: Ross Horton

IMPORTANT : Please include Work Order # and PO # in your invoice.

Analysis	Due	Expires	Sampled	Comments
ATL Lab#: 1902564-04 ⁽¹⁾ / POX Bromate_ICMS/MS_SUB [Bromate by IC-MS/MS] 1-Poly Unpres - 125mL	07/19/19 17:00	07/31/19 10:15	07/03/19 10:15	
ATL Lab#: 1902564-06 ⁽²⁾ / INF Bromate_ICMS/MS_SUB [Bromate by IC-MS/MS] 1-Poly Unpres - 125mL	07/19/19 17:00	07/31/19 10:35	07/03/19 10:35	

07-05-19 AND
 Also has: (1) H
 (2) F

 Released By	7/5/19 9:37 Date	 Received By	7-5-19 9:37 Date
 Released By	7-5-19 11:13 Date	 Received By	07-05-19 11:15AM Date

PROJECT: Raytheon Main GETS Monthly Sample

TASK NO.: 532.15

Project Manager Steve Netto
QA Manager Ross Horton
Phone 858.455.6500
Fax 858.455.6533

Sampled By: <u>Ruben Sanchez</u>				SAMPLE COLLECTION				MATRIX		PRESERVATION		CONTAINERS				ANALYSIS REQUESTED										Expected Concentration Range (ppb) for VOA's				SPECIAL HANDLING				REMARKS			
LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Ice	40-ml VOA	125 mL Poly	250 mL Poly	250 mL Glass	1 L Poly	1L Amber	VOCs by EPA 8260B	Bromate by EPA 317	Bromide by EPA 300	Alkalinity by SM2320B	Total Organic Carbon by SM5310B	Total Suspended Solids by SM2540D	UV Absorption EPA 415.3 @254 nm	1,4-Dioxane by EPA 8270C MOD	1,4-Dioxane by EPA 8270 SIM	0 - 10	10 - 100	100 - 1,000	>1,000	24 hr TAT	48 Hour TAT	5 Day TAT	Level IV Data Validation Requested	MS/MSD Requested				
1902564-01	TB-070319	7/3/2019	8:00		X	X			X	2						X																					
	CEFF	7/3/2019	10:00	X	X				X	3					1	X								X	X												
	CBT	7/3/2019	10:10	X	X				X	3					1	X							X	X													
	POX	7/3/2019	10:15	X	X			X	X	5	1	1			1	X	X		X	X			X	X													
	PF	7/3/2019	10:25	X				X	X	2		1	1	1					X	X	X	X															
	INF	7/3/2019	10:35	X	X				X	3	2				1	X	X	X					X				X										
	EW-02	7/3/2019	11:15	X	X				X	3	1				1	X	X	X					X			X											
	MW-29	7/3/2019	11:30	X	X				X	3	1				1	X	X	X					X			X											
Total number of containers per analysis:										24	5	2	1	1	6	Total No. of Containers: <u>39</u>																					

Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
<u>[Signature]</u> HHA	<u>7-3-19</u> <u>11:39</u>	<u>[Signature]</u> HHA	<u>7-3-19</u> <u>11:39</u>
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
<u>[Signature]</u> HHA	<u>7-3-19</u> <u>12:53</u>	<u>[Signature]</u> ATL	<u>7-3-19</u> <u>12:53</u>

- ☐ No. of containers correct
☐ Received in good condition
☐ Custody seals secure
☐ Conforms to COC document

Send Results to:
Steve Netto & Ross Horton
 9171 Towne Centre Drive
 Suite 375
 San Diego, CA 92122
 Ph: 858.455.6500
snetto@hargis.com
rhorton@hargis.com

Instructions

1. Fill out form completely and sign only after verified for completeness

Complete in ballpoint pen. Draw one line through error, initial and date correction
 Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✗
 Note applicable preservatives, special instructions, and deviations from typical environmental samples.
 Consult project QA documents for specific instructions.

3.2 Temperature on receipt
ICE



July 25, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1902740

Client Reference : Raytheon Main GETS Mid Month Sample, 532.15

Enclosed are the results for sample(s) received on July 18, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read "Edgar Caballero", with a small "En" written below the main signature.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-071819	1902740-01	Lab prepared water	7/18/19 8:00	7/18/19 15:54
CEFF	1902740-02	Groundwater	7/18/19 10:22	7/18/19 15:54
CBT	1902740-03	Groundwater	7/18/19 10:25	7/18/19 15:54
POX	1902740-04	Groundwater	7/18/19 10:30	7/18/19 15:54
INF	1902740-05	Groundwater	7/18/19 10:35	7/18/19 15:54
EW-02	1902740-06	Groundwater	7/18/19 11:20	7/18/19 15:54
MW-29	1902740-07	Groundwater	7/18/19 11:35	7/18/19 15:54



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID TB-071819

Lab ID: 1902740-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,1,1-Trichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,1,2-Trichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,1-Dichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,1-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,1-Dichloropropene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,2,3-Trichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,2,3-Trichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,2,4-Trichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,2,4-Trimethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,2-Dibromoethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,2-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,2-Dichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,2-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,3,5-Trimethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,3-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,3-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
1,4-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
2,2-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
2-Chlorotoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
4-Chlorotoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
4-Isopropyltoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Benzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Bromobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Bromodichloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Bromoform	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Bromomethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Carbon tetrachloride	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Chlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Chloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Chloroform	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Chloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
cis-1,2-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
cis-1,3-Dichloropropene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Dibromochloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID TB-071819

Lab ID: 1902740-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Dichlorodifluoromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Ethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Hexachlorobutadiene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Isopropylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
m,p-Xylene	ND	1.0	1	B9G0632	07/24/2019	07/24/19 10:39	
Methylene chloride	ND	1.0	1	B9G0632	07/24/2019	07/24/19 10:39	
n-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
n-Propylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Naphthalene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
o-Xylene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
sec-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Styrene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
tert-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Tetrachloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Toluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
trans-1,2-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Trichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Trichlorofluoromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Vinyl chloride	ND	0.50	1	B9G0632	07/24/2019	07/24/19 10:39	
Surrogate: 1,2-Dichloroethane-d4	93.7 %	57 - 152		B9G0632	07/24/2019	07/24/19 10:39	
Surrogate: 4-Bromofluorobenzene	91.5 %	62 - 134		B9G0632	07/24/2019	07/24/19 10:39	
Surrogate: Dibromofluoromethane	99.4 %	56 - 167		B9G0632	07/24/2019	07/24/19 10:39	
Surrogate: Toluene-d8	103 %	33 - 170		B9G0632	07/24/2019	07/24/19 10:39	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID CEFF

Lab ID: 1902740-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,1,1-Trichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,1,2-Trichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,1-Dichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,1-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,1-Dichloropropene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,2,3-Trichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,2,3-Trichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,2,4-Trichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,2,4-Trimethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,2-Dibromoethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,2-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,2-Dichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,2-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,3,5-Trimethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,3-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,3-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
1,4-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
2,2-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
2-Chlorotoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
4-Chlorotoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
4-Isopropyltoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Benzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Bromobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Bromodichloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Bromoform	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Bromomethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Carbon tetrachloride	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Chlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Chloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Chloroform	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Chloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
cis-1,2-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
cis-1,3-Dichloropropene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Dibromochloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID CEFF

Lab ID: 1902740-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Dichlorodifluoromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Ethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Hexachlorobutadiene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Isopropylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
m,p-Xylene	ND	1.0	1	B9G0632	07/24/2019	07/24/19 11:01	
Methylene chloride	ND	1.0	1	B9G0632	07/24/2019	07/24/19 11:01	
n-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
n-Propylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Naphthalene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
o-Xylene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
sec-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Styrene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
tert-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Tetrachloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Toluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
trans-1,2-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Trichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Trichlorofluoromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Vinyl chloride	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:01	
Surrogate: 1,2-Dichloroethane-d4	112 %	57 - 152		B9G0632	07/24/2019	07/24/19 11:01	
Surrogate: 4-Bromofluorobenzene	97.6 %	62 - 134		B9G0632	07/24/2019	07/24/19 11:01	
Surrogate: Dibromofluoromethane	106 %	56 - 167		B9G0632	07/24/2019	07/24/19 11:01	
Surrogate: Toluene-d8	106 %	33 - 170		B9G0632	07/24/2019	07/24/19 11:01	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID CEFF

Lab ID: 1902740-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9G0664	07/23/2019	07/24/19 17:31	
Surrogate: 1,2-Dichlorobenzene-d4	73.3 %	22 - 117		B9G0664	07/23/2019	07/24/19 17:31	
Surrogate: 2-Fluorobiphenyl	80.3 %	20 - 131		B9G0664	07/23/2019	07/24/19 17:31	
Surrogate: 4-Terphenyl-d14	82.3 %	24 - 135		B9G0664	07/23/2019	07/24/19 17:31	
Surrogate: Nitrobenzene-d5	70.9 %	6 - 124		B9G0664	07/23/2019	07/24/19 17:31	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID CBT

Lab ID: 1902740-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,1,1-Trichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,1,2-Trichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,1-Dichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,1-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,1-Dichloropropene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,2,3-Trichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,2,3-Trichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,2,4-Trichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,2,4-Trimethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,2-Dibromoethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,2-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,2-Dichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,2-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,3,5-Trimethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,3-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,3-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
1,4-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
2,2-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
2-Chlorotoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
4-Chlorotoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
4-Isopropyltoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Benzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Bromobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Bromodichloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Bromoform	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Bromomethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Carbon tetrachloride	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Chlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Chloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Chloroform	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Chloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
cis-1,2-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
cis-1,3-Dichloropropene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Dibromochloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID CBT

Lab ID: 1902740-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Dichlorodifluoromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Ethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Hexachlorobutadiene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Isopropylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
m,p-Xylene	ND	1.0	1	B9G0632	07/24/2019	07/24/19 11:24	
Methylene chloride	ND	1.0	1	B9G0632	07/24/2019	07/24/19 11:24	
n-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
n-Propylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Naphthalene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
o-Xylene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
sec-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Styrene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
tert-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Tetrachloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Toluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
trans-1,2-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Trichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Trichlorofluoromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Vinyl chloride	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:24	
Surrogate: 1,2-Dichloroethane-d4	108 %	57 - 152		B9G0632	07/24/2019	07/24/19 11:24	
Surrogate: 4-Bromofluorobenzene	92.2 %	62 - 134		B9G0632	07/24/2019	07/24/19 11:24	
Surrogate: Dibromofluoromethane	103 %	56 - 167		B9G0632	07/24/2019	07/24/19 11:24	
Surrogate: Toluene-d8	101 %	33 - 170		B9G0632	07/24/2019	07/24/19 11:24	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID CBT

Lab ID: 1902740-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9G0664	07/23/2019	07/24/19 18:00	
Surrogate: 1,2-Dichlorobenzene-d4	70.8 %	22 - 117		B9G0664	07/23/2019	07/24/19 18:00	
Surrogate: 2-Fluorobiphenyl	76.8 %	20 - 131		B9G0664	07/23/2019	07/24/19 18:00	
Surrogate: 4-Terphenyl-d14	68.3 %	24 - 135		B9G0664	07/23/2019	07/24/19 18:00	
Surrogate: Nitrobenzene-d5	67.3 %	6 - 124		B9G0664	07/23/2019	07/24/19 18:00	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID POX

Lab ID: 1902740-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,1,1-Trichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,1,2-Trichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,1-Dichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,1-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,1-Dichloropropene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,2,3-Trichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,2,3-Trichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,2,4-Trichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,2,4-Trimethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,2-Dibromoethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,2-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,2-Dichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,2-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,3,5-Trimethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,3-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,3-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
1,4-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
2,2-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
2-Chlorotoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
4-Chlorotoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
4-Isopropyltoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Benzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Bromobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Bromodichloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Bromoform	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Bromomethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Carbon tetrachloride	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Chlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Chloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Chloroform	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Chloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
cis-1,2-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
cis-1,3-Dichloropropene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Dibromochloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID POX

Lab ID: 1902740-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Dichlorodifluoromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Ethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Hexachlorobutadiene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Isopropylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
m,p-Xylene	ND	1.0	1	B9G0632	07/24/2019	07/24/19 11:47	
Methylene chloride	ND	1.0	1	B9G0632	07/24/2019	07/24/19 11:47	
n-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
n-Propylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Naphthalene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
o-Xylene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
sec-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Styrene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
tert-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Tetrachloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Toluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
trans-1,2-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Trichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Trichlorofluoromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Vinyl chloride	ND	0.50	1	B9G0632	07/24/2019	07/24/19 11:47	
Surrogate: 1,2-Dichloroethane-d4	112 %	57 - 152		B9G0632	07/24/2019	07/24/19 11:47	
Surrogate: 4-Bromofluorobenzene	99.6 %	62 - 134		B9G0632	07/24/2019	07/24/19 11:47	
Surrogate: Dibromofluoromethane	104 %	56 - 167		B9G0632	07/24/2019	07/24/19 11:47	
Surrogate: Toluene-d8	102 %	33 - 170		B9G0632	07/24/2019	07/24/19 11:47	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID POX

Lab ID: 1902740-04

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9G0664	07/23/2019	07/24/19 18:29	
Surrogate: 1,2-Dichlorobenzene-d4	82.2 %	22 - 117		B9G0664	07/23/2019	07/24/19 18:29	
Surrogate: 2-Fluorobiphenyl	85.4 %	20 - 131		B9G0664	07/23/2019	07/24/19 18:29	
Surrogate: 4-Terphenyl-d14	76.4 %	24 - 135		B9G0664	07/23/2019	07/24/19 18:29	
Surrogate: Nitrobenzene-d5	78.2 %	6 - 124		B9G0664	07/23/2019	07/24/19 18:29	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID INF

Lab ID: 1902740-05

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,1,1-Trichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,1,2-Trichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,1-Dichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,1-Dichloroethene	45	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,1-Dichloropropene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,2,3-Trichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,2,3-Trichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,2,4-Trichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,2,4-Trimethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,2-Dibromoethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,2-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,2-Dichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,2-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,3,5-Trimethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,3-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,3-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
1,4-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
2,2-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
2-Chlorotoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
4-Chlorotoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
4-Isopropyltoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Benzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Bromobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Bromodichloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Bromoform	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Bromomethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Carbon tetrachloride	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Chlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Chloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Chloroform	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Chloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
cis-1,2-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
cis-1,3-Dichloropropene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Dibromochloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID INF

Lab ID: 1902740-05

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Dichlorodifluoromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Ethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Hexachlorobutadiene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Isopropylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
m,p-Xylene	ND	1.0	1	B9G0632	07/24/2019	07/24/19 12:33	
Methylene chloride	ND	1.0	1	B9G0632	07/24/2019	07/24/19 12:33	
n-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
n-Propylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Naphthalene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
o-Xylene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
sec-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Styrene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
tert-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Tetrachloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Toluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
trans-1,2-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Trichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Trichlorofluoromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Vinyl chloride	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:33	
Surrogate: 1,2-Dichloroethane-d4	111 %	57 - 152		B9G0632	07/24/2019	07/24/19 12:33	
Surrogate: 4-Bromofluorobenzene	96.6 %	62 - 134		B9G0632	07/24/2019	07/24/19 12:33	
Surrogate: Dibromofluoromethane	103 %	56 - 167		B9G0632	07/24/2019	07/24/19 12:33	
Surrogate: Toluene-d8	101 %	33 - 170		B9G0632	07/24/2019	07/24/19 12:33	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID INF

Lab ID: 1902740-05

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	30	2.0	1	B9G0637	07/23/2019	07/24/19 16:15	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>67.5 %</i>	<i>34 - 188</i>		B9G0637	07/23/2019	07/24/19 16:15	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>86.0 %</i>	<i>39 - 108</i>		B9G0637	07/23/2019	07/24/19 16:15	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>178 %</i>	<i>71 - 131</i>		B9G0637	07/23/2019	07/24/19 16:15	S12
<i>Surrogate: Nitrobenzene-d5</i>	<i>70.2 %</i>	<i>32 - 106</i>		B9G0637	07/23/2019	07/24/19 16:15	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID EW-02

Lab ID: 1902740-06

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,1,1-Trichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,1,2-Trichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,1-Dichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,1-Dichloroethene	12	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,1-Dichloropropene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,2,3-Trichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,2,3-Trichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,2,4-Trichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,2,4-Trimethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,2-Dibromoethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,2-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,2-Dichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,2-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,3,5-Trimethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,3-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,3-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
1,4-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
2,2-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
2-Chlorotoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
4-Chlorotoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
4-Isopropyltoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Benzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Bromobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Bromodichloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Bromoform	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Bromomethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Carbon tetrachloride	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Chlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Chloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Chloroform	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Chloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
cis-1,2-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
cis-1,3-Dichloropropene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Dibromochloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID EW-02

Lab ID: 1902740-06

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Dichlorodifluoromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Ethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Hexachlorobutadiene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Isopropylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
m,p-Xylene	ND	1.0	1	B9G0632	07/24/2019	07/24/19 12:10	
Methylene chloride	ND	1.0	1	B9G0632	07/24/2019	07/24/19 12:10	
n-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
n-Propylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Naphthalene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
o-Xylene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
sec-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Styrene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
tert-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Tetrachloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Toluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
trans-1,2-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Trichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Trichlorofluoromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Vinyl chloride	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:10	
Surrogate: 1,2-Dichloroethane-d4	107 %	57 - 152		B9G0632	07/24/2019	07/24/19 12:10	
Surrogate: 4-Bromofluorobenzene	100 %	62 - 134		B9G0632	07/24/2019	07/24/19 12:10	
Surrogate: Dibromofluoromethane	103 %	56 - 167		B9G0632	07/24/2019	07/24/19 12:10	
Surrogate: Toluene-d8	102 %	33 - 170		B9G0632	07/24/2019	07/24/19 12:10	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID EW-02

Lab ID: 1902740-06

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	9.4	2.0	1	B9G0637	07/23/2019	07/24/19 16:42	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>75.4 %</i>	<i>34 - 188</i>		<i>B9G0637</i>	<i>07/23/2019</i>	<i>07/24/19 16:42</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>98.9 %</i>	<i>39 - 108</i>		<i>B9G0637</i>	<i>07/23/2019</i>	<i>07/24/19 16:42</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>191 %</i>	<i>71 - 131</i>		<i>B9G0637</i>	<i>07/23/2019</i>	<i>07/24/19 16:42</i>	S12
<i>Surrogate: Nitrobenzene-d5</i>	<i>80.2 %</i>	<i>32 - 106</i>		<i>B9G0637</i>	<i>07/23/2019</i>	<i>07/24/19 16:42</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID MW-29

Lab ID: 1902740-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,1,1-Trichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,1,2-Trichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,1-Dichloroethane	1.4	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,1-Dichloroethene	100	2.5	5	B9G0632	07/24/2019	07/24/19 17:54	
1,1-Dichloropropene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,2,3-Trichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,2,3-Trichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,2,4-Trichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,2,4-Trimethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,2-Dibromoethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,2-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,2-Dichloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,2-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,3,5-Trimethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,3-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,3-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
1,4-Dichlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
2,2-Dichloropropane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
2-Chlorotoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
4-Chlorotoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
4-Isopropyltoluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Benzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Bromobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Bromodichloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Bromoform	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Bromomethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Carbon tetrachloride	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Chlorobenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Chloroethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Chloroform	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Chloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
cis-1,2-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
cis-1,3-Dichloropropene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Dibromochloromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Client Sample ID MW-29

Lab ID: 1902740-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Dichlorodifluoromethane	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Ethylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Hexachlorobutadiene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Isopropylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
m,p-Xylene	ND	1.0	1	B9G0632	07/24/2019	07/24/19 12:56	
Methylene chloride	ND	1.0	1	B9G0632	07/24/2019	07/24/19 12:56	
n-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
n-Propylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Naphthalene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
o-Xylene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
sec-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Styrene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
tert-Butylbenzene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Tetrachloroethene	0.54	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Toluene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
trans-1,2-Dichloroethene	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Trichloroethene	2.1	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Trichlorofluoromethane	0.82	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	
Vinyl chloride	ND	0.50	1	B9G0632	07/24/2019	07/24/19 12:56	

Surrogate: 1,2-Dichloroethane-d4	106 %	57 - 152	B9G0632	07/24/2019	07/24/19 17:54
Surrogate: 1,2-Dichloroethane-d4	106 %	57 - 152	B9G0632	07/24/2019	07/24/19 12:56
Surrogate: 4-Bromofluorobenzene	96.6 %	62 - 134	B9G0632	07/24/2019	07/24/19 17:54
Surrogate: 4-Bromofluorobenzene	98.4 %	62 - 134	B9G0632	07/24/2019	07/24/19 12:56
Surrogate: Dibromofluoromethane	104 %	56 - 167	B9G0632	07/24/2019	07/24/19 17:54
Surrogate: Dibromofluoromethane	104 %	56 - 167	B9G0632	07/24/2019	07/24/19 12:56
Surrogate: Toluene-d8	102 %	33 - 170	B9G0632	07/24/2019	07/24/19 12:56
Surrogate: Toluene-d8	99.9 %	33 - 170	B9G0632	07/24/2019	07/24/19 17:54



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Client Sample ID MW-29

Lab ID: 1902740-07

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: PT

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	110	2.0	1	B9G0637	07/23/2019	07/24/19 17:09	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>67.8 %</i>	<i>34 - 188</i>		B9G0637	07/23/2019	07/24/19 17:09	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>89.4 %</i>	<i>39 - 108</i>		B9G0637	07/23/2019	07/24/19 17:09	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>173 %</i>	<i>71 - 131</i>		B9G0637	07/23/2019	07/24/19 17:09	S12
<i>Surrogate: Nitrobenzene-d5</i>	<i>70.3 %</i>	<i>32 - 106</i>		B9G0637	07/23/2019	07/24/19 17:09	



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QUALITY CONTROL SECTION

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0632 - MSVOA_W

Blank (B9G0632-BLK1)

Prepared: 7/24/2019 Analyzed: 7/24/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,1,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0632 - MSVOA_W (continued)

Blank (B9G0632-BLK1) - Continued

Prepared: 7/24/2019 Analyzed: 7/24/2019

Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15
Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	24.74		25.0000	99.0	57 - 152
Surrogate: 4-Bromofluorobenzene	23.76		25.0000	95.0	62 - 134
Surrogate: Dibromofluoromethane	25.32		25.0000	101	56 - 167
Surrogate: Toluene-d8	25.19		25.0000	101	33 - 170

LCS (B9G0632-BS1)

Prepared: 7/24/2019 Analyzed: 7/24/2019

1,1,1,2-Tetrachloroethane	18.6100	0.50	0.11	20.0000	93.0	80 - 137
1,1,1-Trichloroethane	17.5200	0.50	0.07	20.0000	87.6	75 - 148
1,1,2,2-Tetrachloroethane	16.3900	0.50	0.36	20.0000	82.0	64 - 118
1,1,2-Trichloroethane	16.7300	0.50	0.25	20.0000	83.6	77 - 113
1,1-Dichloroethane	17.8900	0.50	0.09	20.0000	89.4	72 - 131
1,1-Dichloroethene	18.0300	0.50	0.13	20.0000	90.2	75 - 132
1,1-Dichloropropene	19.9900	0.50	0.13	20.0000	100	84 - 141
1,2,3-Trichloropropane	17.7700	0.50	0.39	20.0000	88.8	65 - 111
1,2,3-Trichlorobenzene	17.7300	0.50	0.18	20.0000	88.6	79 - 117
1,2,4-Trichlorobenzene	18.8800	0.50	0.16	20.0000	94.4	78 - 121
1,2,4-Trimethylbenzene	18.1800	0.50	0.14	20.0000	90.9	83 - 125
1,2-Dibromo-3-chloropropane	17.1900	0.50	0.41	20.0000	86.0	54 - 116
1,2-Dibromoethane	18.0900	0.50	0.24	20.0000	90.4	79 - 118
1,2-Dichlorobenzene	17.5700	0.50	0.20	20.0000	87.8	82 - 115
1,2-Dichloroethane	18.1900	0.50	0.20	20.0000	91.0	76 - 115
1,2-Dichloropropane	17.7000	0.50	0.15	20.0000	88.5	74 - 113
1,3,5-Trimethylbenzene	18.5700	0.50	0.13	20.0000	92.8	83 - 126



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Reported : 07/25/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0632 - MSVOA_W (continued)

LCS (B9G0632-BS1) - Continued

Prepared: 7/24/2019 Analyzed: 7/24/2019

1,3-Dichlorobenzene	18.1400	0.50	0.16	20.0000		90.7	84 - 118		
1,3-Dichloropropane	17.1000	0.50	0.21	20.0000		85.5	72 - 116		
1,4-Dichlorobenzene	17.0700	0.50	0.17	20.0000		85.4	83 - 112		
2,2-Dichloropropane	19.7700	0.50	0.38	20.0000		98.8	72 - 150		
2-Chlorotoluene	17.8300	0.50	0.11	20.0000		89.2	82 - 120		
4-Chlorotoluene	18.3400	0.50	0.12	20.0000		91.7	81 - 121		
4-Isopropyltoluene	18.5100	0.50	0.11	20.0000		92.6	86 - 124		
Benzene	37.5000	0.50	0.13	40.0000		93.8	81 - 118		
Bromobenzene	17.7300	0.50	0.21	20.0000		88.6	82 - 117		
Bromodichloromethane	17.5000	0.50	0.14	20.0000		87.5	80 - 122		
Bromoform	18.8300	0.50	0.20	20.0000		94.2	53 - 145		
Bromomethane	14.1600	0.50	0.17	20.0000		70.8	30 - 204		
Carbon tetrachloride	19.0900	0.50	0.09	20.0000		95.4	77 - 157		
Chlorobenzene	17.5800	0.50	0.13	20.0000		87.9	86 - 113		
Chloroethane	18.6200	0.50	0.15	20.0000		93.1	70 - 160		
Chloroform	17.9800	0.50	0.11	20.0000		89.9	66 - 136		
Chloromethane	21.5600	0.50	0.12	20.0000		108	52 - 138		
cis-1,2-Dichloroethene	17.1300	0.50	0.14	20.0000		85.6	71 - 128		
cis-1,3-Dichloropropene	19.3900	0.50	0.13	20.0000		97.0	71 - 123		
Dibromochloromethane	18.0900	0.50	0.16	20.0000		90.4	78 - 140		
Dibromomethane	17.3000	0.50	0.19	20.0000		86.5	78 - 109		
Dichlorodifluoromethane	20.4600	0.50	0.05	20.0000		102	64 - 144		
Ethylbenzene	35.1200	0.50	0.13	40.0000		87.8	90 - 116		L4
Hexachlorobutadiene	18.2900	0.50	0.15	20.0000		91.4	81 - 129		
Isopropylbenzene	19.8400	0.50	0.10	20.0000		99.2	83 - 129		
m,p-Xylene	36.6700	1.0	0.19	40.0000		91.7	88 - 124		
Methylene chloride	15.6400	1.0	0.71	20.0000		78.2	76 - 137		
n-Butylbenzene	18.6900	0.50	0.11	20.0000		93.4	83 - 129		
n-Propylbenzene	18.2100	0.50	0.10	20.0000		91.0	85 - 124		
Naphthalene	16.0600	0.50	0.41	20.0000		80.3	67 - 113		
o-Xylene	37.0100	0.50	0.13	40.0000		92.5	82 - 129		
sec-Butylbenzene	18.4600	0.50	0.09	20.0000		92.3	86 - 127		
Styrene	19.4900	0.50	0.13	20.0000		97.4	83 - 122		
tert-Butylbenzene	18.6400	0.50	0.09	20.0000		93.2	84 - 130		
Tetrachloroethene	18.9000	0.50	0.10	20.0000		94.5	87 - 123		
Toluene	37.0000	0.50	0.12	40.0000		92.5	84 - 115		
trans-1,2-Dichloroethene	18.2300	0.50	0.09	20.0000		91.2	60 - 148		
Trichloroethene	18.4100	0.50	0.10	20.0000		92.0	79 - 129		
Trichlorofluoromethane	17.0900	0.50	0.10	20.0000		85.4	68 - 162		
Vinyl chloride	20.6700	0.50	0.05	20.0000		103	73 - 128		
Surrogate: 1,2-Dichloroethane-d4	23.43			25.0000		93.7	57 - 152		



Certificate of Analysis

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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0632 - MSVOA_W (continued)

LCS (B9G0632-BS1) - Continued

Prepared: 7/24/2019 Analyzed: 7/24/2019

Surrogate: 4-Bromofluorobenzene	25.44		25.0000		102	62 - 134			
Surrogate: Dibromofluoromethane	24.88		25.0000		99.5	56 - 167			
Surrogate: Toluene-d8	25.49		25.0000		102	33 - 170			

LCS Dup (B9G0632-BSD1)

Prepared: 7/24/2019 Analyzed: 7/24/2019

1,1,1,2-Tetrachloroethane	20.8600	0.50	0.11	20.0000	104	80 - 137	11.4	20	R
1,1,1-Trichloroethane	19.5300	0.50	0.07	20.0000	97.6	75 - 148	10.9	20	
1,1,2,2-Tetrachloroethane	20.5100	0.50	0.36	20.0000	103	64 - 118	22.3	20	
1,1,2-Trichloroethane	20.2400	0.50	0.25	20.0000	101	77 - 113	19.0	20	
1,1-Dichloroethane	21.0800	0.50	0.09	20.0000	105	72 - 131	16.4	20	
1,1-Dichloroethene	20.9500	0.50	0.13	20.0000	105	75 - 132	15.0	20	
1,1-Dichloropropene	22.6300	0.50	0.13	20.0000	113	84 - 141	12.4	20	
1,2,3-Trichloropropane	19.7900	0.50	0.39	20.0000	99.0	65 - 111	10.8	20	
1,2,3-Trichlorobenzene	20.5100	0.50	0.18	20.0000	103	79 - 117	14.5	20	
1,2,4-Trichlorobenzene	21.3100	0.50	0.16	20.0000	107	78 - 121	12.1	20	
1,2,4-Trimethylbenzene	20.6400	0.50	0.14	20.0000	103	83 - 125	12.7	20	R
1,2-Dibromo-3-chloropropane	17.8400	0.50	0.41	20.0000	89.2	54 - 116	3.71	20	
1,2-Dibromoethane	21.6900	0.50	0.24	20.0000	108	79 - 118	18.1	20	
1,2-Dichlorobenzene	20.2900	0.50	0.20	20.0000	101	82 - 115	14.4	20	
1,2-Dichloroethane	21.8900	0.50	0.20	20.0000	109	76 - 115	18.5	20	
1,2-Dichloropropane	20.9200	0.50	0.15	20.0000	105	74 - 113	16.7	20	
1,3,5-Trimethylbenzene	20.6600	0.50	0.13	20.0000	103	83 - 126	10.7	20	
1,3-Dichlorobenzene	20.5500	0.50	0.16	20.0000	103	84 - 118	12.5	20	
1,3-Dichloropropane	20.7600	0.50	0.21	20.0000	104	72 - 116	19.3	20	
1,4-Dichlorobenzene	19.4800	0.50	0.17	20.0000	97.4	83 - 112	13.2	20	
2,2-Dichloropropane	23.1900	0.50	0.38	20.0000	116	72 - 150	15.9	20	R
2-Chlorotoluene	19.9800	0.50	0.11	20.0000	99.9	82 - 120	11.4	20	
4-Chlorotoluene	20.3000	0.50	0.12	20.0000	102	81 - 121	10.1	20	
4-Isopropyltoluene	20.4100	0.50	0.11	20.0000	102	86 - 124	9.76	20	
Benzene	42.5600	0.50	0.13	40.0000	106	81 - 118	12.6	20	
Bromobenzene	19.4600	0.50	0.21	20.0000	97.3	82 - 117	9.30	20	
Bromodichloromethane	20.1900	0.50	0.14	20.0000	101	80 - 122	14.3	20	
Bromoform	22.0600	0.50	0.20	20.0000	110	53 - 145	15.8	20	
Bromomethane	18.1400	0.50	0.17	20.0000	90.7	30 - 204	24.6	20	
Carbon tetrachloride	21.3500	0.50	0.09	20.0000	107	77 - 157	11.2	20	
Chlorobenzene	19.9900	0.50	0.13	20.0000	100	86 - 113	12.8	20	R
Chloroethane	21.6700	0.50	0.15	20.0000	108	70 - 160	15.1	20	
Chloroform	20.3500	0.50	0.11	20.0000	102	66 - 136	12.4	20	
Chloromethane	24.7400	0.50	0.12	20.0000	124	52 - 138	13.7	20	
cis-1,2-Dichloroethene	18.9200	0.50	0.14	20.0000	94.6	71 - 128	9.93	20	
cis-1,3-Dichloropropene	23.0200	0.50	0.13	20.0000	115	71 - 123	17.1	20	
Dibromochloromethane	20.5200	0.50	0.16	20.0000	103	78 - 140	12.6	20	



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Report To : Steve Netto

Reported : 07/25/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0632 - MSVOA_W (continued)

LCS Dup (B9G0632-BSD1) - Continued

Prepared: 7/24/2019 Analyzed: 7/24/2019

Dibromomethane	21.2200	0.50	0.19	20.0000		106	78 - 109	20.4	20	R
Dichlorodifluoromethane	25.9100	0.50	0.05	20.0000		130	64 - 144	23.5	20	R
Ethylbenzene	39.9600	0.50	0.13	40.0000		99.9	90 - 116	12.9	20	
Hexachlorobutadiene	19.8400	0.50	0.15	20.0000		99.2	81 - 129	8.13	20	
Isopropylbenzene	21.7400	0.50	0.10	20.0000		109	83 - 129	9.14	20	
m,p-Xylene	41.3100	1.0	0.19	40.0000		103	88 - 124	11.9	20	
Methylene chloride	18.9000	1.0	0.71	20.0000		94.5	76 - 137	18.9	20	
n-Butylbenzene	21.0000	0.50	0.11	20.0000		105	83 - 129	11.6	20	
n-Propylbenzene	20.0100	0.50	0.10	20.0000		100	85 - 124	9.42	20	
Naphthalene	19.3700	0.50	0.41	20.0000		96.8	67 - 113	18.7	20	
o-Xylene	41.6200	0.50	0.13	40.0000		104	82 - 129	11.7	20	
sec-Butylbenzene	20.4900	0.50	0.09	20.0000		102	86 - 127	10.4	20	
Styrene	22.7100	0.50	0.13	20.0000		114	83 - 122	15.3	20	
tert-Butylbenzene	20.9000	0.50	0.09	20.0000		104	84 - 130	11.4	20	
Tetrachloroethene	20.4100	0.50	0.10	20.0000		102	87 - 123	7.68	20	
Toluene	42.3300	0.50	0.12	40.0000		106	84 - 115	13.4	20	
trans-1,2-Dichloroethene	16.4800	0.50	0.09	20.0000		82.4	60 - 148	10.1	20	
Trichloroethene	21.2000	0.50	0.10	20.0000		106	79 - 129	14.1	20	
Trichlorofluoromethane	19.6100	0.50	0.10	20.0000		98.0	68 - 162	13.7	20	
Vinyl chloride	23.6100	0.50	0.05	20.0000		118	73 - 128	13.3	20	
Surrogate: 1,2-Dichloroethane-d4	25.66			25.0000		103	57 - 152			
Surrogate: 4-Bromofluorobenzene	23.92			25.0000		95.7	62 - 134			
Surrogate: Dibromofluoromethane	24.83			25.0000		99.3	56 - 167			
Surrogate: Toluene-d8	26.42			25.0000		106	33 - 170			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0637 - MSSEMI_W

Blank (B9G0637-BLK1)

Prepared: 7/23/2019 Analyzed: 7/23/2019

1,4-Dioxane	ND	2.0	0.84							
Surrogate: 1,2-Dichlorobenzene-d	54.18			100.000		54.2	34 - 188			
Surrogate: 2-Fluorobiphenyl	66.97			100.000		67.0	39 - 108			
Surrogate: 4-Terphenyl-d14	137.4			100.000		137	71 - 131			S3
Surrogate: Nitrobenzene-d5	59.04			100.000		59.0	32 - 106			

LCS (B9G0637-BS1)

Prepared: 7/23/2019 Analyzed: 7/23/2019

1,4-Dioxane	107.360	2.0	0.84	100.000		107	40 - 159			
Surrogate: 1,2-Dichlorobenzene-d	73.17			100.000		73.2	34 - 188			
Surrogate: 2-Fluorobiphenyl	95.32			100.000		95.3	39 - 108			
Surrogate: 4-Terphenyl-d14	140.6			100.000		141	71 - 131			S3
Surrogate: Nitrobenzene-d5	85.21			100.000		85.2	32 - 106			

Matrix Spike (B9G0637-MS1)

Source: 1902735-01

Prepared: 7/23/2019 Analyzed: 7/24/2019

1,4-Dioxane	735.040	10	4.2	100.000	740.100	-5.06	40 - 159			M2
Surrogate: 1,2-Dichlorobenzene-d	71.75			100.000		71.8	34 - 188			
Surrogate: 2-Fluorobiphenyl	73.95			100.000		74.0	39 - 108			
Surrogate: 4-Terphenyl-d14	109.0			100.000		109	71 - 131			
Surrogate: Nitrobenzene-d5	80.55			100.000		80.6	32 - 106			

Matrix Spike Dup (B9G0637-MSD1)

Source: 1902735-01

Prepared: 7/23/2019 Analyzed: 7/24/2019

1,4-Dioxane	744.200	10	4.2	100.000	740.100	4.10	40 - 159	1.24	20	M2
Surrogate: 1,2-Dichlorobenzene-d	73.00			100.000		73.0	34 - 188			
Surrogate: 2-Fluorobiphenyl	71.30			100.000		71.3	39 - 108			
Surrogate: 4-Terphenyl-d14	116.2			100.000		116	71 - 131			
Surrogate: Nitrobenzene-d5	84.75			100.000		84.8	32 - 106			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0664 - MSSEMI_W

Blank (B9G0664-BLK1)

Prepared: 7/24/2019 Analyzed: 7/24/2019

1,4-Dioxane	ND	0.20	0.05						
Surrogate: 1,2-Dichlorobenzene-d	0.8710			1.00000		87.1	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.8970			1.00000		89.7	20 - 131		
Surrogate: 4-Terphenyl-d14	0.9614			1.00000		96.1	24 - 135		
Surrogate: Nitrobenzene-d5	0.8321			1.00000		83.2	6 - 124		

LCS (B9G0664-BS1)

Prepared: 7/24/2019 Analyzed: 7/24/2019

1,4-Dioxane	1.21821	0.20	0.05	1.00000		122	64 - 129		
Surrogate: 1,2-Dichlorobenzene-d	0.8769			1.00000		87.7	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.9081			1.00000		90.8	20 - 131		
Surrogate: 4-Terphenyl-d14	1.018			1.00000		102	24 - 135		
Surrogate: Nitrobenzene-d5	0.8380			1.00000		83.8	6 - 124		

LCS Dup (B9G0664-BSD1)

Prepared: 7/24/2019 Analyzed: 7/24/2019

1,4-Dioxane	1.23822	0.20	0.05	1.00000		124	64 - 129	1.63	20
Surrogate: 1,2-Dichlorobenzene-d	0.8342			1.00000		83.4	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.8634			1.00000		86.3	20 - 131		
Surrogate: 4-Terphenyl-d14	0.9887			1.00000		98.9	24 - 135		
Surrogate: Nitrobenzene-d5	0.8038			1.00000		80.4	6 - 124		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 07/25/2019

Notes and Definitions

S3	Surrogate recovery outside of laboratory acceptance limit. Unable to confirm matrix effects.
S12	Surrogate recovery outside in-house established limit but within method default criteria.
R	RPD value outside acceptance criteria. Calculation is based on raw values.
M2	Matrix spike recovery outside of acceptance limit due to possible matrix interference. The analytical batch was validated by the laboratory control sample.
L4	Laboratory Control Sample outside of control limit but within Marginal Exceedance (ME) limit.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

PROJECT: Raytheon Main GETS Mid Month Sample

TASK NO.: 532.15

Project Manager Steve Netto

QA Manager Ross Horton

Phone 858.455.6500

Fax 858.455.6533

Sampled By:		SAMPLE COLLECTION		MATRIX	PRESERVATION	CONTAINERS				ANALYSIS REQUESTED										Expected Concentration Range (ppb) for VOAs		SPECIAL HANDLING				REMARKS											
LAB ID	SAMPLE ID	Date	Time			Groundwater	Lab prepared water	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Ice	40-ml VOA	125 mL Poly	250 mL Poly	250 mL Glass	1 L Poly	1L Amber	VOCs by EPA 8260B	Bromate by EPA 317	Bromide by EPA 300	Alkalinity by SM2320B	Total Organic Carbon by SM5310B	Total Suspended Solids by SM2540D	UV Absorption EPA 415.3 @254 nm	1,4-Dioxane by EPA 8270C MOD		1,4-Dioxane by EPA 8270C SIM	0 - 10	10 - 100	100 - 1,000	>1,000	24 hr TAT	48 Hour TAT	5 Day TAT	Level IV Data Validation Requested	MS/MSD Requested	
1902740-01	TB-071819	7/18/2019	8:00		X	X			X	2						X										X											
-02	CEFF	7/18/2019	10:22	X	X			X		3					1	X								X	X								X				
-03	CBT	7/18/2019	10:25	X	X			X		3					1	X							X	X								X					
-04	POX	7/18/2019	10:30	X	X			X		3					1	X							X	X								X					
-05	INF	7/18/2019	10:35	X	X			X		3					1	X						X					X					X					
-06	EW-02	7/18/2019	11:20	X	X			X		3					1	X						X			X							X					
-07	MW-29	7/18/2019	11:35	X	X			X		3					1	X						X			X							X					
Total number of containers per analysis:										20	6										Total No. of Containers: 26																
Relinquished By: / Company:		Date / Time	Received By: / Company		Date / Time																																
<i>[Signature]</i> H+H		7-18-19	<i>[Signature]</i> FPD		7/14/19 1554																																
Relinquished By: / Company:		Date / Time	Received By: / Company		Date / Time																																

- ☒ No. of containers correct
- ☒ Received in good condition
- ☒ Custody seals secure
- ☒ Conforms to COC document

Send Results to:
Steve Netto & Ross Horton
9171 Towne Centre Drive
Suite 375
San Diego, CA 92122
Ph: 858.455.6500
snetto@hargis.com
horton@hargis.com

Instructions

- Fill out form completely and sign only after verified for completeness
- Complete in ballpoint pen. Draw one line through error, initial and date correction
- Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✕
- Note applicable preservatives, special instructions, and deviations from typical environmental samples.
- Consult project QA documents for specific instructions.

1.0 °C Temperature on receipt



August 19, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1902882

Client Reference : Raytheon Main GETS Monthly Sample, 532.15

Enclosed are the results for sample(s) received on August 01, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read 'Edgar Caballero', with a small 'Ar' written below it.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-080119	1902882-01	Lab prepared water	8/01/19 8:00	8/01/19 15:15
CEFF	1902882-02	Groundwater	8/01/19 11:20	8/01/19 15:15
CBT	1902882-03	Groundwater	8/01/19 11:25	8/01/19 15:15
POX	1902882-04	Groundwater	8/01/19 11:30	8/01/19 15:15
PF	1902882-05	Groundwater	8/01/19 11:45	8/01/19 15:15
INF	1902882-06	Groundwater	8/01/19 11:50	8/01/19 15:15
EW-02	1902882-07	Groundwater	8/01/19 12:35	8/01/19 15:15
MW-29	1902882-08	Groundwater	8/01/19 13:00	8/01/19 15:15

CASE NARRATIVE

The samples for Bromate by IC-MS/MS analysis were subcontracted to Element with ELAP Cert.# 2652.

Sample Receiving/General Comments:

The following analytes lists were taken from sample containers: Alkalinity - Hydroxide, Bicarbonate, Carbonate, and Total.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: TB-080119

Lab ID: 1902882-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,1,1-Trichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,1,2-Trichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,1-Dichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,1-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,1-Dichloropropene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,2,3-Trichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,2-Dibromoethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,2-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,2-Dichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,2-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,3-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,3-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
1,4-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
2,2-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
2-Chlorotoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
4-Chlorotoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
4-Isopropyltoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Benzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Bromobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Bromodichloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Bromoform	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Bromomethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Carbon tetrachloride	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Chlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Chloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Chloroform	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Chloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Dibromochloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: TB-080119

Lab ID: 1902882-01

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Dichlorodifluoromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Ethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Hexachlorobutadiene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Isopropylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
m,p-Xylene	ND	1.0	1	B9H0037	08/02/2019	08/02/19 10:49	
Methylene chloride	ND	1.0	1	B9H0037	08/02/2019	08/02/19 10:49	
n-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
n-Propylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Naphthalene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
o-Xylene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
sec-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Styrene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
tert-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Tetrachloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Toluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Trichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Trichlorofluoromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Vinyl chloride	ND	0.50	1	B9H0037	08/02/2019	08/02/19 10:49	
Surrogate: 1,2-Dichloroethane-d4	122 %	57 - 152		B9H0037	08/02/2019	08/02/19 10:49	
Surrogate: 4-Bromofluorobenzene	93.9 %	62 - 134		B9H0037	08/02/2019	08/02/19 10:49	
Surrogate: Dibromofluoromethane	128 %	56 - 167		B9H0037	08/02/2019	08/02/19 10:49	
Surrogate: Toluene-d8	119 %	33 - 170		B9H0037	08/02/2019	08/02/19 10:49	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: CEFF

Lab ID: 1902882-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,1,1-Trichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,1,2-Trichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,1-Dichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,1-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,1-Dichloropropene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,2,3-Trichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,2-Dibromoethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,2-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,2-Dichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,2-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,3-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,3-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
1,4-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
2,2-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
2-Chlorotoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
4-Chlorotoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
4-Isopropyltoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Benzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Bromobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Bromodichloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Bromoform	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Bromomethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Carbon tetrachloride	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Chlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Chloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Chloroform	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Chloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Dibromochloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: CEFF

Lab ID: 1902882-02

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Dichlorodifluoromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Ethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Hexachlorobutadiene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Isopropylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
m,p-Xylene	ND	1.0	1	B9H0037	08/02/2019	08/02/19 12:02	
Methylene chloride	ND	1.0	1	B9H0037	08/02/2019	08/02/19 12:02	
n-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
n-Propylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Naphthalene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
o-Xylene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
sec-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Styrene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
tert-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Tetrachloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Toluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Trichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Trichlorofluoromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Vinyl chloride	ND	0.50	1	B9H0037	08/02/2019	08/02/19 12:02	
Surrogate: 1,2-Dichloroethane-d4	136 %	57 - 152		B9H0037	08/02/2019	08/02/19 12:02	
Surrogate: 4-Bromofluorobenzene	95.5 %	62 - 134		B9H0037	08/02/2019	08/02/19 12:02	
Surrogate: Dibromofluoromethane	139 %	56 - 167		B9H0037	08/02/2019	08/02/19 12:02	
Surrogate: Toluene-d8	117 %	33 - 170		B9H0037	08/02/2019	08/02/19 12:02	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: CEFF

Lab ID: 1902882-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9H0050	08/02/2019	08/02/19 13:25	
Surrogate: 1,2-Dichlorobenzene-d4	72.0 %	22 - 117		B9H0050	08/02/2019	08/02/19 13:25	
Surrogate: 2-Fluorobiphenyl	72.3 %	20 - 131		B9H0050	08/02/2019	08/02/19 13:25	
Surrogate: 4-Terphenyl-d14	81.6 %	24 - 135		B9H0050	08/02/2019	08/02/19 13:25	
Surrogate: Nitrobenzene-d5	72.1 %	6 - 124		B9H0050	08/02/2019	08/02/19 13:25	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: CBT

Lab ID: 1902882-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,1,1-Trichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,1,2-Trichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,1-Dichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,1-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,1-Dichloropropene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,2,3-Trichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,2-Dibromoethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,2-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,2-Dichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,2-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,3-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,3-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
1,4-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
2,2-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
2-Chlorotoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
4-Chlorotoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
4-Isopropyltoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Benzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Bromobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Bromodichloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Bromoform	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Bromomethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Carbon tetrachloride	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Chlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Chloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Chloroform	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Chloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Dibromochloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: CBT

Lab ID: 1902882-03

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Dichlorodifluoromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Ethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Hexachlorobutadiene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Isopropylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
m,p-Xylene	ND	1.0	1	B9H0037	08/02/2019	08/02/19 17:52	
Methylene chloride	ND	1.0	1	B9H0037	08/02/2019	08/02/19 17:52	
n-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
n-Propylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Naphthalene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
o-Xylene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
sec-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Styrene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
tert-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Tetrachloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Toluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Trichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Trichlorofluoromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Vinyl chloride	ND	0.50	1	B9H0037	08/02/2019	08/02/19 17:52	
Surrogate: 1,2-Dichloroethane-d4	140 %	57 - 152		B9H0037	08/02/2019	08/02/19 17:52	
Surrogate: 4-Bromofluorobenzene	91.9 %	62 - 134		B9H0037	08/02/2019	08/02/19 17:52	
Surrogate: Dibromofluoromethane	146 %	56 - 167		B9H0037	08/02/2019	08/02/19 17:52	
Surrogate: Toluene-d8	119 %	33 - 170		B9H0037	08/02/2019	08/02/19 17:52	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: CBT

Lab ID: 1902882-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9H0050	08/02/2019	08/02/19 13:53	
Surrogate: 1,2-Dichlorobenzene-d4	80.3 %	22 - 117		B9H0050	08/02/2019	08/02/19 13:53	
Surrogate: 2-Fluorobiphenyl	81.5 %	20 - 131		B9H0050	08/02/2019	08/02/19 13:53	
Surrogate: 4-Terphenyl-d14	99.3 %	24 - 135		B9H0050	08/02/2019	08/02/19 13:53	
Surrogate: Nitrobenzene-d5	81.9 %	6 - 124		B9H0050	08/02/2019	08/02/19 13:53	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: POX

Lab ID: 1902882-04

Alkalinity, Speciated by SM 2320B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO ₃)	220	5.0	1	B9H0132	08/06/2019	08/06/19 17:05	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9H0132	08/06/2019	08/06/19 17:05	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9H0132	08/06/2019	08/06/19 17:05	
Alkalinity, Total (as CaCO ₃)	220	5.0	1	B9H0132	08/06/2019	08/06/19 17:05	

Total Organic Carbon by SM 5310B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9G0862	08/02/2019	08/02/19 13:52	

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,1,1-Trichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,1,2-Trichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,1-Dichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,1-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,1-Dichloropropene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,2,3-Trichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,2-Dibromoethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,2-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,2-Dichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,2-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,3-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,3-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
1,4-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
2,2-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
2-Chlorotoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: POX

Lab ID: 1902882-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
4-Chlorotoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
4-Isopropyltoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Benzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Bromobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Bromodichloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Bromoform	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Bromomethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Carbon tetrachloride	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Chlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Chloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Chloroform	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Chloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Dibromochloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Dibromomethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Dichlorodifluoromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Ethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Hexachlorobutadiene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Isopropylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
m,p-Xylene	ND	1.0	1	B9H0037	08/02/2019	08/02/19 18:16	
Methylene chloride	ND	1.0	1	B9H0037	08/02/2019	08/02/19 18:16	
n-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
n-Propylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Naphthalene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
o-Xylene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
sec-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Styrene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
tert-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Tetrachloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Toluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Trichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Trichlorofluoromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	
Vinyl chloride	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:16	

Surrogate: 1,2-Dichloroethane-d4

140 %

57 - 152

B9H0037

08/02/2019

08/02/19 18:16

Surrogate: 4-Bromofluorobenzene

93.4 %

62 - 134

B9H0037

08/02/2019

08/02/19 18:16



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: POX

Lab ID: 1902882-04

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
<i>Surrogate: Dibromofluoromethane</i>	<i>144 %</i>	<i>56 - 167</i>		B9H0037	08/02/2019	<i>08/02/19 18:16</i>	
<i>Surrogate: Toluene-d8</i>	<i>117 %</i>	<i>33 - 170</i>		B9H0037	08/02/2019	<i>08/02/19 18:16</i>	

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9H0050	08/02/2019	08/02/19 14:21	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>72.6 %</i>	<i>22 - 117</i>		B9H0050	08/02/2019	<i>08/02/19 14:21</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>73.4 %</i>	<i>20 - 131</i>		B9H0050	08/02/2019	<i>08/02/19 14:21</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>78.3 %</i>	<i>24 - 135</i>		B9H0050	08/02/2019	<i>08/02/19 14:21</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>73.5 %</i>	<i>6 - 124</i>		B9H0050	08/02/2019	<i>08/02/19 14:21</i>	



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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: PF

Lab ID: 1902882-05

UV Absorption by EPA 415.3

Analyst: JL

Analyte	Result (1/cm)	PQL (1/cm)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
UV Absorption	ND	0.01	1	B9H0030	08/01/2019	08/01/19 17:22	

Alkalinity, Speciated by SM 2320B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Alkalinity, Bicarbonate (as CaCO ₃)	220	5.0	1	B9H0132	08/06/2019	08/06/19 17:05	
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	1	B9H0132	08/06/2019	08/06/19 17:05	
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	1	B9H0132	08/06/2019	08/06/19 17:05	
Alkalinity, Total (as CaCO ₃)	220	5.0	1	B9H0132	08/06/2019	08/06/19 17:05	

Total Suspended Solids (Residue, Non-Filtrable) by SM 2540D

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Residue, Suspended	ND	1.0	1	B9H0130	08/05/2019	08/06/19 11:10	

Total Organic Carbon by SM 5310B

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Organic Carbon, Total	ND	3.0	1	B9G0862	08/02/2019	08/02/19 14:05	



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: INF

Lab ID: 1902882-06

Bromide by Ion Chromatography EPA 300

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.32	0.10	2	B9H0086	08/02/2019	08/02/19 11:58	

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,1,1-Trichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,1,2-Trichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,1-Dichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,1-Dichloroethene	56	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,1-Dichloropropene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,2,3-Trichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,2-Dibromoethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,2-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,2-Dichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,2-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,3-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,3-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
1,4-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
2,2-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
2-Chlorotoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
4-Chlorotoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
4-Isopropyltoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Benzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Bromobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Bromodichloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Bromoform	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Bromomethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Carbon tetrachloride	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Chlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: INF

Lab ID: 1902882-06

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Chloroform	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Chloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Dibromochloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Dibromomethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Dichlorodifluoromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Ethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Hexachlorobutadiene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Isopropylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
m,p-Xylene	ND	1.0	1	B9H0037	08/02/2019	08/02/19 19:05	
Methylene chloride	ND	1.0	1	B9H0037	08/02/2019	08/02/19 19:05	
n-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
n-Propylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Naphthalene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
o-Xylene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
sec-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Styrene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
tert-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Tetrachloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Toluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Trichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Trichlorofluoromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Vinyl chloride	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:05	
Surrogate: 1,2-Dichloroethane-d4	138 %	57 - 152		B9H0037	08/02/2019	08/02/19 19:05	
Surrogate: 4-Bromofluorobenzene	92.5 %	62 - 134		B9H0037	08/02/2019	08/02/19 19:05	
Surrogate: Dibromofluoromethane	137 %	56 - 167		B9H0037	08/02/2019	08/02/19 19:05	
Surrogate: Toluene-d8	122 %	33 - 170		B9H0037	08/02/2019	08/02/19 19:05	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: INF

Lab ID: 1902882-06

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	32	2.0	1	B9H0051	08/02/2019	08/03/19 03:05	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>64.0 %</i>	<i>34 - 188</i>		B9H0051	08/02/2019	<i>08/03/19 03:05</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>70.0 %</i>	<i>39 - 108</i>		B9H0051	08/02/2019	<i>08/03/19 03:05</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>84.9 %</i>	<i>71 - 131</i>		B9H0051	08/02/2019	<i>08/03/19 03:05</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>67.0 %</i>	<i>32 - 106</i>		B9H0051	08/02/2019	<i>08/03/19 03:05</i>	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: EW-02

Lab ID: 1902882-07

Bromide by Ion Chromatography EPA 300

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.27	0.10	2	B9H0086	08/02/2019	08/02/19 12:09	

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,1,1-Trichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,1,2-Trichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,1-Dichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,1-Dichloroethene	18	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,1-Dichloropropene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,2,3-Trichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,2-Dibromoethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,2-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,2-Dichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,2-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,3-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,3-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
1,4-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
2,2-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
2-Chlorotoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
4-Chlorotoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
4-Isopropyltoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Benzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Bromobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Bromodichloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Bromoform	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Bromomethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Carbon tetrachloride	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Chlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: EW-02

Lab ID: 1902882-07

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Chloroform	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Chloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Dibromochloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Dibromomethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Dichlorodifluoromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Ethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Hexachlorobutadiene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Isopropylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
m,p-Xylene	ND	1.0	1	B9H0037	08/02/2019	08/02/19 18:41	
Methylene chloride	ND	1.0	1	B9H0037	08/02/2019	08/02/19 18:41	
n-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
n-Propylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Naphthalene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
o-Xylene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
sec-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Styrene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
tert-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Tetrachloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Toluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Trichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Trichlorofluoromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Vinyl chloride	ND	0.50	1	B9H0037	08/02/2019	08/02/19 18:41	
Surrogate: 1,2-Dichloroethane-d4	141 %	57 - 152		B9H0037	08/02/2019	08/02/19 18:41	
Surrogate: 4-Bromofluorobenzene	94.3 %	62 - 134		B9H0037	08/02/2019	08/02/19 18:41	
Surrogate: Dibromofluoromethane	146 %	56 - 167		B9H0037	08/02/2019	08/02/19 18:41	
Surrogate: Toluene-d8	120 %	33 - 170		B9H0037	08/02/2019	08/02/19 18:41	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: EW-02

Lab ID: 1902882-07

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	8.3	2.0	1	B9H0051	08/02/2019	08/03/19 03:31	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>69.2 %</i>	<i>34 - 188</i>		B9H0051	08/02/2019	<i>08/03/19 03:31</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>74.3 %</i>	<i>39 - 108</i>		B9H0051	08/02/2019	<i>08/03/19 03:31</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>92.0 %</i>	<i>71 - 131</i>		B9H0051	08/02/2019	<i>08/03/19 03:31</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>73.5 %</i>	<i>32 - 106</i>		B9H0051	08/02/2019	<i>08/03/19 03:31</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: MW-29

Lab ID: 1902882-08

Bromide by Ion Chromatography EPA 300

Analyst: JL

Analyte	Result (mg/L)	PQL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Bromide	0.46	0.10	2	B9H0086	08/02/2019	08/02/19 12:21	

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,1,1-Trichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,1,2-Trichloroethane	1.7	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,1-Dichloroethane	3.0	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,1-Dichloroethene	160	5.0	10	B9H0108	08/06/2019	08/06/19 13:28	
1,1-Dichloropropene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,2,3-Trichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,2-Dibromoethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,2-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,2-Dichloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,2-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,3-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,3-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
1,4-Dichlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
2,2-Dichloropropane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
2-Chlorotoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
4-Chlorotoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
4-Isopropyltoluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Benzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Bromobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Bromodichloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Bromoform	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Bromomethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Carbon tetrachloride	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Chlorobenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: MW-29

Lab ID: 1902882-08

Volatile Organic Compounds by EPA 8260B

Analyst: VW

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Chloroethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Chloroform	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Chloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Dibromochloromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Dibromomethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Dichlorodifluoromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Ethylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Hexachlorobutadiene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Isopropylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
m,p-Xylene	ND	1.0	1	B9H0037	08/02/2019	08/02/19 19:29	
Methylene chloride	ND	1.0	1	B9H0037	08/02/2019	08/02/19 19:29	
n-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
n-Propylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Naphthalene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
o-Xylene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
sec-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Styrene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
tert-Butylbenzene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Tetrachloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Toluene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Trichloroethene	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Trichlorofluoromethane	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Vinyl chloride	ND	0.50	1	B9H0037	08/02/2019	08/02/19 19:29	
Surrogate: 1,2-Dichloroethane-d4	144 %	57 - 152		B9H0108	08/06/2019	08/06/19 13:28	
Surrogate: 1,2-Dichloroethane-d4	140 %	57 - 152		B9H0037	08/02/2019	08/02/19 19:29	
Surrogate: 4-Bromofluorobenzene	90.7 %	62 - 134		B9H0108	08/06/2019	08/06/19 13:28	
Surrogate: 4-Bromofluorobenzene	91.8 %	62 - 134		B9H0037	08/02/2019	08/02/19 19:29	
Surrogate: Dibromofluoromethane	143 %	56 - 167		B9H0108	08/06/2019	08/06/19 13:28	
Surrogate: Dibromofluoromethane	140 %	56 - 167		B9H0037	08/02/2019	08/02/19 19:29	
Surrogate: Toluene-d8	117 %	33 - 170		B9H0037	08/02/2019	08/02/19 19:29	
Surrogate: Toluene-d8	122 %	33 - 170		B9H0108	08/06/2019	08/06/19 13:28	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Client Sample ID: MW-29

Lab ID: 1902882-08

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	110	2.0	1	B9H0051	08/02/2019	08/03/19 03:58	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>67.8 %</i>	<i>34 - 188</i>		B9H0051	08/02/2019	<i>08/03/19 03:58</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>73.9 %</i>	<i>39 - 108</i>		B9H0051	08/02/2019	<i>08/03/19 03:58</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>87.9 %</i>	<i>71 - 131</i>		B9H0051	08/02/2019	<i>08/03/19 03:58</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>70.9 %</i>	<i>32 - 106</i>		B9H0051	08/02/2019	<i>08/03/19 03:58</i>	



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

QUALITY CONTROL SECTION

Alkalinity, Speciated by SM 2320B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0132 - No_Prep_WC1_W

Blank (B9H0132-BLK1)

Prepared: 8/6/2019 Analyzed: 8/6/2019

Alkalinity, Bicarbonate (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Carbonate (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Hydroxide (as CaCO ₃)	ND	5.0	3.4
Alkalinity, Total (as CaCO ₃)	ND	5.0	3.4

LCS (B9H0132-BS1)

Prepared: 8/6/2019 Analyzed: 8/6/2019

Alkalinity, Total (as CaCO ₃)	106.720	5.0	3.4	99.9580	107	80 - 120

Matrix Spike (B9H0132-MS1)

Source: 1902882-05

Prepared: 8/6/2019 Analyzed: 8/6/2019

Alkalinity, Total (as CaCO ₃)	322.130	5.0	3.4	99.9580	221.340	101	80 - 120

Matrix Spike Dup (B9H0132-MSD1)

Source: 1902882-05

Prepared: 8/6/2019 Analyzed: 8/6/2019

Alkalinity, Total (as CaCO ₃)	322.130	5.0	3.4	99.9580	221.340	101	80 - 120	0.00	20



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Total Suspended Solids (Residue, Non-Filtrable) by SM 2540D - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0130 - No_Prep_WC1_W

Blank (B9H0130-BLK1)

Prepared: 8/5/2019 Analyzed: 8/6/2019

Residue, Suspended ND 1.0 1.0

LCS (B9H0130-BS1)

Prepared: 8/5/2019 Analyzed: 8/6/2019

Residue, Suspended 92.0000 10 10 90.4000 102 80 - 120

Duplicate (B9H0130-DUP1)

Source: 1902879-01

Prepared: 8/5/2019 Analyzed: 8/6/2019

Residue, Suspended 20.0000 10 10 20.0000 0.00 10



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Bromide by Ion Chromatography EPA 300 - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0086 - No_Prep_IC1_W

Blank (B9H0086-BLK1)

Prepared: 8/2/2019 Analyzed: 8/2/2019

Bromide ND 0.05 0.02

LCS (B9H0086-BS1)

Prepared: 8/2/2019 Analyzed: 8/2/2019

Bromide 0.936300 0.05 0.02 1.00000 93.6 90 - 110

Duplicate (B9H0086-DUP1)

Source: 1902881-01

Prepared: 8/2/2019 Analyzed: 8/2/2019

Bromide 2.36500 2.5 0.79 2.19500 7.46 20

Matrix Spike (B9H0086-MS1)

Source: 1902881-01

Prepared: 8/2/2019 Analyzed: 8/2/2019

Bromide 2.62030 2.50000 0.0439 103 80 - 120

Matrix Spike Dup (B9H0086-MSD1)

Source: 1902881-01

Prepared: 8/2/2019 Analyzed: 8/2/2019

Bromide 2.59130 2.50000 0.0439 102 80 - 120 1.11 20



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

UV Absorption by EPA 415.3 - Quality Control

Analyte	Result (1/cm)	PQL (1/cm)	MDL (1/cm)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0030 - No_Prep_II_W

Duplicate (B9H0030-DUP1)

Source: 1902882-05

Prepared: 8/1/2019 Analyzed: 8/1/2019

UV Absorption	ND	0.01	0.01		ND			NR	20	



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Total Organic Carbon by SM 5310B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9G0862 - No_Prep_II_W

Blank (B9G0862-BLK1)

Prepared: 8/2/2019 Analyzed: 8/2/2019

Organic Carbon, Total ND 3.0 0.28

LCS (B9G0862-BS1)

Prepared: 8/2/2019 Analyzed: 8/2/2019

Organic Carbon, Total 19.1300 3.0 0.28 20.0000 95.6 80 - 120

LCS Dup (B9G0862-BSD1)

Prepared: 8/2/2019 Analyzed: 8/2/2019

Organic Carbon, Total 17.5500 3.0 0.28 20.0000 87.8 80 - 120 8.62 20



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Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0037 - MSVOA_W

Blank (B9H0037-BLK1)

Prepared: 8/2/2019 Analyzed: 8/2/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0037 - MSVOA_W (continued)

Blank (B9H0037-BLK1) - Continued

Prepared: 8/2/2019 Analyzed: 8/2/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	33.02		25.0000	132	57 - 152
Surrogate: 4-Bromofluorobenzene	23.08		25.0000	92.3	62 - 134
Surrogate: Dibromofluoromethane	35.10		25.0000	140	56 - 167
Surrogate: Toluene-d8	29.43		25.0000	118	33 - 170

LCS (B9H0037-BS1)

Prepared: 8/2/2019 Analyzed: 8/2/2019

1,1,1,2-Tetrachloroethane	18.1900	0.50	0.11	20.0000	91.0	80 - 137
1,1,1-Trichloroethane	21.8400	0.50	0.07	20.0000	109	75 - 148
1,1,2,2-Tetrachloroethane	18.9900	0.50	0.36	20.0000	95.0	64 - 118
1,1,2-Trichloroethane	22.4000	0.50	0.25	20.0000	112	77 - 113
1,1-Dichloroethane	21.4000	0.50	0.09	20.0000	107	72 - 131
1,1-Dichloroethene	20.6100	0.50	0.13	20.0000	103	75 - 132
1,1-Dichloropropene	22.0600	0.50	0.13	20.0000	110	84 - 141
1,2,3-Trichloropropane	18.4400	0.50	0.39	20.0000	92.2	65 - 111
1,2,3-Trichlorobenzene	19.6400	0.50	0.18	20.0000	98.2	79 - 117
1,2,4-Trichlorobenzene	19.2600	0.50	0.16	20.0000	96.3	78 - 121
1,2,4-Trimethylbenzene	19.9500	0.50	0.14	20.0000	99.8	83 - 125
1,2-Dibromo-3-chloropropane	17.1600	0.50	0.41	20.0000	85.8	54 - 116
1,2-Dibromoethane	21.5600	0.50	0.24	20.0000	108	79 - 118
1,2-Dichlorobenzene	19.6800	0.50	0.20	20.0000	98.4	82 - 115
1,2-Dichloroethane	21.1900	0.50	0.20	20.0000	106	76 - 115
1,2-Dichloropropane	20.5400	0.50	0.15	20.0000	103	74 - 113
1,3,5-Trimethylbenzene	19.5700	0.50	0.13	20.0000	97.8	83 - 126
1,3-Dichlorobenzene	19.9000	0.50	0.16	20.0000	99.5	84 - 118
1,3-Dichloropropane	18.1200	0.50	0.21	20.0000	90.6	72 - 116



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0037 - MSVOA_W (continued)

LCS (B9H0037-BS1) - Continued

Prepared: 8/2/2019 Analyzed: 8/2/2019

1,4-Dichlorobenzene	19.3400	0.50	0.17	20.0000		96.7	83 - 112		
2,2-Dichloropropane	20.3100	0.50	0.38	20.0000		102	72 - 150		
2-Chlorotoluene	20.0700	0.50	0.11	20.0000		100	82 - 120		
4-Chlorotoluene	19.3900	0.50	0.12	20.0000		97.0	81 - 121		
4-Isopropyltoluene	20.1800	0.50	0.11	20.0000		101	86 - 124		
Benzene	39.5700	0.50	0.13	40.0000		98.9	81 - 118		
Bromobenzene	19.5700	0.50	0.21	20.0000		97.8	82 - 117		
Bromodichloromethane	21.2500	0.50	0.14	20.0000		106	80 - 122		
Bromoform	16.8800	0.50	0.20	20.0000		84.4	53 - 145		
Bromomethane	22.2300	0.50	0.17	20.0000		111	30 - 204		
Carbon tetrachloride	19.0900	0.50	0.09	20.0000		95.4	77 - 157		
Chlorobenzene	19.3900	0.50	0.13	20.0000		97.0	86 - 113		
Chloroethane	21.5000	0.50	0.15	20.0000		108	70 - 160		
Chloroform	23.1300	0.50	0.11	20.0000		116	66 - 136		
Chloromethane	20.4100	0.50	0.12	20.0000		102	52 - 138		
cis-1,2-Dichloroethene	21.8000	0.50	0.14	20.0000		109	71 - 128		
cis-1,3-Dichloropropene	21.7900	0.50	0.13	20.0000		109	71 - 123		
Dibromochloromethane	18.6600	0.50	0.16	20.0000		93.3	78 - 140		
Dibromomethane	21.8400	0.50	0.19	20.0000		109	78 - 109		L4
Dichlorodifluoromethane	23.0500	0.50	0.05	20.0000		115	64 - 144		
Ethylbenzene	37.5700	0.50	0.13	40.0000		93.9	90 - 116		
Hexachlorobutadiene	20.5100	0.50	0.15	20.0000		103	81 - 129		
Isopropylbenzene	20.5400	0.50	0.10	20.0000		103	83 - 129		
m,p-Xylene	39.3500	1.0	0.19	40.0000		98.4	88 - 124		
Methylene chloride	17.5800	1.0	0.71	20.0000		87.9	76 - 137		
n-Butylbenzene	19.8700	0.50	0.11	20.0000		99.4	83 - 129		
n-Propylbenzene	19.3300	0.50	0.10	20.0000		96.6	85 - 124		
Naphthalene	17.5300	0.50	0.41	20.0000		87.6	67 - 113		
o-Xylene	39.0300	0.50	0.13	40.0000		97.6	82 - 129		
sec-Butylbenzene	19.4500	0.50	0.09	20.0000		97.2	86 - 127		
Styrene	20.2400	0.50	0.13	20.0000		101	83 - 122		
tert-Butylbenzene	20.0300	0.50	0.09	20.0000		100	84 - 130		
Tetrachloroethene	18.1900	0.50	0.10	20.0000		91.0	87 - 123		
Toluene	42.8900	0.50	0.12	40.0000		107	84 - 115		
trans-1,2-Dichloroethene	20.3900	0.50	0.09	20.0000		102	60 - 148		
Trichloroethene	21.6900	0.50	0.10	20.0000		108	79 - 129		
Trichlorofluoromethane	21.6200	0.50	0.10	20.0000		108	68 - 162		
Vinyl chloride	19.6500	0.50	0.05	20.0000		98.2	73 - 128		
Surrogate: 1,2-Dichloroethane-d4	29.86			25.0000		119	57 - 152		
Surrogate: 4-Bromofluorobenzene	23.60			25.0000		94.4	62 - 134		
Surrogate: Dibromofluoromethane	32.37			25.0000		129	56 - 167		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0037 - MSVOA_W (continued)

LCS (B9H0037-BS1) - Continued

Prepared: 8/2/2019 Analyzed: 8/2/2019

Surrogate: Toluene-d8 28.92 25.0000 116 33 - 170

LCS Dup (B9H0037-BS1)

Prepared: 8/2/2019 Analyzed: 8/2/2019

1,1,1,2-Tetrachloroethane	18.9500	0.50	0.11	20.0000	94.8	80 - 137	4.09	20	L4
1,1,1-Trichloroethane	21.9000	0.50	0.07	20.0000	110	75 - 148	0.274	20	
1,1,2,2-Tetrachloroethane	19.6200	0.50	0.36	20.0000	98.1	64 - 118	3.26	20	
1,1,2-Trichloroethane	22.6100	0.50	0.25	20.0000	113	77 - 113	0.933	20	
1,1-Dichloroethane	22.2700	0.50	0.09	20.0000	111	72 - 131	3.98	20	
1,1-Dichloroethene	21.4000	0.50	0.13	20.0000	107	75 - 132	3.76	20	
1,1-Dichloropropene	21.3300	0.50	0.13	20.0000	107	84 - 141	3.36	20	
1,2,3-Trichloropropane	18.6500	0.50	0.39	20.0000	93.2	65 - 111	1.13	20	
1,2,3-Trichlorobenzene	20.2700	0.50	0.18	20.0000	101	79 - 117	3.16	20	
1,2,4-Trichlorobenzene	20.2500	0.50	0.16	20.0000	101	78 - 121	5.01	20	
1,2,4-Trimethylbenzene	19.6800	0.50	0.14	20.0000	98.4	83 - 125	1.36	20	L4
1,2-Dibromo-3-chloropropane	18.8600	0.50	0.41	20.0000	94.3	54 - 116	9.44	20	
1,2-Dibromoethane	22.1000	0.50	0.24	20.0000	110	79 - 118	2.47	20	
1,2-Dichlorobenzene	20.2000	0.50	0.20	20.0000	101	82 - 115	2.61	20	
1,2-Dichloroethane	21.6400	0.50	0.20	20.0000	108	76 - 115	2.10	20	
1,2-Dichloropropane	20.2100	0.50	0.15	20.0000	101	74 - 113	1.62	20	
1,3,5-Trimethylbenzene	19.4000	0.50	0.13	20.0000	97.0	83 - 126	0.872	20	
1,3-Dichlorobenzene	20.3500	0.50	0.16	20.0000	102	84 - 118	2.24	20	
1,3-Dichloropropane	19.1000	0.50	0.21	20.0000	95.5	72 - 116	5.27	20	
1,4-Dichlorobenzene	19.6200	0.50	0.17	20.0000	98.1	83 - 112	1.44	20	
2,2-Dichloropropane	21.0300	0.50	0.38	20.0000	105	72 - 150	3.48	20	
2-Chlorotoluene	19.5200	0.50	0.11	20.0000	97.6	82 - 120	2.78	20	
4-Chlorotoluene	19.2700	0.50	0.12	20.0000	96.4	81 - 121	0.621	20	
4-Isopropyltoluene	19.8500	0.50	0.11	20.0000	99.2	86 - 124	1.65	20	
Benzene	39.3800	0.50	0.13	40.0000	98.4	81 - 118	0.481	20	
Bromobenzene	19.7600	0.50	0.21	20.0000	98.8	82 - 117	0.966	20	
Bromodichloromethane	21.3100	0.50	0.14	20.0000	107	80 - 122	0.282	20	
Bromoform	17.9200	0.50	0.20	20.0000	89.6	53 - 145	5.98	20	
Bromomethane	22.9600	0.50	0.17	20.0000	115	30 - 204	3.23	20	
Carbon tetrachloride	18.3100	0.50	0.09	20.0000	91.6	77 - 157	4.17	20	
Chlorobenzene	19.6600	0.50	0.13	20.0000	98.3	86 - 113	1.38	20	
Chloroethane	21.7900	0.50	0.15	20.0000	109	70 - 160	1.34	20	
Chloroform	23.7100	0.50	0.11	20.0000	119	66 - 136	2.48	20	
Chloromethane	19.7300	0.50	0.12	20.0000	98.6	52 - 138	3.39	20	
cis-1,2-Dichloroethene	21.5000	0.50	0.14	20.0000	108	71 - 128	1.39	20	
cis-1,3-Dichloropropene	22.5500	0.50	0.13	20.0000	113	71 - 123	3.43	20	
Dibromochloromethane	19.6300	0.50	0.16	20.0000	98.2	78 - 140	5.07	20	
Dibromomethane	21.8500	0.50	0.19	20.0000	109	78 - 109	0.0458	20	
Dichlorodifluoromethane	23.0000	0.50	0.05	20.0000	115	64 - 144	0.217	20	



Certificate of Analysis

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Report To : Steve Netto

Reported : 08/19/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0037 - MSVOA_W (continued)

LCS Dup (B9H0037-BSD1) - Continued

Prepared: 8/2/2019 Analyzed: 8/2/2019

Ethylbenzene	38.6300	0.50	0.13	40.0000		96.6	90 - 116	2.78	20	
Hexachlorobutadiene	19.4600	0.50	0.15	20.0000		97.3	81 - 129	5.25	20	
Isopropylbenzene	20.3400	0.50	0.10	20.0000		102	83 - 129	0.978	20	
m,p-Xylene	40.0800	1.0	0.19	40.0000		100	88 - 124	1.84	20	
Methylene chloride	18.7900	1.0	0.71	20.0000		94.0	76 - 137	6.65	20	
n-Butylbenzene	19.7000	0.50	0.11	20.0000		98.5	83 - 129	0.859	20	
n-Propylbenzene	19.2600	0.50	0.10	20.0000		96.3	85 - 124	0.363	20	
Naphthalene	18.7700	0.50	0.41	20.0000		93.8	67 - 113	6.83	20	
o-Xylene	40.0400	0.50	0.13	40.0000		100	82 - 129	2.55	20	
sec-Butylbenzene	19.4300	0.50	0.09	20.0000		97.2	86 - 127	0.103	20	
Styrene	20.7700	0.50	0.13	20.0000		104	83 - 122	2.58	20	
tert-Butylbenzene	19.7900	0.50	0.09	20.0000		99.0	84 - 130	1.21	20	
Tetrachloroethene	18.1900	0.50	0.10	20.0000		91.0	87 - 123	0.00	20	
Toluene	42.0500	0.50	0.12	40.0000		105	84 - 115	1.98	20	
trans-1,2-Dichloroethene	21.2100	0.50	0.09	20.0000		106	60 - 148	3.94	20	
Trichloroethene	21.8400	0.50	0.10	20.0000		109	79 - 129	0.689	20	
Trichlorofluoromethane	22.9000	0.50	0.10	20.0000		114	68 - 162	5.75	20	
Vinyl chloride	20.3300	0.50	0.05	20.0000		102	73 - 128	3.40	20	
Surrogate: 1,2-Dichloroethane-d4	32.34			25.0000		129	57 - 152			
Surrogate: 4-Bromofluorobenzene	24.92			25.0000		99.7	62 - 134			
Surrogate: Dibromofluoromethane	34.10			25.0000		136	56 - 167			
Surrogate: Toluene-d8	29.02			25.0000		116	33 - 170			



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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0108 - MSVOA_W

Blank (B9H0108-BLK1)

Prepared: 8/6/2019 Analyzed: 8/6/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



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Report To : Steve Netto

Reported : 08/19/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0108 - MSVOA_W (continued)

Blank (B9H0108-BLK1) - Continued

Prepared: 8/6/2019 Analyzed: 8/6/2019

Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	34.99		25.0000	140	57 - 152
Surrogate: 4-Bromofluorobenzene	23.87		25.0000	95.5	62 - 134
Surrogate: Dibromofluoromethane	36.57		25.0000	146	56 - 167
Surrogate: Toluene-d8	30.72		25.0000	123	33 - 170

LCS (B9H0108-BS1)

Prepared: 8/6/2019 Analyzed: 8/6/2019

1,1,1,2-Tetrachloroethane	18.2300	0.50	0.11	20.0000	91.2	80 - 137
1,1,1-Trichloroethane	25.4400	0.50	0.07	20.0000	127	75 - 148
1,1,2,2-Tetrachloroethane	16.5800	0.50	0.36	20.0000	82.9	64 - 118
1,1,2-Trichloroethane	23.7400	0.50	0.25	20.0000	119	77 - 113
1,1-Dichloroethane	25.0500	0.50	0.09	20.0000	125	72 - 131
1,1-Dichloroethene	24.4000	0.50	0.13	20.0000	122	75 - 132
1,1-Dichloropropene	25.2800	0.50	0.13	20.0000	126	84 - 141
1,2,3-Trichloropropane	15.7400	0.50	0.39	20.0000	78.7	65 - 111
1,2,3-Trichlorobenzene	17.6300	0.50	0.18	20.0000	88.2	79 - 117
1,2,4-Trichlorobenzene	18.0600	0.50	0.16	20.0000	90.3	78 - 121
1,2,4-Trimethylbenzene	18.5000	0.50	0.14	20.0000	92.5	83 - 125
1,2-Dibromo-3-chloropropane	14.9500	0.50	0.41	20.0000	74.8	54 - 116
1,2-Dibromoethane	21.8700	0.50	0.24	20.0000	109	79 - 118
1,2-Dichlorobenzene	18.5900	0.50	0.20	20.0000	93.0	82 - 115
1,2-Dichloroethane	24.1700	0.50	0.20	20.0000	121	76 - 115
1,2-Dichloropropane	21.8600	0.50	0.15	20.0000	109	74 - 113
1,3,5-Trimethylbenzene	18.4400	0.50	0.13	20.0000	92.2	83 - 126
1,3-Dichlorobenzene	19.2400	0.50	0.16	20.0000	96.2	84 - 118
1,3-Dichloropropane	17.3800	0.50	0.21	20.0000	86.9	72 - 116

L3

L3



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0108 - MSVOA_W (continued)

LCS (B9H0108-BS1) - Continued

Prepared: 8/6/2019 Analyzed: 8/6/2019

1,4-Dichlorobenzene	18.1100	0.50	0.17	20.0000		90.6	83 - 112		
2,2-Dichloropropane	24.1500	0.50	0.38	20.0000		121	72 - 150		
2-Chlorotoluene	18.6800	0.50	0.11	20.0000		93.4	82 - 120		
4-Chlorotoluene	18.1100	0.50	0.12	20.0000		90.6	81 - 121		
4-Isopropyltoluene	18.8800	0.50	0.11	20.0000		94.4	86 - 124		
Benzene	44.5000	0.50	0.13	40.0000		111	81 - 118		
Bromobenzene	18.4800	0.50	0.21	20.0000		92.4	82 - 117		
Bromodichloromethane	21.7300	0.50	0.14	20.0000		109	80 - 122		
Bromoform	15.7500	0.50	0.20	20.0000		78.8	53 - 145		
Bromomethane	30.7600	0.50	0.17	20.0000		154	30 - 204		
Carbon tetrachloride	20.9700	0.50	0.09	20.0000		105	77 - 157		
Chlorobenzene	18.8500	0.50	0.13	20.0000		94.2	86 - 113		
Chloroethane	25.1800	0.50	0.15	20.0000		126	70 - 160		
Chloroform	26.4900	0.50	0.11	20.0000		132	66 - 136		
Chloromethane	25.1300	0.50	0.12	20.0000		126	52 - 138		
cis-1,2-Dichloroethene	25.7900	0.50	0.14	20.0000		129	71 - 128		
cis-1,3-Dichloropropene	22.8900	0.50	0.13	20.0000		114	71 - 123		
Dibromochloromethane	17.4400	0.50	0.16	20.0000		87.2	78 - 140		
Dibromomethane	23.5500	0.50	0.19	20.0000		118	78 - 109		
Dichlorodifluoromethane	28.7700	0.50	0.05	20.0000		144	64 - 144		
Ethylbenzene	37.9000	0.50	0.13	40.0000		94.8	90 - 116		
Hexachlorobutadiene	19.2000	0.50	0.15	20.0000		96.0	81 - 129		
Isopropylbenzene	19.4600	0.50	0.10	20.0000		97.3	83 - 129		
m,p-Xylene	39.9000	1.0	0.19	40.0000		99.8	88 - 124		
Methylene chloride	21.3300	1.0	0.71	20.0000		107	76 - 137		
n-Butylbenzene	18.6600	0.50	0.11	20.0000		93.3	83 - 129		
n-Propylbenzene	18.4500	0.50	0.10	20.0000		92.2	85 - 124		
Naphthalene	15.7800	0.50	0.41	20.0000		78.9	67 - 113		
o-Xylene	38.9100	0.50	0.13	40.0000		97.3	82 - 129		
sec-Butylbenzene	18.6000	0.50	0.09	20.0000		93.0	86 - 127		
Styrene	19.7900	0.50	0.13	20.0000		99.0	83 - 122		
tert-Butylbenzene	19.0300	0.50	0.09	20.0000		95.2	84 - 130		
Tetrachloroethene	19.0200	0.50	0.10	20.0000		95.1	87 - 123		
Toluene	46.6800	0.50	0.12	40.0000		117	84 - 115		L3
trans-1,2-Dichloroethene	24.0900	0.50	0.09	20.0000		120	60 - 148		
Trichloroethene	24.7000	0.50	0.10	20.0000		124	79 - 129		
Trichlorofluoromethane	26.6600	0.50	0.10	20.0000		133	68 - 162		
Vinyl chloride	23.6200	0.50	0.05	20.0000		118	73 - 128		
Surrogate: 1,2-Dichloroethane-d4	33.76			25.0000		135	57 - 152		
Surrogate: 4-Bromofluorobenzene	23.57			25.0000		94.3	62 - 134		
Surrogate: Dibromofluoromethane	35.59			25.0000		142	56 - 167		



Certificate of Analysis

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Report To : Steve Netto

Reported : 08/19/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0108 - MSVOA_W (continued)

LCS (B9H0108-BS1) - Continued

Prepared: 8/6/2019 Analyzed: 8/6/2019

Surrogate: Toluene-d8 29.96 25.0000 120 33 - 170

LCS Dup (B9H0108-BS1)

Prepared: 8/6/2019 Analyzed: 8/6/2019

1,1,1,2-Tetrachloroethane	18.2000	0.50	0.11	20.0000	91.0	80 - 137	0.165	20	
1,1,1-Trichloroethane	26.4900	0.50	0.07	20.0000	132	75 - 148	4.04	20	
1,1,2,2-Tetrachloroethane	17.7100	0.50	0.36	20.0000	88.6	64 - 118	6.59	20	
1,1,2-Trichloroethane	24.5300	0.50	0.25	20.0000	123	77 - 113	3.27	20	L3
1,1-Dichloroethane	26.4800	0.50	0.09	20.0000	132	72 - 131	5.55	20	L4
1,1-Dichloroethene	25.4200	0.50	0.13	20.0000	127	75 - 132	4.09	20	
1,1-Dichloropropene	25.3700	0.50	0.13	20.0000	127	84 - 141	0.355	20	
1,2,3-Trichloropropane	17.6700	0.50	0.39	20.0000	88.4	65 - 111	11.6	20	
1,2,3-Trichlorobenzene	18.3600	0.50	0.18	20.0000	91.8	79 - 117	4.06	20	
1,2,4-Trichlorobenzene	18.3500	0.50	0.16	20.0000	91.8	78 - 121	1.59	20	
1,2,4-Trimethylbenzene	19.0100	0.50	0.14	20.0000	95.0	83 - 125	2.72	20	
1,2-Dibromo-3-chloropropane	16.1800	0.50	0.41	20.0000	80.9	54 - 116	7.90	20	
1,2-Dibromoethane	24.2700	0.50	0.24	20.0000	121	79 - 118	10.4	20	L3
1,2-Dichlorobenzene	19.0000	0.50	0.20	20.0000	95.0	82 - 115	2.18	20	
1,2-Dichloroethane	25.3600	0.50	0.20	20.0000	127	76 - 115	4.81	20	L3
1,2-Dichloropropane	21.6600	0.50	0.15	20.0000	108	74 - 113	0.919	20	
1,3,5-Trimethylbenzene	18.3200	0.50	0.13	20.0000	91.6	83 - 126	0.653	20	
1,3-Dichlorobenzene	19.3000	0.50	0.16	20.0000	96.5	84 - 118	0.311	20	
1,3-Dichloropropane	19.1200	0.50	0.21	20.0000	95.6	72 - 116	9.53	20	
1,4-Dichlorobenzene	18.5900	0.50	0.17	20.0000	93.0	83 - 112	2.62	20	
2,2-Dichloropropane	24.9200	0.50	0.38	20.0000	125	72 - 150	3.14	20	
2-Chlorotoluene	18.9400	0.50	0.11	20.0000	94.7	82 - 120	1.38	20	
4-Chlorotoluene	18.2300	0.50	0.12	20.0000	91.2	81 - 121	0.660	20	
4-Isopropyltoluene	18.5200	0.50	0.11	20.0000	92.6	86 - 124	1.93	20	
Benzene	44.7200	0.50	0.13	40.0000	112	81 - 118	0.493	20	
Bromobenzene	18.7900	0.50	0.21	20.0000	94.0	82 - 117	1.66	20	
Bromodichloromethane	22.8700	0.50	0.14	20.0000	114	80 - 122	5.11	20	
Bromoform	16.4500	0.50	0.20	20.0000	82.2	53 - 145	4.35	20	
Bromomethane	33.3900	0.50	0.17	20.0000	167	30 - 204	8.20	20	
Carbon tetrachloride	21.2000	0.50	0.09	20.0000	106	77 - 157	1.09	20	
Chlorobenzene	19.2300	0.50	0.13	20.0000	96.2	86 - 113	2.00	20	
Chloroethane	27.7700	0.50	0.15	20.0000	139	70 - 160	9.78	20	
Chloroform	27.4300	0.50	0.11	20.0000	137	66 - 136	3.49	20	L4
Chloromethane	27.0800	0.50	0.12	20.0000	135	52 - 138	7.47	20	
cis-1,2-Dichloroethene	27.0100	0.50	0.14	20.0000	135	71 - 128	4.62	20	L4
cis-1,3-Dichloropropene	23.4300	0.50	0.13	20.0000	117	71 - 123	2.33	20	
Dibromochloromethane	19.0300	0.50	0.16	20.0000	95.2	78 - 140	8.72	20	
Dibromomethane	23.9000	0.50	0.19	20.0000	120	78 - 109	1.48	20	L3
Dichlorodifluoromethane	29.2300	0.50	0.05	20.0000	146	64 - 144	1.59	20	L4



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0108 - MSVOA_W (continued)

LCS Dup (B9H0108-BSD1) - Continued

Prepared: 8/6/2019 Analyzed: 8/6/2019

Ethylbenzene	37.7000	0.50	0.13	40.0000		94.2	90 - 116	0.529	20	
Hexachlorobutadiene	19.3600	0.50	0.15	20.0000		96.8	81 - 129	0.830	20	
Isopropylbenzene	19.4700	0.50	0.10	20.0000		97.4	83 - 129	0.0514	20	
m,p-Xylene	39.3300	1.0	0.19	40.0000		98.3	88 - 124	1.44	20	
Methylene chloride	22.3100	1.0	0.71	20.0000		112	76 - 137	4.49	20	
n-Butylbenzene	18.1600	0.50	0.11	20.0000		90.8	83 - 129	2.72	20	
n-Propylbenzene	18.3600	0.50	0.10	20.0000		91.8	85 - 124	0.489	20	
Naphthalene	16.7500	0.50	0.41	20.0000		83.8	67 - 113	5.96	20	
o-Xylene	38.9300	0.50	0.13	40.0000		97.3	82 - 129	0.0514	20	
sec-Butylbenzene	18.3200	0.50	0.09	20.0000		91.6	86 - 127	1.52	20	
Styrene	20.2700	0.50	0.13	20.0000		101	83 - 122	2.40	20	
tert-Butylbenzene	18.8300	0.50	0.09	20.0000		94.2	84 - 130	1.06	20	
Tetrachloroethene	18.7100	0.50	0.10	20.0000		93.6	87 - 123	1.64	20	
Toluene	47.3900	0.50	0.12	40.0000		118	84 - 115	1.51	20	L3
trans-1,2-Dichloroethene	25.4900	0.50	0.09	20.0000		127	60 - 148	5.65	20	
Trichloroethene	24.2800	0.50	0.10	20.0000		121	79 - 129	1.71	20	
Trichlorofluoromethane	27.5200	0.50	0.10	20.0000		138	68 - 162	3.17	20	
Vinyl chloride	24.5800	0.50	0.05	20.0000		123	73 - 128	3.98	20	
Surrogate: 1,2-Dichloroethane-d4	34.56			25.0000		138	57 - 152			
Surrogate: 4-Bromofluorobenzene	23.78			25.0000		95.1	62 - 134			
Surrogate: Dibromofluoromethane	36.91			25.0000		148	56 - 167			
Surrogate: Toluene-d8	30.40			25.0000		122	33 - 170			



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0051 - MSSEMI_W

Blank (B9H0051-BLK1)

Prepared: 8/2/2019 Analyzed: 8/3/2019

1,4-Dioxane	ND	2.0	0.84						
Surrogate: 1,2-Dichlorobenzene-d	70.55			100.000		70.6	34 - 188		
Surrogate: 2-Fluorobiphenyl	74.80			100.000		74.8	39 - 108		
Surrogate: 4-Terphenyl-d14	88.29			100.000		88.3	71 - 131		
Surrogate: Nitrobenzene-d5	75.68			100.000		75.7	32 - 106		

LCS (B9H0051-BS1)

Prepared: 8/2/2019 Analyzed: 8/3/2019

1,4-Dioxane	106.240	2.0	0.84	100.000		106	40 - 159		
Surrogate: 1,2-Dichlorobenzene-d	69.43			100.000		69.4	34 - 188		
Surrogate: 2-Fluorobiphenyl	82.61			100.000		82.6	39 - 108		
Surrogate: 4-Terphenyl-d14	90.58			100.000		90.6	71 - 131		
Surrogate: Nitrobenzene-d5	80.15			100.000		80.2	32 - 106		

LCS Dup (B9H0051-BSD1)

Prepared: 8/2/2019 Analyzed: 8/3/2019

1,4-Dioxane	107.850	2.0	0.84	100.000		108	40 - 159	1.50	20
Surrogate: 1,2-Dichlorobenzene-d	64.91			100.000		64.9	34 - 188		
Surrogate: 2-Fluorobiphenyl	77.13			100.000		77.1	39 - 108		
Surrogate: 4-Terphenyl-d14	84.35			100.000		84.4	71 - 131		
Surrogate: Nitrobenzene-d5	72.46			100.000		72.5	32 - 106		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0050 - MSSEMI_W

Blank (B9H0050-BLK1)

Prepared: 8/2/2019 Analyzed: 8/2/2019

1,4-Dioxane	ND	0.20	0.05						
Surrogate: 1,2-Dichlorobenzene-d	0.6653			1.00000		66.5	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.7112			1.00000		71.1	20 - 131		
Surrogate: 4-Terphenyl-d14	0.9306			1.00000		93.1	24 - 135		
Surrogate: Nitrobenzene-d5	0.6491			1.00000		64.9	6 - 124		

LCS (B9H0050-BS1)

Prepared: 8/2/2019 Analyzed: 8/2/2019

1,4-Dioxane	1.26699	0.20	0.05	1.00000		127	64 - 129		
Surrogate: 1,2-Dichlorobenzene-d	0.7148			1.00000		71.5	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.7537			1.00000		75.4	20 - 131		
Surrogate: 4-Terphenyl-d14	0.9567			1.00000		95.7	24 - 135		
Surrogate: Nitrobenzene-d5	0.7292			1.00000		72.9	6 - 124		

LCS Dup (B9H0050-BSD1)

Prepared: 8/2/2019 Analyzed: 8/2/2019

1,4-Dioxane	1.24241	0.20	0.05	1.00000		124	64 - 129	1.96	20
Surrogate: 1,2-Dichlorobenzene-d	0.5652			1.00000		56.5	22 - 117		
Surrogate: 2-Fluorobiphenyl	0.6099			1.00000		61.0	20 - 131		
Surrogate: 4-Terphenyl-d14	0.7895			1.00000		79.0	24 - 135		
Surrogate: Nitrobenzene-d5	0.5424			1.00000		54.2	6 - 124		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Monthly Sample, 5

Report To : Steve Netto

Reported : 08/19/2019

Notes and Definitions

L4	Laboratory Control Sample outside of control limit but within Marginal Exceedance (ME) limit.
L3	Laboratory control sample outside in-house established limits but within method criteria.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.

Laboratory Report

August 16, 2019

Advanced Technology Laboratories
PO Box 92797
Long Beach, CA 90809-2797

Attn: Rachelle Arada

Element Job No: 233143
Purchase Order: CREDIT CARD
Project Name: 1902882 / Groundwater
Samples Received: 2
Date Received: 08-02-19

Analysis	Page
Bromate by SOP 5600, Rev 3	2


Michael Shelton
Technical Director
John Rowan
Senior Chemist

Bromate by SOP 5600, Rev 3
Ion Chromatography-Tandem Mass Spectrometry

Sample preparation: An aliquot of sample was spiked with internal standard (bromate-¹⁸O₃), and diluted with water. The sample solutions were analyzed using IC-MS/MS.

Parts Per Billion (µg/L)

<u>Sample ID</u>	<u>Result</u>
ATL Lab#: 1902882-04 / POX	ND
ATL Lab#: 1902882-06 / INF	ND
Method Blank	ND
Detection Limit	0.5
Date Analyzed: 08-14-19	

Quality Control Summary

Sample ID: ATL Lab#: 1902882-06 / INF

<u>Analyte</u>	<u>Sample Result</u>	<u>Spike Conc</u>	<u>Spike Result</u>	<u>Spike % Rec</u>	<u>Spike Duplicate</u>	<u>Duplicate % Rec</u>	<u>RPD</u>
Bromate	ND	10.0	10.9	109	9.69	97	12
QC Guidelines				80-120		80-120	NMT 15

ADVANCED TECHNOLOGY
LABORATORIES

SUBCONTRACT ORDER

Work Order: 1902882

SENDING LABORATORY:

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Phone: 562.989.4045
Fax: 562.989.6348
Project Manager: Rachelle Arada
(Rachelle.Arada@atlglobal.com)

RECEIVING LABORATORY:

Element Materials Technology
9240 Santa Fe Springs Road
Santa Fe Springs, CA 90670
Phone: (562) 948-2225
Fax: (562) 948-5850
PO#: SC13948- STANDARD TAT

Sampler: Signed

IMPORTANT : Please include Work Order # and PO # in your invoice.

Analysis	Due	Expires	Sampled	Comments
ATL Lab#: 1902882-04 / POX Bromate_ICMS/MS_SUB [Bromate by IC-MS/MS] 1-Poly Unpres - 125mL	08/16/19 17:00	08/29/19 11:30	08/01/19 11:30	
ATL Lab#: 1902882-06 / INF Bromate_ICMS/MS_SUB [Bromate by IC-MS/MS] 1-1-Poly Unpres - 125mL	08/16/19 17:00	08/29/19 11:50	08/01/19 11:50	

08.02.19 AND
Also has: ① H
② F

Released By

Date

Received By

Date

Released By

Date

Received By

Date

233143



PROJECT: Raytheon Main GETS Monthly Sample

TASK NO.: 532.15

Project Manager Steve Netto

QA Manager Ross Horton

Phone 858.455.6500

Fax 858.455.6533

Sampled By:				SAMPLE COLLECTION		MATRIX		PRESERVATION		CONTAINERS		ANALYSIS REQUESTED										Expected Concentration Range (ppb) for VOAs		SPECIAL HANDLING		Laboratory											
LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Ice	40-ml VOA	125 mL Poly	250 mL Poly	250 mL Glass	1 L Poly	1L Amber	VOCs by EPA 8260B	Bromate by EPA 317	Bromide by EPA 300	Alkalinity by SM2320B	Total Organic Carbon by SM5310B	SM2540D	UV Absorption EPA 415.3 @254 nm	1,4-Dioxane by EPA 8270C MOD	1,4-Dioxane by EPA 8270 SIM	0 - 10	10 - 100	100 - 1,000	>1,000	24 hr TAT	48 Hour TAT	5 Day TAT	Level IV Data Validation Requested	MS/MSD Requested	REMARKS			
1902882-01	TB-080119	8/1/2019	8:00		X	X			X	2						X									X												
02	CEFF	8/1/2019	11:20	X		X			X	3					1	X								X	X												
03	CBT	8/1/2019	11:25	X		X			X	3					1	X								X	X												
04	POX	8/1/2019	11:30	X		X		X	X	5	1	1			1	X	X		X	X				X	X												
05	PF	8/1/2019	11:45	X				X	X	2		1	1	1					X	X	X	X															
06	INF	8/1/2019	11:50	X		X			X	3	2				1	X	X	X					X				X										
07	EW-02	8/1/2019	12:35	X		X			X	3	1				1	X		X					X			X											
08	MW-29	8/1/2019	13:00	X		X			X	3	1				1	X		X					X			X											
Total number of containers per analysis:										24	5	2	1	1	6	Total No. of Containers: <u>39</u>																					

Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
HHA	8-1-19 1355	HHA	8-1-19 1355
Relinquished By: / Company:	Date / Time	Received By: / Company	Date / Time
HHA	8-1-19 1515	AIL	8-1-19 1515

- ☐ No. of containers correct
☐ Received in good condition
☐ Custody seals secure
☐ Conforms to COC document

Instructions

1. Fill out form completely and sign only after verified for completeness

Complete in ballpoint pen. Draw one line through error, initial and date correction
Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✗
Note applicable preservatives, special instructions, and deviations from typical environmental samples.
Consult project QA documents for specific instructions.

Temperature on receipt

Send Results to:
Steve Netto & Ross Horton
9171 Towne Centre Drive
Suite 375
San Diego, CA 92122
Ph: 858.455.6500
snetto@hargis.com
rhorton@hargis.com



August 22, 2019

Steve Netto
Hargis & Associates, Inc.
9171 Towne Centre Drive, Suite 375
San Diego, CA 92122
Tel: (619) 249-3166
Fax: (858) 455-6533

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1903057

Client Reference : Raytheon Main GETS Mid Month Sample, 532.15

Enclosed are the results for sample(s) received on August 15, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read "EC", with a stylized flourish at the end.

Edgar Caballero
President & Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. Test results contained within this data package meet the requirements of applicable state-specific certification programs. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-081519	1903057-01	Lab prepared water	8/15/19 8:00	8/15/19 14:45
CEFF	1903057-02	Groundwater	8/15/19 8:50	8/15/19 14:45
CBT	1903057-03	Groundwater	8/15/19 8:55	8/15/19 14:45
POX	1903057-04	Groundwater	8/15/19 9:00	8/15/19 14:45
INF	1903057-05	Groundwater	8/15/19 9:05	8/15/19 14:45
EW-02	1903057-06	Groundwater	8/15/19 10:15	8/15/19 14:45
MW-29	1903057-07	Groundwater	8/15/19 11:55	8/15/19 14:45



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: TB-081519

Lab ID: 1903057-01

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,1,1-Trichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,1,2-Trichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,1-Dichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,1-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,1-Dichloropropene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,2,3-Trichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,2-Dibromoethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,2-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,2-Dichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,2-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,3-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,3-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
1,4-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
2,2-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
2-Chlorotoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
4-Chlorotoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
4-Isopropyltoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Benzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Bromobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Bromodichloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Bromoform	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Bromomethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Carbon tetrachloride	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Chlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Chloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Chloroform	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Chloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Dibromochloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: TB-081519

Lab ID: 1903057-01

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Dichlorodifluoromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Ethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Hexachlorobutadiene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Isopropylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
m,p-Xylene	ND	1.0	1	B9H0438	08/20/2019	08/20/19 16:17	
Methylene chloride	ND	1.0	1	B9H0438	08/20/2019	08/20/19 16:17	
n-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
n-Propylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Naphthalene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
o-Xylene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
sec-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Styrene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
tert-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Tetrachloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Toluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Trichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Trichlorofluoromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Vinyl chloride	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:17	
Surrogate: 1,2-Dichloroethane-d4	117 %	59 - 158		B9H0438	08/20/2019	08/20/19 16:17	
Surrogate: 4-Bromofluorobenzene	103 %	71 - 127		B9H0438	08/20/2019	08/20/19 16:17	
Surrogate: Dibromofluoromethane	113 %	66 - 147		B9H0438	08/20/2019	08/20/19 16:17	
Surrogate: Toluene-d8	123 %	77 - 138		B9H0438	08/20/2019	08/20/19 16:17	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: CEFF

Lab ID: 1903057-02

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,1,1-Trichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,1,2-Trichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,1-Dichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,1-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,1-Dichloropropene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,2,3-Trichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,2-Dibromoethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,2-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,2-Dichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,2-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,3-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,3-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
1,4-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
2,2-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
2-Chlorotoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
4-Chlorotoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
4-Isopropyltoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Benzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Bromobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Bromodichloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Bromoform	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Bromomethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Carbon tetrachloride	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Chlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Chloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Chloroform	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Chloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Dibromochloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: CEFF

Lab ID: 1903057-02

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Dichlorodifluoromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Ethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Hexachlorobutadiene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Isopropylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
m,p-Xylene	ND	1.0	1	B9H0438	08/20/2019	08/20/19 16:41	
Methylene chloride	ND	1.0	1	B9H0438	08/20/2019	08/20/19 16:41	
n-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
n-Propylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Naphthalene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
o-Xylene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
sec-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Styrene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
tert-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Tetrachloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Toluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Trichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Trichlorofluoromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Vinyl chloride	ND	0.50	1	B9H0438	08/20/2019	08/20/19 16:41	
Surrogate: 1,2-Dichloroethane-d4	119 %	59 - 158		B9H0438	08/20/2019	08/20/19 16:41	
Surrogate: 4-Bromofluorobenzene	100 %	71 - 127		B9H0438	08/20/2019	08/20/19 16:41	
Surrogate: Dibromofluoromethane	118 %	66 - 147		B9H0438	08/20/2019	08/20/19 16:41	
Surrogate: Toluene-d8	122 %	77 - 138		B9H0438	08/20/2019	08/20/19 16:41	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: CEFF

Lab ID: 1903057-02

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9H0468	08/20/2019	08/20/19 18:23	
Surrogate: 1,2-Dichlorobenzene-d4	72.9 %	22 - 117		B9H0468	08/20/2019	08/20/19 18:23	
Surrogate: 2-Fluorobiphenyl	77.4 %	20 - 131		B9H0468	08/20/2019	08/20/19 18:23	
Surrogate: 4-Terphenyl-d14	85.0 %	24 - 135		B9H0468	08/20/2019	08/20/19 18:23	
Surrogate: Nitrobenzene-d5	92.1 %	6 - 124		B9H0468	08/20/2019	08/20/19 18:23	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: CBT

Lab ID: 1903057-03

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,1,1-Trichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,1,2-Trichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,1-Dichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,1-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,1-Dichloropropene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,2,3-Trichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,2-Dibromoethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,2-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,2-Dichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,2-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,3-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,3-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
1,4-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
2,2-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
2-Chlorotoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
4-Chlorotoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
4-Isopropyltoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Benzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Bromobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Bromodichloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Bromoform	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Bromomethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Carbon tetrachloride	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Chlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Chloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Chloroform	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Chloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Dibromochloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: CBT

Lab ID: 1903057-03

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Dichlorodifluoromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Ethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Hexachlorobutadiene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Isopropylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
m,p-Xylene	ND	1.0	1	B9H0438	08/20/2019	08/20/19 17:05	
Methylene chloride	ND	1.0	1	B9H0438	08/20/2019	08/20/19 17:05	
n-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
n-Propylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Naphthalene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
o-Xylene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
sec-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Styrene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
tert-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Tetrachloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Toluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Trichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Trichlorofluoromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Vinyl chloride	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:05	
Surrogate: 1,2-Dichloroethane-d4	125 %	59 - 158		B9H0438	08/20/2019	08/20/19 17:05	
Surrogate: 4-Bromofluorobenzene	101 %	71 - 127		B9H0438	08/20/2019	08/20/19 17:05	
Surrogate: Dibromofluoromethane	124 %	66 - 147		B9H0438	08/20/2019	08/20/19 17:05	
Surrogate: Toluene-d8	124 %	77 - 138		B9H0438	08/20/2019	08/20/19 17:05	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: CBT

Lab ID: 1903057-03

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9H0424	08/19/2019	08/19/19 21:10	
Surrogate: 1,2-Dichlorobenzene-d4	74.5 %	22 - 117		B9H0424	08/19/2019	08/19/19 21:10	
Surrogate: 2-Fluorobiphenyl	77.1 %	20 - 131		B9H0424	08/19/2019	08/19/19 21:10	
Surrogate: 4-Terphenyl-d14	86.2 %	24 - 135		B9H0424	08/19/2019	08/19/19 21:10	
Surrogate: Nitrobenzene-d5	86.4 %	6 - 124		B9H0424	08/19/2019	08/19/19 21:10	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: POX

Lab ID: 1903057-04

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,1,1-Trichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,1,2-Trichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,1-Dichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,1-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,1-Dichloropropene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,2,3-Trichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,2-Dibromoethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,2-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,2-Dichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,2-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,3-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,3-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
1,4-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
2,2-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
2-Chlorotoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
4-Chlorotoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
4-Isopropyltoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Benzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Bromobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Bromodichloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Bromoform	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Bromomethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Carbon tetrachloride	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Chlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Chloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Chloroform	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Chloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Dibromochloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: POX

Lab ID: 1903057-04

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Dichlorodifluoromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Ethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Hexachlorobutadiene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Isopropylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
m,p-Xylene	ND	1.0	1	B9H0438	08/20/2019	08/20/19 17:29	
Methylene chloride	ND	1.0	1	B9H0438	08/20/2019	08/20/19 17:29	
n-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
n-Propylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Naphthalene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
o-Xylene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
sec-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Styrene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
tert-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Tetrachloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Toluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Trichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Trichlorofluoromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Vinyl chloride	ND	0.50	1	B9H0438	08/20/2019	08/20/19 17:29	
Surrogate: 1,2-Dichloroethane-d4	125 %	59 - 158		B9H0438	08/20/2019	08/20/19 17:29	
Surrogate: 4-Bromofluorobenzene	102 %	71 - 127		B9H0438	08/20/2019	08/20/19 17:29	
Surrogate: Dibromofluoromethane	120 %	66 - 147		B9H0438	08/20/2019	08/20/19 17:29	
Surrogate: Toluene-d8	120 %	77 - 138		B9H0438	08/20/2019	08/20/19 17:29	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: POX

Lab ID: 1903057-04

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	ND	0.20	1	B9H0424	08/19/2019	08/19/19 21:37	
Surrogate: 1,2-Dichlorobenzene-d4	89.8 %	22 - 117		B9H0424	08/19/2019	08/19/19 21:37	
Surrogate: 2-Fluorobiphenyl	91.3 %	20 - 131		B9H0424	08/19/2019	08/19/19 21:37	
Surrogate: 4-Terphenyl-d14	95.7 %	24 - 135		B9H0424	08/19/2019	08/19/19 21:37	
Surrogate: Nitrobenzene-d5	105 %	6 - 124		B9H0424	08/19/2019	08/19/19 21:37	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: INF

Lab ID: 1903057-05

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,1,1-Trichloroethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,1,2-Trichloroethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,1-Dichloroethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,1-Dichloroethene	63	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,1-Dichloropropene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,2,3-Trichloropropane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,2-Dibromoethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,2-Dichlorobenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,2-Dichloroethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,2-Dichloropropane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,3-Dichlorobenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,3-Dichloropropane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
1,4-Dichlorobenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
2,2-Dichloropropane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
2-Chlorotoluene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
4-Chlorotoluene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
4-Isopropyltoluene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Benzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Bromobenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Bromodichloromethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Bromoform	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Bromomethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Carbon tetrachloride	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Chlorobenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Chloroethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Chloroform	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Chloromethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Dibromochloromethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: INF

Lab ID: 1903057-05

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Dichlorodifluoromethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Ethylbenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Hexachlorobutadiene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Isopropylbenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
m,p-Xylene	ND	1.0	1	B9H0520	08/22/2019	08/22/19 13:58	
Methylene chloride	ND	1.0	1	B9H0520	08/22/2019	08/22/19 13:58	
n-Butylbenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
n-Propylbenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Naphthalene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
o-Xylene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
sec-Butylbenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Styrene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
tert-Butylbenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Tetrachloroethene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Toluene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Trichloroethene	0.74	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Trichlorofluoromethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
Vinyl chloride	ND	0.50	1	B9H0520	08/22/2019	08/22/19 13:58	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>130 %</i>	<i>59 - 158</i>		B9H0520	08/22/2019	<i>08/22/19 13:58</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>99.1 %</i>	<i>71 - 127</i>		B9H0520	08/22/2019	<i>08/22/19 13:58</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>127 %</i>	<i>66 - 147</i>		B9H0520	08/22/2019	<i>08/22/19 13:58</i>	
<i>Surrogate: Toluene-d8</i>	<i>126 %</i>	<i>77 - 138</i>		B9H0520	08/22/2019	<i>08/22/19 13:58</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: INF

Lab ID: 1903057-05

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	35	2.0	1	B9H0467	08/20/2019	08/20/19 22:33	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>63.4 %</i>	<i>34 - 188</i>		B9H0467	08/20/2019	<i>08/20/19 22:33</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>68.8 %</i>	<i>39 - 108</i>		B9H0467	08/20/2019	<i>08/20/19 22:33</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>109 %</i>	<i>71 - 131</i>		B9H0467	08/20/2019	<i>08/20/19 22:33</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>69.1 %</i>	<i>32 - 106</i>		B9H0467	08/20/2019	<i>08/20/19 22:33</i>	



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Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: EW-02

Lab ID: 1903057-06

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,1,1-Trichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,1,2-Trichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,1-Dichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,1-Dichloroethene	19	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,1-Dichloropropene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,2,3-Trichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,2-Dibromoethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,2-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,2-Dichloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,2-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,3-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,3-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
1,4-Dichlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
2,2-Dichloropropane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
2-Chlorotoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
4-Chlorotoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
4-Isopropyltoluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Benzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Bromobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Bromodichloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Bromoform	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Bromomethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Carbon tetrachloride	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Chlorobenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Chloroethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Chloroform	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Chloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Dibromochloromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: EW-02

Lab ID: 1903057-06

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Dichlorodifluoromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Ethylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Hexachlorobutadiene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Isopropylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
m,p-Xylene	ND	1.0	1	B9H0438	08/20/2019	08/20/19 21:04	
Methylene chloride	ND	1.0	1	B9H0438	08/20/2019	08/20/19 21:04	
n-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
n-Propylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Naphthalene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
o-Xylene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
sec-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Styrene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
tert-Butylbenzene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Tetrachloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Toluene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Trichloroethene	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Trichlorofluoromethane	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Vinyl chloride	ND	0.50	1	B9H0438	08/20/2019	08/20/19 21:04	
Surrogate: 1,2-Dichloroethane-d4	126 %	59 - 158		B9H0438	08/20/2019	08/20/19 21:04	
Surrogate: 4-Bromofluorobenzene	98.7 %	71 - 127		B9H0438	08/20/2019	08/20/19 21:04	
Surrogate: Dibromofluoromethane	127 %	66 - 147		B9H0438	08/20/2019	08/20/19 21:04	
Surrogate: Toluene-d8	122 %	77 - 138		B9H0438	08/20/2019	08/20/19 21:04	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: EW-02

Lab ID: 1903057-06

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	12	2.0	1	B9H0467	08/20/2019	08/20/19 22:59	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>69.3 %</i>	<i>34 - 188</i>		B9H0467	08/20/2019	<i>08/20/19 22:59</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>73.2 %</i>	<i>39 - 108</i>		B9H0467	08/20/2019	<i>08/20/19 22:59</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>112 %</i>	<i>71 - 131</i>		B9H0467	08/20/2019	<i>08/20/19 22:59</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>76.7 %</i>	<i>32 - 106</i>		B9H0467	08/20/2019	<i>08/20/19 22:59</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-29

Lab ID: 1903057-07

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,1,1,2-Tetrachloroethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,1,1-Trichloroethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,1,2,2-Tetrachloroethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,1,2-Trichloroethane	0.64	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,1-Dichloroethane	2.7	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,1-Dichloroethene	170	5.0	10	B9H0497	08/21/2019	08/21/19 21:43	
1,1-Dichloropropene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,2,3-Trichloropropane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,2,3-Trichlorobenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,2,4-Trichlorobenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,2,4-Trimethylbenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,2-Dibromo-3-chloropropane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,2-Dibromoethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,2-Dichlorobenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,2-Dichloroethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,2-Dichloropropane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,3,5-Trimethylbenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,3-Dichlorobenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,3-Dichloropropane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
1,4-Dichlorobenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
2,2-Dichloropropane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
2-Chlorotoluene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
4-Chlorotoluene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
4-Isopropyltoluene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Benzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Bromobenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Bromodichloromethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Bromoform	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Bromomethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Carbon tetrachloride	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Chlorobenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Chloroethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Chloroform	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Chloromethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
cis-1,2-Dichloroethene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
cis-1,3-Dichloropropene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Dibromochloromethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-29

Lab ID: 1903057-07

Volatile Organic Compounds by EPA 8260B

Analyst: QP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Dibromomethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Dichlorodifluoromethane	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Ethylbenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Hexachlorobutadiene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Isopropylbenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
m,p-Xylene	ND	1.0	1	B9H0520	08/22/2019	08/22/19 14:22	
Methylene chloride	ND	1.0	1	B9H0520	08/22/2019	08/22/19 14:22	
n-Butylbenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
n-Propylbenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Naphthalene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
o-Xylene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
sec-Butylbenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Styrene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
tert-Butylbenzene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Tetrachloroethene	0.69	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Toluene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
trans-1,2-Dichloroethene	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Trichloroethene	2.3	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Trichlorofluoromethane	1.2	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
Vinyl chloride	ND	0.50	1	B9H0520	08/22/2019	08/22/19 14:22	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>131 %</i>	<i>59 - 158</i>		B9H0497	08/21/2019	<i>08/21/19 21:43</i>	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>135 %</i>	<i>59 - 158</i>		B9H0520	08/22/2019	<i>08/22/19 14:22</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>99.0 %</i>	<i>71 - 127</i>		B9H0497	08/21/2019	<i>08/21/19 21:43</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>99.3 %</i>	<i>71 - 127</i>		B9H0520	08/22/2019	<i>08/22/19 14:22</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>126 %</i>	<i>66 - 147</i>		B9H0497	08/21/2019	<i>08/21/19 21:43</i>	
<i>Surrogate: Dibromofluoromethane</i>	<i>133 %</i>	<i>66 - 147</i>		B9H0520	08/22/2019	<i>08/22/19 14:22</i>	
<i>Surrogate: Toluene-d8</i>	<i>129 %</i>	<i>77 - 138</i>		B9H0520	08/22/2019	<i>08/22/19 14:22</i>	
<i>Surrogate: Toluene-d8</i>	<i>124 %</i>	<i>77 - 138</i>		B9H0497	08/21/2019	<i>08/21/19 21:43</i>	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Client Sample ID: MW-29

Lab ID: 1903057-07

1,4-Dioxane by EPA 8270: Isotope Dilution Technique

Analyst: SP

Analyte	Result (ug/L)	PQL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,4-Dioxane	120	2.0	1	B9H0467	08/20/2019	08/20/19 23:26	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	<i>57.0 %</i>	<i>34 - 188</i>		B9H0467	08/20/2019	<i>08/20/19 23:26</i>	
<i>Surrogate: 2-Fluorobiphenyl</i>	<i>62.5 %</i>	<i>39 - 108</i>		B9H0467	08/20/2019	<i>08/20/19 23:26</i>	
<i>Surrogate: 4-Terphenyl-d14</i>	<i>92.8 %</i>	<i>71 - 131</i>		B9H0467	08/20/2019	<i>08/20/19 23:26</i>	
<i>Surrogate: Nitrobenzene-d5</i>	<i>64.8 %</i>	<i>32 - 106</i>		B9H0467	08/20/2019	<i>08/20/19 23:26</i>	



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San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

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Reported : 08/22/2019

QUALITY CONTROL SECTION

Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0438 - MSVOA_LL_W

Blank (B9H0438-BLK1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,1,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05



Certificate of Analysis

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9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0438 - MSVOA_LL_W (continued)

Blank (B9H0438-BLK1) - Continued

Prepared: 8/20/2019 Analyzed: 8/20/2019

Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15
Isopropylbenzene	ND	0.50	0.10
m,p-Xylene	ND	1.0	0.19
Methylene chloride	ND	1.0	0.71
n-Butylbenzene	ND	0.50	0.11
n-Propylbenzene	ND	0.50	0.10
Naphthalene	ND	0.50	0.41
o-Xylene	ND	0.50	0.13
sec-Butylbenzene	ND	0.50	0.09
Styrene	ND	0.50	0.13
tert-Butylbenzene	ND	0.50	0.09
Tetrachloroethene	ND	0.50	0.10
Toluene	ND	0.50	0.12
trans-1,2-Dichloroethene	ND	0.50	0.09
Trichloroethene	ND	0.50	0.10
Trichlorofluoromethane	ND	0.50	0.10
Vinyl chloride	ND	0.50	0.05

Surrogate: 1,2-Dichloroethane-d4	25.74		25.0000	103	59 - 158
Surrogate: 4-Bromofluorobenzene	24.39		25.0000	97.6	71 - 127
Surrogate: Dibromofluoromethane	26.85		25.0000	107	66 - 147
Surrogate: Toluene-d8	27.17		25.0000	109	77 - 138

LCS (B9H0438-BS1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,1,1,2-Tetrachloroethane	17.4400	0.50	0.11	20.0000	87.2	71 - 133
1,1,1-Trichloroethane	17.6200	0.50	0.07	20.0000	88.1	62 - 124
1,1,2,2-Tetrachloroethane	17.2100	0.50	0.36	20.0000	86.0	50 - 131
1,1,2-Trichloroethane	16.6500	0.50	0.25	20.0000	83.2	77 - 121
1,1-Dichloroethane	18.7800	0.50	0.09	20.0000	93.9	52 - 130
1,1-Dichloroethene	18.9800	0.50	0.13	20.0000	94.9	61 - 136
1,1-Dichloropropene	17.2200	0.50	0.13	20.0000	86.1	80 - 128
1,2,3-Trichloropropane	16.4700	0.50	0.39	20.0000	82.4	59 - 126
1,2,3-Trichlorobenzene	17.3700	0.50	0.18	20.0000	86.8	69 - 138
1,2,4-Trichlorobenzene	17.2000	0.50	0.16	20.0000	86.0	78 - 125
1,2,4-Trimethylbenzene	18.9600	0.50	0.14	20.0000	94.8	70 - 126
1,2-Dibromo-3-chloropropane	16.7700	0.50	0.41	20.0000	83.8	58 - 127
1,2-Dibromoethane	16.2300	0.50	0.24	20.0000	81.2	76 - 120
1,2-Dichlorobenzene	16.6900	0.50	0.20	20.0000	83.4	82 - 117
1,2-Dichloroethane	17.5600	0.50	0.20	20.0000	87.8	66 - 126
1,2-Dichloropropane	16.1200	0.50	0.15	20.0000	80.6	70 - 117
1,3,5-Trimethylbenzene	18.8200	0.50	0.13	20.0000	94.1	71 - 125



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0438 - MSVOA_LL_W (continued)

LCS (B9H0438-BS1) - Continued

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,3-Dichlorobenzene	17.1900	0.50	0.16	20.0000		86.0	81 - 116		
1,3-Dichloropropane	16.3600	0.50	0.21	20.0000		81.8	69 - 124		
1,4-Dichlorobenzene	17.9800	0.50	0.17	20.0000		89.9	80 - 114		
2,2-Dichloropropane	20.7900	0.50	0.38	20.0000		104	58 - 132		
2-Chlorotoluene	18.0800	0.50	0.11	20.0000		90.4	71 - 119		
4-Chlorotoluene	17.8500	0.50	0.12	20.0000		89.2	72 - 122		
4-Isopropyltoluene	19.1000	0.50	0.11	20.0000		95.5	69 - 126		
Benzene	33.8200	0.50	0.13	40.0000		84.6	80 - 116		
Bromobenzene	17.7000	0.50	0.21	20.0000		88.5	77 - 118		
Bromodichloromethane	16.8000	0.50	0.14	20.0000		84.0	73 - 118		
Bromoform	16.5100	0.50	0.20	20.0000		82.6	65 - 133		
Bromomethane	16.7500	0.50	0.17	20.0000		83.8	7 - 205		
Carbon tetrachloride	16.9400	0.50	0.09	20.0000		84.7	63 - 133		
Chlorobenzene	17.6800	0.50	0.13	20.0000		88.4	86 - 113		
Chloroethane	17.6200	0.50	0.15	20.0000		88.1	66 - 141		
Chloroform	18.8400	0.50	0.11	20.0000		94.2	63 - 127		
Chloromethane	15.0100	0.50	0.12	20.0000		75.0	0 - 207		
cis-1,2-Dichloroethene	18.5700	0.50	0.14	20.0000		92.8	64 - 126		
cis-1,3-Dichloropropene	19.5000	0.50	0.13	20.0000		97.5	70 - 141		
Dibromochloromethane	16.5500	0.50	0.16	20.0000		82.8	67 - 135		
Dibromomethane	17.0800	0.50	0.19	20.0000		85.4	74 - 118		
Dichlorodifluoromethane	18.0800	0.50	0.05	20.0000		90.4	14 - 181		
Ethylbenzene	34.0100	0.50	0.13	40.0000		85.0	77 - 118		
Hexachlorobutadiene	18.0900	0.50	0.15	20.0000		90.4	66 - 125		
Isopropylbenzene	19.5500	0.50	0.10	20.0000		97.8	68 - 137		
m,p-Xylene	36.1900	1.0	0.19	40.0000		90.5	78 - 126		
Methylene chloride	23.7000	1.0	0.71	20.0000		118	51 - 149		
n-Butylbenzene	19.0900	0.50	0.11	20.0000		95.4	63 - 127		
n-Propylbenzene	18.3100	0.50	0.10	20.0000		91.6	69 - 124		
Naphthalene	15.1000	0.50	0.41	20.0000		75.5	60 - 126		
o-Xylene	37.1200	0.50	0.13	40.0000		92.8	79 - 126		
sec-Butylbenzene	18.6700	0.50	0.09	20.0000		93.4	69 - 124		
Styrene	18.3900	0.50	0.13	20.0000		92.0	80 - 127		
tert-Butylbenzene	18.9300	0.50	0.09	20.0000		94.6	71 - 124		
Tetrachloroethene	17.0000	0.50	0.10	20.0000		85.0	73 - 129		
Toluene	33.9700	0.50	0.12	40.0000		84.9	78 - 121		
trans-1,2-Dichloroethene	18.3500	0.50	0.09	20.0000		91.8	58 - 141		
Trichloroethene	15.7200	0.50	0.10	20.0000		78.6	73 - 126		
Trichlorofluoromethane	17.2700	0.50	0.10	20.0000		86.4	62 - 146		
Vinyl chloride	18.1800	0.50	0.05	20.0000		90.9	61 - 137		

Surrogate: 1,2-Dichloroethane-d4	25.25			25.0000		101	59 - 158		



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0438 - MSVOA_LL_W (continued)

LCS (B9H0438-BS1) - Continued

Prepared: 8/20/2019 Analyzed: 8/20/2019

Surrogate: 4-Bromofluorobenzene	26.55		25.0000		106	71 - 127			
Surrogate: Dibromofluoromethane	25.98		25.0000		104	66 - 147			
Surrogate: Toluene-d8	26.16		25.0000		105	77 - 138			

LCS Dup (B9H0438-BSD1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,1,1,2-Tetrachloroethane	20.2100	0.50	0.11	20.0000	101	71 - 133	14.7	20	
1,1,1-Trichloroethane	19.7800	0.50	0.07	20.0000	98.9	62 - 124	11.6	20	
1,1,2,2-Tetrachloroethane	21.2000	0.50	0.36	20.0000	106	50 - 131	20.8	20	R
1,1,2-Trichloroethane	20.4700	0.50	0.25	20.0000	102	77 - 121	20.6	20	R
1,1-Dichloroethane	21.0200	0.50	0.09	20.0000	105	52 - 130	11.3	20	
1,1-Dichloroethene	21.4000	0.50	0.13	20.0000	107	61 - 136	12.0	20	
1,1-Dichloropropene	21.2700	0.50	0.13	20.0000	106	80 - 128	21.0	20	R
1,2,3-Trichloropropane	19.4900	0.50	0.39	20.0000	97.4	59 - 126	16.8	20	
1,2,3-Trichlorobenzene	20.6200	0.50	0.18	20.0000	103	69 - 138	17.1	20	
1,2,4-Trichlorobenzene	19.4800	0.50	0.16	20.0000	97.4	78 - 125	12.4	20	
1,2,4-Trimethylbenzene	21.4700	0.50	0.14	20.0000	107	70 - 126	12.4	20	
1,2-Dibromo-3-chloropropane	18.3600	0.50	0.41	20.0000	91.8	58 - 127	9.05	20	
1,2-Dibromoethane	20.2700	0.50	0.24	20.0000	101	76 - 120	22.1	20	R
1,2-Dichlorobenzene	18.8300	0.50	0.20	20.0000	94.2	82 - 117	12.0	20	
1,2-Dichloroethane	21.3700	0.50	0.20	20.0000	107	66 - 126	19.6	20	
1,2-Dichloropropane	19.3600	0.50	0.15	20.0000	96.8	70 - 117	18.3	20	
1,3,5-Trimethylbenzene	21.0100	0.50	0.13	20.0000	105	71 - 125	11.0	20	
1,3-Dichlorobenzene	19.1700	0.50	0.16	20.0000	95.8	81 - 116	10.9	20	
1,3-Dichloropropane	20.5400	0.50	0.21	20.0000	103	69 - 124	22.7	20	R
1,4-Dichlorobenzene	20.3000	0.50	0.17	20.0000	102	80 - 114	12.1	20	
2,2-Dichloropropane	22.9800	0.50	0.38	20.0000	115	58 - 132	10.0	20	
2-Chlorotoluene	20.2200	0.50	0.11	20.0000	101	71 - 119	11.2	20	
4-Chlorotoluene	20.2200	0.50	0.12	20.0000	101	72 - 122	12.5	20	
4-Isopropyltoluene	21.0500	0.50	0.11	20.0000	105	69 - 126	9.71	20	
Benzene	40.2500	0.50	0.13	40.0000	101	80 - 116	17.4	20	
Bromobenzene	19.6900	0.50	0.21	20.0000	98.4	77 - 118	10.6	20	
Bromodichloromethane	20.1900	0.50	0.14	20.0000	101	73 - 118	18.3	20	
Bromoform	19.4800	0.50	0.20	20.0000	97.4	65 - 133	16.5	20	
Bromomethane	17.1600	0.50	0.17	20.0000	85.8	7 - 205	2.42	20	
Carbon tetrachloride	20.5100	0.50	0.09	20.0000	103	63 - 133	19.1	20	
Chlorobenzene	20.8100	0.50	0.13	20.0000	104	86 - 113	16.3	20	
Chloroethane	17.7100	0.50	0.15	20.0000	88.6	66 - 141	0.509	20	
Chloroform	21.2800	0.50	0.11	20.0000	106	63 - 127	12.2	20	
Chloromethane	14.0700	0.50	0.12	20.0000	70.4	0 - 207	6.46	20	
cis-1,2-Dichloroethene	20.6700	0.50	0.14	20.0000	103	64 - 126	10.7	20	
cis-1,3-Dichloropropene	23.0800	0.50	0.13	20.0000	115	70 - 141	16.8	20	
Dibromochloromethane	19.6100	0.50	0.16	20.0000	98.0	67 - 135	16.9	20	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

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Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0438 - MSVOA_LL_W (continued)

LCS Dup (B9H0438-BSD1) - Continued

Prepared: 8/20/2019 Analyzed: 8/20/2019

Dibromomethane	21.0400	0.50	0.19	20.0000		105	74 - 118	20.8	20	R
Dichlorodifluoromethane	17.6200	0.50	0.05	20.0000		88.1	14 - 181	2.58	20	
Ethylbenzene	39.5400	0.50	0.13	40.0000		98.8	77 - 118	15.0	20	
Hexachlorobutadiene	20.2400	0.50	0.15	20.0000		101	66 - 125	11.2	20	
Isopropylbenzene	22.1500	0.50	0.10	20.0000		111	68 - 137	12.5	20	
m,p-Xylene	42.1700	1.0	0.19	40.0000		105	78 - 126	15.3	20	
Methylene chloride	25.7100	1.0	0.71	20.0000		129	51 - 149	8.14	20	
n-Butylbenzene	20.6400	0.50	0.11	20.0000		103	63 - 127	7.80	20	
n-Propylbenzene	20.3300	0.50	0.10	20.0000		102	69 - 124	10.5	20	
Naphthalene	18.0200	0.50	0.41	20.0000		90.1	60 - 126	17.6	20	
o-Xylene	42.8900	0.50	0.13	40.0000		107	79 - 126	14.4	20	
sec-Butylbenzene	21.1400	0.50	0.09	20.0000		106	69 - 124	12.4	20	
Styrene	21.7200	0.50	0.13	20.0000		109	80 - 127	16.6	20	
tert-Butylbenzene	20.9300	0.50	0.09	20.0000		105	71 - 124	10.0	20	
Tetrachloroethene	19.3600	0.50	0.10	20.0000		96.8	73 - 129	13.0	20	
Toluene	40.4700	0.50	0.12	40.0000		101	78 - 121	17.5	20	
trans-1,2-Dichloroethene	19.9500	0.50	0.09	20.0000		99.8	58 - 141	8.36	20	
Trichloroethene	18.8400	0.50	0.10	20.0000		94.2	73 - 126	18.1	20	
Trichlorofluoromethane	17.4800	0.50	0.10	20.0000		87.4	62 - 146	1.21	20	
Vinyl chloride	17.3400	0.50	0.05	20.0000		86.7	61 - 137	4.73	20	
Surrogate: 1,2-Dichloroethane-d4	25.22			25.0000		101	59 - 158			
Surrogate: 4-Bromofluorobenzene	27.45			25.0000		110	71 - 127			
Surrogate: Dibromofluoromethane	25.86			25.0000		103	66 - 147			
Surrogate: Toluene-d8	26.39			25.0000		106	77 - 138			



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Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0497 - MSVOA_LL_W

Blank (B9H0497-BLK1)

Prepared: 8/21/2019 Analyzed: 8/21/2019

1,1,1,2-Tetrachloroethane	ND	0.50	0.11
1,1,1-Trichloroethane	ND	0.50	0.07
1,1,2,2-Tetrachloroethane	ND	0.50	0.36
1,1,2-Trichloroethane	ND	0.50	0.25
1,1-Dichloroethane	ND	0.50	0.09
1,1-Dichloroethene	ND	0.50	0.13
1,1-Dichloropropene	ND	0.50	0.13
1,2,3-Trichloropropane	ND	0.50	0.39
1,2,3-Trichlorobenzene	ND	0.50	0.18
1,2,4-Trichlorobenzene	ND	0.50	0.16
1,2,4-Trimethylbenzene	ND	0.50	0.14
1,2-Dibromo-3-chloropropane	ND	0.50	0.41
1,2-Dibromoethane	ND	0.50	0.24
1,2-Dichlorobenzene	ND	0.50	0.20
1,2-Dichloroethane	ND	0.50	0.20
1,2-Dichloropropane	ND	0.50	0.15
1,3,5-Trimethylbenzene	ND	0.50	0.13
1,3-Dichlorobenzene	ND	0.50	0.16
1,3-Dichloropropane	ND	0.50	0.21
1,4-Dichlorobenzene	ND	0.50	0.17
2,2-Dichloropropane	ND	0.50	0.38
2-Chlorotoluene	ND	0.50	0.11
4-Chlorotoluene	ND	0.50	0.12
4-Isopropyltoluene	ND	0.50	0.11
Benzene	ND	0.50	0.13
Bromobenzene	ND	0.50	0.21
Bromodichloromethane	ND	0.50	0.14
Bromoform	ND	0.50	0.20
Bromomethane	ND	0.50	0.17
Carbon tetrachloride	ND	0.50	0.09
Chlorobenzene	ND	0.50	0.13
Chloroethane	ND	0.50	0.15
Chloroform	ND	0.50	0.11
Chloromethane	ND	0.50	0.12
cis-1,2-Dichloroethene	ND	0.50	0.14
cis-1,3-Dichloropropene	ND	0.50	0.13
Dibromochloromethane	ND	0.50	0.16
Dibromomethane	ND	0.50	0.19
Dichlorodifluoromethane	ND	0.50	0.05
Ethylbenzene	ND	0.50	0.13
Hexachlorobutadiene	ND	0.50	0.15



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0497 - MSVOA_LL_W (continued)

Blank (B9H0497-BLK1) - Continued

Prepared: 8/21/2019 Analyzed: 8/21/2019

Isopropylbenzene	ND	0.50	0.10							
m,p-Xylene	ND	1.0	0.19							
Methylene chloride	1.00000	1.0	0.71							B
n-Butylbenzene	ND	0.50	0.11							
n-Propylbenzene	ND	0.50	0.10							
Naphthalene	ND	0.50	0.41							
o-Xylene	ND	0.50	0.13							
sec-Butylbenzene	ND	0.50	0.09							
Styrene	ND	0.50	0.13							
tert-Butylbenzene	ND	0.50	0.09							
Tetrachloroethene	ND	0.50	0.10							
Toluene	ND	0.50	0.12							
trans-1,2-Dichloroethene	ND	0.50	0.09							
Trichloroethene	ND	0.50	0.10							
Trichlorofluoromethane	ND	0.50	0.10							
Vinyl chloride	ND	0.50	0.05							

Surrogate: 1,2-Dichloroethane-d4	30.27			25.0000		121	59 - 158
Surrogate: 4-Bromofluorobenzene	25.27			25.0000		101	71 - 127
Surrogate: Dibromofluoromethane	30.97			25.0000		124	66 - 147
Surrogate: Toluene-d8	29.34			25.0000		117	77 - 138

LCS (B9H0497-BS1)

Prepared: 8/21/2019 Analyzed: 8/21/2019

1,1,1,2-Tetrachloroethane	18.3700	0.50	0.11	20.0000		91.8	71 - 133
1,1,1-Trichloroethane	19.5400	0.50	0.07	20.0000		97.7	62 - 124
1,1,2,2-Tetrachloroethane	16.8600	0.50	0.36	20.0000		84.3	50 - 131
1,1,2-Trichloroethane	17.8100	0.50	0.25	20.0000		89.0	77 - 121
1,1-Dichloroethane	20.7900	0.50	0.09	20.0000		104	52 - 130
1,1-Dichloroethene	20.9600	0.50	0.13	20.0000		105	61 - 136
1,1-Dichloropropene	20.0400	0.50	0.13	20.0000		100	80 - 128
1,2,3-Trichloropropane	16.4400	0.50	0.39	20.0000		82.2	59 - 126
1,2,3-Trichlorobenzene	17.5500	0.50	0.18	20.0000		87.8	69 - 138
1,2,4-Trichlorobenzene	17.3200	0.50	0.16	20.0000		86.6	78 - 125
1,2,4-Trimethylbenzene	19.7500	0.50	0.14	20.0000		98.8	70 - 126
1,2-Dibromo-3-chloropropane	15.1500	0.50	0.41	20.0000		75.8	58 - 127
1,2-Dibromoethane	17.6500	0.50	0.24	20.0000		88.2	76 - 120
1,2-Dichlorobenzene	16.5100	0.50	0.20	20.0000		82.6	82 - 117
1,2-Dichloroethane	19.1500	0.50	0.20	20.0000		95.8	66 - 126
1,2-Dichloropropane	17.9500	0.50	0.15	20.0000		89.8	70 - 117
1,3,5-Trimethylbenzene	19.5600	0.50	0.13	20.0000		97.8	71 - 125
1,3-Dichlorobenzene	17.5600	0.50	0.16	20.0000		87.8	81 - 116
1,3-Dichloropropane	16.8800	0.50	0.21	20.0000		84.4	69 - 124



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0497 - MSVOA_LL_W (continued)

LCS (B9H0497-BS1) - Continued

Prepared: 8/21/2019 Analyzed: 8/21/2019

1,4-Dichlorobenzene	18.4700	0.50	0.17	20.0000		92.4	80 - 114		
2,2-Dichloropropane	23.5200	0.50	0.38	20.0000		118	58 - 132		
2-Chlorotoluene	18.6100	0.50	0.11	20.0000		93.0	71 - 119		
4-Chlorotoluene	18.7800	0.50	0.12	20.0000		93.9	72 - 122		
4-Isopropyltoluene	19.9600	0.50	0.11	20.0000		99.8	69 - 126		
Benzene	38.1100	0.50	0.13	40.0000		95.3	80 - 116		
Bromobenzene	18.0700	0.50	0.21	20.0000		90.4	77 - 118		
Bromodichloromethane	18.5400	0.50	0.14	20.0000		92.7	73 - 118		
Bromoform	16.1700	0.50	0.20	20.0000		80.8	65 - 133		
Bromomethane	21.5000	0.50	0.17	20.0000		108	7 - 205		
Carbon tetrachloride	19.1700	0.50	0.09	20.0000		95.8	63 - 133		
Chlorobenzene	18.5300	0.50	0.13	20.0000		92.6	86 - 113		
Chloroethane	19.9000	0.50	0.15	20.0000		99.5	66 - 141		
Chloroform	20.2800	0.50	0.11	20.0000		101	63 - 127		
Chloromethane	19.0200	0.50	0.12	20.0000		95.1	0 - 207		
cis-1,2-Dichloroethene	20.2400	0.50	0.14	20.0000		101	64 - 126		
cis-1,3-Dichloropropene	21.5100	0.50	0.13	20.0000		108	70 - 141		
Dibromochloromethane	16.9200	0.50	0.16	20.0000		84.6	67 - 135		
Dibromomethane	18.1200	0.50	0.19	20.0000		90.6	74 - 118		
Dichlorodifluoromethane	21.4400	0.50	0.05	20.0000		107	14 - 181		
Ethylbenzene	35.6300	0.50	0.13	40.0000		89.1	77 - 118		
Hexachlorobutadiene	19.3100	0.50	0.15	20.0000		96.6	66 - 125		
Isopropylbenzene	20.9400	0.50	0.10	20.0000		105	68 - 137		
m,p-Xylene	38.1200	1.0	0.19	40.0000		95.3	78 - 126		
Methylene chloride	23.5600	1.0	0.71	20.0000		118	51 - 149		B
n-Butylbenzene	20.1400	0.50	0.11	20.0000		101	63 - 127		
n-Propylbenzene	19.4700	0.50	0.10	20.0000		97.4	69 - 124		
Naphthalene	14.4900	0.50	0.41	20.0000		72.4	60 - 126		
o-Xylene	38.2700	0.50	0.13	40.0000		95.7	79 - 126		
sec-Butylbenzene	19.8100	0.50	0.09	20.0000		99.0	69 - 124		
Styrene	19.1200	0.50	0.13	20.0000		95.6	80 - 127		
tert-Butylbenzene	19.8200	0.50	0.09	20.0000		99.1	71 - 124		
Tetrachloroethene	17.5500	0.50	0.10	20.0000		87.8	73 - 129		
Toluene	38.3400	0.50	0.12	40.0000		95.8	78 - 121		
trans-1,2-Dichloroethene	20.1900	0.50	0.09	20.0000		101	58 - 141		
Trichloroethene	17.7900	0.50	0.10	20.0000		89.0	73 - 126		
Trichlorofluoromethane	20.1300	0.50	0.10	20.0000		101	62 - 146		
Vinyl chloride	21.3800	0.50	0.05	20.0000		107	61 - 137		
Surrogate: 1,2-Dichloroethane-d4	25.94			25.0000		104	59 - 158		
Surrogate: 4-Bromofluorobenzene	26.63			25.0000		107	71 - 127		
Surrogate: Dibromofluoromethane	26.54			25.0000		106	66 - 147		



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0497 - MSVOA_LL_W (continued)

LCS (B9H0497-BS1) - Continued

Prepared: 8/21/2019 Analyzed: 8/21/2019

Surrogate: Toluene-d8 27.51 25.0000 110 77 - 138

LCS Dup (B9H0497-BS1)

Prepared: 8/21/2019 Analyzed: 8/21/2019

1,1,1,2-Tetrachloroethane	20.9200	0.50	0.11	20.0000	105	71 - 133	13.0	20	
1,1,1-Trichloroethane	23.0400	0.50	0.07	20.0000	115	62 - 124	16.4	20	
1,1,2,2-Tetrachloroethane	21.3900	0.50	0.36	20.0000	107	50 - 131	23.7	20	R
1,1,2-Trichloroethane	22.6900	0.50	0.25	20.0000	113	77 - 121	24.1	20	R
1,1-Dichloroethane	24.7100	0.50	0.09	20.0000	124	52 - 130	17.2	20	
1,1-Dichloroethene	24.7200	0.50	0.13	20.0000	124	61 - 136	16.5	20	
1,1-Dichloropropene	22.6200	0.50	0.13	20.0000	113	80 - 128	12.1	20	
1,2,3-Trichloropropane	20.2100	0.50	0.39	20.0000	101	59 - 126	20.6	20	R
1,2,3-Trichlorobenzene	20.6100	0.50	0.18	20.0000	103	69 - 138	16.0	20	
1,2,4-Trichlorobenzene	19.8000	0.50	0.16	20.0000	99.0	78 - 125	13.4	20	
1,2,4-Trimethylbenzene	21.8000	0.50	0.14	20.0000	109	70 - 126	9.87	20	
1,2-Dibromo-3-chloropropane	19.8500	0.50	0.41	20.0000	99.2	58 - 127	26.9	20	R
1,2-Dibromoethane	21.9800	0.50	0.24	20.0000	110	76 - 120	21.9	20	R
1,2-Dichlorobenzene	18.8700	0.50	0.20	20.0000	94.4	82 - 117	13.3	20	
1,2-Dichloroethane	22.9200	0.50	0.20	20.0000	115	66 - 126	17.9	20	
1,2-Dichloropropane	20.9000	0.50	0.15	20.0000	104	70 - 117	15.2	20	
1,3,5-Trimethylbenzene	21.4000	0.50	0.13	20.0000	107	71 - 125	8.98	20	
1,3-Dichlorobenzene	19.7700	0.50	0.16	20.0000	98.8	81 - 116	11.8	20	
1,3-Dichloropropane	20.6200	0.50	0.21	20.0000	103	69 - 124	19.9	20	
1,4-Dichlorobenzene	20.3300	0.50	0.17	20.0000	102	80 - 114	9.59	20	
2,2-Dichloropropane	27.7700	0.50	0.38	20.0000	139	58 - 132	16.6	20	L4
2-Chlorotoluene	20.5800	0.50	0.11	20.0000	103	71 - 119	10.1	20	
4-Chlorotoluene	20.6000	0.50	0.12	20.0000	103	72 - 122	9.24	20	
4-Isopropyltoluene	21.5600	0.50	0.11	20.0000	108	69 - 126	7.71	20	
Benzene	43.4900	0.50	0.13	40.0000	109	80 - 116	13.2	20	
Bromobenzene	20.6600	0.50	0.21	20.0000	103	77 - 118	13.4	20	
Bromodichloromethane	22.2200	0.50	0.14	20.0000	111	73 - 118	18.1	20	
Bromoform	18.9800	0.50	0.20	20.0000	94.9	65 - 133	16.0	20	
Bromomethane	23.1400	0.50	0.17	20.0000	116	7 - 205	7.35	20	
Carbon tetrachloride	21.7900	0.50	0.09	20.0000	109	63 - 133	12.8	20	
Chlorobenzene	20.8000	0.50	0.13	20.0000	104	86 - 113	11.5	20	
Chloroethane	20.9800	0.50	0.15	20.0000	105	66 - 141	5.28	20	
Chloroform	24.9300	0.50	0.11	20.0000	125	63 - 127	20.6	20	R
Chloromethane	18.7500	0.50	0.12	20.0000	93.8	0 - 207	1.43	20	
cis-1,2-Dichloroethene	24.5700	0.50	0.14	20.0000	123	64 - 126	19.3	20	
cis-1,3-Dichloropropene	25.7400	0.50	0.13	20.0000	129	70 - 141	17.9	20	
Dibromochloromethane	20.1400	0.50	0.16	20.0000	101	67 - 135	17.4	20	
Dibromomethane	22.1000	0.50	0.19	20.0000	110	74 - 118	19.8	20	
Dichlorodifluoromethane	21.0700	0.50	0.05	20.0000	105	14 - 181	1.74	20	



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0497 - MSVOA_LL_W (continued)

LCS Dup (B9H0497-BSD1) - Continued

Prepared: 8/21/2019 Analyzed: 8/21/2019

Ethylbenzene	39.8600	0.50	0.13	40.0000		99.6	77 - 118	11.2	20	
Hexachlorobutadiene	20.9800	0.50	0.15	20.0000		105	66 - 125	8.29	20	
Isopropylbenzene	22.5000	0.50	0.10	20.0000		112	68 - 137	7.18	20	
m,p-Xylene	43.1700	1.0	0.19	40.0000		108	78 - 126	12.4	20	
Methylene chloride	29.2800	1.0	0.71	20.0000		146	51 - 149	21.7	20	B, R
n-Butylbenzene	21.4600	0.50	0.11	20.0000		107	63 - 127	6.35	20	
n-Propylbenzene	21.0200	0.50	0.10	20.0000		105	69 - 124	7.66	20	
Naphthalene	17.9800	0.50	0.41	20.0000		89.9	60 - 126	21.5	20	R
o-Xylene	43.1100	0.50	0.13	40.0000		108	79 - 126	11.9	20	
sec-Butylbenzene	21.5800	0.50	0.09	20.0000		108	69 - 124	8.55	20	
Styrene	21.7300	0.50	0.13	20.0000		109	80 - 127	12.8	20	
tert-Butylbenzene	21.7000	0.50	0.09	20.0000		108	71 - 124	9.06	20	
Tetrachloroethene	19.7700	0.50	0.10	20.0000		98.8	73 - 129	11.9	20	
Toluene	44.2000	0.50	0.12	40.0000		110	78 - 121	14.2	20	
trans-1,2-Dichloroethene	24.2400	0.50	0.09	20.0000		121	58 - 141	18.2	20	
Trichloroethene	20.5200	0.50	0.10	20.0000		103	73 - 126	14.3	20	
Trichlorofluoromethane	20.7700	0.50	0.10	20.0000		104	62 - 146	3.13	20	
Vinyl chloride	21.2700	0.50	0.05	20.0000		106	61 - 137	0.516	20	
Surrogate: 1,2-Dichloroethane-d4	28.10			25.0000		112	59 - 158			
Surrogate: 4-Bromofluorobenzene	26.09			25.0000		104	71 - 127			
Surrogate: Dibromofluoromethane	26.63			25.0000		107	66 - 147			
Surrogate: Toluene-d8	27.80			25.0000		111	77 - 138			

Matrix Spike (B9H0497-MS1)

Source: 1903058-03RE1

Prepared: 8/21/2019 Analyzed: 8/21/2019

1,1,1,2-Tetrachloroethane	1880.00	50	11	2000.00	127.000	87.6	71 - 133			
1,1,1-Trichloroethane	2078.00	50	7.4	2000.00	ND	104	62 - 124			
1,1,2,2-Tetrachloroethane	1898.00	50	36	2000.00	ND	94.9	50 - 131			
1,1,2-Trichloroethane	2288.00	50	25	2000.00	ND	114	77 - 121			
1,1-Dichloroethane	2241.00	50	9.2	2000.00	41.0000	110	52 - 130			
1,1-Dichloroethene	2884.00	50	13	2000.00	968.000	95.8	61 - 136			
1,1-Dichloropropene	2048.00	50	13	2000.00	ND	102	80 - 128			
1,2,3-Trichloropropane	1783.00	50	39	2000.00	ND	89.2	59 - 126			
1,2,3-Trichlorobenzene	1773.00	50	18	2000.00	ND	88.6	69 - 138			
1,2,4-Trichlorobenzene	1630.00	50	16	2000.00	ND	81.5	78 - 125			
1,2,4-Trimethylbenzene	1798.00	50	14	2000.00	ND	89.9	70 - 126			
1,2-Dibromo-3-chloropropane	1756.00	50	41	2000.00	226.000	76.5	58 - 127			
1,2-Dibromoethane	2166.00	50	24	2000.00	37.0000	106	76 - 120			
1,2-Dichlorobenzene	1686.00	50	20	2000.00	ND	84.3	82 - 117			
1,2-Dichloroethane	2319.00	50	20	2000.00	ND	116	66 - 126			
1,2-Dichloropropane	2021.00	50	15	2000.00	ND	101	70 - 117			
1,3,5-Trimethylbenzene	1789.00	50	13	2000.00	ND	89.4	71 - 125			



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0497 - MSVOA_LL_W (continued)

Matrix Spike (B9H0497-MS1) - Continued

Source: 1903058-03RE1

Prepared: 8/21/2019 Analyzed: 8/21/2019

1,3-Dichlorobenzene	1680.00	50	16	2000.00	ND	84.0	81 - 116			
1,3-Dichloropropane	1835.00	50	21	2000.00	84.0000	87.6	69 - 124			
1,4-Dichlorobenzene	1733.00	50	17	2000.00	32.0000	85.0	80 - 114			
2,2-Dichloropropane	2201.00	50	38	2000.00	ND	110	58 - 132			
2-Chlorotoluene	1719.00	50	11	2000.00	ND	86.0	71 - 119			
4-Chlorotoluene	1712.00	50	12	2000.00	ND	85.6	72 - 122			
4-Isopropyltoluene	1742.00	50	11	2000.00	ND	87.1	69 - 126			
Benzene	4069.00	50	13	4000.00	ND	102	80 - 116			
Bromobenzene	1742.00	50	21	2000.00	79.0000	83.2	77 - 118			
Bromodichloromethane	2143.00	50	14	2000.00	44.0000	105	73 - 118			
Bromoform	1846.00	50	20	2000.00	199.0000	82.4	65 - 133			
Bromomethane	2199.00	50	17	2000.00	ND	110	7 - 205			
Carbon tetrachloride	2053.00	50	9.2	2000.00	ND	103	63 - 133			
Chlorobenzene	1887.00	50	13	2000.00	25.0000	93.1	81 - 115			
Chloroethane	2207.00	50	15	2000.00	ND	110	66 - 141			
Chloroform	2309.00	50	11	2000.00	ND	115	63 - 127			
Chloromethane	1825.00	50	12	2000.00	ND	91.2	0 - 207			
cis-1,2-Dichloroethene	2177.00	50	14	2000.00	43.0000	107	64 - 126			
cis-1,3-Dichloropropene	2237.00	50	13	2000.00	ND	112	70 - 141			
Dibromochloromethane	1767.00	50	16	2000.00	170.0000	79.8	67 - 135			
Dibromomethane	2247.00	50	19	2000.00	ND	112	74 - 118			
Dichlorodifluoromethane	1932.00	50	5.4	2000.00	ND	96.6	14 - 181			
Ethylbenzene	3583.00	50	13	4000.00	ND	89.6	77 - 118			
Hexachlorobutadiene	1623.00	50	15	2000.00	143.0000	74.0	66 - 125			
Isopropylbenzene	1873.00	50	10	2000.00	ND	93.6	68 - 137			
m,p-Xylene	3798.00	100	19	4000.00	ND	95.0	78 - 126			
Methylene chloride	2781.00	100	71	2000.00	ND	139	51 - 149			B
n-Butylbenzene	1692.00	50	11	2000.00	ND	84.6	63 - 127			
n-Propylbenzene	1761.00	50	10	2000.00	ND	88.0	69 - 124			
Naphthalene	1496.00	50	41	2000.00	174.0000	66.1	60 - 126			
o-Xylene	3862.00	50	13	4000.00	ND	96.6	79 - 126			
sec-Butylbenzene	1774.00	50	9.0	2000.00	ND	88.7	69 - 124			
Styrene	1949.00	50	13	2000.00	ND	97.4	80 - 127			
tert-Butylbenzene	1792.00	50	9.0	2000.00	ND	89.6	71 - 124			
Tetrachloroethene	1715.00	50	10	2000.00	ND	85.8	73 - 129			
Toluene	4198.00	50	12	4000.00	ND	105	78 - 121			
trans-1,2-Dichloroethene	2057.00	50	9.2	2000.00	42.0000	101	58 - 141			
Trichloroethene	1918.00	50	9.9	2000.00	12.0000	95.3	73 - 126			
Trichlorofluoromethane	2250.00	50	9.8	2000.00	ND	112	62 - 146			
Vinyl chloride	2093.00	50	5.3	2000.00	ND	105	61 - 137			

Surrogate: 1,2-Dichloroethane-d4 30.48 25.0000 122 59 - 158



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Reported : 08/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0497 - MSVOA_LL_W (continued)

Matrix Spike (B9H0497-MS1) - Continued

Source: 1903058-03RE1

Prepared: 8/21/2019 Analyzed: 8/21/2019

Surrogate: 4-Bromofluorobenzene	26.27		25.0000		105	71 - 127			
Surrogate: Dibromofluoromethane	29.87		25.0000		119	66 - 147			
Surrogate: Toluene-d8	29.26		25.0000		117	77 - 138			

Matrix Spike Dup (B9H0497-MSD1)

Source: 1903058-03RE1

Prepared: 8/21/2019 Analyzed: 8/21/2019

1,1,1,2-Tetrachloroethane	1958.00	50	11	2000.00	127.000	91.6	71 - 133	4.06	20
1,1,1-Trichloroethane	2213.00	50	7.4	2000.00	ND	111	62 - 124	6.29	20
1,1,2,2-Tetrachloroethane	1988.00	50	36	2000.00	ND	99.4	50 - 131	4.63	20
1,1,2-Trichloroethane	2194.00	50	25	2000.00	ND	110	77 - 121	4.19	20
1,1-Dichloroethane	2380.00	50	9.2	2000.00	41.0000	117	52 - 130	6.02	20
1,1-Dichloroethene	3107.00	50	13	2000.00	968.000	107	61 - 136	7.44	20
1,1-Dichloropropene	2128.00	50	13	2000.00	ND	106	80 - 128	3.83	20
1,2,3-Trichloropropane	1958.00	50	39	2000.00	ND	97.9	59 - 126	9.36	20
1,2,3-Trichlorobenzene	1842.00	50	18	2000.00	ND	92.1	69 - 138	3.82	20
1,2,4-Trichlorobenzene	1743.00	50	16	2000.00	ND	87.2	78 - 125	6.70	20
1,2,4-Trimethylbenzene	1897.00	50	14	2000.00	ND	94.8	70 - 126	5.36	20
1,2-Dibromo-3-chloropropane	1929.00	50	41	2000.00	226.000	85.2	58 - 127	9.39	20
1,2-Dibromoethane	2180.00	50	24	2000.00	37.0000	107	76 - 120	0.644	20
1,2-Dichlorobenzene	1751.00	50	20	2000.00	ND	87.6	82 - 117	3.78	20
1,2-Dichloroethane	2218.00	50	20	2000.00	ND	111	66 - 126	4.45	20
1,2-Dichloropropane	2046.00	50	15	2000.00	ND	102	70 - 117	1.23	20
1,3,5-Trimethylbenzene	1864.00	50	13	2000.00	ND	93.2	71 - 125	4.11	20
1,3-Dichlorobenzene	1752.00	50	16	2000.00	ND	87.6	81 - 116	4.20	20
1,3-Dichloropropane	1875.00	50	21	2000.00	84.0000	89.6	69 - 124	2.16	20
1,4-Dichlorobenzene	1850.00	50	17	2000.00	32.0000	90.9	80 - 114	6.53	20
2,2-Dichloropropane	2236.00	50	38	2000.00	ND	112	58 - 132	1.58	20
2-Chlorotoluene	1761.00	50	11	2000.00	ND	88.0	71 - 119	2.41	20
4-Chlorotoluene	1793.00	50	12	2000.00	ND	89.6	72 - 122	4.62	20
4-Isopropyltoluene	1866.00	50	11	2000.00	ND	93.3	69 - 126	6.87	20
Benzene	4063.00	50	13	4000.00	ND	102	80 - 116	0.148	20
Bromobenzene	1795.00	50	21	2000.00	79.0000	85.8	77 - 118	3.00	20
Bromodichloromethane	2132.00	50	14	2000.00	44.0000	104	73 - 118	0.515	20
Bromoform	1888.00	50	20	2000.00	199.000	84.4	65 - 133	2.25	20
Bromomethane	2304.00	50	17	2000.00	ND	115	7 - 205	4.66	20
Carbon tetrachloride	2097.00	50	9.2	2000.00	ND	105	63 - 133	2.12	20
Chlorobenzene	1926.00	50	13	2000.00	25.0000	95.0	81 - 115	2.05	20
Chloroethane	2319.00	50	15	2000.00	ND	116	66 - 141	4.95	20
Chloroform	2398.00	50	11	2000.00	ND	120	63 - 127	3.78	20
Chloromethane	1848.00	50	12	2000.00	ND	92.4	0 - 207	1.25	20
cis-1,2-Dichloroethene	2299.00	50	14	2000.00	43.0000	113	64 - 126	5.45	20
cis-1,3-Dichloropropene	2248.00	50	13	2000.00	ND	112	70 - 141	0.491	20
Dibromochloromethane	1896.00	50	16	2000.00	170.000	86.3	67 - 135	7.04	20



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0497 - MSVOA_LL_W (continued)

Matrix Spike Dup (B9H0497-MSD1) - Continued

Source: 1903058-03RE1

Prepared: 8/21/2019 Analyzed: 8/21/2019

Dibromomethane	2182.00	50	19	2000.00	ND	109	74 - 118	2.94	20	
Dichlorodifluoromethane	1868.00	50	5.4	2000.00	ND	93.4	14 - 181	3.37	20	
Ethylbenzene	3629.00	50	13	4000.00	ND	90.7	77 - 118	1.28	20	
Hexachlorobutadiene	1789.00	50	15	2000.00	143.000	82.3	66 - 125	9.73	20	
Isopropylbenzene	1944.00	50	10	2000.00	ND	97.2	68 - 137	3.72	20	
m,p-Xylene	3878.00	100	19	4000.00	ND	97.0	78 - 126	2.08	20	
Methylene chloride	2901.00	100	71	2000.00	ND	145	51 - 149	4.22	20	B
n-Butylbenzene	1805.00	50	11	2000.00	ND	90.2	63 - 127	6.46	20	
n-Propylbenzene	1826.00	50	10	2000.00	ND	91.3	69 - 124	3.62	20	
Naphthalene	1634.00	50	41	2000.00	174.000	73.0	60 - 126	8.82	20	
o-Xylene	3929.00	50	13	4000.00	ND	98.2	79 - 126	1.72	20	
sec-Butylbenzene	1869.00	50	9.0	2000.00	ND	93.4	69 - 124	5.22	20	
Styrene	1982.00	50	13	2000.00	ND	99.1	80 - 127	1.68	20	
tert-Butylbenzene	1858.00	50	9.0	2000.00	ND	92.9	71 - 124	3.62	20	
Tetrachloroethene	1781.00	50	10	2000.00	ND	89.0	73 - 129	3.78	20	
Toluene	4185.00	50	12	4000.00	ND	105	78 - 121	0.310	20	
trans-1,2-Dichloroethene	2275.00	50	9.2	2000.00	42.0000	112	58 - 141	10.1	20	
Trichloroethene	1905.00	50	9.9	2000.00	12.0000	94.6	73 - 126	0.680	20	
Trichlorofluoromethane	2252.00	50	9.8	2000.00	ND	113	62 - 146	0.0888	20	
Vinyl chloride	2143.00	50	5.3	2000.00	ND	107	61 - 137	2.36	20	

Surrogate: 1,2-Dichloroethane-d4	30.16			25.0000		121	59 - 158			
Surrogate: 4-Bromofluorobenzene	26.40			25.0000		106	71 - 127			
Surrogate: Dibromofluoromethane	30.29			25.0000		121	66 - 147			
Surrogate: Toluene-d8	28.65			25.0000		115	77 - 138			



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Volatile Organic Compounds by EPA 8260B - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0520 - MSVOA_LL_W

LCS (B9H0520-BS1)

Prepared: 8/22/2019 Analyzed: 8/22/2019

1,1,1,2-Tetrachloroethane	18.9500	0.50	0.11	20.0000		94.8	71 - 133		
1,1,1-Trichloroethane	21.2700	0.50	0.07	20.0000		106	62 - 124		
1,1,2,2-Tetrachloroethane	18.8400	0.50	0.36	20.0000		94.2	50 - 131		
1,1,2-Trichloroethane	21.0100	0.50	0.25	20.0000		105	77 - 121		
1,1-Dichloroethane	23.2900	0.50	0.09	20.0000		116	52 - 130		
1,1-Dichloroethene	22.8700	0.50	0.13	20.0000		114	61 - 136		
1,1-Dichloropropene	21.6200	0.50	0.13	20.0000		108	80 - 128		
1,2,3-Trichloropropane	18.4700	0.50	0.39	20.0000		92.4	59 - 126		
1,2,3-Trichlorobenzene	17.9600	0.50	0.18	20.0000		89.8	69 - 138		
1,2,4-Trichlorobenzene	17.3700	0.50	0.16	20.0000		86.8	78 - 125		
1,2,4-Trimethylbenzene	19.5200	0.50	0.14	20.0000		97.6	70 - 126		
1,2-Dibromo-3-chloropropane	16.8600	0.50	0.41	20.0000		84.3	58 - 127		
1,2-Dibromoethane	20.3100	0.50	0.24	20.0000		102	76 - 120		
1,2-Dichlorobenzene	17.6200	0.50	0.20	20.0000		88.1	82 - 117		
1,2-Dichloroethane	21.5600	0.50	0.20	20.0000		108	66 - 126		
1,2-Dichloropropane	19.8500	0.50	0.15	20.0000		99.2	70 - 117		
1,3,5-Trimethylbenzene	19.3700	0.50	0.13	20.0000		96.8	71 - 125		
1,3-Dichlorobenzene	17.9400	0.50	0.16	20.0000		89.7	81 - 116		
1,3-Dichloropropane	18.1000	0.50	0.21	20.0000		90.5	69 - 124		
1,4-Dichlorobenzene	18.6600	0.50	0.17	20.0000		93.3	80 - 114		
2,2-Dichloropropane	25.4300	0.50	0.38	20.0000		127	58 - 132		
2-Chlorotoluene	18.8800	0.50	0.11	20.0000		94.4	71 - 119		
4-Chlorotoluene	18.7200	0.50	0.12	20.0000		93.6	72 - 122		
4-Isopropyltoluene	19.2100	0.50	0.11	20.0000		96.0	69 - 126		
Benzene	40.9800	0.50	0.13	40.0000		102	80 - 116		
Bromobenzene	18.6500	0.50	0.21	20.0000		93.2	77 - 118		
Bromodichloromethane	20.8700	0.50	0.14	20.0000		104	73 - 118		
Bromoform	17.5500	0.50	0.20	20.0000		87.8	65 - 133		
Bromomethane	26.1600	0.50	0.17	20.0000		131	7 - 205		
Carbon tetrachloride	20.2900	0.50	0.09	20.0000		101	63 - 133		
Chlorobenzene	18.5200	0.50	0.13	20.0000		92.6	86 - 113		
Chloroethane	24.3900	0.50	0.15	20.0000		122	66 - 141		
Chloroform	22.7000	0.50	0.11	20.0000		114	63 - 127		
Chloromethane	21.2600	0.50	0.12	20.0000		106	0 - 207		
cis-1,2-Dichloroethene	22.5800	0.50	0.14	20.0000		113	64 - 126		
cis-1,3-Dichloropropene	24.0300	0.50	0.13	20.0000		120	70 - 141		
Dibromochloromethane	18.3700	0.50	0.16	20.0000		91.8	67 - 135		
Dibromomethane	20.8500	0.50	0.19	20.0000		104	74 - 118		
Dichlorodifluoromethane	25.3000	0.50	0.05	20.0000		126	14 - 181		
Ethylbenzene	36.0400	0.50	0.13	40.0000		90.1	77 - 118		
Hexachlorobutadiene	18.9100	0.50	0.15	20.0000		94.6	66 - 125		



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Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0520 - MSVOA_LL_W (continued)

LCS (B9H0520-BS1) - Continued

Prepared: 8/22/2019 Analyzed: 8/22/2019

Isopropylbenzene	20.7300	0.50	0.10	20.0000		104	68 - 137		
m,p-Xylene	38.5400	1.0	0.19	40.0000		96.4	78 - 126		
Methylene chloride	28.6800	1.0	0.71	20.0000		143	51 - 149		
n-Butylbenzene	19.1000	0.50	0.11	20.0000		95.5	63 - 127		
n-Propylbenzene	19.3200	0.50	0.10	20.0000		96.6	69 - 124		
Naphthalene	15.4200	0.50	0.41	20.0000		77.1	60 - 126		
o-Xylene	39.1500	0.50	0.13	40.0000		97.9	79 - 126		
sec-Butylbenzene	19.2700	0.50	0.09	20.0000		96.4	69 - 124		
Styrene	19.6200	0.50	0.13	20.0000		98.1	80 - 127		
tert-Butylbenzene	19.6300	0.50	0.09	20.0000		98.2	71 - 124		
Tetrachloroethene	17.8400	0.50	0.10	20.0000		89.2	73 - 129		
Toluene	41.0800	0.50	0.12	40.0000		103	78 - 121		
trans-1,2-Dichloroethene	21.9200	0.50	0.09	20.0000		110	58 - 141		
Trichloroethene	19.3400	0.50	0.10	20.0000		96.7	73 - 126		
Trichlorofluoromethane	24.0200	0.50	0.10	20.0000		120	62 - 146		
Vinyl chloride	24.0300	0.50	0.05	20.0000		120	61 - 137		
Surrogate: 1,2-Dichloroethane-d4	27.99			25.0000		112	59 - 158		
Surrogate: 4-Bromofluorobenzene	25.97			25.0000		104	71 - 127		
Surrogate: Dibromofluoromethane	28.58			25.0000		114	66 - 147		
Surrogate: Toluene-d8	28.69			25.0000		115	77 - 138		

LCS Dup (B9H0520-BSD1)

Prepared: 8/22/2019 Analyzed: 8/22/2019

1,1,1,2-Tetrachloroethane	20.2500	0.50	0.11	20.0000		101	71 - 133	6.63	20
1,1,1-Trichloroethane	23.5600	0.50	0.07	20.0000		118	62 - 124	10.2	20
1,1,2,2-Tetrachloroethane	20.1800	0.50	0.36	20.0000		101	50 - 131	6.87	20
1,1,2-Trichloroethane	21.8200	0.50	0.25	20.0000		109	77 - 121	3.78	20
1,1-Dichloroethane	24.2000	0.50	0.09	20.0000		121	52 - 130	3.83	20
1,1-Dichloroethene	24.6500	0.50	0.13	20.0000		123	61 - 136	7.49	20
1,1-Dichloropropene	22.8500	0.50	0.13	20.0000		114	80 - 128	5.53	20
1,2,3-Trichloropropane	18.7700	0.50	0.39	20.0000		93.8	59 - 126	1.61	20
1,2,3-Trichlorobenzene	19.4300	0.50	0.18	20.0000		97.2	69 - 138	7.86	20
1,2,4-Trichlorobenzene	18.8300	0.50	0.16	20.0000		94.2	78 - 125	8.07	20
1,2,4-Trimethylbenzene	20.5200	0.50	0.14	20.0000		103	70 - 126	5.00	20
1,2-Dibromo-3-chloropropane	18.3700	0.50	0.41	20.0000		91.8	58 - 127	8.57	20
1,2-Dibromoethane	21.3300	0.50	0.24	20.0000		107	76 - 120	4.90	20
1,2-Dichlorobenzene	18.2300	0.50	0.20	20.0000		91.2	82 - 117	3.40	20
1,2-Dichloroethane	22.4000	0.50	0.20	20.0000		112	66 - 126	3.82	20
1,2-Dichloropropane	20.3400	0.50	0.15	20.0000		102	70 - 117	2.44	20
1,3,5-Trimethylbenzene	20.4200	0.50	0.13	20.0000		102	71 - 125	5.28	20
1,3-Dichlorobenzene	18.8600	0.50	0.16	20.0000		94.3	81 - 116	5.00	20
1,3-Dichloropropane	19.0800	0.50	0.21	20.0000		95.4	69 - 124	5.27	20



Certificate of Analysis

Hargis & Associates, Inc.

9171 Towne Centre Drive, Suite 375

San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0520 - MSVOA_LL_W (continued)

LCS Dup (B9H0520-BSD1) - Continued

Prepared: 8/22/2019 Analyzed: 8/22/2019

1,4-Dichlorobenzene	19.2800	0.50	0.17	20.0000		96.4	80 - 114	3.27	20	
2,2-Dichloropropane	26.8400	0.50	0.38	20.0000		134	58 - 132	5.40	20	L5
2-Chlorotoluene	19.6300	0.50	0.11	20.0000		98.2	71 - 119	3.90	20	
4-Chlorotoluene	19.2100	0.50	0.12	20.0000		96.0	72 - 122	2.58	20	
4-Isopropyltoluene	20.4400	0.50	0.11	20.0000		102	69 - 126	6.20	20	
Benzene	42.1800	0.50	0.13	40.0000		105	80 - 116	2.89	20	
Bromobenzene	19.0100	0.50	0.21	20.0000		95.0	77 - 118	1.91	20	
Bromodichloromethane	20.9100	0.50	0.14	20.0000		105	73 - 118	0.191	20	
Bromoform	18.8800	0.50	0.20	20.0000		94.4	65 - 133	7.30	20	
Bromomethane	28.4600	0.50	0.17	20.0000		142	7 - 205	8.42	20	
Carbon tetrachloride	21.6400	0.50	0.09	20.0000		108	63 - 133	6.44	20	
Chlorobenzene	19.9600	0.50	0.13	20.0000		99.8	86 - 113	7.48	20	
Chloroethane	26.0400	0.50	0.15	20.0000		130	66 - 141	6.54	20	
Chloroform	24.7100	0.50	0.11	20.0000		124	63 - 127	8.48	20	
Chloromethane	22.6800	0.50	0.12	20.0000		113	0 - 207	6.46	20	
cis-1,2-Dichloroethene	24.1900	0.50	0.14	20.0000		121	64 - 126	6.88	20	
cis-1,3-Dichloropropene	24.2900	0.50	0.13	20.0000		121	70 - 141	1.08	20	
Dibromochloromethane	19.2400	0.50	0.16	20.0000		96.2	67 - 135	4.63	20	
Dibromomethane	21.6500	0.50	0.19	20.0000		108	74 - 118	3.76	20	
Dichlorodifluoromethane	25.8600	0.50	0.05	20.0000		129	14 - 181	2.19	20	
Ethylbenzene	38.1900	0.50	0.13	40.0000		95.5	77 - 118	5.79	20	
Hexachlorobutadiene	20.2100	0.50	0.15	20.0000		101	66 - 125	6.65	20	
Isopropylbenzene	21.3300	0.50	0.10	20.0000		107	68 - 137	2.85	20	
m,p-Xylene	41.1000	1.0	0.19	40.0000		103	78 - 126	6.43	20	
Methylene chloride	30.2100	1.0	0.71	20.0000		151	51 - 149	5.20	20	L4
n-Butylbenzene	19.7900	0.50	0.11	20.0000		99.0	63 - 127	3.55	20	
n-Propylbenzene	19.9500	0.50	0.10	20.0000		99.8	69 - 124	3.21	20	
Naphthalene	16.9000	0.50	0.41	20.0000		84.5	60 - 126	9.16	20	
o-Xylene	41.9900	0.50	0.13	40.0000		105	79 - 126	7.00	20	
sec-Butylbenzene	20.4900	0.50	0.09	20.0000		102	69 - 124	6.14	20	
Styrene	21.0300	0.50	0.13	20.0000		105	80 - 127	6.94	20	
tert-Butylbenzene	20.4300	0.50	0.09	20.0000		102	71 - 124	3.99	20	
Tetrachloroethene	18.9000	0.50	0.10	20.0000		94.5	73 - 129	5.77	20	
Toluene	42.7400	0.50	0.12	40.0000		107	78 - 121	3.96	20	
trans-1,2-Dichloroethene	23.2000	0.50	0.09	20.0000		116	58 - 141	5.67	20	
Trichloroethene	19.7700	0.50	0.10	20.0000		98.8	73 - 126	2.20	20	
Trichlorofluoromethane	25.2700	0.50	0.10	20.0000		126	62 - 146	5.07	20	
Vinyl chloride	24.9600	0.50	0.05	20.0000		125	61 - 137	3.80	20	
Surrogate: 1,2-Dichloroethane-d4	29.89			25.0000		120	59 - 158			
Surrogate: 4-Bromofluorobenzene	26.24			25.0000		105	71 - 127			
Surrogate: Dibromofluoromethane	29.95			25.0000		120	66 - 147			



Certificate of Analysis

Hargis & Associates, Inc.

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San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

Volatile Organic Compounds by EPA 8260B - Quality Control (cont'd)

Analyte	Result (ug/L)	PQL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0520 - MSVOA_LL_W (continued)

LCS Dup (B9H0520-BSD1) - Continued

Prepared: 8/22/2019 Analyzed: 8/22/2019

Surrogate: Toluene-d8

28.03

25.0000

112

77 - 138



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

1,4-Dioxane by EPA 8270: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0467 - MSSEMI_W

Blank (B9H0467-BLK1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,4-Dioxane	ND	2.0	0.84							
Surrogate: 1,2-Dichlorobenzene-d	63.15			100.000		63.2	34 - 188			
Surrogate: 2-Fluorobiphenyl	65.01			100.000		65.0	39 - 108			
Surrogate: 4-Terphenyl-d14	99.03			100.000		99.0	71 - 131			
Surrogate: Nitrobenzene-d5	70.22			100.000		70.2	32 - 106			

LCS (B9H0467-BS1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,4-Dioxane	114.230	2.0	0.84	100.000		114	40 - 159			
Surrogate: 1,2-Dichlorobenzene-d	59.43			100.000		59.4	34 - 188			
Surrogate: 2-Fluorobiphenyl	71.59			100.000		71.6	39 - 108			
Surrogate: 4-Terphenyl-d14	101.4			100.000		101	71 - 131			
Surrogate: Nitrobenzene-d5	72.62			100.000		72.6	32 - 106			

Matrix Spike (B9H0467-MS1)

Source: 1903058-03

Prepared: 8/20/2019 Analyzed: 8/21/2019

1,4-Dioxane	612.920	4.0	1.7	100.000	507.880	105	40 - 159			
Surrogate: 1,2-Dichlorobenzene-d	64.66			100.000		64.7	34 - 188			
Surrogate: 2-Fluorobiphenyl	71.68			100.000		71.7	39 - 108			
Surrogate: 4-Terphenyl-d14	100.2			100.000		100	71 - 131			
Surrogate: Nitrobenzene-d5	72.84			100.000		72.8	32 - 106			

Matrix Spike Dup (B9H0467-MSD1)

Source: 1903058-03

Prepared: 8/20/2019 Analyzed: 8/21/2019

1,4-Dioxane	595.780	4.0	1.7	100.000	507.880	87.9	40 - 159	2.84	20	
Surrogate: 1,2-Dichlorobenzene-d	69.24			100.000		69.2	34 - 188			
Surrogate: 2-Fluorobiphenyl	80.34			100.000		80.3	39 - 108			
Surrogate: 4-Terphenyl-d14	112.8			100.000		113	71 - 131			
Surrogate: Nitrobenzene-d5	81.52			100.000		81.5	32 - 106			



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Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0424 - EPA 1311_W (SVOA_GCMS)

Blank (B9H0424-BLK1)

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,4-Dioxane	ND	0.20	0.05							
Surrogate: 1,2-Dichlorobenzene-d	0.8044			1.00000		80.4	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.8500			1.00000		85.0	20 - 131			
Surrogate: 4-Terphenyl-d14	1.119			1.00000		112	24 - 135			
Surrogate: Nitrobenzene-d5	0.9408			1.00000		94.1	6 - 124			

LCS (B9H0424-BS1)

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,4-Dioxane	1.16743	0.20	0.05	1.00000		117	64 - 129			
Surrogate: 1,2-Dichlorobenzene-d	0.6379			1.00000		63.8	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.6706			1.00000		67.1	20 - 131			
Surrogate: 4-Terphenyl-d14	0.8311			1.00000		83.1	24 - 135			
Surrogate: Nitrobenzene-d5	0.7616			1.00000		76.2	6 - 124			

Matrix Spike (B9H0424-MS1)

Source: 1903038-04

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,4-Dioxane	2.16512	0.20	0.05	1.00000	0.839590	133	56 - 128			M2
Surrogate: 1,2-Dichlorobenzene-d	0.9112			1.00000		91.1	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.9417			1.00000		94.2	20 - 131			
Surrogate: 4-Terphenyl-d14	0.9509			1.00000		95.1	24 - 135			
Surrogate: Nitrobenzene-d5	1.080			1.00000		108	6 - 124			

Matrix Spike Dup (B9H0424-MSD1)

Source: 1903038-04

Prepared: 8/19/2019 Analyzed: 8/19/2019

1,4-Dioxane	2.06784	0.20	0.05	1.00000	0.839590	123	56 - 128	4.60	20	
Surrogate: 1,2-Dichlorobenzene-d	0.9200			1.00000		92.0	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.9489			1.00000		94.9	20 - 131			
Surrogate: 4-Terphenyl-d14	0.9664			1.00000		96.6	24 - 135			
Surrogate: Nitrobenzene-d5	1.107			1.00000		111	6 - 124			



Certificate of Analysis

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San Diego , CA 92122

Project Number : Raytheon Main GETS Mid Month Sample

Report To : Steve Netto

Reported : 08/22/2019

1,4-Dioxane by EPA 8270/SIM: Isotope Dilution Technique - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes

Batch B9H0468 - EPA 1311_W (SVOA_GCMS)

Blank (B9H0468-BLK1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,4-Dioxane	ND	0.20	0.05							
Surrogate: 1,2-Dichlorobenzene-d	0.8254			1.00000		82.5	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.9087			1.00000		90.9	20 - 131			
Surrogate: 4-Terphenyl-d14	1.063			1.00000		106	24 - 135			
Surrogate: Nitrobenzene-d5	0.9430			1.00000		94.3	6 - 124			

LCS (B9H0468-BS1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,4-Dioxane	1.23171	0.20	0.05	1.00000		123	64 - 129			
Surrogate: 1,2-Dichlorobenzene-d	0.5679			1.00000		56.8	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.6079			1.00000		60.8	20 - 131			
Surrogate: 4-Terphenyl-d14	0.7082			1.00000		70.8	24 - 135			
Surrogate: Nitrobenzene-d5	0.6828			1.00000		68.3	6 - 124			

LCS Dup (B9H0468-BS1)

Prepared: 8/20/2019 Analyzed: 8/20/2019

1,4-Dioxane	1.18038	0.20	0.05	1.00000		118	64 - 129	4.26	20	
Surrogate: 1,2-Dichlorobenzene-d	0.5632			1.00000		56.3	22 - 117			
Surrogate: 2-Fluorobiphenyl	0.6072			1.00000		60.7	20 - 131			
Surrogate: 4-Terphenyl-d14	0.7113			1.00000		71.1	24 - 135			
Surrogate: Nitrobenzene-d5	0.6796			1.00000		68.0	6 - 124			



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Report To : Steve Netto

Reported : 08/22/2019

Notes and Definitions

R	RPD value outside acceptance criteria. Calculation is based on raw values.
M2	Matrix spike recovery outside of acceptance limit due to possible matrix interference. The analytical batch was validated by the laboratory control sample.
L5	Laboratory Control Sample high biased. Sample result/s was non-detect (ND) for the target analyte; therefore reanalysis was not necessary.
L4	Laboratory Control Sample outside of control limit but within Marginal Exceedance (ME) limit.
B	Analyte detected in the associated method blank.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:

- (1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
- (2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
- (3) Results are wet unless otherwise specified.



PROJECT: Raytheon Main GETS Mid Month Sample

TASK NO.: 532.15

Project Manager Steve Netto

QA Manager Ross Horton

Phone 858.455.6500

Fax 858.455.6533

Sampled By:				SAMPLE COLLECTION		MATRIX		PRESERVATION		CONTAINERS				ANALYSIS REQUESTED										Expected Concentration Range (ppb) for VOAs				SPECIAL HANDLING				REMARKS				
LAB ID	SAMPLE ID	Date	Time	Groundwater	Lab prepared water	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Ice	40-ml VOA	125 mL Poly	250 mL Poly	250 mL Glass	1 L Poly	1L Amber	VOCs by EPA 8260B	Bromate by EPA 317	Bromide by EPA 300	Alkalinity by SM2320B	Total Organic Carbon by SM5310B	Total Suspended Solids by SM2540D	UV Absorption EPA 415.3 @254 nm	1,4-Dioxane by EPA 8270C MOD	1,4-Dioxane by EPA 8270C SIM	0 - 10	10 - 100	100 - 1,000	>1,000	24 hr TAT	48 Hour TAT	5 Day TAT	Level IV Data Validation Requested	MS/MSD Requested			
1903057-01	TB-081519	8/15/2019	8:00		X	X			X	2						X									X											
02	CEFF	8/15/2019	8:56	X	X				X	3					1	X								X	X											
03	CBT	8/15/2019	8:55	X	X				X	3					1	X								X	X											
04	POX	8/15/2019	9:00	X	X				X	3					1	X								X	X											
05	INF	8/15/2019	9:05	X	X				X	3					1	X							X				X									
06	EW-02	8/15/2019	10:15	X	X				X	3					1	X							X			X										
07	MW-29	8/15/2019	11:55	X	X				X	3					1	X							X				X									
Total number of containers per analysis:										20					6											Total No. of Containers: 26										
Relinquished By: / Company:		Date / Time		Received By: / Company		Date / Time																														
R. Netto / H&A		8-15-19 12:02		R. Netto / H&A		8-15-19 12:02																														
Relinquished By: / Company:		Date / Time		Received By: / Company		Date / Time																														
R. Netto / H&A		8-15-19 1445		R. Netto / H&A		8/15/19 1445																														

Instructions

- Fill out form completely and sign only after verified for completeness
- Complete in ballpoint pen. Draw one line through error, initial and date correction
- Indicate the number of sample containers in analytical request space; indicate choice with ✓ or ✕
- Note applicable preservatives, special instructions, and deviations from typical environmental samples.
- Consult project QA documents for specific instructions.

- ☐ No. of containers correct
☐ Received in good condition
☐ Custody seals secure
☐ Conforms to COC document

Temperature on receipt

Send Results to:
Steve Netto & Ross Horton
9171 Towne Centre Drive
Suite 375
San Diego, CA 92122
Ph: 858.455.6500
snetto@hargis.com
rhorton@hargis.com