NINTH ANNUAL GROUNDWATER MONITORING REPORT
CHESAPEAKE ENERGY CORPORATION
INCIDENT # NCS2215955789
STATE M LEASE (AP-72)
LEA COUNTY, NEW MEXICO

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EQUUS
Environmental, LLC

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1.0 INTRODUCTION

Chesapeake Energy Corporation (Chesapeake) has retained Equus Environmental, LLC (Equus), to perform impacted groundwater monitoring and light non-aqueous phase liquid (LNAPL) hydrocarbon remediation at Chesapeake's former State M Lease site (Site) located in Lea County, New Mexico. The Site is located approximately 8 miles south-southwest of Lovington, New Mexico in the SE-SW-SE of Section 18, Township 17 South, Range 36 East, Lea County, New Mexico (coordinates 32.828061º latitude, -103.391012º longitude). The Site location and topographic features are shown on **Figure 1**. A production tank battery for oil and gas was formerly located at the Site. Chesapeake purchased the Site in 2004, but never operated the tank battery. Chesapeake began abandonment and environmental investigation activities at the Site in 2007.

Initial Site investigation activities were conducted in May 2007. These investigation activities consisted of conducting EM-31 and EM-34 ground conductivity surveys, the collection of soil samples from nine boreholes, and the installation and sampling of seven groundwater monitoring wells. Following the investigation in August 2007, Chesapeake submitted to the New Mexico Oil Conservation Division (NMOCD) a Stage 1 Abatement Plan for the Site. In May 2010, the NMOCD responded to Chesapeake that the agency was not adequately staffed to review the abatement plan in a timely manner and advised Chesapeake that they could proceed with abatement operations at risk. In July 2010, Chesapeake notified the NMOCD of their intent to proceed with the Stage 1 Abatement activities. On March 20, 2012, following implementation of these activities, Chesapeake submitted the Stage 1 Abatement Report for the Site.

On March 27, 2012, Chesapeake submitted to the NMOCD the ***Stage 2 Abatement Plan*** (Plan) for the Site. A copy of the Plan is provided in **Appendix A**. In this Plan, Chesapeake proposed the following abatement activities at the Site:

- Excavate and remove the near-surface soils at the Site containing concentrations of chloride exceeding 1,000 milligrams per kilogram (mg/kg),

- Excavate and remove the near-surface soils at the Site containing concentrations of TPH exceeding 1,000 mg/kg,
- Install clay liners in areas where chloride and/or TPH concentrations exceed 1,000 mg/kg at depths greater than five feet below ground level (bgl),
- Install one additional groundwater monitoring well downgradient of the Site,
- Monitor the groundwater at the Site until the concentrations of chloride and benzene are below the New Mexico Water Quality Control Commission standards.

On March 7, 2013, NMOCD notified Chesapeake that the Plan was administratively complete and that Chesapeake should proceed with public notice of the Plan. On March 30, 2013, Chesapeake published a notice of the proposed activities in the Albuquerque Journal, the Hobbs-Daily News Sun and the Lovington Leader. In addition, written notification of the Plan submittal was sent to all surface owners of record within a 1-mile radius of the Site. On June 27, 2013 upon completion of the notification activities, the NMOCD approved the Plan for the Site. A copy of the NMOCD correspondence approving the Plan is included in **Appendix B**.

The soil remediation activities outlined in the Plan were conducted at the Site during the period January 15, 2014 through March 27, 2014. The soil remediation activities were summarized in the document titled ***Soil Remediation Summary Report***, submitted to the NMOCD on August 6, 2014.

This ***Ninth Annual Groundwater Monitoring Report*** (Report) summarizes the groundwater monitoring activities conducted at the Site during the following quarterly sampling events:

- Thirty-Third Event - June 21, 2022,
- Thirty-Fourth - September 13, 2022,
- Thirty-Fifth Event - December 7, 2022,
- Thirty-Sixth Event - March 7, 2023.

2.0 REMEDIATION

2.1 SVE SYSTEM

As documented in the ***First Annual Groundwater Monitoring Report***, dated May 19, 2015, during the period May 12-14, 2014, a soil vapor extraction (SVE) remediation system (System) was installed and made operational at the Site. The System is comprised of 8 SVE wells connected through a manifold system constructed of two- and three-inch Schedule 80 PVC piping and plumbed to a 10-horsepower 3-phase SVE Regenerative Blower housed within the System Building. The location of the SVE wells and the System Building are shown on attached **Figure 2**. Within the System, soil vapor from the SVE wells is drawn through a moisture knock out/separator and a particulate filter prior to reaching the blower. An air-flow meter is installed downstream of the blower in the air-exhaust line and an air sample port is located on the air-exhaust line at a location upstream of its exit from the System Building.

System start-up was conducted on June 6, 2014. Routine checks of the System are conducted to record the blower run times, discharge rate and volatile organic compounds (VOC) concentration of the discharge-air stream. VOC concentrations are measured with a photo-ionization detector (PID) data in the field. These PID data are then entered into to a spreadsheet to calculate both the VOC discharge rate and approximate total pounds of VOCs removed by the System. The approximate total VOC discharges for each quarter are then summed to provide a cumulative VOC discharge total. These data are summarized in **Table 1**. Through March 7, 2023, the field PID data suggest that approximately 9,210 pounds of VOCs have been removed from the subsurface and discharged from the System.

In addition to the collection of field data, discharged-air samples are collected quarterly using laboratory provided Suma canisters and shipped under chain-of-custody control to Eurofins TestAmerica, Pittsburgh, Pennsylvania. Discharged-air samples are then analyzed for VOC compounds and total VOCs as hexane by Method TO-15. The discharged-air analytical data are used to compute a correlation factor for the field PID readings to more accurately calculate the total VOCs discharged.

During the thirty-third quarter, discharge-air sample 20220621 M-1 was collected on June 22, 2022. On this date, the System had been running for a total of 62,966 hours, was operating at 261 ACFM and had a field reading of 23.7 PPM from the discharge air stream. Laboratory analytical results for this discharge-air sample indicated a total VOC as Hexane concentration of 10,000 PPB V/V (10.0 PPM V/V).

During the thirty-fourth quarter, discharge-air sample 202209 M-1 was collected on September 13, 2022. On this date, the System had been running for a total of 64,976 hours, was operating at 233 ACFM and had a field reading of 60 PPM from the discharge air stream. Laboratory analytical results for this discharge-air sample indicated a total VOC as Hexane concentration of 14 PPB V/V (0.014 PPM V/V).

During the thirty-fifth quarter, discharge-air sample 20221207 M-1 was collected on December 7, 2022. On this date, the System had been running for approximately 67,017 hours, was operating at 224 ACFM and had a field reading of 17.2 PPM from the discharge air stream. Laboratory analytical results for this discharge-air sample indicated a total VOC as Hexane concentration of 8,800 PPB V/V (8.8 PPM V/V).

During the thirty-sixth quarter, discharge-air sample 20230307 M-1 was collected on March 7, 2023. On this date, the System had been running for a total of 69,176 hours, was operating at 250 ACFM and had a field reading of 23.7 PPM from the discharge air stream. Laboratory analytical results for this discharge-air sample indicated a total VOC as Hexane concentration of 17,000 PPB V/V (17.0 PPM V/V).

A summary of the laboratory analytical results for the discharged-air samples is presented in **Table 2**, and complete copies of the laboratory analytical reports and chain-of-custody documentation are provided in **Appendix C**.

Field PID instrument readings are typically lower than laboratory analysis for total VOCs. To compensate for the low field PID readings, a correlation factor is calculated based upon the ratio of the laboratory analytical value versus the field PID value. The correlation factor is then used to multiply the field PID readings and calculate the total pounds of VOCs discharged from the System. To accurately reflect the total pounds of VOCs discharged from the System during a given period, **Table 1** also includes the unique correlation factor calculated for each quarterly air-discharge sampling event. This unique correlation factor is then utilized to calculate the total pounds of VOCs discharged from the System for the period in which that particular air-discharge sample was collected. Utilizing the noted correlation factors, approximately 14,793 pounds (7.48 tons) of VOCs have been removed from the subsurface at the Site.

Figure 3 presents a graph of the VOC concentrations observed in the discharge air stream versus time. As can be seen on this figure, the levels of VOC observed in the air discharge stream have decreased dramatically since startup. These data indicate that the System is effective at

removing hydrocarbon vapors from the subsurface. Removal of hydrocarbon vapors coupled with the influx of oxygen drawn into the impacted area by the System enhances biodegradation of the hydrocarbon impacts observed in this area.

2.2 MW-1R LNAPL RECOVERY

As documented in the ***First Annual Groundwater Monitoring Report***, dated May 19, 2015, to enhance LNAPL recovery in the MW-1R area, 2-inch diameter monitoring well MW-1 was plugged and replaced with 4-inch diameter monitoring well MW-1R. On June 5, 2014, a QED Environmental Genie LNAPL recovery pump was placed and made operational in monitoring well MW-1R. The Genie LNAPL recovery pump is an air-actuated bladder pump with a floating intake (skimmer), set at a depth that produces the maximum amount of LNAPL recovery per cycle. Air is provided to the Genie LNAPL recovery pump from a compressor located within the System Building.

The observed LNAPL thicknesses in MW-1R during this reporting period ranged from 0.05-feet to 0.30-feet. At this time, LNAPL thicknesses are still outside of the recovery range for the LNAPL recovery pump. To facilitate further LNAPL recovery, Chesapeake has deployed a hydrophobic LNAPL absorption sock within MW-1, which is changed out as necessary.

During the operation of the Genie LNAPL recovery pump, a total of approximately 15 drums (822.5 gallons) of LNAPL have been removed from the subsurface.

3.0 QUARTERLY GROUNDWATER MONITORING

This Report describes the findings from four quarterly groundwater sampling events conducted at the Site from June 21, 2022 through March 7, 2023. As specified in the Plan, chloride is the primary constituent of concern (COC) at the Site until the LNAPL has been adequately eliminated from monitoring well MW-1R. When the LNAPL has been adequately eliminated from monitoring well MW-1R, the groundwater within this well will be monitored for benzene, toluene, ethylbenzene and total xylenes (BTEX). Each of the four BTEX constituents will be considered as separate COCs.

It should be noted that Chesapeake did collect BTEX groundwater samples from monitoring well MW-1R during each of the quarterly monitoring events during this reporting period. As noted in **Section 2.2** above, the apparent LNAPL thicknesses measured in monitoring well MW-1R are on a downward trend, with some measurements presenting as a film.

3.1 DEPTH-TO-GROUNDWATER MEASUREMENTS

Prior to collecting groundwater samples during each quarterly event, Equus gauged all 8 monitoring wells (MW-1R through MW-8) at the Site using an electronic interface probe to determine the depth-to-water (DTW) and LNAPL thickness within each well. The locations of these monitoring wells are shown on **Figure 2**. DTWs were measured from the surveyed top-of-casing (TOC) of each well and converted to elevations relative to mean sea level. These data are presented in **Table 3**. A potentiometric surface map was constructed utilizing groundwater elevation data from the March 7, 2023 monitoring event to illustrate the groundwater flow direction within the shallow groundwater system beneath the Site. This potentiometric surface map is presented on **Figures 4**. As can be seen on **Figure 4**, groundwater flow at the Site is, in general, from the northwest to the southeast.

3.2 GROUNDWATER SAMPLING METHODS

Upon completion of DTW measurement activities, Equus field personnel collected groundwater samples per the Plan. Groundwater samples were collected from monitoring wells MW-4 for chloride and MW-1R for BTEX utilizing EPA approved low-flow purging/sampling methodologies. Field parameters consisting of pH, specific conductivity, temperature, and dissolved oxygen (DO) were measured during field activities utilizing a multi-parameter meter and air-tight flow-through cell. Upon stabilization of the field parameters, the groundwater sample was collected into laboratory prepared containers, labeled as to source and contents, placed on ice for preservation, placed under chain-of-custody control and shipped via overnight courier to the analytical

laboratory (Eurofins, Edison, New Jersey). As per the Plan, groundwater samples collected from these monitoring wells were analyzed for chloride by EPA Method 300.0. A summary of the laboratory analytical results for chloride analyses is presented in **Table 4**, and complete copies of the laboratory analytical reports and chain-of-custody documentation is provided in **Appendix C**.

3.3 GROUNDWATER LABORATORY ANALYTICAL RESULTS

The laboratory analytical results for chloride and BTEX from these sampling events are screened against *the* ***New Mexico Administrative Code (NMAC) 20.6.2, Standards for Groundwater of 10,000 mg/L TDS Concentration or Less***. The applicable cleanup standards presented in ***NMAC 20.6.2*** consists of the following: chloride (250 mg/L), benzene (5 µg/L), toluene (1,000 µg/L), ethylbenzene (700 µg/L), and total xylenes (620 µg/L), herein referenced to as the Limit(s). According to the remediation goals set in the Plan, each Site monitoring well is required to exhibit eight consecutive monitoring events where chloride is below the Limit. In addition, the same applies for BTEX constituents in monitoring well MW-1R, only. When these remediation goals are met, Chesapeake will cease groundwater sampling activities for all groundwater COCs.

3.4 THIRTY-THIRD QUARTERLY GROUNDWATER SAMPLING RESULTS

The thirty-third groundwater sampling event was conducted at the Site on June 21, 2022. As can be seen in **Table 4**, the groundwater sample collected from monitoring well MW-4 (414 mg/L) exhibited a concentration of chloride that exceeds the Limit of 250 mg/L.

During the thirty-third quarterly groundwater sampling event, LNAPL was observed in monitoring well MW-1R at a thickness of 0.05 feet.

3.5 THIRTY-FOURTH GROUNDWATER SAMPLING RESULTS

The thirty-fourth quarterly groundwater sampling event was conducted at the Site from September 13, 2022. As can be seen in **Table 4**, the groundwater sample collected from monitoring well MW-4 (412 mg/L) exhibited a concentration of chloride that exceeds the Limit of 250 mg/L.

During the thirty-fourth quarterly groundwater sampling event, LNAPL was observed in monitoring well MW-1R at a thickness of 0.30 feet.

3.6 THIRTY-FIFTH QUARTERLY GROUNDWATER SAMPLING RESULTS

The thirty-fifth quarterly groundwater sampling event was conducted at the Site on December 7, 2022. As can be seen in **Table 4**, the groundwater sample collected from monitoring well MW-4 (398 mg/L) exhibited a concentration of chloride that exceeds the Limit of 250 mg/L.

During the thirty-fifth quarterly groundwater sampling event, LNAPL was observed in monitoring well MW-1R at a thickness of 0.14 feet.

3.7 THIRTY-SIXTH QUARTERLY GROUNDWATER SAMPLING RESULTS

The thirty-sixth quarterly groundwater sampling event was conducted at the Site on March 2, 2021. As can be seen in **Table 4**, the groundwater sample collected from monitoring well MW-4 (376 mg/L) exhibited a chloride concentration that exceeds the Limit of 250 mg/L.

During the thirty-sixth quarterly groundwater sampling event, LNAPL was observed in monitoring well MW-1R at a thickness of 0.08 feet.

Figure 5 presents an isopleth map depicting chloride concentrations in groundwater at the Site. The data used to prepare this isopleth map includes the most recent chloride concentration detected in monitoring well MW-4 (March 7, 2023), and chloride concentrations from the last reported sampling date for each of the remaining site monitoring wells. As can be seen in **Figure 5**, a relatively small footprint of chloride impacted groundwater remains at concentrations greater than 250 mg/L cleanup level.

Figure 6 presents chloride concentration trend graphs for each of the monitoring wells sampled at the Site. A review of this figure and the decreasing indicates that the soil remediation activities conducted in the first quarter of 2014 have removed the continuing source of chloride impacts to the groundwater at the Site. Source removal has facilitated the physical natural attenuation mechanisms of dispersion and dilution on remnant chloride concentrations present in Site groundwater.

4.0 CONCLUSIONS

Based upon the data presented herein, the following conclusions are presented:

- Groundwater beneath the Site is encountered at depths ranging from approximately 47 to 49 feet from the surveyed top-of-casing of the Site monitoring wells.
- The direction of groundwater flow at the Site is, in general, from the northwest to the southeast.
- Monitoring well MW-4 is the only remaining well exhibiting concentrations of chloride greater than the Limit of 250 mg/L. During this latest reporting period, chloride concentrations in monitoring well MW-4 ranged from 376 mg/L to 414 mg/L.
- The SVE System is operating as designed and has removed approximately 14,793 pounds of VOCs since start-up on June 6, 2014.
- During the reporting period, a measurable quantity of LNAPL was not recovered from monitoring well MW-1R. The lack of recovery is attributed to the decreasing LNAPL thicknesses observed within MW-1R (0.05-feet to 0.30-feet) during the reporting period. LNAPL thicknesses this thin are outside the effective operating capabilities of the skimmer-pump technology deployed within monitoring well MW-1R.

5.0 RECOMMENDATIONS

Based upon a review of the data presented within this report, the following recommendations have been developed:

- Operation of the LNAPL skimmer-pump within monitoring well MW-1R has been stopped as the LNAPL thickness observed within this well is too thin to be recovered utilizing this technology. A hydrophobic LNAPL absorbent sock will be deployed within monitoring well MW-1R to continue LNAPL removal.

- As specified in the Plan, LNAPL recovery within monitoring well MW-1R should be continued until the LNAPL observed within this well has been adequately eliminated.

- As specified in the Plan, when the LNAPL has been adequately eliminated from monitoring well MW-1R, the groundwater within this well should be monitored for BTEX until the levels of these constituents fall below the Limits of 0.01 mg/L, 0.75 mg/L, 0.75 mg/L and 0.62 mg/L, respectively, for eight consecutive quarters.

- Concentrations of chloride in monitoring well MW-8 have exhibited levels below the New Mexico Water Quality Control Commission standard of 250 mg/L for eleven consecutive events. Based on this milestone and the NMOCD-approved ***Stage 2 Abatement Plan***, chloride monitoring will no longer be conducted from monitoring well MW-8.

- The groundwater within monitoring well MW-4 should continue to be monitored on a quarterly basis for chloride until eight consecutive quarterly sampling events result in chloride levels less than the New Mexico Water Quality Control Commission standards. The next groundwater monitoring event at the Site is scheduled to be conducted in June 2022.

TABLES

Table 1 : Summary of SVE System Field Readings
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Date	Time	Run Time Reading	Operating Hours		Discharge Readings		VOC Discharge				Calculated Correlation Factor
			since last reading	Total	PPM	CFM	lbs/Hr	lbs since last Reading	Total lbs	Total Tons	
06/07/14	8:00	4131.73	19.73	20	596	519	2.281	44.99	44.99	0.02	
06/08/14	7:10	4154.69	22.96	43	398	483	1.416	32.50	77.50	0.04	
06/08/14	9:15	4156.94	2.25	45	5000	489	18.021	40.55	118.05	0.06	
06/12/14	12:40	4256.45	99.51	144	1817	120	1.607	159.92	277.96	0.14	
06/12/14	12:43	4259.65	3.20	148	1561	117	1.346	4.31	282.27	0.14	
06/13/14	7:15	4274.90	18.45	163	1804	122	1.622	29.93	307.89	0.15	
06/13/14	7:17	4276.27	1.37	164	3390	121	3.023	4.14	312.03	0.16	
06/13/14	7:18	4277.08	0.81	165	2301	120	2.035	1.65	313.68	0.16	
06/19/14	12:05	4422.02	144.94	310	1153	120	1.020	147.81	461.49	0.23	
06/19/14	13:30	4423.74	1.72	312	1117	107	0.881	1.52	463.00	0.23	
06/19/14	16:00	4426.00	2.26	314	1448	121	1.291	2.92	465.92	0.23	0.98
06/24/14	12:05	4543.27	117.27	431	*1440*	*120*	1.274	149.36	615.28	0.31	
06/26/14	12:40	4591.01	165.01	479	1970	127	1.844	304.28	919.56	0.46	
06/26/14	12:42	4593.20	2.19	481	1968	120	1.741	3.81	923.37	0.46	
07/03/14	9:35	4755.92	162.72	644	1650	126	1.532	249.34	1172.71	0.59	
07/03/14	9:37	4757.95	2.03	646	1318	126	1.224	2.48	1175.20	0.59	
07/09/14	11:40	4901.77	143.82	790	875	126	0.812	116.80	1292.00	0.65	
07/09/14	11:42	4903.69	1.92	792	795	124	0.727	1.40	1293.39	0.65	
07/17/14	12:33	5094.48	190.79	982	*790*	124	0.722	137.75	1431.15	0.72	
07/17/14	12:34	5095.13	0.65	983	*790*	127	0.739	0.48	1431.63	0.72	
07/17/14	12:36	5097.75	2.62	986	*790*	127	0.739	1.94	1433.56	0.72	
08/01/14	11:00	5452.10	354.35	1,340	1078	139	1.104	391.35	1824.91	0.91	
08/01/14	11:42	5454.03	1.93	1,342	938	150	1.037	2.00	1826.91	0.91	
08/01/14	11:44	5456.32	2.29	1,344	2314	14	0.239	0.55	1827.46	0.91	
10/10/14	13:00	7118.38	1662.06	3,006	130	51	0.049	81.70	1909.16	0.95	
10/10/14	13:02	7120.15	1.77	3,008	216	58	0.093	0.16	1909.32	0.95	1.86
10/31/14	13:00	7622.85	502.70	3,511	161	48	0.057	28.63	1937.95	0.97	
10/31/14	13:04	7624.49	1.64	3,512	78	54	0.031	0.05	1938.00	0.97	
12/11/14	13:50	8607.53	983.04	4,496	352	***131***	0.340	334.10	2272.11	1.14	
01/15/15	10:11	9441.32	833.79	5,329	47	131	0.045	37.60	2309.70	1.15	
01/15/15	10:12	9442.31	0.99	5,330	173	152	0.194	0.19	2309.89	1.15	
01/15/15	10:15	9445.26	2.95	5,333	388	136	0.389	1.15	2311.04	1.16	
01/29/15	11:50	9778.04	332.78	5,666	240	54	0.095	31.49	2342.53	1.17	0.21
01/29/15	11:52	9780.13	2.09	5,668	239	50	0.088	0.18	2342.72	1.17	
02/26/15	11:00	10448.98	668.85	6,337	72	137	0.073	48.63	2391.35	1.20	
02/26/15	11:02	10450.10	1.12	6,338	178	155	0.204	0.23	2391.57	1.20	
03/12/15	10:15	10780.66	330.56	6,669	483	***155***	0.552	182.40	2573.97	1.29	
04/28/15	8:30	11901.34	1120.68	7,789	126	114	0.106	118.86	2692.84	1.35	
04/28/15	8:36	11907.42	6.08	7,795	132	126	0.123	0.75	2693.58	1.35	
05/14/15	9:05	12285.12	377.70	8,173	96	55	0.039	14.68	2708.26	1.35	1.10
05/14/15	9:10	12290.05	4.93	8,178	105	58	0.045	0.22	2708.48	1.35	
05/28/15	11:30	12623.70	333.65	8,512	6	150	0.006	2.07	2710.55	1.36	
06/11/15	10:39	12650.70	27.00	8,539	318	172	0.403	10.88	2721.43	1.36	
07/02/15	11:00	13154.04	503.34	9,042	85	112	0.070	35.32	2756.75	1.38	0.76
09/03/15	8:00	14662.17	1508.13	10,550	249	104	0.191	287.85	3044.60	1.52	
12/10/15	13:00	17015.28	2353.11	12,903	162	95	0.113	266.92	3311.52	1.66	0.86

Table 1 : Summary of SVE System Field Readings
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Date	Time	Run Time Reading	Operating Hours		Discharge Readings		VOC Discharge				Calculated Correlation Factor
			since last reading	Total	PPM	CFM	lbs/Hr	lbs since last Reading	Total lbs	Total Tons	
03/10/16	12:00	17899.58	884.30	13,788	209	105	0.162	143.03	3454.55	1.73	1.78
06/29/16	8:00	20558.59	2659.01	16,447	156	101	0.116	309.58	3764.13	1.88	3.77
07/27/16	12:30	21232.43	673.84	17,120	126	103	0.095	64.20	3828.33	1.91	
08/25/16	11:00	21927.96	695.53	17,816	115	270	0.229	159.45	3987.78	1.99	1.55
09/22/16	10:20	22596.81	668.85	18,485	169	220	0.274	183.07	4170.85	2.09	
12/08/16	9:30	24443.73	1846.92	20,332	109	220	0.177	327.03	4497.88	2.25	6.59
01/10/17	12:23	24758.20	314.47	20,646	173	233	0.297	93.37	4591.25	2.30	
01/25/17	10:56	25115.43	357.23	21,003	206	179	0.271	96.95	4688.20	2.34	3.06
02/22/17	10:35	25786.27	670.84	21,674	248	214	0.391	262.30	4950.50	2.48	
03/09/17	11:04	26146.82	360.55	22,035	321	209	0.495	178.51	5129.01	2.56	
04/05/17	11:55	26792.33	645.51	22,680	454	113	0.378	244.08	5373.09	2.69	
05/16/17	7:00	26967.77	175.44	22,856	61	198	0.089	15.69	5388.79	2.69	5.78
06/07/17	13:00	27495.83	528.06	23,384	54	221	0.087	46.02	5434.80	2.72	
09/07/17	11:36	29698.50	2202.67	25,587	62	200	0.091	201.31	5636.11	2.82	
09/22/17	11:30	30057.43	358.93	25,945	56	211	0.087	31.26	5667.37	2.83	
10/04/17	10:15	30344.40	286.97	26,232	57	198	0.083	23.87	5691.24	2.85	0.81
11/02/17	13:00	31042.78	698.38	26,931	58	185	0.079	55.23	5746.48	2.87	
12/01/17	12:30	31739.31	696.53	27,627	59	192	0.083	58.16	5804.63	2.90	
12/06/17	12:40	31859.62	120.31	27,748	6	270	0.011	1.36	5806.00	2.90	
12/18/17	15:00	32149.36	289.74	28,037	60	208	0.092	26.65	5832.65	2.92	
01/09/18	10:00	32672.25	522.89	28,560	52	189	0.072	37.88	5870.52	2.94	
01/26/18	10:15	33080.48	408.23	28,968	48	172	0.061	24.84	5895.36	2.95	
02/09/18	13:10	33416.85	336.37	29,305	32	220	0.052	17.45	5912.82	2.96	0.19
02/23/18	11:15	33753.60	336.75	29,642	34	186	0.047	15.70	5928.51	2.96	
03/07/18	10:55	34040.75	287.15	29,929	52	227	0.087	24.98	5953.50	2.98	
03/16/18	13:03	34251.67	210.92	30,140	48	195	0.069	14.55	5968.05	2.98	
04/13/18	9:15	34970.90	719.23	30,859	46	200	0.068	48.77	6016.82	3.01	
04/30/18	13:16	35332.87	361.97	31,221	46	200	0.068	24.54	6041.36	3.02	
05/15/18	13:34	35692.17	359.30	31,580	48	200	0.071	25.42	6066.78	3.03	
05/29/18	14:20	36028.04	335.87	31,916	48	200	0.071	23.77	6090.55	3.05	0.65
06/04/18	16:30	36169.50	141.46	32,058	71	200	0.105	14.81	6105.35	3.05	
06/20/18	14:30	36556.30	386.80	32,444	48	200	0.071	27.37	6132.72	3.07	
07/03/18	10:30	36865.13	308.83	32,753	56	520	0.215	66.28	6199.01	3.10	
07/19/18	10:40	37249.27	384.14	33,137	46	486	0.165	63.30	6262.30	3.13	
08/09/18	12:30	37754.97	505.70	33,643	58	386	0.165	83.45	6345.75	3.17	2.13
09/06/18					36						
09/19/18	12:00	38730.31	975.34	34,618	46	405	0.137	133.93	6479.67	3.24	
10/04/18	15:30	39093.45	363.14	34,981	73	425	0.227	82.47	6562.14	3.28	
10/18/18	13:00	39428.14	334.69	35,316	42	261	0.081	27.04	6589.19	3.29	
10/31/18	13:40	39716.90	288.76	35,605	52	317	0.121	35.08	6624.27	3.31	
11/16/18	8:00	39983.80	266.90	35,872	68	156	0.078	20.87	6645.14	3.32	1.19
11/16/18	9:54	39985.70	1.90	35,874	77	264	0.149	0.28	6645.42	3.32	
12/11/18	14:20	40585.95	600.25	36,474	90	150	0.099	59.53	6704.95	3.35	
12/27/18	13:40	40965.57	379.62	36,854	72	310	0.165	62.45	6767.40	3.38	

Table 1 : Summary of SVE System Field Readings
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Date	Time	Run Time Reading	Operating Hours		Discharge Readings		VOC Discharge				Calculated Correlation Factor
			since last reading	Total	PPM	CFM	lbs/Hr	lbs since last Reading	Total lbs	Total Tons	
01/24/19	14:58	41636.05	670.48	37,524	63	275	0.128	85.62	6853.01	3.43	
02/05/19	12:02	41919.95	283.90	37,808	48	251	0.088	25.08	6878.09	3.44	
02/21/19	12:00	42303.95	384.00	38,192	26	218	0.042	16.10	6894.20	3.45	
03/07/19	7:00	42632.85	328.90	38,521	80	208	0.122	40.29	6934.48	3.47	0.97
03/22/19	11:09	42986.51	353.66	38,875	47	177	0.062	21.78	6956.26	3.48	
04/03/19	15:00	43277.65	291.14	39,166	58	440	0.186	54.29	7010.55	3.51	
04/18/19	12:00	43634.32	356.67	39,522	105	450	0.348	124.21	7134.76	3.57	
05/17/19	13:30	44330.99	696.67	40,219	39	365	0.104	72.34	7207.11	3.60	
06/12/19	17:00	44952.75	621.76	40,841	6	170	0.008	4.67	7211.78	3.61	
06/25/19	11:00	45283.69	330.94	41,172	23	445	0.075	24.97	7236.75	3.62	
07/09/19	13:30	45573.87	290.18	41,462	27	360	0.072	20.79	7257.53	3.63	
07/22/19	14:00	45906.56	332.69	41,795	27	425	0.083	27.62	7285.15	3.64	0.87
08/05/19	11:30	46239.45	332.89	42,127	37	462	0.126	41.94	7327.09	3.66	
08/19/19	11:00	46575.01	335.56	42,463	23	533	0.090	30.32	7357.41	3.68	
09/03/19	15:15	46937.77	362.76	42,826	31	455	0.104	37.71	7395.12	3.70	
09/05/19	7:30	46980.41	42.64	42,868	79	227	0.133	5.65	7400.77	3.70	
09/16/19	11:30	47242.95	262.54	43,131	21	372	0.058	15.12	7415.89	3.71	
09/30/19	11:00	47576.43	333.48	43,464	24	355	0.063	20.94	7436.83	3.72	
10/16/19	12:00	47958.94	382.51	43,847	22	280	0.045	17.37	7454.20	3.73	
10/28/19	11:45	48246.61	287.67	44,135	16	326	0.038	11.06	7465.26	3.73	
11/11/19	11:00	48581.38	334.77	44,469	35	488	0.127	42.56	7507.82	3.75	
11/11/19	12:10	48582.46	1.08	44,470	27	188	0.037	0.04	7507.86	3.75	0.88
11/26/19	11:20	48916.78	334.32	44,805	16	284	0.033	10.95	7518.82	3.76	
11/26/19	11:50	48917.34	0.56	44,805	26	472	0.089	0.05	7518.87	3.76	
12/11/19	10:30	49294.17	376.83	45,182	30	214	0.047	17.79	7536.65	3.77	
12/22/19	11:00	49558.50	264.33	45,447	16	462	0.054	14.40	7551.05	3.78	
12/30/19	14:00	49631.20	72.70	45,519	30	462	0.102	7.43	7558.48	3.78	
01/12/20	13:00	49682.50	51.30	45,571	19	282	0.039	2.01	7560.49	3.78	
02/10/20	11:00	49806.20	123.70	45,694	19	145	0.021	2.55	7563.04	3.78	
03/05/20	12:40	50000.00	193.80	45,888	38	197	0.055	10.66	7573.71	3.79	0.69
03/09/20	12:10	50070.44	70.44	45,958	23	250	0.041	2.92	7576.62	3.79	
03/23/20	11:45	50083.25	12.81	45,971	25	323	0.060	0.76	7577.39	3.79	
04/06/20	10:30	50139.34	56.09	46,027	26	316	0.060	3.34	7580.73	3.79	
04/20/20	10:30	50225.20	85.86	46,113	19	408	0.056	4.84	7585.57	3.79	
05/05/20	11:00	50540.55	315.35	46,429	61	311	0.140	44.17	7629.74	3.81	1.06
05/18/20	12:30	50840.55	300.00	46,729	36	506	0.132	39.72	7669.46	3.83	
06/06/20	10:10	51279.56	439.01	47,168	47	340	0.118	51.71	7721.16	3.86	
06/20/20	13:20	51616.41	336.85	47,504	34	322	0.081	27.18	7748.35	3.87	
07/06/20	10:44	51998.22	381.81	47,886	0.5	425	0.002	0.60	7748.94	3.87	
07/19/20	11:10	52309.12	310.90	48,197	29	470	0.099	30.80	7779.75	3.89	0.51
08/09/20	17:30	52819.74	510.62	48,708	28	428	0.087	44.46	7824.20	3.91	
09/14/20	18:30	53480.00	660.26	49,368	25	421	0.076	50.19	7874.40	3.94	
09/24/20	13:20	53703.31	223.31	49,591	47	410	0.143	31.85	7906.25	3.95	
11/15/20	13:00	54664.23	960.92	50,552	38	418	0.116	111.61	8017.86	4.01	
12/11/20	8:27	55250.13	585.90	51,138	67	380	0.187	109.62	8127.48	4.06	1.36

Table 1 : Summary of SVE System Field Readings
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Date	Time	Run Time Reading	Operating Hours		Discharge Readings		VOC Discharge				Calculated Correlation Factor
			since last reading	Total	PPM	CFM	lbs/Hr	lbs since last Reading	Total lbs	Total Tons	
02/28/21	10:00	56876.10	1625.97	52,764	37	410	0.112	181.80	8309.28	4.15	0.36
03/02/21	14:05	56926.31	50.21	52,814	6.4	355	0.017	0.84	8310.12	4.16	
04/21/21	14:11	58101.61	1175.30	53,990	2.9	391	0.008	9.82	8319.94	4.16	0.07
05/13/21	13:42	58654.06	552.45	54,542	3.2	490	0.012	6.38	8326.32	4.16	
06/08/21	12:30	59275.70	621.64	55,164	31.0	460	0.105	65.34	8391.66	4.20	
09/09/21	12:50	60240.17	964.47	56,128	91.7	422	0.285	275.08	8666.74	4.33	1.53
09/24/21	12:30	60600.84	360.67	56,489	28.4	415	0.087	31.33	8698.07	4.35	
10/24/21	14:20	61323.92	723.08	57,212	23.7	312	0.055	39.41	8737.48	4.37	0.27
11/19/21	14:11	61946.79	622.87	57,835	26.1	402	0.077	48.17	8785.65	4.39	
12/07/21	12:30	62377.93	431.14	58,266	6.0	350	0.015	6.67	8792.32	4.40	
01/23/22	10:49	63503.18	1125.25	59,391	15.4	295	0.033	37.68	8830.00	4.42	1.38
02/16/22	11:30	64080.45	577.27	59,968	17.2	396	0.050	28.98	8858.98	4.43	
03/09/22	12:01	64561.31	480.86	60,449	16.7	383	0.047	22.67	8881.65	4.44	
03/27/22	9:05	65012.44	451.13	60,900	17.4	372	0.048	21.52	8903.17	4.45	
04/24/22	11:59	65684.16	671.72	61,572	14.1	317	0.033	22.13	8925.30	4.46	0.42
05/23/22	7:45	66388.40	704.24	62,276	17.1	205	0.026	18.20	8943.50	4.47	
06/21/22	12:15	67077.58	689.18	62,966	23.7	261	0.046	31.42	8974.92	4.49	
07/28/22	7:45	67970.01	892.43	63,858	16.5	217	0.026	23.55	8998.47	4.50	0.0002
08/28/22	9:11	68705.43	735.42	64,593	18.3	248	0.033	24.60	9023.07	4.51	
09/13/22	9:26	69088.00	382.57	64,976	60.0	233	0.103	39.42	9062.49	4.53	
09/15/22	8:23	69135.64	47.64	65,024	14.2	241	0.025	1.20	9063.69	4.53	0.51
10/29/22	11:02	70194.13	1058.49	66,082	19.2	240	0.034	35.95	9099.64	4.55	
11/27/22	11:11	70889.70	695.57	66,778	18.2	265	0.036	24.73	9124.37	4.56	
12/07/22	11:40	71129.09	239.39	67,017	17.2	224	0.028	6.80	9131.16	4.57	
01/29/23	11:00	72398.93	1509.23	68,287	16.5	255	0.031	46.80	9177.97	4.59	0.72
03/07/23	11:15	73288.13	889.20	69,176	23.7	250	0.044	38.83	9216.80	4.61	
								Corrected Total:	14,793.01	7.48	

Notes:

1. Color shading indicates air sampling period with a unique correlation factor.
2. During the June 24 & July 17, 2014 site visit the field readings were not recorded. The italicized values presented above for these dates are conservative estimated values based upon last known readings.

Table 2 : Summary of Laboratory Analytical Results for Discharge Air Samples
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Parameters	Sample ID:	SVE	Canister #34000823 Serial C8528 2014-12-11	CANISTER #C8522	Canister #8408 2015-06-11 Air Sample	Canister #5451 Batch #320-14155 9-3-15	CANISTER #34000512 BATCH ID #320-15930	STATE M-1 LEASE	20160629 M SVE	20160922 M SVE	20161208 M SVE	20170309 M SVE	20170607M SVE	20170907 M SVE	20171206 -M-SVE	20180307-M-SVE	20180604-M-SVE	20180906-M-SVE
	Sample Date:	1-Aug-14	11-Dec-14	12-Mar-15	11-Jun-15	3-Sep-15	10-Dec-15	10-Mar-16	29-Jun-16	22-Sep-16	8-Dec-16	9-Mar-17	7-Jun-17	7-Sep-17	6-Dec-17	7-Mar-18	4-Jun-18	6-Sep-18
Volatile Organic Compounds by TO-15																		
Acetone	ppb v/v	<2000	<615	<965	<860	<615	<370	<915	<280	<175	<106	<203	<76.0	<116	<20.0	**5.67**	<78.0	<124
Benzene	ppb v/v	**8,820**	**2,960**	**533**	**3,630**	**312**	**194**	**1,070**	**2,600**	**853**	**373**	**550**	**180**	**143**	**1.77**	**24.5**	**87.9**	**112**
Benzyl chloride	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8
Bromodichloromethane	ppb v/v	<120	<36.9	<57.9	<51.6	<36.9	<22.2	<54.9	<16.8	103.5	<6.33	<12.2	<4.56	<6.93	<1.20	<0.300	<4.68	<7.43
Bromoform	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
Bromomethane	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8
2-Butanone (MEK)	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4	<12.2	**178**	<3.20	<0.800	<12.5	<19.8
Carbon disulfide	ppb v/v	**1,800**	**272**	<154	<138	<98.4	<59.2	<146	**177**	<27.9	<16.9	<32.4	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8
Carbon tetrachloride	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8
Chlorobenzene	ppb v/v	<120	<36.9	<57.9	<51.6	<36.9	<22.2	<54.9	<16.8	<10.5	<6.33	<12.2	<4.56	<6.93	<1.20	<0.300	<4.68	<7.43
Dibromochloromethane	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
Chloroethane	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8
Chloroform	ppb v/v	<120	<36.9	<57.9	<51.6	<36.9	<22.2	<54.9	<16.8	<10.5	<6.33	<12.2	<4.56	<6.93	<1.20	<0.300	<4.68	<7.43
Chloromethane	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8
1,2-Dibromoethane	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8
1,2-Dichlorobenzene	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
1,3-Dichlorobenzene	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
1,4-Dichlorobenzene	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
Dichlorodifluoromethane	ppb v/v	**1,980**	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
1,1-Dichloroethane	ppb v/v	<120	<36.9	<57.9	<51.6	<36.9	<22.2	<54.9	<16.8	<10.5	<6.33	<12.2	<4.56	<6.93	<1.20	<0.300	<4.68	<7.43
1,2-Dichloroethane	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4	<12.2	<18.5	<3.20	**0.881**	<12.5	<19.8
1,1-Dichloroethene	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8
cis-1,2-Dichloroethene	ppb v/v	<160	<49.2	**84.5**	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
trans-1,2-Dichloroethene	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
1,2-Dichloropropane	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
cis-1,3-Dichloropropene	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
trans-1,3-Dichloropropene	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
Ethylbenzene	ppb v/v	**13,500**	**3,830**	**799**	**2,890**	**731**	**723**	**446**	**2,530**	**1,390**	**531**	**908**	**229**	**219**	**4.75**	**25.4**	**250**	**334**
4-Ethyltoluene	ppb v/v	**974**	**533**	**164**	**299**	**256**	**186**	<73.2	**660**	**497**	**135**	**263**	**58.5**	**45.1**	**2.38**	**3.74**	**42.7**	**89.2**
Hexachlorobutadiene	ppb v/v	<800	<246	<386	<344	<246	<148	<366	<112	<69.8	<42.2	<81.0	<30.4	<46.2	<8.00	<2.00	<31.2	<49.5
2-Hexanone	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<4.68	<9.91
Methylene Chloride	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	**0.540**	<6.24	<9.91
4-Methyl-2-pentanone	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
Styrene	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
1,1,2,2-Tetrachloroethane	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	**41.1**	<14.0	<8.44	**20.0**	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
Tetrachloroethene	ppb v/v	<160	**71.9**	<77.2	<68.8	<49.2	<29.6	**92.9**	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
Toluene	ppb v/v	**4,020**	**1,040**	**228**	**1,480**	<49.2	<29.6	**120**	**975**	**380**	**164**	**193**	**68.4**	**49.2**	<1.60	**6.92**	**34.4**	**44.3**
1,2,4-Trichlorobenzene	ppb v/v	<800	<246	<386	<344	<246	<148	<366	<112	<69.8	<42.2	<81.0	<30.4	<46.2	<8.00	<2.00	<31.2	<49.5
1,1,1-Trichloroethane	ppb v/v	<120	<36.9	<57.9	<51.6	<36.9	<22.2	<54.9	<16.8	<10.5	<6.33	<12.2	<4.56	<6.93	<1.20	<0.300	<4.68	<7.43
1,1,2-Trichloroethane	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
Trichloroethene	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
Trichlorofluoromethane	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
1,1,2-Trichloro-1,2,2-trifluoroethane	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
1,2,4-Trimethylbenzene	ppb v/v	**2,020**	**648**	**299**	**774**	<98.4	**355**	<146	**968**	**740**	**228**	**411**	**85.9**	**50.3**	**7.35**	**9.05**	**71.3**	**134**
1,3,5-Trimethylbenzene	ppb v/v	**821**	**385**	**172**	**353**	**73.0**	**247**	<73.2	**727**	**541**	**192**	**397**	**53.6**	**45.5**	**6.18**	**5.81**	**46.2**	**88.6**
Vinyl acetate	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8
Vinyl chloride	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.8	<14.0	<8.44	<16.2	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91
m,p-Xylene	ppb v/v	**12,700**	**4,680**	**1,110**	**3,920**	**1,140**	**1,380**	**609**	**5,050**	**2,550**	**870**	**1,510**	**322**	**330**	**10.3**	**48.7**	**376**	**501**
o-Xylene	ppb v/v	**4,520**	**1,190**	**286**	**1,120**	**164**	**194**	**107**	**720**	**419**	**177**	**337**	**98.4**	**96.4**	**2.54**	**15.6**	**107**	**133**
Total VOC as Hexane (C6-C12)	ppb v/v	**1,060,000**	**655,000**	**99,400**	**351,000**	**190,000**	**140,000**	**371,000**	**590,000**	**262,000**	**117,000**	**167,000**	**54,500**	**40,900**	**4,630**	**9,930**	**46,500**	**76,600**

Table 2 : Summary of Laboratory Analytical Results for Discharge Air Samples
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Parameters	Sample ID:	2018121-M-SVE	20190307 M SVE	20190905 M SVE	20200122 M1-SVE	20200305 M SVE	20200606-M-SVE	20200924M1 SVE	20201211 M-1	20210302 M-1	20210608 M-1	20210908 M-1	20211207M-1	20220308 M-1	20220621 M-1	202209_ _M-1	20221207 M-1	20230307 M-1
	Sample Date:	11-Dec-18	7-Mar-19	5-Sep-19	22-Jan-20	5-Mar-20	6-Jun-20	24-Sep-20	11-Dec-20	2-Mar-21	8-Jun-21	9-Sep-21	7-Dec-21	8-Mar-22	21-Jun-22	13-Sep-22	7-Dec-22	7-Mar-23
Volatile Organic Compounds by TO-15																		
Acetone	ppb v/v	<178	<22.3	<84	<17	<78	<34	<29	<110	<7.8	**16**	**92**	**8.6**	**30**	<74	<7.1	<7.0	<32
Benzene	ppb v/v	**137**	**40.1**	**140**	**3.7**	**42**	**48**	**18**	**80**	<0.78	<0.71	**71**	<0.75	<1.6	<7.4	<0.71	**1.1**	<3.2
Benzyl chloride	ppb v/v	<28.4	<3.56	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
Bromodichloromethane	ppb v/v	<10.7	<1.34	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
Bromoform	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
Bromomethane	ppb v/v	<28.4	<3.56	<84	<17	<78	<34	<29	<110	<7.8	<7.1	<8.0	<7.5	<16	<74	<7.1	<7.0	<32
2-Butanone (MEK)	ppb v/v	<28.4	**5.97**	<34	<6.7	<31	<34	<11	<43	<3.1	<2.8	**11**	<3.0	<6.2	<29	<2.8	<2.8	<13
Carbon disulfide	ppb v/v	<28.4	<3.56	<34	<6.7	<31	<34	<11	<43	<3.1	<2.8	**11**	<3.0	<6.2	<29	<2.8	<2.8	<13
Carbon tetrachloride	ppb v/v	<28.4	<3.56	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
Chlorobenzene	ppb v/v	<10.7	<1.34	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	0.71	<0.70	<3.2
Dibromochloromethane	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
Chloroethane	ppb v/v	<28.4	<3.56	<34	<6.7	<31	<34	<11	<43	<3.1	<2.8	<3.2	<3.0	<6.2	<29	<2.8	<2.8	<13
Chloroform	ppb v/v	<10.7	<1.34	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
Chloromethane	ppb v/v	<28.4	<3.56	<84	<17	<78	<34	<29	<110	<7.8	<7.1	<8.0	<7.5	<16	<74	<7.1	<7.0	<32
1,2-Dibromoethane	ppb v/v	<28.4	<3.56	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
1,2-Dichlorobenzene	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
1,3-Dichlorobenzene	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
1,4-Dichlorobenzene	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
Dichlorodifluoromethane	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
1,1-Dichloroethane	ppb v/v	<10.7	<1.34	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
1,2-Dichloroethane	ppb v/v	<28.4	<3.56	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
1,1-Dichloroethene	ppb v/v	<28.4	<3.56	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
cis-1,2-Dichloroethene	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
trans-1,2-Dichloroethene	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
1,2-Dichloropropane	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
cis-1,3-Dichloropropene	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
trans-1,3-Dichloropropene	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
Ethylbenzene	ppb v/v	**363**	**284**	**270**	**33**	**120**	**150**	**56**	**180**	<0.78	<0.71	**88**	<0.75	**5.2**	<7.4	<0.71	<0.70	<3.2
4-Ethyltoluene	ppb v/v	**76.7**	**167**	**180**	**25**	**100**	**130**	**64**	**170**	**0.82**	<0.71	**140**	<0.75	**27**	**31**	<0.71	**7.9**	**18**
Hexachlorobutadiene	ppb v/v	<71.0	<8.90	<34	<6.7	<31	<34	<11	<43	<3.1	<2.8	<3.2	<3.0	<6.2	<29	<2.8	<2.8	<13
2-Hexanone	ppb v/v	<14.2	<1.78	<34	<6.7	<31	<34	<11	<43	<3.1	<2.8	<3.2	<3.0	<6.2	<29	<2.8	<2.8	<13
Methylene Chloride	ppb v/v	<14.2	<1.78	<84	<17	<78	<34	<29	<110	<7.8	<7.1	<8.0	<7.5	<16	<74	<7.1	<7.0	<32
4-Methyl-2-pentanone	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
Styrene	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
1,1,2,2-Tetrachloroethane	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
Tetrachloroethene	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
Toluene	ppb v/v	**41.0**	**38.8**	**30**	**3.1**	<7.8	**11**	**3.1**	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	**0.94**	<6.5
1,2,4-Trichlorobenzene	ppb v/v	<71.0	<8.90	<34	<6.7	<31	<34	<11	<43	<3.1	<2.8	<3.2	<3.0	<6.2	<29	<2.8	<2.8	<13
1,1,1-Trichloroethane	ppb v/v	<10.7	<1.34	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
1,1,2-Trichloroethane	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
Trichloroethene	ppb v/v	<14.2	<1.78	<8.4	<1.7	**20**	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
Trichlorofluoromethane	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
1,1,2-Trichloro-1,2,2-trifluoroethane	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<0.71	<0.70	<3.2
1,2,4-Trimethylbenzene	ppb v/v	**124**	**83.0**	**75**	**10**	**59**	**60**	**38**	**79**	<0.78	<0.71	**100**	**0.80**	**9.7**	**19**	<0.71	**6.1**	**11**
1,3,5-Trimethylbenzene	ppb v/v	**102**	**67.0**	**69**	**9.1**	**43**	**50**	**31**	**77**	**1.0**	**1.3**	**110**	**1.3**	**14**	**16**	<0.71	**6.5**	**17**
Vinyl acetate	ppb v/v	<28.4	<3.56	<8.4	<6.7	<31	<34	<11	<43	<3.1	<2.8	<3.2	<3.0	<6.2	<29	<2.8	<2.8	<13
Vinyl chloride	ppb v/v	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78	<0.71	<0.80	<0.75	<1.6	<7.4	<2.8	<0.70	<3.2
m,p-Xylene	ppb v/v	**544**	**442**	**440**	**66**	**210**	**280**	**110**	**380**	<0.78	<0.71	**260**	<0.75	**20**	**7.9**	<0.71	**2.1**	**5.8**
o-Xylene	ppb v/v	**158**	**137**	**120**	**55**	**50**	**63**	**25**	**83**	<0.78	<0.71	**55**	<0.75	**4.0**	<7.4	<0.71	<0.70	<3.2
Total VOC as Hexane (C6-C12)	ppb v/v	**107,000**	**77,900**	**69,000**	**14,000**	**26,000**	**50,000**	**24,000**	**91,000**	**2,300**	**2,100**	**140,000**	**1,600**	**24,000**	**10,000**	**14**	**8,800**	**17,000**

Table 3 : Summary of Liquid Level Measurements
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Monitoring Well	Top of Casing Elevation (AMSL-Feet)	Depth to Liquid Measurement Date	Depth to LNAPL (Feet-TOC)	Depth to Groundwater (Feet-TOC)	LNAPL Thickness (Feet)	Groundwater Elevation (AMSL-Feet)
MW-1R	3888.97	06/03/14	44.57	49.89	5.32	3839.08
	3888.97	09/22/14	44.87	48.91	4.04	3840.06
	3888.97	12/10/14	45.80	46.30	0.50	3842.67
	3888.97	03/11/15	45.12	46.83	1.71	3842.14
	3888.97	06/10/15	45.54	46.31	0.77	3842.66
	3888.97	09/02/15	45.81	47.37	1.56	3841.60
	3888.97	12/09/15	45.22	49.07	3.85	3839.90
	3888.97	03/09/16	45.30	47.18	1.88	3841.79
	3888.97	06/28/16	45.75	47.02	1.27	3841.95
	3888.97	09/21/16	46.10	46.38	0.28	3842.59
	3888.97	12/07/16	46.13	46.88	0.75	3842.09
	3888.97	03/08/17	46.14	46.57	0.43	3842.40
	3888.97	06/06/17	45.82	48.86	3.04	3840.11
	3888.97	09/08/17	46.30	46.63	0.33	3842.34
	3888.97	12/04/17	46.36	46.77	0.41	3842.20
	3888.97	03/05/18	46.47	46.81	0.34	3842.16
	3888.97	06/05/18	46.56	46.93	0.37	3842.04
	3888.97	09/05/18	46.31	48.81	2.50	3840.16
	3888.97	12/11/18	46.34	49.11	2.77	3839.86
	3888.97	03/06/19	46.48	49.20	2.72	3839.77
	3888.97	06/04/19	46.58	48.84	2.26	3840.13
	3888.97	09/04/19	47.88	48.67	0.79	3840.30
	3888.97	12/06/19	47.13	47.43	0.30	3841.54
	3888.97	03/05/20	47.11	47.68	0.57	3841.29
	3888.97	06/06/20	47.21	47.45	0.24	3841.52
	3888.97	09/24/20	47.44	47.60	0.16	3841.37
	3888.97	12/10/20	47.51	47.69	0.18	3841.28
	3888.97	03/02/21	47.48	47.58	0.10	3841.39
	3888.97	06/08/21	47.52	48.30	0.78	3840.67
	3888.97	09/08/21	47.73	48.00	0.27	3840.97
	3888.97	12/07/21	47.87	48.03	0.16	3840.94
	3888.97	03/08/22	47.84	47.98	0.14	3840.99
	3888.97	06/21/22	48.06	48.11	0.05	3840.86
	3888.97	09/13/22	48.23	48.53	0.30	3840.44
	3888.97	12/07/22	48.38	48.52	0.14	3840.45
	3888.97	03/07/23	48.44	48.52	0.08	3840.45
MW-2	3890.51	06/03/14	--	47.23	--	3843.28
	3890.51	09/22/14	--	46.37	--	3844.14
	3890.51	12/10/14	--	45.91	--	3844.60
	3890.51	03/11/15	--	46.03	--	3844.48
	3890.51	06/10/15	--	46.38	--	3844.13
	3890.51	09/02/15	--	46.44	--	3844.07
	3890.51	12/09/15	--	46.51	--	3844.00
	3890.51	03/09/16	--	46.61	--	3843.90
	3890.51	06/28/16	--	46.70	--	3843.81
	3890.51	09/21/16	--	46.80	--	3843.71
	3890.51	12/07/16	--	46.82	--	3843.69
	3890.51	03/08/17	--	46.88	--	3843.63
	3890.51	06/06/17	--	46.98	--	3843.53
	3890.51	09/08/17	--	47.06	--	3843.45
	3890.51	12/04/17	--	47.11	--	3843.40
	3890.51	03/05/18	--	47.22	--	3843.29

Table 3 : Summary of Liquid Level Measurements
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Monitoring Well	Top of Casing Elevation (AMSL-Feet)	Depth to Liquid Measurement Date	Depth to LNAPL (Feet-TOC)	Depth to Groundwater (Feet-TOC)	LNAPL Thickness (Feet)	Groundwater Elevation (AMSL-Feet)
MW-2 (con't)	3890.51	06/05/18	--	47.31	--	3843.20
	3890.51	09/05/18	--	47.36	--	3843.15
	3890.51	12/11/18	--	47.46	--	3843.05
	3890.51	03/06/19	--	47.51	--	3843.00
	3890.51	06/04/19	--	47.61	--	3842.90
	3890.51	09/04/19	--	47.76	--	3842.75
	3890.51	12/06/19	--	47.81	--	3842.70
	3890.51	03/05/20	--	47.91	--	3842.60
	3890.51	06/06/20	--	49.98	--	3840.53
	3890.51	09/24/20	--	48.14	--	3842.37
	3890.51	12/10/20	--	48.21	--	3842.30
	3890.51	03/02/21	--	48.25	--	3842.26
	3890.51	06/08/21	--	48.31	--	3842.20
	3890.51	09/08/21	--	48.41	--	3842.10
	3890.51	12/07/21	--	48.51	--	3842.00
	3890.51	03/08/22	--	48.58	--	3841.93
	3890.51	06/21/22	--	48.72	--	3841.79
	3890.51	09/13/22	--	48.82	--	3841.69
	3890.51	12/07/22	--	48.90	--	3841.61
	3890.51	03/07/23	--	49.00	--	3841.51
MW-3	3889.34	06/03/14	--	46.35	--	3842.99
	3889.34	09/22/14	--	46.49	--	3842.85
	3889.34	12/10/14	--	46.08	--	3843.26
	3889.34	03/11/15	--	46.28	--	3843.06
	3889.34	06/10/15	--	46.51	--	3842.83
	3889.34	09/02/15	--	46.60	--	3842.74
	3889.34	12/09/15	--	46.68	--	3842.66
	3889.34	03/09/16	--	46.72	--	3842.62
	3889.34	06/28/16	--	46.85	--	3842.49
	3889.34	09/21/16	--	46.96	--	3842.38
	3889.34	12/07/16	--	47.02	--	3842.32
	3889.34	03/08/17	--	47.11	--	3842.23
	3889.34	06/06/17	--	47.13	--	3842.21
	3889.34	09/08/17	--	47.23	--	3842.11
	3889.34	12/04/17	--	47.28	--	3842.06
	3889.34	03/05/18	--	47.44	--	3841.90
	3889.34	06/05/18	--	47.48	--	3841.86
	3889.34	09/05/18	--	47.55	--	3841.79
	3889.34	12/11/18	--	47.60	--	3841.74
	3889.34	03/06/19	--	47.68	--	3841.66
	3889.34	06/04/19	--	47.80	--	3841.54
	3889.34	09/04/19	--	47.95	--	3841.39
	3889.34	12/06/19	--	48.00	--	3841.34
	3889.34	03/05/20	--	48.03	--	3841.31
	3889.34	06/06/20	--	48.16	--	3841.18
	3889.34	09/24/20	--	48.34	--	3841.00
	3889.34	12/10/20	--	48.42	--	3840.92
	3889.34	03/02/21	--	48.42	--	3840.92
	3889.34	06/08/21	--	48.50	--	3840.84
	3889.34	09/08/21	--	48.60	--	3840.74
	3889.34	12/07/21	--	48.71	--	3840.63
	3889.34	03/08/22	--	48.74	--	3840.60
	3889.34	06/21/22	--	48.89	--	3840.45
	3889.34	09/13/22	--	49.02	--	3840.32
	3889.34	12/07/22	--	49.10	--	3840.24
	3889.34	03/07/23	--	49.22	--	3840.12

Table 3 : Summary of Liquid Level Measurements
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Monitoring Well	Top of Casing Elevation (AMSL-Feet)	Depth to Liquid Measurement Date	Depth to LNAPL (Feet-TOC)	Depth to Groundwater (Feet-TOC)	LNAPL Thickness (Feet)	Groundwater Elevation (AMSL-Feet)
MW-4	3888.90	06/03/14	--	46.38	--	3842.52
	3888.90	09/22/14	--	46.50	--	3842.40
	3888.90	12/10/14	--	46.14	--	3842.76
	3888.90	03/11/15	--	46.35	--	3842.55
	3888.90	06/10/15	--	46.49	--	3842.41
	3888.90	09/02/15	--	46.57	--	3842.33
	3888.90	12/09/15	--	46.68	--	3842.22
	3888.90	03/09/16	--	46.75	--	3842.15
	3888.90	06/28/16	--	46.87	--	3842.03
	3888.90	09/21/16	--	46.94	--	3841.96
	3888.90	12/07/16	--	47.03	--	3841.87
	3888.90	03/08/17	--	47.08	--	3841.82
	3888.90	06/06/17	--	47.15	--	3841.75
	3888.90	09/08/17	--	47.24	--	3841.66
	3888.90	12/04/17	--	47.29	--	3841.61
	3888.90	03/05/18	--	47.38	--	3841.52
	3888.90	06/05/18	--	47.50	--	3841.40
	3888.90	09/05/18	--	47.53	--	3841.37
	3888.90	12/11/18	--	47.62	--	3841.28
	3888.90	03/06/19	--	47.72	--	3841.18
	3888.90	06/04/19	--	47.80	--	3841.10
	3888.90	09/04/19	--	47.98	--	3840.92
	3888.90	12/06/19	--	48.00	--	3840.90
	3888.90	03/05/20	--	48.07	--	3840.83
	3888.90	06/06/20	--	48.20	--	3840.70
	3888.90	09/24/20	--	48.32	--	3840.58
	3888.90	12/10/20	--	48.39	--	3840.51
	3888.90	03/02/21	--	48.44	--	3840.46
	3888.90	06/08/21	--	48.55	--	3840.35
	3888.90	09/08/21	--	48.60	--	3840.30
	3888.90	12//07/21	--	48.72	--	3840.18
	3888.90	03/08/22	--	48.80	--	3840.10
	3888.90	06/21/22	--	48.92	--	3839.98
	3888.90	09/13/22	--	49.02	--	3839.88
	3888.90	12/07/22	--	49.06	--	3839.84
	3888.90	03/07/23	--	49.17	--	3839.73
MW-5	3890.41	06/03/14	--	46.56	--	3843.85
	3890.41	09/22/14	--	46.70	--	3843.71
	3890.41	12/10/14	--	46.29	--	3844.12
	3890.41	03/11/15	--	46.44	--	3843.97
	3890.41	06/10/15	--	46.69	--	3843.72
	3890.41	09/02/15	--	46.79	--	3843.62
	3890.41	12/09/15	--	46.85	--	3843.56
	3890.41	03/09/16	--	46.90	--	3843.51
	3890.41	06/28/16	--	47.08	--	3843.33
	3890.41	09/21/16	--	47.13	--	3843.28
	3890.41	12/07/16	--	47.14	--	3843.27
	3890.41	03/08/17	--	47.23	--	3843.18
	3890.41	06/06/17	--	47.32	--	3843.09
	3890.41	09/08/17	--	47.40	--	3843.01
	3890.41	12/04/17	--	47.27	--	3843.14
	3890.41	03/05/18	--	47.54	--	3842.87

Table 3 : Summary of Liquid Level Measurements
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Monitoring Well	Top of Casing Elevation (AMSL-Feet)	Depth to Liquid Measurement Date	Depth to LNAPL (Feet-TOC)	Depth to Groundwater (Feet-TOC)	LNAPL Thickness (Feet)	Groundwater Elevation (AMSL-Feet)
MW-5 (con't)	3890.41	06/05/18	--	47.66	--	3842.75
	3890.41	09/05/18	--	47.72	--	3842.69
	3890.41	12/11/18	--	47.80	--	3842.61
	3890.41	03/06/19	--	47.85	--	3842.56
	3890.41	06/04/19	--	47.98	--	3842.43
	3890.41	09/04/19	--	48.15	--	3842.26
	3890.41	12/06/19	--	48.17	--	3842.24
	3890.41	03/05/20	--	48.23	--	3842.18
	3890.41	06/06/20	--	48.33	--	3842.08
	3890.41	09/24/20	--	48.51	--	3841.90
	3890.41	12/10/20	--	48.60	--	3841.81
	3890.41	03/02/21	--	48.60	--	3841.81
	3890.41	06/08/21	--	48.66	--	3841.75
	3890.41	09/08/21	--	48.76	--	3841.65
	3890.41	12/07/21	--	48.90	--	3841.51
	3890.41	03/08/22	--	48.90	--	3841.51
	3890.41	06/21/22	--	49.09	--	3841.32
	3890.41	09/13/22	--	49.19	--	3841.22
	3890.41	12/07/22	--	49.28	--	3841.13
	3890.41	03/07/23	--	49.38	--	3841.03
MW-6	3888.25	06/03/14	--	46.25	--	3842.00
	3888.25	09/22/14	--	46.39	--	3841.86
	3888.25	12/10/14	--	46.09	--	3842.16
	3888.25	03/11/15	--	46.23	--	3842.02
	3888.25	06/10/15	--	46.32	--	3841.93
	3888.25	09/02/15	--	46.48	--	3841.77
	3888.25	12/09/15	--	46.57	--	3841.68
	3888.25	03/09/16	--	46.62	--	3841.63
	3888.25	06/28/16	--	46.74	--	3841.51
	3888.25	09/21/16	--	46.81	--	3841.44
	3888.25	12/07/16	--	46.90	--	3841.35
	3888.25	03/08/17	--	46.93	--	3841.32
	3888.25	06/06/17	--	47.08	--	3841.17
	3888.25	09/08/17	--	47.12	--	3841.13
	3888.25	12/04/17	--	47.21	--	3841.04
	3888.25	03/05/18	--	47.30	--	3840.95
	3888.25	06/05/18	--	47.36	--	3840.89
	3888.25	09/05/18	--	47.43	--	3840.82
	3888.25	12/11/18	--	47.52	--	3840.73
	3888.25	03/06/19	--	47.60	--	3840.65
	3888.25	06/04/19	--	47.71	--	3840.54
	3888.25	09/04/19	--	47.81	--	3840.44
	3888.25	12/06/19	--	47.90	--	3840.35
	3888.25	03/05/20	--	47.98	--	3840.27
	3888.25	06/06/20	--	48.08	--	3840.17
	3888.25	09/24/20	--	48.23	--	3840.02
	3888.25	12/10/20	--	48.28	--	3839.97
	3888.25	03/02/21	--	48.33	--	3839.92
	3888.25	06/08/21	--	48.48	--	3839.77
	3888.25	09/08/21	--	48.50	--	3839.75
	3888.25	12/07/21	--	48.60	--	3839.65
	3888.25	03/08/22	--	48.67	--	3839.58
	3888.25	06/21/22	--	48.82	--	3839.43
	3888.25	09/13/22	--	48.91	--	3839.34
	3888.25	12/07/22	--	49.01	--	3839.24
	3888.25	03/07/23	--	49.06	--	3839.19

Table 3 : Summary of Liquid Level Measurements
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Monitoring Well	Top of Casing Elevation (AMSL-Feet)	Depth to Liquid Measurement Date	Depth to LNAPL (Feet-TOC)	Depth to Groundwater (Feet-TOC)	LNAPL Thickness (Feet)	Groundwater Elevation (AMSL-Feet)
MW-7	3889.23	06/03/14	--	45.94	--	3843.29
	3889.23	09/22/14	--	46.08	--	3843.15
	3889.23	12/10/14	--	45.70	--	3843.53
	3889.23	03/11/15	--	45.36	--	3843.87
	3889.23	06/10/15	--	46.08	--	3843.15
	3889.23	09/02/15	--	46.14	--	3843.09
	3889.23	12/09/15	--	46.24	--	3842.99
	3889.23	03/09/16	--	46.30	--	3842.93
	3889.23	06/28/16	--	46.42	--	3842.81
	3889.23	09/21/16	--	46.52	--	3842.71
	3889.23	12/07/16	--	46.59	--	3842.64
	3889.23	03/08/17	--	46.65	--	3842.58
	3889.23	06/06/17	--	46.73	--	3842.50
	3889.23	09/08/17	--	46.80	--	3842.43
	3889.23	12/04/17	--	46.88	--	3842.35
	3889.23	03/05/18	--	46.96	--	3842.27
	3889.23	06/05/18	--	47.04	--	3842.19
	3889.23	09/05/18	--	47.11	--	3842.12
	3889.23	12/11/18	--	47.20	--	3842.03
	3889.23	03/06/19	--	47.27	--	3841.96
	3889.23	06/04/19	--	47.37	--	3841.86
	3889.23	09/04/19	--	47.50	--	3841.73
	3889.23	12/06/19	--	47.58	--	3841.65
	3889.23	03/05/20	--	47.66	--	3841.57
	3889.23	06/06/20	--	47.72	--	3841.51
	3889.23	09/24/20	--	47.90	--	3841.33
	3889.23	12/10/20	--	47.96	--	3841.27
	3889.23	03/02/21	--	48.02	--	3841.21
	3889.23	06/08/21	--	48.06	--	3841.17
	3889.23	09/08/21	--	48.14	--	3841.09
	3889.23	12/07/21	--	48.26	--	3840.97
	3889.23	03/08/22	--	48.33	--	3840.90
	3889.23	06/21/22	--	48.44	--	3840.79
	3889.23	09/13/22	--	48.58	--	3840.65
	3889.23	12/07/22	--	48.70	--	3840.53
	3889.23	03/07/23	--	48.75	--	3840.48
MW-8	3887.06	06/03/14	--	44.94	--	3842.12
	3887.06	09/22/14	--	45.11	--	3841.95
	3887.06	12/10/14	--	44.79	--	3842.27
	3887.06	03/11/15	--	44.94	--	3842.12
	3887.06	06/10/15	--	45.22	--	3841.84
	3887.06	09/02/15	--	45.21	--	3841.85
	3887.06	12/09/15	--	45.29	--	3841.77
	3887.06	03/09/16	--	45.35	--	3841.71
	3887.06	06/28/16	--	45.56	--	3841.50
	3887.06	09/21/16	--	45.67	--	3841.39
	3887.06	12/07/16	--	45.64	--	3841.42
	3887.06	03/08/17	--	45.68	--	3841.38
	3887.06	06/06/17	--	45.78	--	3841.28
	3887.06	09/08/17	--	45.82	--	3841.24
	3887.06	12/04/17	--	45.91	--	3841.15
	3887.06	03/05/18	--	46.03	--	3841.03

Table 3 : Summary of Liquid Level Measurements
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Monitoring Well	Top of Casing Elevation (AMSL-Feet)	Depth to Liquid Measurement Date	Depth to LNAPL (Feet-TOC)	Depth to Groundwater (Feet-TOC)	LNAPL Thickness (Feet)	Groundwater Elevation (AMSL-Feet)
MW-8 (con't)	3887.06	06/05/18	--	46.12	--	3840.94
	3887.06	09/05/18	--	46.16	--	3840.90
	3887.06	12/11/18	--	46.26	--	3840.80
	3887.06	03/06/19	--	46.33	--	3840.73
	3887.06	06/04/19	--	46.42	--	3840.64
	3887.06	09/04/19	--	46.53	--	3840.53
	3887.06	12/06/19	--	46.62	--	3840.44
	3887.06	03/05/20	--	46.71	--	3840.35
	3887.06	06/06/20	--	46.79	--	3840.27
	3887.06	09/24/20	--	46.95	--	3840.11
	3887.06	12/10/20	--	47.02	--	3840.04
	3887.06	03/02/21	--	47.06	--	3840.00
	3887.06	06/08/21	--	47.21	--	3839.85
	3887.06	09/08/21	--	47.25	--	3839.81
	3887.06	12/07/21	--	47.36	--	3839.70
	3887.06	03/08/22	--	47.41	--	3839.65
	3887.06	06/21/22	--	47.55	--	3839.51
	3887.06	09/13/22	--	47.66	--	3839.40
	3887.06	12/07/22	--	47.75	--	3839.31
	3887.06	03/07/23	--	47.82	--	3839.24

Notes:
1. TOC : Measured from top of casing.
2. LNAPL : Light non-aqueous phase liquid.
3. -- : Denotes not measured.
4. AMSL : Denotes above mean sea level (AMSL).

Table 4 : Summary of Laboratory Analytical Results for Chloride in Groundwater Samples
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

	Chloride (mg/L)																	
	June 2014	Sept. 2014	Dec. 2014	March 2015	June 2015	Sept. 2015	Dec. 2015	March 2016	June 2016	Sept. 2016	Dec. 2016	March 2017	June 2017	Sept. 2017	Dec. 2017	March 2018	June 2018	Sept. 2018
MW-1R	---	51.4	116	39.0	24.6	21.6	23.5	34.8	24.9	28.5	44.8	32.0	28.6	29.3	29.0	33.7	---	---
MW-2	17.7	17.4	18.3	16.6	16.8	16.6	15.4 *	13.5	18.9	17.6	18.2	15.0	15.9	15.2	16.2	16.6	---	---
MW-3	59.7	59.7	58.9	57.0	57.1	56.3	50.5 *	49.3	51.5	52.0	55.1	50.0	53.7	49.5	58.1	64.3	---	---
MW-4	**586**	**534**	**535**	**543**	**556**	**567**	**546 ***	**525**	**527**	**569**	**605**	**500**	**493**	**465**	**492**	**484**	**413**	**387**
MW-5	28.6	27.3	27.9	26.1	26.2	25.8	22.4 *	22.4	26.1	26.2	27.8	23.1	24.7	20.4	25.4	25.9	---	---
MW-6	**282**	**263**	**268**	**261**	**253**	**277**	197 *	150	128	128	125	94.4	86.3	79.3	71.8	64.7	---	---
MW-7	42.7	29.6	36.0	39.7	36.2	35.2	28.8 *	27.7	36.0	38.2	39.6	24.2	23.8	24.0	27.7	31.6	---	---
MW-8	**409**	**442**	**463**	**485**	**558**	**327**	**499**	**504**	**539**	**490**	**768**	**489**	**531**	**573**	**570**	**587**	**539**	**398**

Notes:

1. mg/L : milligrams per liter.
2. < : Analyte not detected at the laboratory reporting limit.
3. All analyses performed by TestAmerica Laboratories in Nashville, Tennessee.
4. Cells shaded in blue indicate results that are above the laboratory Reporting Limit (RL).
5. Cells with text **bolded** indicate results that exceed the New Mexico Administrative Code (NMAC) 20.6.2.3103, Standards for Groundwater of 10,000 milligrams per liter (mg/L) total dissolved solids (TDS) Concentration or Less: chloride (250.0 mg/L).
6. --- : Analysis not performed.
7. * : Analysis performed outside of holding time.
8. December 2016 results for MW-1R and MW-8 were confirmed by laboratory reanalysis.
9. Sample MW-1R was collected in December 2017 under sample ID MW-R1 as shown on the COC and in the field book.
10. Beginning with the September 2019 sampling event, Eurofins (Edison, NJ) became the Project Laboratory.

Table 4 : Summary of Laboratory Analytical Results for Chloride in Groundwater Samples
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

	Chloride (mg/L)																	
	Dec. 2018	March 2019	June 2019	Sept. 2019	Dec. 2019	March 2020	June 2020	Sept. 2020	Dec. 2020	March 2021	June 2021	Sept. 2021	Dec. 2021	March 2022	June 2022	Sept. 2022	Dec. 2022	March 2023
MW-1R	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	**373**	**617**	**392**	**404**	**421**	**443**	**429**	**430**	**475**	**437**	**528**	**438**	**404**	**387**	**414**	**412**	**398**	**376**
MW-5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-8	**474**	**308**	**283**	223	198	118	97.4	88.8	73.5	63.9	92.5	65.4	56.2	29.6	---	---	---	---

Notes:

1. mg/L : milligrams per liter.
2. < : Analyte not detected at the laboratory reporting limit.
3. All analyses performed by TestAmerica Laboratories in Nashville, Tennessee.
4. Cells shaded in blue indicate results that are above the laboratory reporting limit.
5. Cells with text bolded indicate results that exceed the New Mexico Administrative Code (NMAC) 20.6.2.3103, Standards for Groundwater of 10,000 milligrams per liter (mg/L) total dissolved solids (TDS) Concentration or Less: chloride (250.0 mg/L).
6. --- : Analysis not performed.
7. * : Analysis performed outside of holding time.
8. December 2016 results for MW-1R and MW-8 were confirmed by laboratory. reanalysis.
9. Sample MW-1R was collected in December 2017 under sample ID MW-R1 as shown on the COC and in the field book.
10. Beginning with the September 2019 sampling event, Eurofins TestAmerica (Edison, NJ) became the Project Laboratory.

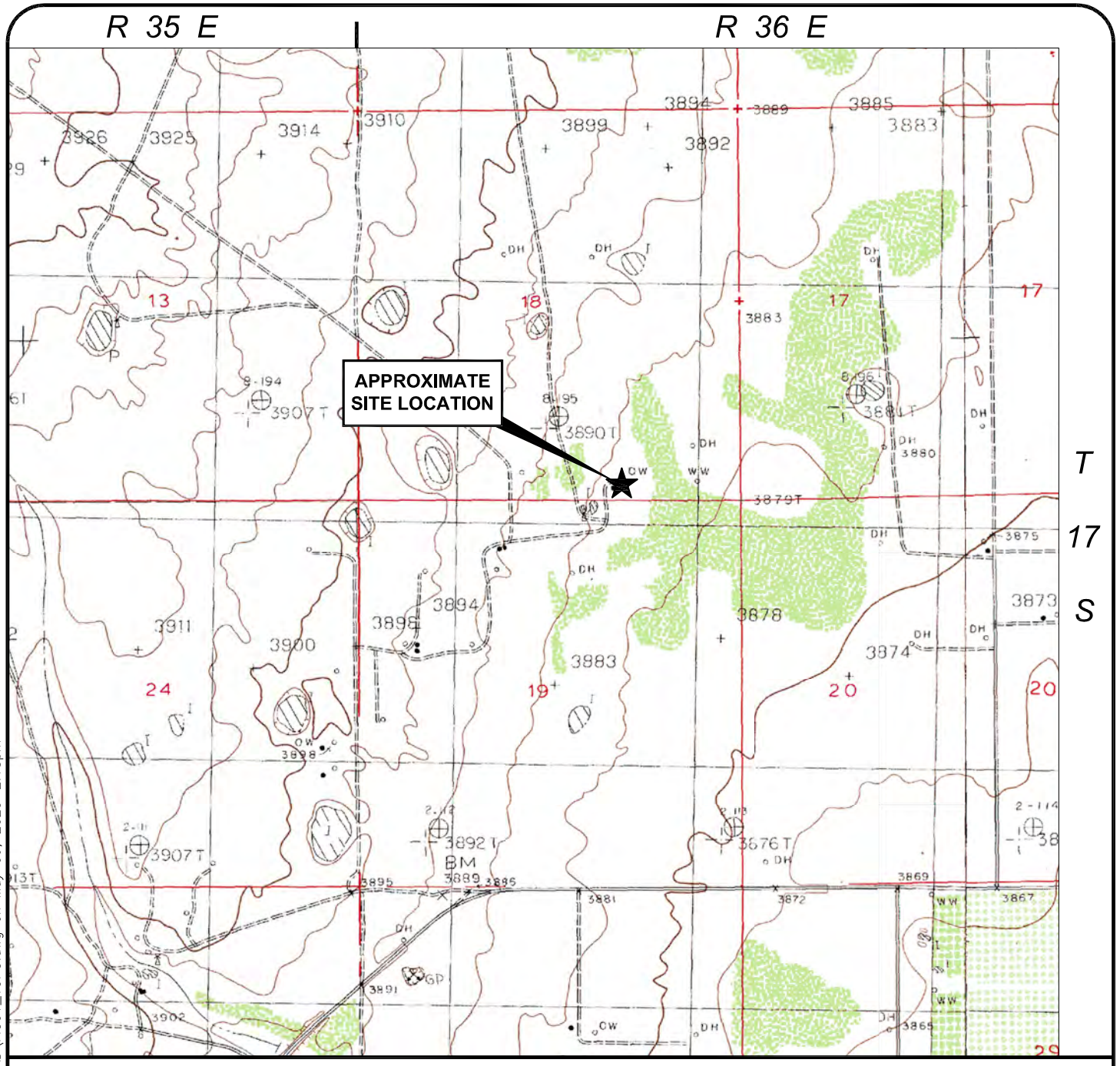
Table 5 : Summary of Laboratory Analytical Results for Groundwater Samples
Chesapeake Energy Corporation, State M Lease
Lea County, New Mexico

Parameters	*Cleanup Levels*	Sample Date:	MW-1R 21-Jun-22	MW-1R 13-Sep-22	MW-1R 7-Dec-22	MW-1R 7-Mar-23
Volatile Organic Compounds (VOCs)		***Units***				
Benzene	5	µg/L	3.71	3.80	2.55	1.59
Toluene	1000	µg/L	0.902	0.955	<0.500	<0.500
Ethylbenzene	700	µg/L	215	211	75.4	23.0
Xylenes, Total	620	µg/L	261	235	76.0	18.2

Notes:

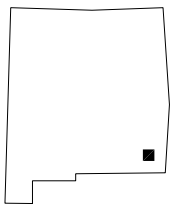
1. µg/L : micrograms per liter.
2. All analyses performed by Eurofins (formerly TestAmerica Laboratories).
3. < : Analyte not detected at the laboratory Reporting Limit (RL).
4. Cells shaded in blue indicate results that are above the laboratory Reporting Limit (RL).
5. Cleanup Criteria obtained from New Mexico Administrative Code (NMAC) 20.6.2.3103, Standards for Groundwater of 10,000 milligrams per liter (mg/L) Concentration or Less: benzene (5 µg/L), toluene (1000 mg/L), ethylbenzene (700 mg/L), and xylenes (620 mg/L).

FIGURES



SOURCE: U.S.G.S. 7.5 MINUTE TOPOGRAPHIC QUADRANGLES
LOVINGTON SW, NEW MEXICO - PROVISIONAL EDITION 1985 AND
LOVINGTON SE, NEW MEXICO - PROVISIONAL EDITION 1985

NEW MEXICO



N

SCALE
0 1/2 1 MILE

CLIENT CHESAPEAKE ENERGY CORPORATION, LLC OKLAHOMA CITY, OKLAHOMA	FIGURE TITLE ***SITE LOCATION AND TOPOGRAPHIC FEATURES***
LOCATION STATE M LEASE (AP-72) SEC. 18, T17S, R36E, LEA COUNTY, NEW MEXICO	DOCUMENT TITLE NINTH ANNUAL GROUNDWATER MONITORING REPORT

Equus Environmental, LLC
1323 East 71st Street, Suite 200
Tulsa, Oklahoma 74136-5065
918.921.5331
www.EQUUSENV.com

		DESIGNED BY	MNM
DATE	4/20/2023	APPROVED BY	MNM
SCALE	AS SHOWN	DRAWN BY	SKG
PROJECT NUMBER		FIGURE NUMBER	
CHKSTATM:H22001		1	

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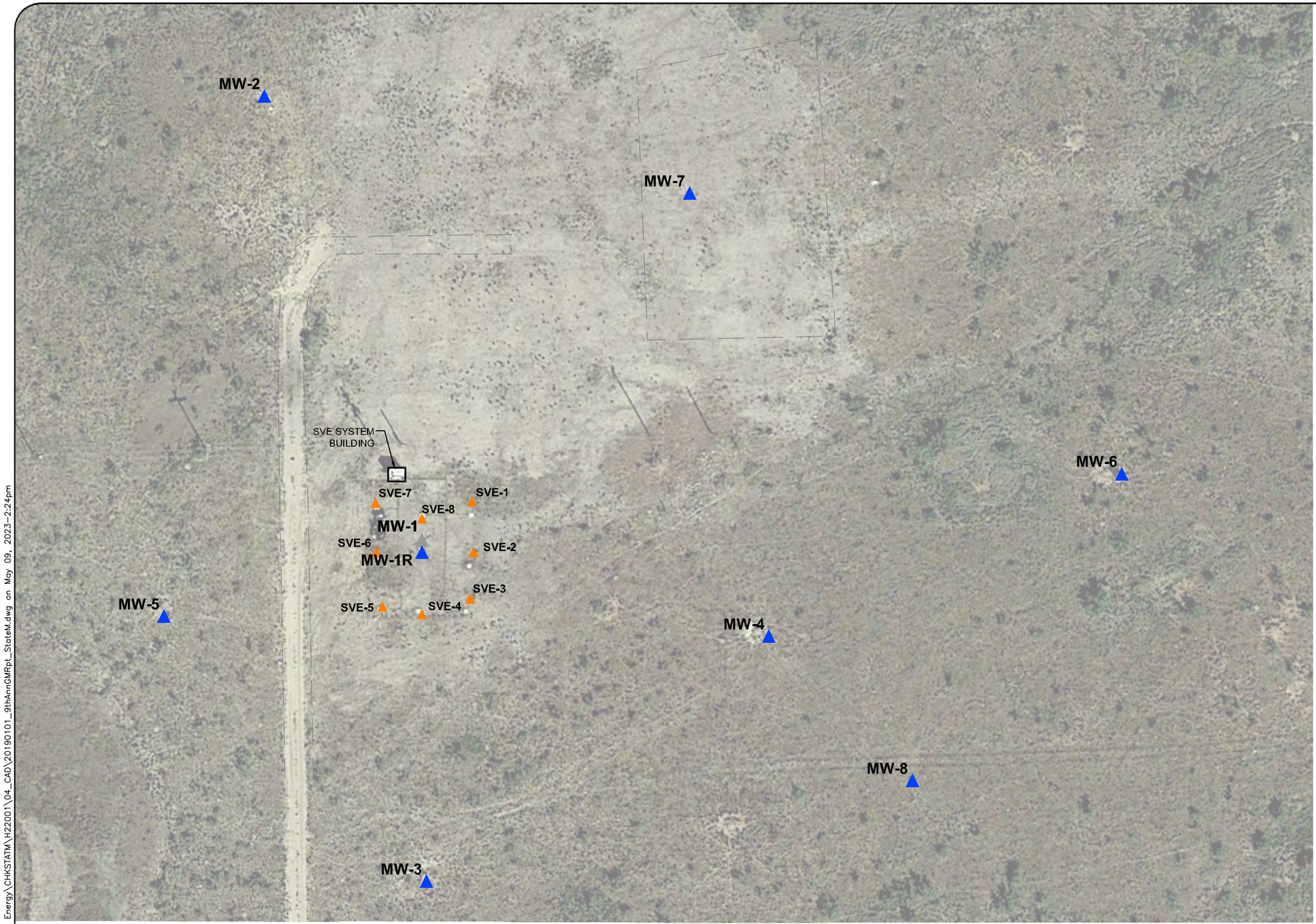


LEGEND

- MW-5 — LOCATION OF MONITORING WELL
- MW-1 — LOCATION OF PLUGGED AND ABANDONED MONITORING WELL
- SVE-1 — LOCATION OF SVE SYSTEM WELL

N

30 0 30 60
SCALE FEET

SOURCE: AERIAL PHOTOGRAPH DATED FEBRUARY 1, 2017, GOOGLE EARTH PRO SCREEN CAPTURE

H:\PROJECTS\Chesapeake Energy\CHKSTATM\H22001\04_CAD\20190101_9thAnnGMRpt_StateM.dwg on May 09, 2023–2:24pm

EQUUS Environmental, LLC
1323 East 71st Street, Suite 200
Tulsa, Oklahoma 74136-5065
918.921.5331
www.EQUUSENV.com

DOCUMENT TITLE: NINTH ANNUAL GROUNDWATER MONITORING REPORT

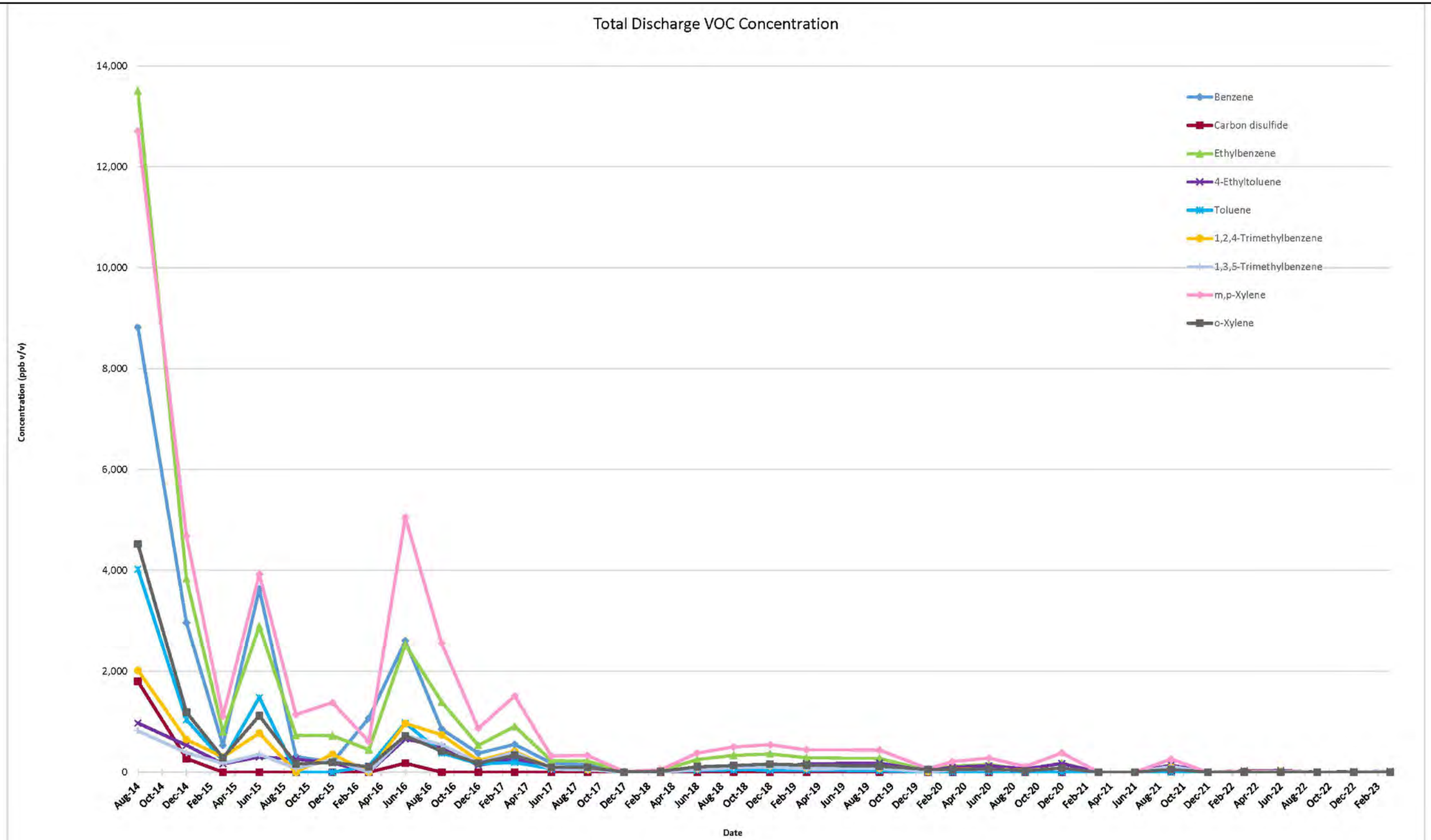
FIGURE TITLE: ***SITE BASE MAP***

CLIENT: CHESAPEAKE ENERGY CORPORATION, OKLAHOMA CITY, OKLAHOMA

LOCATION: STATE M LEASE (AP-72), SEC. 18, T17S, R36E, LEA COUNTY, NEW MEXICO

DESIGNED BY	MNM		
APPROVED BY	MNM	SCALE	1"= 60'
DRAWN BY	SKG\SMK	DATE	4/20/2023

PROJECT NUMBER	FIGURE NUMBER
CHKSTATM:H22001	2



EQUUS Environmental, LLC
1323 East 71st Street, Suite 200
Tulsa, Oklahoma 74136-5065
918.921.5331
www.EQUUSENV.com

DOCUMENT TITLE
NINTH ANNUAL GROUNDWATER MONITORING REPORT

FIGURE TITLE
SVE SYSTEM VOC DISCHARGE CONCENTRATIONS VERSUS TIME

CLIENT
CHESAPEAKE ENERGY CORPORATION
OKLAHOMA CITY, OKLAHOMA

LOCATION
STATE M LEASE (AP-72)
SEC. 18, T17S, R36E, LEA COUNTY, NEW MEXICO

DESIGNED BY	JEC		
APPROVED BY	MNM	SCALE	NTS
DRAWN BY	SKG\SMK	DATE	4/20/2023

PROJECT NUMBER	FIGURE NUMBER
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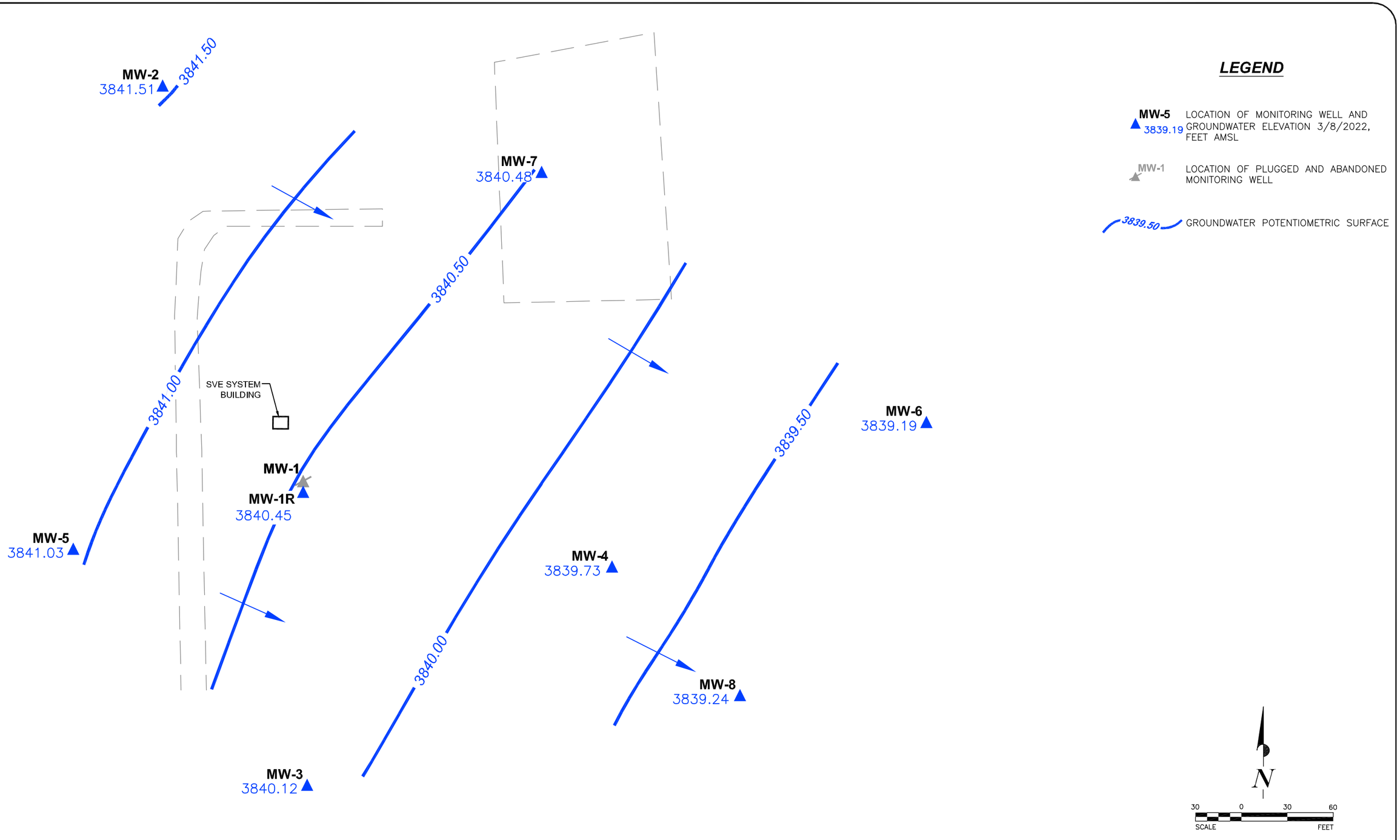

EQUUS Environmental, LLC
1323 East 71st Street, Suite 200
Tulsa, Oklahoma 74136-5065
918.921.5331
www.EQUUSENV.com

DOCUMENT TITLE
NINTH ANNUAL GROUNDWATER MONITORING REPORT

FIGURE TITLE
GROUNDWATER POTENTIOMETRIC SURFACE, MARCH 8, 2022

CLIENT
CHESAPEAKE ENERGY CORPORATION
OKLAHOMA CITY, OKLAHOMA

LOCATION
STATE M LEASE (AP-72)
SEC. 18, T17S, R36E, LEA COUNTY, NEW MEXICO

DESIGNED BY	MNM		
APPROVED BY	MNM	SCALE	1"= 60'
DRAWN BY	SKG\SMK	DATE	4/20/2023

PROJECT NUMBER	FIGURE NUMBER
CHKSTATM:H22001	4

MW-2
16.6
(3/5/2018)

MW-7
31.6
(3/5/2018)

MW-6
64.7
(3/5/2018)

MW-1

MW-1R
33.7
(3/5/2018)

MW-5
25.9
(3/5/2018)

250

MW-4
376

MW-8
29.6
(3/7/2022)

MW-3
64.3
(3/5/2018)

LEGEND

- **MW-4** — LOCATION OF MONITORING WELL AND CONCENTRATION OF CHLORIDE IN GROUNDWATER 3/8/2022, mg/L
- MW-1 — LOCATION OF PLUGGED AND ABANDONED MONITORING WELL
- 250 — CONTOUR LINE SHOWING EQUAL CONCENTRATIONS OF CHLORIDE IN GROUNDWATER, mg/L. (DASHED WHERE INFERRED)

N

30 0 30 60
SCALE FEET

EQUUS Environmental, LLC
1323 East 71st Street, Suite 200
Tulsa, Oklahoma 74136-5065
918.921.5331
www.EQUUSENV.com

DOCUMENT TITLE: NINTH ANNUAL GROUNDWATER MONITORING REPORT

FIGURE TITLE: ***ISOPLETH OF CHLORIDE CONCENTRATIONS IN GROUNDWATER, MARCH 8, 2022***

CLIENT: CHESAPEAKE ENERGY CORPORATION
OKLAHOMA CITY, OKLAHOMA

LOCATION: STATE M LEASE (AP-72)
SEC. 18, T17S, R36E, LEA COUNTY, NEW MEXICO

DESIGNED BY	MNM		
APPROVED BY	MNM	SCALE	1"= 60'
DRAWN BY	SKG\SMK	DATE	4/20/2023

PROJECT NUMBER	FIGURE NUMBER
CHKSTATM:H22001	5

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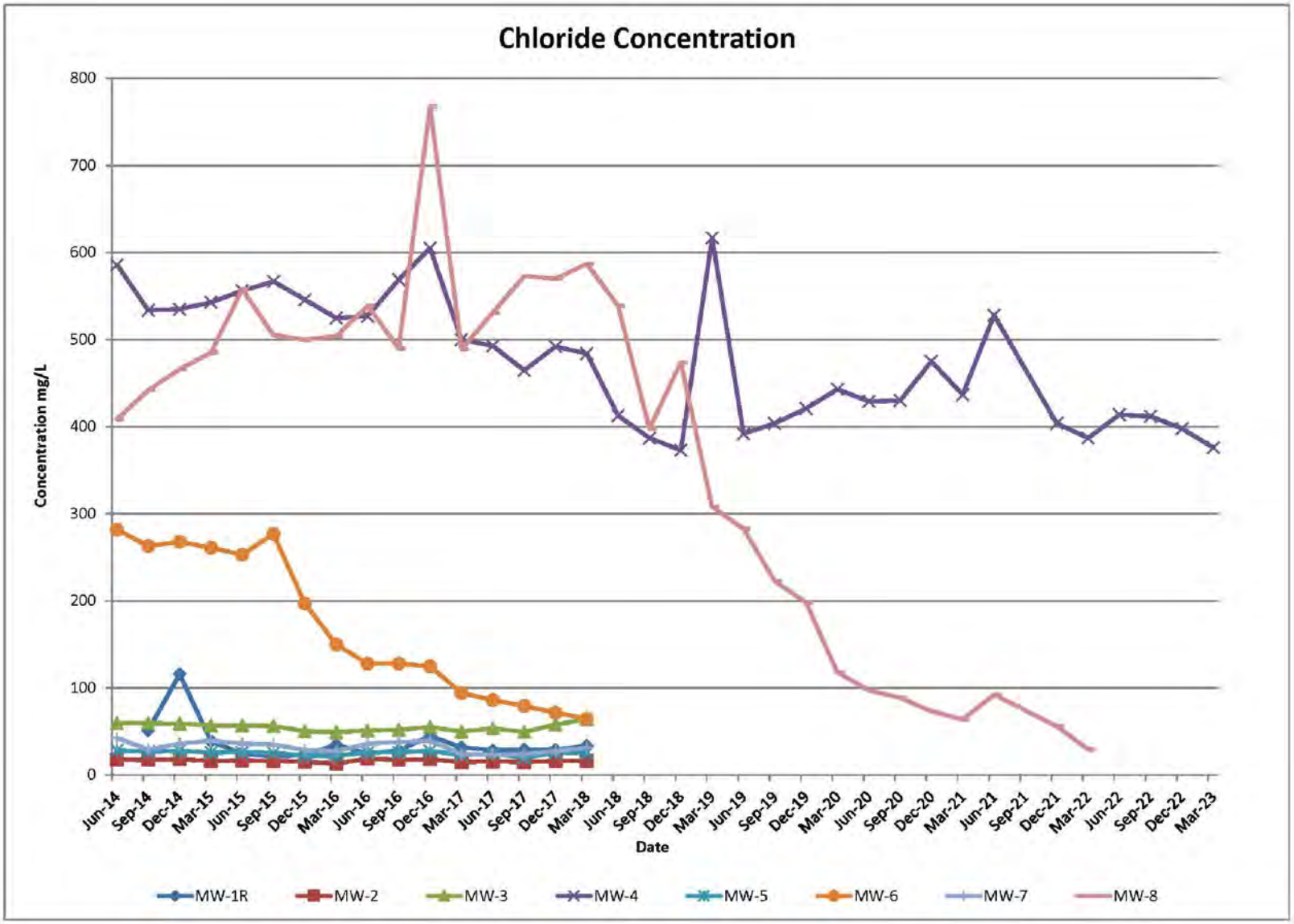

EQUUS Environmental, LLC
1323 East 71st Street, Suite 200
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918.921.5331
www.EQUUSENV.com

DOCUMENT TITLE
NINTH ANNUAL GROUNDWATER MONITORING REPORT

FIGURE TITLE
CHLORIDE CONCENTRATION TREND GRAPHS

CLIENT
CHESAPEAKE ENERGY CORPORATION
OKLAHOMA CITY, OKLAHOMA

LOCATION
STATE M LEASE (AP-72)
SEC. 18, T17S, R36E, LEA COUNTY, NEW MEXICO

DESIGNED BY	CNA		
APPROVED BY	MNM	SCALE	NTS
DRAWN BY	SKG\SMK	DATE	4/20/2023

PROJECT NUMBER	FIGURE NUMBER
CHKSTATM:H22001	6

APPENDICES

APPENDIX A

STAGE 2 ABATEMENT PLAN

ARCADIS
Infrastructure · Water · Environment · Buildings

ARCADIS U.S., Inc.
1004 North Big Spring Street
Suite 300
Midland
Texas 79701
Tel 432 687 5400
Fax 432 687 5401
www.arcadis-us.com

ENVIRONMENT

Mr. Glenn Von Gonten
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Subject:
State M-1 AP-072
Stage 2 Abatement Plan

Date:
March 27, 2012

Dear Mr. Von Gonten:

On behalf of Chesapeake Energy Corporation, ARCCADIS U.S. Inc. respectfully submits the enclosed Stage 2 Abatement plan for the State M-1 site (AP-072). A Stage 1 Abatement Plan Report was submitted on March 20, 2012. Your review and approval of this Abatement Plan will be appreciated. The landowner, Darr Angell, is anxious for us to complete soil remediation at this site.

If you have any questions please do not hesitate to contact Bradley Blevins at (575) 391-1462 or via e-mail at bblevins@chkenergy or me at (432) 687-5400, e-mail address shall@aracdis-us.com.

Contact:
Sharon Hall

Phone:
432 687-5400

Email:
shall@aracdis-us.com

Our ref:
MT001088

ARCADIS U.S., Inc.
TX Engineering License # F-533

Sincerely,

ARCADIS U.S., Inc.

Sharon E. Hall

Sharon E. Hall
Associate Vice President

Copies:
Bradley Blevins- Chesapeake, Hobbs

Imagine the result

g:\aproject\chesapeake\m-1 stage 2 plan\transmitall letter.doc

ARCADIS
Infrastructure · Water · Environment · Buildings

Imagine the result

Chesapeake Energy Corporation

State M-1 AP-072
Stage 2 Abatement
Plan Proposal

Hobbs, New Mexico

March 27, 2012

ARCADIS

Sharon Hall
Associate Vice President

State M-1 AP-072

Stage 2 Abatement
Plan Proposal

Prepared for:
Chesapeake Energy
Corporation
Hobbs, New Mexico

Prepared by:
ARCADIS U.S., Inc.
1004 North Big Spring Street
Suite 300
Midland
Texas 79701
Tel 432 687 5400
Fax 432 687 5401

Our Ref.:
MT001088.0001.00001

Date:
March 27, 2012

Table of Contents

Figures

Appendices

1. INTRODUCTION

The subject site is a former tank battery site located east of Buckeye, New Mexico. The site was purchased by Chesapeake Energy Corporation (Chesapeake) in April 2004. Chesapeake did not operate the tank battery or the associated well field and began the process of facility abandonment in 2007.

Seven monitor wells and nine soil borings have been drilled at the site. Elevated chloride concentrations and limited hydrocarbon compounds were detected in soil samples collected from soil borings and monitoring wells. Elevated chlorides were detected in the down gradient monitor wells and light non-aqueous phase liquid (LNAPL) occurs in monitoring well MW-1. LNAPL recovery activities have been piloted at the site and will commence again upon completion of surface reclamation activities.

2. SUMMARY OF STAGE 1 ABATEMENT ACTIVITIES

Initial site investigation activities were conducted in May of 2007 following abandonment of the tank battery. Stage 1 Abatement activities were conducted during the period of May 2007 through September 2011. Stage 1 Abatement activities included drilling and soil sampling of nine boreholes, drilling and sampling of seven monitor wells, EM 31 and EM 34 surveys, conversion of one monitoring well into a recovery well and recovery of phase-separated hydrocarbons from the recovery well.

New Mexico Oil Conservation Division (NMOCD) was notified of impacts to groundwater at the site via e-mail on May 30, 2007. NMOCD notified Chesapeake in a letter dated June 19, 2007 that a Stage 1 Abatement Plan was required for the site in accordance with Rule 19.

The Stage 1 Abatement Plan was submitted to NMOCD on August 22, 2007. The plan summarized site activities taken to date. The plan proposed the drilling and sampling of a minimum of three additional soil borings and installation and sampling of nine groundwater monitoring wells.

BBC contacted NMOCD via email on April 24, 2010 to inquire about the status of the Stage 1 Abatement Plan approval and Chesapeake's desire to conduct the proposed Stage 1 Abatement Plan activities. On May 27, 2010, NMOCD responded via email that the State was not staffed to review the Abatement Plans (APs) in a timely manner. On June 23, 2010, BBC contacted NMOCD via email to request a waiver of the Public Notice requirement and inform NMOCD that Chesapeake and the landowner were

anxious to move forward with the proposed AP activities. NMOCD replied via email on June 23, 2010 stating they were still understaffed to review the AP and could not waive the Public Notice requirement. They advised BBC that Chesapeake could proceed "at risk." On July 12, 2010 BBC informed NMOCD by registered letter that Chesapeake was planning to start the Stage 1 Assessment on or about August 23, 2010. They further informed NMOCD they would be submitting the required Public Notices, a copy of which was attached to the letter. NMOCD did not respond to the registered letter.

The public notices were published in the Hobbs News-Sun and Lovington Leader on July 22, 2010 and the Albuquerque Journal on July 24, 2010. No comments were received from the public or NMOCD during the 30-day comment period and Chesapeake proceeded with the proposed Stage 1 Abatement Plan activities on August 26, 2010. Copies of correspondence and Public Notice are included in Appendix A.

A detailed description of site activities and results can be found in the report submitted to NMOCD dated March 20, 2012 entitled State M-1 AP-072, Stage 1 Abatement Report (Site Assessment Investigation). Analytical results for soil and groundwater sampling are summarized on Figure 1.

3. STAGE 2 ABATEMENT PLAN PROPOSAL

After review of various remedial options, we propose the following Stage 2 Abatement Plan. The plan addresses soil and groundwater remediation.

3.1 Soil Remediation

The selected remedial option will be the excavation of near-surface soils and installation of clay liners. The anticipated extent and depth of excavation is based on assessment activities (laboratory analysis and visual observation) and is shown in Figure 2. Near surface soils (to a depth of 5 feet below ground surface) with chloride concentrations in excess of 1,000 milligrams per kilogram (mg/kg) and a Total Petroleum Hydrocarbons (TPH) concentration in excess of 1,000 mg/kg will be excavated and disposed. Excavated soils will be disposed at Lea Land Landfill.

Areas where chloride or TPH concentrations are expected to exceed 1,000 mg/kg at depths greater than 5 feet below ground surface soils will be excavated to a depth of 5

feet below ground surface. Soils will be screened in the field for chlorides using chloride field test kits and for TPH using a photoionization. Critical samples (samples used to delineate the excavations) will be submitted for laboratory analysis of chlorides and/or TPH. Following excavation, a 12-inch compacted clay layer that meets or exceeds a permeability of equal to or less than 1×10^{-8} centimeters per second will be installed in the excavations. The lined excavations will be backfilled with four feet of locally obtained native soil. All of the excavated areas will be re-seeded with native vegetation. Areas that are supporting vegetation will not be disturbed.

Use of the USEPA Multi-Med model demonstrates that the clay liners will mitigate the leaching of chlorides to groundwater. The model predicts that after 7000 years of infiltration through the liner the maximum concentration of chlorides in groundwater will be 221.8 milligrams per liter (mg/L). The Multi-Med inputs and outputs are included in Appendix A.

3.2 Groundwater Remediation and Monitoring

One additional groundwater monitoring well will be installed downgradient of the site. The monitoring well will be designated MW-8.

Groundwater samples will be collected from all of the monitoring wells and analyzed for chlorides using USEPA method 9056 for each of four quarters. Based on sample results for one year (four quarters), sampling frequency will be reviewed and may be revised.

Sampling will be discontinued when eight quarters of sample results indicate chloride concentrations are below New Mexico Water Quality Control Commission, Title 20, Chapter 6, Part 2 standards. Sample results will be submitted to the NMOCD annually on June 15.

Following removal of LNAPL from MW-1, groundwater samples will be collected from MW-1 and analyzed for benzene, toluene ethylbenzene and xylenes (BTEX) using USEPA method 8260B for each of four quarters. Based on sample results for one year (four quarters), sampling frequency will be reviewed and may be revised.

Sampling of MW-1 for BTEX will be discontinued when eight quarters of sample results indicate BTEX concentrations are below New Mexico Water Quality Control Commission, Title 20, Chapter 6, Part 2 standards. Sample results will be submitted to

the NMOCD annually on June 15. Proposed groundwater remediation is presented in Sections 3.2.1 and 3.2.2.

3.2.1 Chlorides

Chloride concentrations in groundwater exceed New Mexico Water Quality Control Commission standards in two wells (MW-1 411mg/L and MW-4 472mg/L).

Removal of near-surface soils that are a potential source of chlorides and BTEX in groundwater and lining of excavations with chloride and TPH concentrations in excess of 1,000 mg/kg will mitigate leaching of chlorides to groundwater. Considering the relatively low concentrations of chlorides in groundwater and the fact that soil removal and clay liner infiltration barrier installation will be conducted at this site, we propose monitoring the site for a period of two years before considering pumping of groundwater at this site. With the proposed source removal and mitigation and the severe drought conditions being experienced in this area, we believe it prudent to evaluate if chloride mass removal by pumping is warranted at this site.

3.2.2 Hydrocarbons

A pilot LNAPL recovery test will take place over a three week period and will be used to develop long-term recovery procedures. LNAPL will be recovered from MW-1 and disposed in a NMOCD approved facility. Additionally, two soil vent borings equipped with wind turbines will be installed in the area near MW-1.

4. PUBLIC NOTIFICATION

Written notification of submittal of the Stage 2 Abatement Plan Proposal and site activities will be sent to all surface owners of record within a one-mile radius of the site. NMOCD will be supplied with a list of parties to be notified. Publication of notice of activities will be published in a state-wide circulated newspaper, the Albuquerque Journal, and two county newspapers, the Hobbs-Daily News Sun and the Lovington Leader.

5. REMEDIATION WORK SCHEDULE

Soil remediation activities are expected to be completed in 15 working days (Monday through Friday). Groundwater remediation activities will be ongoing. An estimated completion date for groundwater remediation is not available.

6. REFERENCES

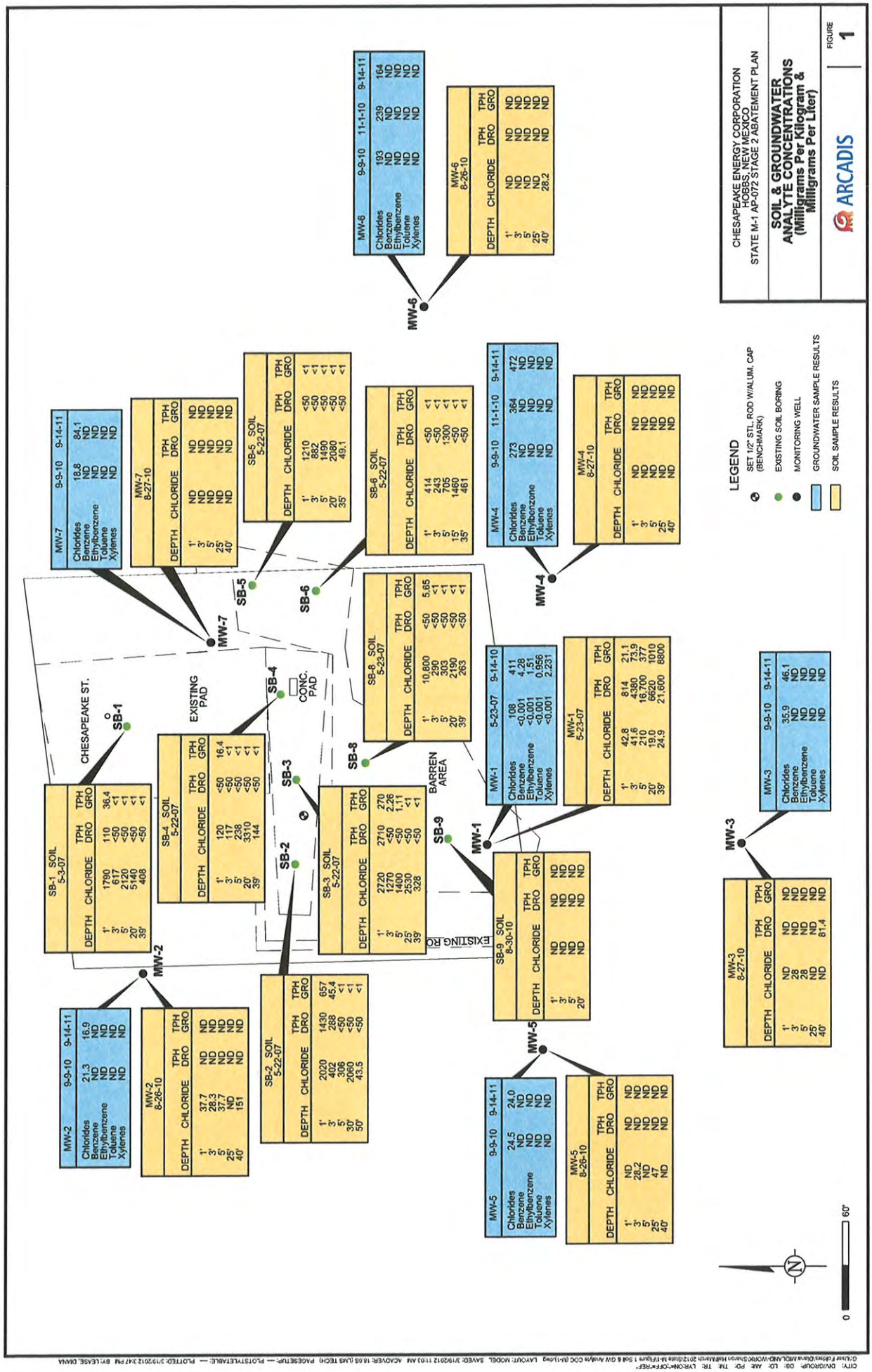
Groundwater Handbook; United States Environmental Protection Agency, Office of Research and Development, Center for Environmental Research Information; 1992

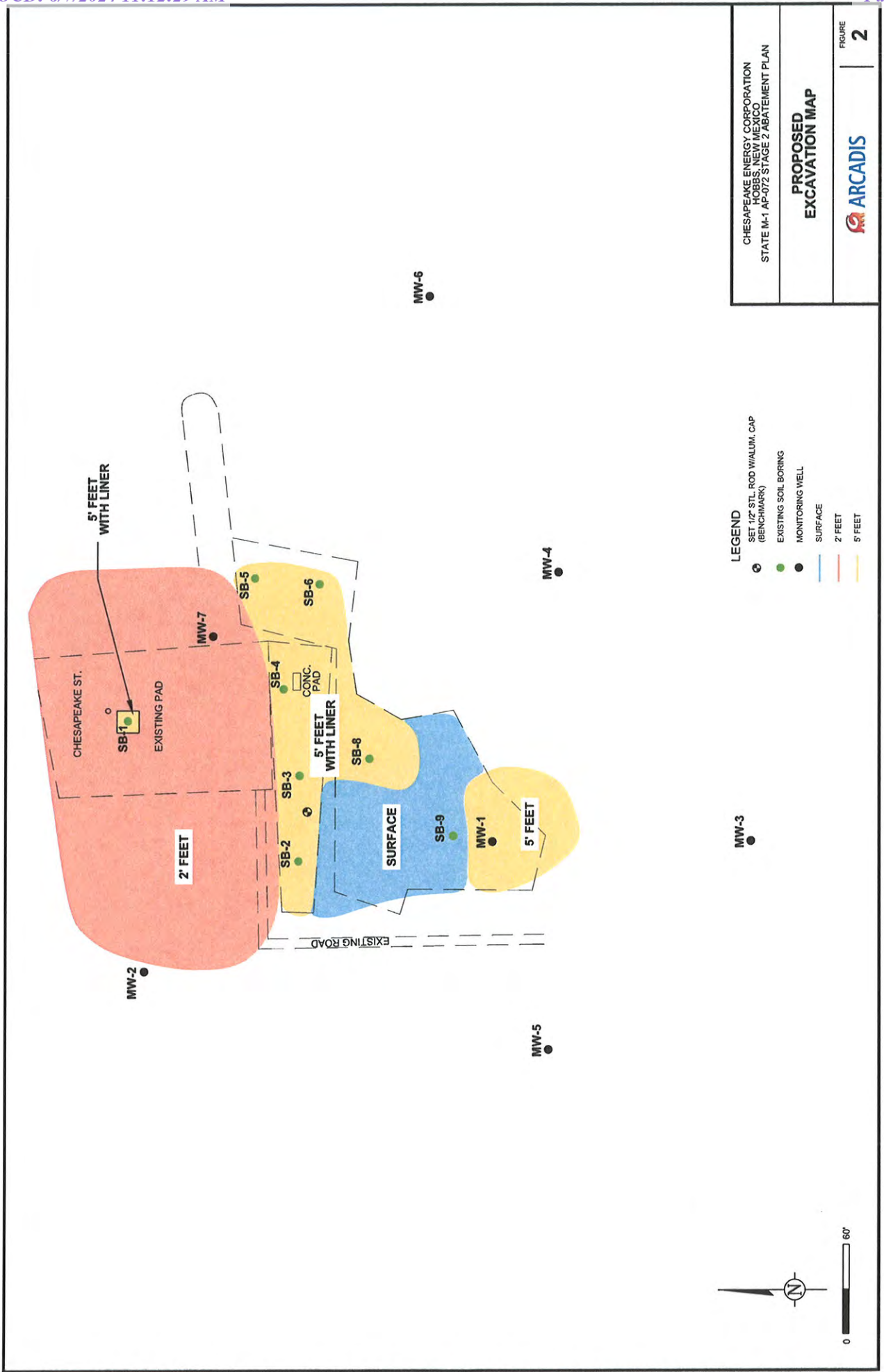
New Mexico Water Quality Control Commission, Title 20 Chapter 6, Part 2, Subpart I

State M-1 AP-072 Stage 1 Abatement Report (Site Assessment Investigation); ARCADIS; March 2012

State M-1Salt Water Disposal Tank Battery, Stage 1 Abatement Plan (Ap-072), BBC International; August 2007

New Mexico Water Quality Control Commission, Title 20 Chapter 6, Part 2, Subpart I


CHESAPEAKE ENERGY CORPORATION
HOBBS, NEW MEXICO
STATE M-1 AP-072 STAGE 2 ABATEMENT PLAN
SOIL & GROUNDWATER ANALYTE CONCENTRATIONS (Milligrams Per Kilogram & Milligrams Per Liter)
FIGURE 1
ARCADIS
LEGEND
SET 1/2" STL. ROD W/ALUM. CAP (BENCHMARK)
EXISTING SOIL BORING
MONITORING WELL
GROUNDWATER SAMPLE RESULTS
SOIL SAMPLE RESULTS
CHESAPEAKE ST.
EXISTING PAD
CONC. PAD
BARREN AREA
EXISTING ROAD
SB-1
SB-2
SB-3
SB-4
SB-5
SB-6
SB-8
SB-9
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
SB-1 SOIL 5-3-07
SB-2 SOIL 5-22-07
SB-3 SOIL 5-22-07
SB-4 SOIL 5-22-07
SB-5 SOIL 5-22-07
SB-6 SOIL 5-22-07
SB-8 SOIL 5-23-07
SB-9 SOIL 8-30-10
MW-1 5-23-07
MW-2 8-26-10
MW-3 8-27-10
MW-4 8-27-10
MW-5 8-26-10
MW-6 8-26-10
MW-7 8-27-10
0
60'
N


CHESAPEAKE ENERGY CORPORATION
HOBBS, NEW MEXICO
STATE M-1 AP-072 STAGE 2 ABATEMENT PLAN
PROPOSED
EXCAVATION MAP
ARCADIS
FIGURE
2
LEGEND
SET 1/2" STL. ROD W/ALUM. CAP (BENCHMARK)
EXISTING SOIL BORING
MONITORING WELL
SURFACE
2' FEET
5' FEET
5' FEET WITH LINER
CHESAPEAKE ST.
EXISTING PAD
SB-1
MW-7
SB-5
SB-6
SB-4
CONC. PAD
SB-8
SB-3
SB-2
SURFACE
SB-9
MW-1
5' FEET
2' FEET
EXISTING ROAD
MW-2
MW-3
MW-4
MW-5
MW-6
N
0
60'

ARCADIS

Appendix A

Multi-Med Model Inputs and Outputs

Chesapeake State M-1
Chesapeake Energy Corporation
Buckeye, Lea County, New Mexico
Multimed Model Input and Output (With Liner)

MODEL INPUT AND OUTPUT						MODEL RANGE	
INPUT PARAMETERS						Minimum	Maximum
Unsaturated Zone Flow Parameters							
Depth of Unsaturated Zone	m	45	feet	13.7	m	0.000000001	None
Hydraulic Conductivity	cm/hr	2	ft/day	2.54	cm/hr	0.00000000001	10,000
Unsaturated Zone Porosity	fraction	0.05	fraction	0.05	fraction	0.000000001	0.99
Residual Water Content	fraction	0.01	fraction	0.010	fraction	0.000000001	1
Unsaturated Zone Transport Parameters							
Thickness of Layer	m	45	feet	13.7	m	0.000000001	None
Percent of Organic Matter	%	2.6	%	2.6	%	0	100
Bulk Density	g/cm^3	1.35	g/cm^3	1.35	g/cm^3	0.01	5
Biological Decay Coefficient	1/yr	0	1/yr	0	1/yr	0	None
Aquifer Parameters							
Aquifer Porosity	fraction	0.25	fraction	0.25	fraction	0.000000001	0.99
Bulk Density	g/cm^3	1.35	g/cm^3	1.35	g/cm^3	0.01	5
Aquifer Thickness	m	50	ft	15.24	m	0.000000001	100,000
Hydraulic Conductivity	m/yr	2	ft/day	223	m/yr	0.0000001	100,000,000
Hydraulic Gradient	m/m	0.007	m/m	0.007	m/m	0.00000001	None
Organic Carbon Content	fraction	0.00315	fraction	0.00315	fraction	0.000001	1
Temperature of Aquifer	°C	14.4	°C	14.4	°C	0.00000001	None
pH		6.2		6.2		0.3	14
x-distance Radial Distance from Site to Receptor	m	1	m	1	m	1	None
Source Parameters							
Infiltration Rate from the Facility	m/yr	0.124	in/yr	0.00315	m/yr	0.0000000001	10,000,000,000
Area of Waste Disposal Unit	m^2	46,800	ft^2	4348	m^2	0.01	None
Length Scale of Facility	m	240	feet	73.2	m	0.000000001	10,000,000,000
Width Scale of Facility	m	195	feet	59.4	m	0.000000001	10,000,000,000
Recharge Rate into the Plume	m/yr	16.71	in/yr	0.4244	m/yr	0	10,000,000,000
Duration of Pulse	yr	8,000	yr	8000	yr	0.000000001	None
Initial Concentration at Landfill	mg/L	6,000	mg/L	6,000	mg/L	0	None
Additional Parameters							
Method				Gaussian		Gaussian	Patch
Name of Chemical Specified				Chloride			

MODEL OUTPUT			
Final Concentration at Landfill	mg/L	221.8	mg/L

MODEL OUTPUT				
Concentration at Landfill	0.0 mg/L	Time	1 yr
	0.0 mg/L		10 yr
	0.0 mg/L		20 yr
	18.9 mg/L		50 yr
	36.6 mg/L		70 yr
	45.4 mg/L		80 yr
	61.8 mg/L		100 yr
	123.4 mg/L		200 yr
	154.1 mg/L		300 yr
	166.3 mg/L		400 yr
	178.5 mg/L		500 yr
	190.7 mg/L		600 yr
	204.8 mg/L		800 yr
	211.1 mg/L		1,000 yr
	220.4 mg/L		2,000 yr
	221.6 mg/L		3,000 yr
	221.8 mg/L		4,000 yr
	221.8 mg/L		5,000 yr
	221.8 mg/L		6,000 yr
	221.8 mg/L		7,000 yr

Chesapeake State M-1
Chesapeake Energy Corporation
Buckeye, Lea County, New Mexico

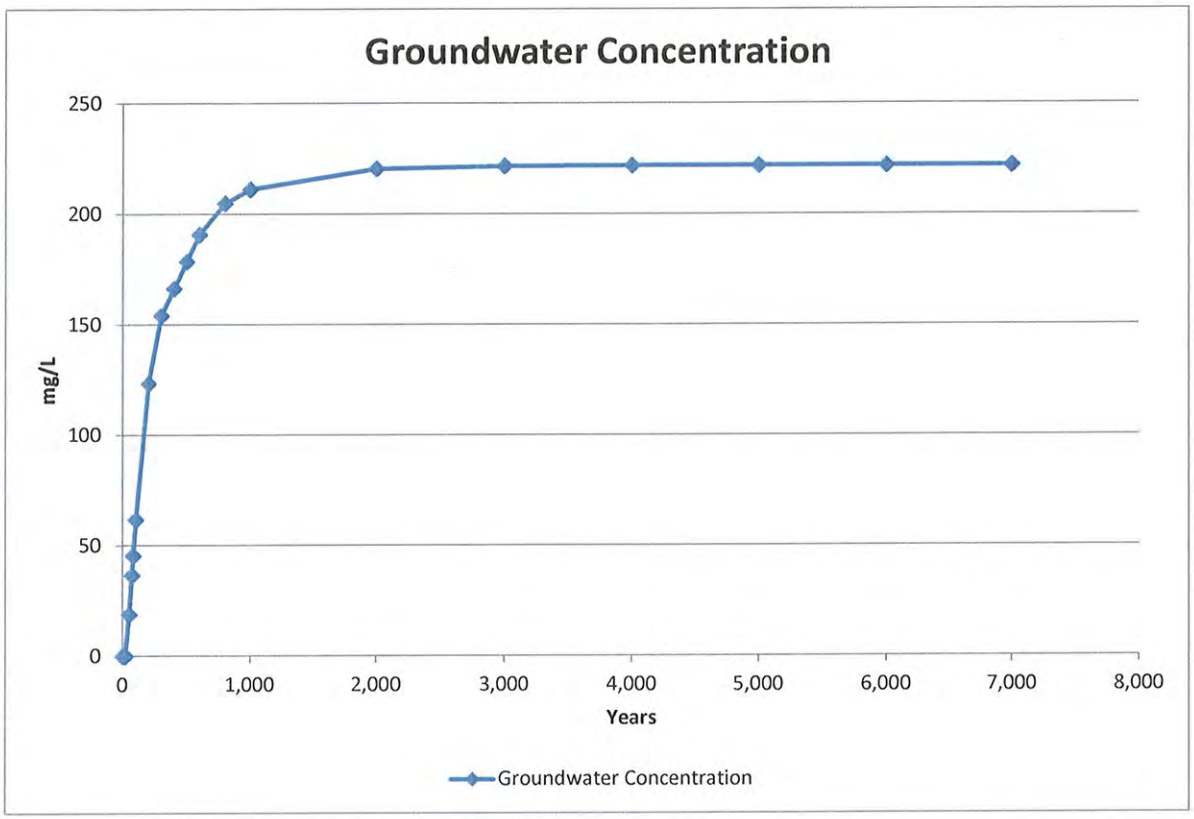


TABLE 6-3. TOTAL POROSITY OF VARIOUS MATERIALS

Material	No. of Analyses	Range	Arithmetic Mean
Igneous Rocks			
Weathered granite	8	0.34-0.57	0.45
Weathered gabbro	4	0.42-0.45	0.43
Basalt	94	0.03-0.35	0.17
Sedimentary Materials			
Sandstone	65	0.14-0.49	0.34
Siltstone	7	0.21-0.41	0.35
Sand (fine)	243	0.26-0.53	0.43
Sand (coarse)	26	0.31-0.46	0.39
Gravel (fine)	38	0.25-0.38	0.34
Gravel (coarse)	15	0.24-0.36	0.28
Silt	281	0.34-0.61	0.46
Clay	74	0.34-0.57	0.42
Limestone	74	0.07-0.56	0.3
Metamorphic Rocks			
Schist	18	0.04-0.49	0.38

Sources: From Mercer et al. (1982),
McWhorter and Sunada (1977),
Original reference Morris and Johnson, (1967).

Texture	Bulk Density g/cm^3	Average Wilting Point	Plant Available Water Inches/Ft
Sandy loam	1.6	0.057	1.66
Silt Loam	1.45	0.119	2
Loam	1.5	0.097	2.4
Sandy clay loam	1.45	0.137	1.66
Clay loam	1.45	0.157	1.9

TABLE 6-8. MEAN BULK DENSITY (g/cm3) FOR FIVE SOIL TEXTURAL CLASSIFICATIONSa,b

Soil Texture	Mean Value	Range Reported
Silt Loams	1.32	0.86 - 1.67
Clay and Clay Loams	1.3	0.94 - 1.54
Sandy Loams	1.49	1.25 - 1.76
Gravelly Silt Loams	1.22	1.02 - 1.58
Loams	1.42	1.16 - 1.58
All Soils	1.35	0.86 - 1.76

a Baes, C.F., III and R.D. Sharp. 1983. A Proposal for Estimation of Soil Leaching Constants for Use in Assessment Models. J. Environ. Qual. 12(1):17-28 (Original reference).

b From Dean et al. (1989)

TABLE 6-2. DESCRIPTIVE STATISTICS FOR SATURATED HYDRAULIC CONDUCTIVITY (cm hr-1)

Soil Type	Hydraulic Conductivity (Ks)* x	s	CV	n		
Clay**	0.2	0.42	210.3	114	cm/hr	17.52
Clay Loam	0.26	0.7	267.2	345	cm/hr	22.776
Loam	1.04	1.82	174.6	735	cm/hr	91.104
Loamy Sand	14.59	11.36	77.9	315	cm/hr	1278.084
Silt	0.25	0.33	129.9	88	cm/hr	21.9
Silt Loam	0.45	1.23	275.1	1093	cm/hr	39.42
Silty Clay	0.02	0.11	453.3	126	cm/hr	1.752
Silty Clay Loam	0.07	0.19	288.7	592	cm/hr	6.132
Sand	29.7	15.6	52.4	246	cm/hr	2601.72
Sandy Clay	0.12	0.28	234.1	46	cm/hr	10.512
Sandy Clay Loam	1.31	2.74	208.6	214	cm/hr	114.756
Sandy Loam	4.42	5.63	127	1183	cm/hr	387.192

* n = Sample size, = Mean, s = Standard deviation, CV = Coefficient of variation (percent)

** Agricultural soil, less than 60 percent clay

Sources: From Dean et al. (1989),
Original reference Carsel and Parrish (1988).

Saturated water content is the maximum volumetric amount of water in the soil when all pores are filled with water. Very often it is assumed that saturated water content equals the porosity n . However, in many cases qS is smaller than n due to the fact that small amounts of air will be trapped in very small pores. Residual water content can be defined as the asymptote of the pF-curve when h gets very high negative values. Usually qR is very small - on the order of 0.001--0.02 for coarse soils but gets as high values as 0.15..0.25 for heavy clay soils. Air entry point ha is

Soil texture. Fine-textured soils can hold much more organic matter than sandy soils for two reasons. First, clay particles form electrochemical bonds that hold organic compounds. Second, decomposition occurs faster in well-aerated sandy soils. A sandy loam rarely holds more than 2% organic matter.

The recharge rate in this model is the net amount of water that percolates directly into the aquifer system outside of the land disposal facility. The recharge is assumed to have no contamination and hence dilutes the groundwater contaminant plume. The recharge rate into the plume can be calculated in a variety of ways. One possibility is to use a model, such as HELP (Hydrologic Evaluation of Landfill Performance) (Schroeder et al., 1984), without any engineering controls (leachate collection system or a liner) to simulate the water balance for natural conditions.

The infiltration rate is the net amount of leachate that percolates into the aquifer system from a land disposal facility. Because of the use of engineering controls and the presence of non-native porous materials in the landfill facility, the infiltration rate will typically be different than the recharge rate. However, it can be estimated by similar

Most soils contain 2-10 percent organic matter. *The Importance of Soil Organic Matter: Key to Drought-Resistant Soil and Sustained Food Production. http://www.fao.org*

APPENDIX B

NMOCD APPROVAL OF STAGE 2 ABATEMENT PLAN

From:	Chase Acker
To:	Bruce McKenzie
Subject:	FW: Stage 2 Abatement Plan Approval: AP-72 Former State M-1 Tank Battery located in Unit Letter O of Section 18 in Township 17 South, Range 36 East, NMPM in Lea County, NM
Date:	Monday, April 14, 2014 1:56:01 PM

From: Griswold, Jim, EMNRD [mailto:Jim.Griswold@state.nm.us]
Sent: Thursday, June 27, 2013 5:14 PM
To: Larry Wooten
Cc: Hall, Sharon; Chase Acker
Subject: Stage 2 Abatement Plan Approval: AP-72 Former State M-1 Tank Battery located in Unit Letter O of Section 18 in Township 17 South, Range 36 East, NMPM in Lea County, NM

Mr. Wooten,

The Oil Conservation Division (OCD) has reviewed the Stage 2 Abatement Plan for the above-referenced site submitted on your behalf by Arcadis and dated 3/27/12. That plan has substantially met the requirements of 19.15.30 NMAC and is hereby approved. Please proceed with field activities.

Be advised this approval does not relieve Chesapeake of responsibility should the situation continue to pose a threat to groundwater, surface water, human health, or the environment. Furthermore, this approval does not relieve your responsibility for compliance with any federal, state, or local laws and/or regulations. Please retain a copy of this email for your files, as no hardcopy will be sent. If you have any questions, please feel free to contact me at any time.

Jim Griswold
Senior Hydrologist
EMNRD/Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505.476.3465
email: jim.griswold@state.nm.us

APPENDIX C

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION

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ANALYTICAL REPORT

Eurofins Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-140223-1
Laboratory Sample Delivery Group: Property ID: 891077
Client Project/Site: State M-1
Revision: 1

For:
Chesapeake Energy Corporation
PO BOX 548806
Oklahoma City, Oklahoma 73154

Attn: Chase Acker

CathyGartner

Authorized for release by:
7/20/2022 2:55:24 PM
Cathy Gartner, Project Manager II
(615)301-5041
Cathy.Gartner@et.eurofinsus.com

Designee for

Ken Hayes, Project Manager II
(615)301-5035
Ken.Hayes@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

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.

PA Lab ID: 02-00416

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Laboratory Job ID: 180-140223-1
SDG: Property ID: 891077

Table of Contents

Case Narrative

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-140223-1
SDG: Property ID: 891077

Job ID: 180-140223-1

Laboratory: Eurofins Pittsburgh

Narrative

Job Narrative
180-140223-1

Revised Report
Subcontract COC was added.
This replaces the report generated on 7/15/2022.

Receipt
The sample was received on 6/23/2022 9:52 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice.

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

Subcontract Work
Method TO 15: This method was subcontracted to Eurofins Air Toxics. The subcontract laboratory certification is different from that of the facility issuing the final report.

Definitions/Glossary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-140223-1
SDG: Property ID: 891077

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Sample Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-140223-1
SDG: Property ID: 891077

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-140223-1	20220621 M-1	Air	06/21/22 12:30	06/23/22 09:52

Method Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-140223-1
SDG: Property ID: 891077

Method	Method Description	Protocol	Laboratory
TO-15	TO-15	EPA	Eurofins

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

Eurofins = Eurofins Air Toxics, 180 Blue Ravine Road, Suite B, Folsom, CA 95630

eurofins | Air Toxics

7/6/2022
Mr. Ken Hayes
Eurofins Test America
500 Wilson Pike Circle Suite 100

Brentwood TN 37027

Project Name: CHK STATE M
Project #: CHKSTATM
Workorder #: 2206535

Dear Mr. Ken Hayes

The following report includes the data for the above referenced project for sample(s) received on 6/22/2022 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2206535

Work Order Summary

CLIENT:	Mr. Ken Hayes Eurofins Environment Testing 500 Wilson Pike Circle Suite 100 Brentwood, TN 37027	**BILL TO:**	Accounts Payable Eurofins Environment Testing 4104 Shuffel St NW North Canton, OH 44720
PHONE:	800-765-0980	**P.O. #**	180-140223
FAX:	615-726-3404	**PROJECT #**	CHKSTATM CHK STATE M
DATE RECEIVED:	06/22/2022	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	07/06/2022		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	20220621M-1	TO-15	7.3 "Hg	1.7 psi
02A	Lab Blank	TO-15	NA	NA
03A	CCV	TO-15	NA	NA
04A	LCS	TO-15	NA	NA
04AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 07/06/22

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

eurofins | Air Toxics

LABORATORY NARRATIVE
EPA Method TO-15
Eurofins Test America
Workorder# 2206535

One 6 Liter Summa Canister sample was received on June 22, 2022. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

TVOC (Total Volatile Organic Compounds) referenced to Hexane includes area counts for peaks that elute from Hexane minus 0.08 minutes to Naphthalene plus 0.08 minutes and quantitating the area based on the response factor of Hexane.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page. Target compound non-detects in the samples that are associated with high bias in QC analyses have not been flagged.

Dilution was performed on sample 20220621M-1 due to matrix interference.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.
UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.
M - Reported value may be biased due to apparent matrix interferences.
CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: 20220621M-1

Lab ID#: 2206535-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
4-Ethyltoluene	7.4	31	36	150
1,2,4-Trimethylbenzene	7.4	19	36	95
1,3,5-Trimethylbenzene	7.4	16	36	82
m,p-Xylene	7.4	7.9	32	34
TVOC Ref. to Hexane	150	10000	520	35000

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Client Sample ID: 20220621M-1

Lab ID#: 2206535-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p063023**	**Date of Collection:**	**6/21/22 12:30:00 PM**
Dil. Factor:	**14.7**	**Date of Analysis:**	**7/1/22 12:46 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	74	Not Detected	170	Not Detected
Benzene	7.4	Not Detected	23	Not Detected
alpha-Chlorotoluene	7.4	Not Detected	38	Not Detected
Bromodichloromethane	7.4	Not Detected	49	Not Detected
Bromoform	7.4	Not Detected	76	Not Detected
Bromomethane	74	Not Detected	280	Not Detected
2-Butanone (Methyl Ethyl Ketone)	29	Not Detected	87	Not Detected
Carbon Disulfide	29	Not Detected	92	Not Detected
Carbon Tetrachloride	7.4	Not Detected	46	Not Detected
Chlorobenzene	7.4	Not Detected	34	Not Detected
Dibromochloromethane	7.4	Not Detected	63	Not Detected
Chloroethane	29	Not Detected	78	Not Detected
Chloroform	7.4	Not Detected	36	Not Detected
Chloromethane	74	Not Detected	150	Not Detected
1,2-Dibromoethane (EDB)	7.4	Not Detected	56	Not Detected
1,2-Dichlorobenzene	7.4	Not Detected	44	Not Detected
1,3-Dichlorobenzene	7.4	Not Detected	44	Not Detected
1,4-Dichlorobenzene	7.4	Not Detected	44	Not Detected
1,1-Dichloroethane	7.4	Not Detected	30	Not Detected
Freon 12	7.4	Not Detected	36	Not Detected
1,2-Dichloroethane	7.4	Not Detected	30	Not Detected
1,1-Dichloroethene	7.4	Not Detected	29	Not Detected
cis-1,2-Dichloroethene	7.4	Not Detected	29	Not Detected
trans-1,2-Dichloroethene	7.4	Not Detected	29	Not Detected
1,2-Dichloropropane	7.4	Not Detected	34	Not Detected
cis-1,3-Dichloropropene	7.4	Not Detected	33	Not Detected
trans-1,3-Dichloropropene	7.4	Not Detected	33	Not Detected
Freon 114	7.4	Not Detected	51	Not Detected
Ethyl Benzene	7.4	Not Detected	32	Not Detected
4-Ethyltoluene	7.4	31	36	150
Hexachlorobutadiene	29	Not Detected	310	Not Detected
2-Hexanone	29	Not Detected	120	Not Detected
Methylene Chloride	74	Not Detected	260	Not Detected
4-Methyl-2-pentanone	7.4	Not Detected	30	Not Detected
Styrene	7.4	Not Detected	31	Not Detected
1,1,2,2-Tetrachloroethane	7.4	Not Detected	50	Not Detected
Tetrachloroethene	7.4	Not Detected	50	Not Detected
Toluene	7.4	Not Detected	28	Not Detected
1,2,4-Trichlorobenzene	29	Not Detected	220	Not Detected
1,1,1-Trichloroethane	7.4	Not Detected	40	Not Detected
1,1,2-Trichloroethane	7.4	Not Detected	40	Not Detected
Trichloroethene	7.4	Not Detected	40	Not Detected

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Client Sample ID: 20220621M-1

Lab ID#: 2206535-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p063023**	**Date of Collection: 6/21/22 12:30:00 PM**	
Dil. Factor:	**14.7**	**Date of Analysis: 7/1/22 12:46 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	7.4	Not Detected	41	Not Detected
Freon 113	7.4	Not Detected	56	Not Detected
1,2,4-Trimethylbenzene	7.4	19	36	95
1,3,5-Trimethylbenzene	7.4	16	36	82
Vinyl Acetate	29	Not Detected	100	Not Detected
Vinyl Chloride	7.4	Not Detected	19	Not Detected
m,p-Xylene	7.4	7.9	32	34
o-Xylene	7.4	Not Detected	32	Not Detected
TVOC Ref. to Hexane	150	10000	520	35000

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	120	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2206535-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p063011a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/30/22 04:48 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	5.0	Not Detected	12	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Freon 12	0.50	Not Detected	2.5	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 2206535-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p063011a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/30/22 04:48 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
Vinyl Acetate	2.0	Not Detected	7.0	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
TVOC Ref. to Hexane	10	Not Detected	35	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	119	70-130
4-Bromofluorobenzene	107	70-130

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Client Sample ID: CCV

Lab ID#: 2206535-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p063006**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/30/22 01:58 PM**	

Compound	%Recovery
Acetone	82
Benzene	86
alpha-Chlorotoluene	117
Bromodichloromethane	117
Bromoform	129
Bromomethane	76
2-Butanone (Methyl Ethyl Ketone)	73
Carbon Disulfide	79
Carbon Tetrachloride	131 Q
Chlorobenzene	95
Dibromochloromethane	122
Chloroethane	82
Chloroform	95
Chloromethane	122
1,2-Dibromoethane (EDB)	108
1,2-Dichlorobenzene	124
1,3-Dichlorobenzene	123
1,4-Dichlorobenzene	123
1,1-Dichloroethane	96
Freon 12	116
1,2-Dichloroethane	124
1,1-Dichloroethene	88
cis-1,2-Dichloroethene	94
trans-1,2-Dichloroethene	89
1,2-Dichloropropane	98
cis-1,3-Dichloropropene	97
trans-1,3-Dichloropropene	108
Freon 114	109
Ethyl Benzene	98
4-Ethyltoluene	115
Hexachlorobutadiene	132 Q
2-Hexanone	104
Methylene Chloride	97
4-Methyl-2-pentanone	98
Styrene	109
1,1,2,2-Tetrachloroethane	93
Tetrachloroethene	118
Toluene	92
1,2,4-Trichlorobenzene	118
1,1,1-Trichloroethane	116
1,1,2-Trichloroethane	102
Trichloroethene	100

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Client Sample ID: CCV

Lab ID#: 2206535-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p063006**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/30/22 01:58 PM**	

Compound	%Recovery
Freon 11	121
Freon 113	102
1,2,4-Trimethylbenzene	122
1,3,5-Trimethylbenzene	106
Vinyl Acetate	94
Vinyl Chloride	82
m,p-Xylene	97
o-Xylene	98
TVOC Ref. to Hexane	100

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	118	70-130
4-Bromofluorobenzene	113	70-130

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Client Sample ID: LCS

Lab ID#: 2206535-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p063007**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/30/22 02:26 PM**	

Compound	%Recovery	Method Limits
Acetone	82	70-130
Benzene	85	70-130
alpha-Chlorotoluene	117	70-130
Bromodichloromethane	115	70-130
Bromoform	129	70-130
Bromomethane	77	70-130
2-Butanone (Methyl Ethyl Ketone)	78	70-130
Carbon Disulfide	81	70-130
Carbon Tetrachloride	131 Q	70-130
Chlorobenzene	97	70-130
Dibromochloromethane	122	70-130
Chloroethane	83	70-130
Chloroform	94	70-130
Chloromethane	118	70-130
1,2-Dibromoethane (EDB)	108	70-130
1,2-Dichlorobenzene	121	70-130
1,3-Dichlorobenzene	120	70-130
1,4-Dichlorobenzene	118	70-130
1,1-Dichloroethane	96	70-130
Freon 12	115	70-130
1,2-Dichloroethane	122	70-130
1,1-Dichloroethene	87	70-130
cis-1,2-Dichloroethene	96	70-130
trans-1,2-Dichloroethene	92	70-130
1,2-Dichloropropane	95	70-130
cis-1,3-Dichloropropene	100	70-130
trans-1,3-Dichloropropene	110	70-130
Freon 114	108	70-130
Ethyl Benzene	99	70-130
4-Ethyltoluene	116	70-130
Hexachlorobutadiene	127	70-130
2-Hexanone	108	70-130
Methylene Chloride	94	70-130
4-Methyl-2-pentanone	98	70-130
Styrene	109	70-130
1,1,2,2-Tetrachloroethane	96	70-130
Tetrachloroethene	118	70-130
Toluene	92	70-130
1,2,4-Trichlorobenzene	109	70-130
1,1,1-Trichloroethane	119	70-130
1,1,2-Trichloroethane	102	70-130
Trichloroethene	100	70-130

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Client Sample ID: LCS

Lab ID#: 2206535-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p063007**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/30/22 02:26 PM**	

Compound	%Recovery	Method Limits
Freon 11	121	70-130
Freon 113	102	70-130
1,2,4-Trimethylbenzene	121	70-130
1,3,5-Trimethylbenzene	106	70-130
Vinyl Acetate	109	70-130
Vinyl Chloride	84	70-130
m,p-Xylene	98	70-130
o-Xylene	96	70-130
TVOC Ref. to Hexane	Not Spiked	

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	117	70-130
4-Bromofluorobenzene	111	70-130

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Client Sample ID: LCSD

Lab ID#: 2206535-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p063008**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/30/22 02:54 PM**	

Compound	%Recovery	Method Limits
Acetone	84	70-130
Benzene	85	70-130
alpha-Chlorotoluene	118	70-130
Bromodichloromethane	114	70-130
Bromoform	130	70-130
Bromomethane	79	70-130
2-Butanone (Methyl Ethyl Ketone)	80	70-130
Carbon Disulfide	84	70-130
Carbon Tetrachloride	135 Q	70-130
Chlorobenzene	96	70-130
Dibromochloromethane	123	70-130
Chloroethane	86	70-130
Chloroform	98	70-130
Chloromethane	120	70-130
1,2-Dibromoethane (EDB)	108	70-130
1,2-Dichlorobenzene	124	70-130
1,3-Dichlorobenzene	121	70-130
1,4-Dichlorobenzene	120	70-130
1,1-Dichloroethane	100	70-130
Freon 12	118	70-130
1,2-Dichloroethane	121	70-130
1,1-Dichloroethene	90	70-130
cis-1,2-Dichloroethene	98	70-130
trans-1,2-Dichloroethene	95	70-130
1,2-Dichloropropane	95	70-130
cis-1,3-Dichloropropene	99	70-130
trans-1,3-Dichloropropene	111	70-130
Freon 114	112	70-130
Ethyl Benzene	99	70-130
4-Ethyltoluene	115	70-130
Hexachlorobutadiene	140 Q	70-130
2-Hexanone	110	70-130
Methylene Chloride	97	70-130
4-Methyl-2-pentanone	98	70-130
Styrene	110	70-130
1,1,2,2-Tetrachloroethane	97	70-130
Tetrachloroethene	120	70-130
Toluene	90	70-130
1,2,4-Trichlorobenzene	126	70-130
1,1,1-Trichloroethane	120	70-130
1,1,2-Trichloroethane	105	70-130
Trichloroethene	100	70-130

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Client Sample ID: LCSD

Lab ID#: 2206535-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p063008**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/30/22 02:54 PM**	

Compound	%Recovery	Method Limits
Freon 11	124	70-130
Freon 113	106	70-130
1,2,4-Trimethylbenzene	122	70-130
1,3,5-Trimethylbenzene	106	70-130
Vinyl Acetate	116	70-130
Vinyl Chloride	86	70-130
m,p-Xylene	99	70-130
o-Xylene	98	70-130
TVOC Ref. to Hexane	Not Spiked	

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	120	70-130
4-Bromofluorobenzene	112	70-130

CHAIN OF CUSTODY RECORD

No. 2453

EQUUS Environmental, LLC
(918) 921-5331

PROJECT NUMBER: CHKSTATM	PROJECT NAME: CHK STATE M	COC 1 of 1	
SHIPPED TO: AIR TOXICS	PROJECT MANAGER: DAVID BRADY	TAT: STANDARD	
SAMPLER'S PRINTED NAME: Terry Fisher		PO#	WO#
SAMPLERS SIGNATURE:			

Date	Time	Sample ID	Sample Matrix	# of Sample Containers	TO-15	* TVOC as HEXANE
6-21-22	1230	20220621M-1	AIR	1	X	X

* TVOC as C_6-C_{12}

2206535

REMARKS

TAG # 6L2094

Custody Seal Intact?
Y N None Temp NA
FedEX

TOTAL NUMBER OF CONTAINERS	1		
RELINQUISHED BY: Terry Fisher	DATE 6-21-22 TIME 1600	RECEIVED BY: EAR	DATE 6/22/22 TIME 0952
RELINQUISHED BY:	DATE TIME	RECEIVED BY:	DATE TIME
METHOD OF SHIPMENT: FedEX		AIRBILL NUMBER:	
RECEIVED IN LABORATORY BY:	DATE TIME	Send PDF, EDD, and INVOICE (if applicable) to: QAQC@EquusEnv.com	
LABORATORY CONTACT: CATHY 615-301-5041		LABORATORY ADDRESS: 180 BLUE RAVINE RD. STE B FOLSOM, CA 95630	

White: Receiving Lab Yellow: Equus Environmental Project File Pink: Equus QA/QC

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation

Job Number: 180-140223-1
SDG Number: Property ID: 891077

Login Number: 140223
List Number: 1
Creator: Gartner, Cathy

List Source: Eurofins Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

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ANALYTICAL REPORT

Eurofins Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-144803-1
Laboratory Sample Delivery Group: Property ID: 891077
Client Project/Site: CHK STATE M
Revision: 1

For:
Chesapeake Energy Corporation
PO BOX 548806
Oklahoma City, Oklahoma 73154

Attn: Chase Acker

Authorized for release by:
10/12/2022 4:14:17 PM

Ken Hayes, Project Manager II
(615)301-5035
Ken.Hayes@et.eurofinsus.com

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.

PA Lab ID: 02-00416

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Laboratory Job ID: 180-144803-1
SDG: Property ID: 891077

Table of Contents

Case Narrative

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 180-144803-1
SDG: Property ID: 891077

Job ID: 180-144803-1

Laboratory: Eurofins Pittsburgh

Narrative

Job Narrative
180-144803-1

Revision
The report being provided is a revision of the original report sent on 10/12/2022. The report (revision 1) is being revised due to: Sample ID was entered incorrectly in the initial report.

Comments
No additional comments.

Receipt
The sample was received on 9/21/2022 9:06 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice.

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

Subcontract Work
Method TO 15: This method was subcontracted to Eurofins Air Toxics. The subcontract laboratory certification is different from that of the facility issuing the final report.

Definitions/Glossary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 180-144803-1
SDG: Property ID: 891077

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Sample Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 180-144803-1
SDG: Property ID: 891077

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-144803-1	202209__M-1	Air	09/13/22 09:45	09/21/22 09:06

Method Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 180-144803-1
SDG: Property ID: 891077

Method	Method Description	Protocol	Laboratory
TO-15	TO-15	EPA	Eurofins

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

Eurofins = Eurofins Air Toxics, 180 Blue Ravine Road, Suite B, Folsom, CA 95630

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9/27/2022
Mr. Ken Hayes
Eurofins Environment Testing
500 Wilson Pike Circle Suite 100

Brentwood TN 37027

Project Name: CHKSTATM
Project #: CHKSTATM
Workorder #: 2209338

Dear Mr. Ken Hayes

The following report includes the data for the above referenced project for sample(s) received on 9/14/2022 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2209338

Work Order Summary

CLIENT:	Mr. Ken Hayes Eurofins Environment Testing 500 Wilson Pike Circle Suite 100 Brentwood, TN 37027	**BILL TO:**	Accounts Payable Eurofins Environment Testing 4104 Shuffel St NW North Canton, OH 44720
PHONE:	800-765-0980	**P.O. #**	180-144803-1
FAX:	615-726-3404	**PROJECT #**	CHKSTATM CHKSTATM
DATE RECEIVED:	09/14/2022	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	09/27/2022		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	202209__M-1	TO-15	6.0 "Hg	2 psi
02A	Lab Blank	TO-15	NA	NA
03A	CCV	TO-15	NA	NA
04A	LCS	TO-15	NA	NA
04AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 09/27/22

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

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LABORATORY NARRATIVE
EPA Method TO-15
Eurofins Environment Testing
Workorder# 2209338

One 6 Liter Summa Canister sample was received on September 14, 2022. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

Sample identification for sample 202209__M-1 was not provided on the sample tag. Therefore the information on the Chain of Custody was used to process and report the sample.

Analytical Notes

TVOC (Total Volatile Organic Compounds) referenced to Hexane includes area counts for peaks that elute from Hexane minus 0.08 minutes to Naphthalene plus 0.08 minutes and quantitating the area based on the response factor of Hexane.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page. Target compound non-detects in the samples that are associated with high bias in QC analyses have not been flagged.

Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:
B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.
UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.
M - Reported value may be biased due to apparent matrix interferences.
CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: 202209__M-1

Lab ID#: 2209338-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TVOC Ref. to Hexane	14	250	50	880

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Client Sample ID: 202209__M-1

Lab ID#: 2209338-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091913**	**Date of Collection:**	**9/13/22**
Dil. Factor:	**1.42**	**Date of Analysis:**	**9/19/22 04:46 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	7.1	Not Detected	17	Not Detected
Benzene	0.71	Not Detected	2.3	Not Detected
alpha-Chlorotoluene	0.71	Not Detected	3.7	Not Detected
Bromodichloromethane	0.71	Not Detected	4.8	Not Detected
Bromoform	0.71	Not Detected	7.3	Not Detected
Bromomethane	7.1	Not Detected	28	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.8	Not Detected	8.4	Not Detected
Carbon Disulfide	2.8	Not Detected	8.8	Not Detected
Carbon Tetrachloride	0.71	Not Detected	4.5	Not Detected
Chlorobenzene	0.71	Not Detected	3.3	Not Detected
Dibromochloromethane	0.71	Not Detected	6.0	Not Detected
Chloroethane	2.8	Not Detected	7.5	Not Detected
Chloroform	0.71	Not Detected	3.5	Not Detected
Chloromethane	7.1	Not Detected	15	Not Detected
1,2-Dibromoethane (EDB)	0.71	Not Detected	5.4	Not Detected
1,2-Dichlorobenzene	0.71	Not Detected	4.3	Not Detected
1,3-Dichlorobenzene	0.71	Not Detected	4.3	Not Detected
1,4-Dichlorobenzene	0.71	Not Detected	4.3	Not Detected
1,1-Dichloroethane	0.71	Not Detected	2.9	Not Detected
Freon 12	0.71	Not Detected	3.5	Not Detected
1,2-Dichloroethane	0.71	Not Detected	2.9	Not Detected
1,1-Dichloroethene	0.71	Not Detected	2.8	Not Detected
cis-1,2-Dichloroethene	0.71	Not Detected	2.8	Not Detected
trans-1,2-Dichloroethene	0.71	Not Detected	2.8	Not Detected
1,2-Dichloropropane	0.71	Not Detected	3.3	Not Detected
cis-1,3-Dichloropropene	0.71	Not Detected	3.2	Not Detected
trans-1,3-Dichloropropene	0.71	Not Detected	3.2	Not Detected
Freon 114	0.71	Not Detected	5.0	Not Detected
Ethyl Benzene	0.71	Not Detected	3.1	Not Detected
4-Ethyltoluene	0.71	Not Detected	3.5	Not Detected
Hexachlorobutadiene	2.8	Not Detected	30	Not Detected
2-Hexanone	2.8	Not Detected	12	Not Detected
Methylene Chloride	7.1	Not Detected	25	Not Detected
4-Methyl-2-pentanone	0.71	Not Detected	2.9	Not Detected
Styrene	0.71	Not Detected	3.0	Not Detected
1,1,2,2-Tetrachloroethane	0.71	Not Detected	4.9	Not Detected
Tetrachloroethene	0.71	Not Detected	4.8	Not Detected
Toluene	0.71	Not Detected	2.7	Not Detected
1,2,4-Trichlorobenzene	2.8	Not Detected	21	Not Detected
1,1,1-Trichloroethane	0.71	Not Detected	3.9	Not Detected
1,1,2-Trichloroethane	0.71	Not Detected	3.9	Not Detected
Trichloroethene	0.71	Not Detected	3.8	Not Detected

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Client Sample ID: 202209__M-1

Lab ID#: 2209338-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091913**	**Date of Collection: 9/13/22**	
Dil. Factor:	**1.42**	**Date of Analysis: 9/19/22 04:46 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.71	Not Detected	4.0	Not Detected
Freon 113	0.71	Not Detected	5.4	Not Detected
1,2,4-Trimethylbenzene	0.71	Not Detected	3.5	Not Detected
1,3,5-Trimethylbenzene	0.71	Not Detected	3.5	Not Detected
Vinyl Acetate	2.8	Not Detected	10	Not Detected
Vinyl Chloride	0.71	Not Detected	1.8	Not Detected
m,p-Xylene	0.71	Not Detected	3.1	Not Detected
o-Xylene	0.71	Not Detected	3.1	Not Detected
TVOC Ref. to Hexane	14	250	50	880

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2209338-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091906g**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/19/22 12:10 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	5.0	Not Detected	12	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Freon 12	0.50	Not Detected	2.5	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 2209338-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091906g**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/19/22 12:10 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
Vinyl Acetate	2.0	Not Detected	7.0	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
TVOC Ref. to Hexane	10	Not Detected	35	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: CCV

Lab ID#: 2209338-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091902**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/19/22 09:47 AM**	

Compound	%Recovery
Acetone	100
Benzene	108
alpha-Chlorotoluene	106
Bromodichloromethane	113
Bromoform	122
Bromomethane	112
2-Butanone (Methyl Ethyl Ketone)	101
Carbon Disulfide	105
Carbon Tetrachloride	112
Chlorobenzene	105
Dibromochloromethane	115
Chloroethane	104
Chloroform	108
Chloromethane	140 Q
1,2-Dibromoethane (EDB)	109
1,2-Dichlorobenzene	111
1,3-Dichlorobenzene	112
1,4-Dichlorobenzene	112
1,1-Dichloroethane	110
Freon 12	112
1,2-Dichloroethane	113
1,1-Dichloroethene	100
cis-1,2-Dichloroethene	104
trans-1,2-Dichloroethene	103
1,2-Dichloropropane	103
cis-1,3-Dichloropropene	106
trans-1,3-Dichloropropene	111
Freon 114	118
Ethyl Benzene	104
4-Ethyltoluene	107
Hexachlorobutadiene	119
2-Hexanone	103
Methylene Chloride	108
4-Methyl-2-pentanone	103
Styrene	106
1,1,2,2-Tetrachloroethane	107
Tetrachloroethene	117
Toluene	106
1,2,4-Trichlorobenzene	110
1,1,1-Trichloroethane	99
1,1,2-Trichloroethane	107
Trichloroethene	106

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Client Sample ID: CCV

Lab ID#: 2209338-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091902**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/19/22 09:47 AM**	

Compound	%Recovery
Freon 11	112
Freon 113	109
1,2,4-Trimethylbenzene	105
1,3,5-Trimethylbenzene	106
Vinyl Acetate	106
Vinyl Chloride	102
m,p-Xylene	105
o-Xylene	103
TVOC Ref. to Hexane	100

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	113	70-130

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Client Sample ID: LCS

Lab ID#: 2209338-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091903**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/19/22 10:13 AM**	

Compound	%Recovery	Method Limits
Acetone	101	70-130
Benzene	110	70-130
alpha-Chlorotoluene	105	70-130
Bromodichloromethane	114	70-130
Bromoform	123	70-130
Bromomethane	114	70-130
2-Butanone (Methyl Ethyl Ketone)	103	70-130
Carbon Disulfide	109	70-130
Carbon Tetrachloride	117	70-130
Chlorobenzene	108	70-130
Dibromochloromethane	117	70-130
Chloroethane	108	70-130
Chloroform	110	70-130
Chloromethane	139 Q	70-130
1,2-Dibromoethane (EDB)	112	70-130
1,2-Dichlorobenzene	111	70-130
1,3-Dichlorobenzene	112	70-130
1,4-Dichlorobenzene	110	70-130
1,1-Dichloroethane	113	70-130
Freon 12	118	70-130
1,2-Dichloroethane	116	70-130
1,1-Dichloroethene	101	70-130
cis-1,2-Dichloroethene	105	70-130
trans-1,2-Dichloroethene	108	70-130
1,2-Dichloropropane	104	70-130
cis-1,3-Dichloropropene	109	70-130
trans-1,3-Dichloropropene	115	70-130
Freon 114	98	70-130
Ethyl Benzene	108	70-130
4-Ethyltoluene	109	70-130
Hexachlorobutadiene	125	70-130
2-Hexanone	103	70-130
Methylene Chloride	109	70-130
4-Methyl-2-pentanone	102	70-130
Styrene	106	70-130
1,1,2,2-Tetrachloroethane	110	70-130
Tetrachloroethene	119	70-130
Toluene	107	70-130
1,2,4-Trichlorobenzene	113	70-130
1,1,1-Trichloroethane	105	70-130
1,1,2-Trichloroethane	113	70-130
Trichloroethene	110	70-130

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Client Sample ID: LCS

Lab ID#: 2209338-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091903**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/19/22 10:13 AM**	

Compound	%Recovery	Method Limits
Freon 11	116	70-130
Freon 113	110	70-130
1,2,4-Trimethylbenzene	106	70-130
1,3,5-Trimethylbenzene	107	70-130
Vinyl Acetate	Not Spiked	
Vinyl Chloride	116	70-130
m,p-Xylene	107	70-130
o-Xylene	104	70-130
TVOC Ref. to Hexane	Not Spiked	

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	109	70-130

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Client Sample ID: LCSD

Lab ID#: 2209338-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/19/22 10:40 AM**	

Compound	%Recovery	Method Limits
Acetone	104	70-130
Benzene	107	70-130
alpha-Chlorotoluene	103	70-130
Bromodichloromethane	110	70-130
Bromoform	120	70-130
Bromomethane	109	70-130
2-Butanone (Methyl Ethyl Ketone)	105	70-130
Carbon Disulfide	109	70-130
Carbon Tetrachloride	113	70-130
Chlorobenzene	106	70-130
Dibromochloromethane	114	70-130
Chloroethane	108	70-130
Chloroform	110	70-130
Chloromethane	139 Q	70-130
1,2-Dibromoethane (EDB)	109	70-130
1,2-Dichlorobenzene	109	70-130
1,3-Dichlorobenzene	110	70-130
1,4-Dichlorobenzene	108	70-130
1,1-Dichloroethane	113	70-130
Freon 12	118	70-130
1,2-Dichloroethane	113	70-130
1,1-Dichloroethene	103	70-130
cis-1,2-Dichloroethene	108	70-130
trans-1,2-Dichloroethene	109	70-130
1,2-Dichloropropane	102	70-130
cis-1,3-Dichloropropene	105	70-130
trans-1,3-Dichloropropene	112	70-130
Freon 114	98	70-130
Ethyl Benzene	106	70-130
4-Ethyltoluene	106	70-130
Hexachlorobutadiene	131 Q	70-130
2-Hexanone	101	70-130
Methylene Chloride	109	70-130
4-Methyl-2-pentanone	100	70-130
Styrene	105	70-130
1,1,2,2-Tetrachloroethane	108	70-130
Tetrachloroethene	115	70-130
Toluene	104	70-130
1,2,4-Trichlorobenzene	122	70-130
1,1,1-Trichloroethane	104	70-130
1,1,2-Trichloroethane	111	70-130
Trichloroethene	108	70-130

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Client Sample ID: LCSD

Lab ID#: 2209338-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/19/22 10:40 AM**	

Compound	%Recovery	Method Limits
Freon 11	116	70-130
Freon 113	112	70-130
1,2,4-Trimethylbenzene	103	70-130
1,3,5-Trimethylbenzene	104	70-130
Vinyl Acetate	Not Spiked	
Vinyl Chloride	118	70-130
m,p-Xylene	105	70-130
o-Xylene	103	70-130
TVOC Ref. to Hexane	Not Spiked	

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	109	70-130

CHAIN OF CUSTODY RECORD

No. 2474

EQUUS Environmental, LLC (918) 921-5331

PROJECT NUMBER: CHKSTATM	PROJECT NAME: CHK STATE M
SHIPPED TO: AIR TOXICS	PROJECT MANAGER: DAVID BRADY
COC 1 of 1	TAT: STANDARD
PO#	WO#

SAMPLER'S PRINTED NAME: Riley O'Bannon

SAMPLERS SIGNATURE: [signature]

	Date	Time	Sample ID	Sample Matrix	# of Sample Containers	TO-15	TVOC as HEXANE*	REMARKS
01A	9/13/22		202209__M-1	Gas	1	X	X	TAG# N4871

REMARKS: * TVOC: C_6-C_{12} 2209338

Custody Seal Intact? Y N None Temp — YW 9/14/22

TOTAL NUMBER OF CONTAINERS: 1

RELINQUISHED BY: [signature]	DATE 9/13/22 TIME 1530	RECEIVED BY: [signature] EAIL	DATE 09/14/22 TIME 1015	Custody Seal Intact?
RELINQUISHED BY:	DATE TIME	RECEIVED BY:	DATE TIME	
METHOD OF SHIPMENT: FEDEX		AIRBILL NUMBER: 5662 0997 0090		Y N None Temp NA
RECEIVED IN LABORATORY BY:	DATE TIME	Send PDF, EDD, and INVOICE (if applicable) to: QAQC@EquusEnv.com		7toty
LABORATORY CONTACT: KEN HAYES 615-301-5035		LABORATORY ADDRESS: 180 BLUE RAVINE RD. STE. B. FOLSOM, CA 95630		

White: Receiving Lab Yellow: Equus Environmental Project File Pink: Equus QA/QC

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation

Job Number: 180-144803-1
SDG Number: Property ID: 891077

Login Number: 144803
List Number: 1
Creator: Hayes, Ken

List Source: Eurofins Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

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ANALYTICAL REPORT

PREPARED FOR

Attn: Chase Acker
Chesapeake Energy Corporation
PO BOX 548806
Oklahoma City, Oklahoma 73154

Generated 2/7/2023 10:52:44 AM

JOB DESCRIPTION

CHK STATE M
SDG NUMBER Property ID: 891077

JOB NUMBER

180-149988-1

Eurofins Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh PA 15238

See page two for job notes and contact information.

my EOL

Eurofins Pittsburgh

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing Northeast, LLC Pittsburgh and its client. All questions regarding this report should be directed to the Eurofins Environment Testing Northeast, LLC Pittsburgh Project Manager or designee who has signed this report.

PA Lab ID: 02-00416

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Pittsburgh Project Manager.

Authorization

Generated
2/7/2023 10:52:44 AM

Authorized for release by
Ken Hayes, Project Manager II
Ken.Hayes@et.eurofinsus.com
(615)301-5035

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Laboratory Job ID: 180-149988-1
SDG: Property ID: 891077

Table of Contents

Case Narrative

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 180-149988-1
SDG: Property ID: 891077

Job ID: 180-149988-1

Laboratory: Eurofins Pittsburgh

Narrative

Job Narrative
180-149988-1

Comments
No additional comments.

Receipt
The sample was received on 12/8/2022 10:50 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice.

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

Subcontract Work
Method TO 15: This method was subcontracted to Eurofins Air Toxics. The subcontract laboratory certification is different from that of the facility issuing the final report.

Definitions/Glossary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 180-149988-1
SDG: Property ID: 891077

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Sample Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 180-149988-1
SDG: Property ID: 891077

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-149988-1	20221207__M-1	Air	12/07/22 11:55	12/08/22 10:50

Method Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 180-149988-1
SDG: Property ID: 891077

Method	Method Description	Protocol	Laboratory
TO-15	TO-15	EPA	Eurofins

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

Eurofins = Eurofins Air Toxics, 180 Blue Ravine Road, Suite B, Folsom, CA 95630

eurofins | Air Toxics

12/27/2022
Mr. Ken Hayes
Eurofins Environment Testing
500 Wilson Pike Circle Suite 100

Brentwood TN 37027

Project Name: CHK STATE M
Project #: CHKSTATM
Workorder #: 2212275

Dear Mr. Ken Hayes

The following report includes the data for the above referenced project for sample(s) received on 12/8/2022 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2212275

Work Order Summary

CLIENT:	Mr. Ken Hayes Eurofins Environment Testing 500 Wilson Pike Circle Suite 100 Brentwood, TN 37027	**BILL TO:**	Accounts Payable Eurofins Environment Testing 4104 Shuffel St NW North Canton, OH 44720
PHONE:	800-765-0980	**P.O. #**	23737
FAX:	615-726-3404	**PROJECT #**	CHKSTATM CHK STATE M
DATE RECEIVED:	12/08/2022	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	12/27/2022		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	20221207 M-1	TO-15	6.5 "Hg	1.5 psi
02A	Lab Blank	TO-15	NA	NA
03A	CCV	TO-15	NA	NA
04A	LCS	TO-15	NA	NA
04AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 12/27/22

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

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LABORATORY NARRATIVE
EPA Method TO-15
Eurofins Environment Testing
Workorder# 2212275

One 6 Liter Summa Canister sample was received on December 08, 2022. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

A single point calibration for TVOC (Total Volatile Organic Compounds) referenced to Hexane was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

TVOC (Total Volatile Organic Compounds) referenced to Hexane includes area counts for peaks that elute from Hexane minus 0.08 minutes to Naphthalene plus 0.08 minutes and quantitating the area based on the response factor of Hexane.

Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:
B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.
UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.
M - Reported value may be biased due to apparent matrix interferences.
CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: 20221207 M-1

Lab ID#: 2212275-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.70	1.1	2.2	3.4
4-Ethyltoluene	0.70	7.9	3.5	39
Toluene	0.70	0.94	2.6	3.5
1,2,4-Trimethylbenzene	0.70	6.1	3.5	30
1,3,5-Trimethylbenzene	0.70	6.5	3.5	32
m,p-Xylene	0.70	2.1	3.1	9.1
TVOC Ref. to Hexane	14	8800	50	31000

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Client Sample ID: 20221207 M-1

Lab ID#: 2212275-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3122228**	**Date of Collection:**	**12/7/22 11:55:00 AM**
Dil. Factor:	**1.41**	**Date of Analysis:**	**12/23/22 01:16 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	7.0	Not Detected	17	Not Detected
Benzene	0.70	1.1	2.2	3.4
alpha-Chlorotoluene	0.70	Not Detected	3.6	Not Detected
Bromodichloromethane	0.70	Not Detected	4.7	Not Detected
Bromoform	0.70	Not Detected	7.3	Not Detected
Bromomethane	7.0	Not Detected	27	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.8	Not Detected	8.3	Not Detected
Carbon Disulfide	2.8	Not Detected	8.8	Not Detected
Carbon Tetrachloride	0.70	Not Detected	4.4	Not Detected
Chlorobenzene	0.70	Not Detected	3.2	Not Detected
Dibromochloromethane	0.70	Not Detected	6.0	Not Detected
Chloroethane	2.8	Not Detected	7.4	Not Detected
Chloroform	0.70	Not Detected	3.4	Not Detected
Chloromethane	7.0	Not Detected	14	Not Detected
1,2-Dibromoethane (EDB)	0.70	Not Detected	5.4	Not Detected
1,2-Dichlorobenzene	0.70	Not Detected	4.2	Not Detected
1,3-Dichlorobenzene	0.70	Not Detected	4.2	Not Detected
1,4-Dichlorobenzene	0.70	Not Detected	4.2	Not Detected
1,1-Dichloroethane	0.70	Not Detected	2.8	Not Detected
Freon 12	0.70	Not Detected	3.5	Not Detected
1,2-Dichloroethane	0.70	Not Detected	2.8	Not Detected
1,1-Dichloroethene	0.70	Not Detected	2.8	Not Detected
cis-1,2-Dichloroethene	0.70	Not Detected	2.8	Not Detected
trans-1,2-Dichloroethene	0.70	Not Detected	2.8	Not Detected
1,2-Dichloropropane	0.70	Not Detected	3.2	Not Detected
cis-1,3-Dichloropropene	0.70	Not Detected	3.2	Not Detected
trans-1,3-Dichloropropene	0.70	Not Detected	3.2	Not Detected
Freon 114	0.70	Not Detected	4.9	Not Detected
Ethyl Benzene	0.70	Not Detected	3.1	Not Detected
4-Ethyltoluene	0.70	7.9	3.5	39
Hexachlorobutadiene	2.8	Not Detected	30	Not Detected
2-Hexanone	2.8	Not Detected	12	Not Detected
Methylene Chloride	7.0	Not Detected	24	Not Detected
4-Methyl-2-pentanone	0.70	Not Detected	2.9	Not Detected
Styrene	0.70	Not Detected	3.0	Not Detected
1,1,2,2-Tetrachloroethane	0.70	Not Detected	4.8	Not Detected
Tetrachloroethene	0.70	Not Detected	4.8	Not Detected
Toluene	0.70	0.94	2.6	3.5
1,2,4-Trichlorobenzene	2.8	Not Detected	21	Not Detected
1,1,1-Trichloroethane	0.70	Not Detected	3.8	Not Detected
1,1,2-Trichloroethane	0.70	Not Detected	3.8	Not Detected
Trichloroethene	0.70	Not Detected	3.8	Not Detected

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Client Sample ID: 20221207 M-1

Lab ID#: 2212275-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3122228**	**Date of Collection: 12/7/22 11:55:00 AM**	
Dil. Factor:	**1.41**	**Date of Analysis: 12/23/22 01:16 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.70	Not Detected	4.0	Not Detected
Freon 113	0.70	Not Detected	5.4	Not Detected
1,2,4-Trimethylbenzene	0.70	6.1	3.5	30
1,3,5-Trimethylbenzene	0.70	6.5	3.5	32
Vinyl Acetate	2.8	Not Detected	9.9	Not Detected
Vinyl Chloride	0.70	Not Detected	1.8	Not Detected
m,p-Xylene	0.70	2.1	3.1	9.1
o-Xylene	0.70	Not Detected	3.1	Not Detected
TVOC Ref. to Hexane	14	8800	50	31000

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2212275-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3122205e**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/22/22 11:56 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	5.0	Not Detected	12	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Freon 12	0.50	Not Detected	2.5	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 2212275-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3122205e**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/22/22 11:56 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
Vinyl Acetate	2.0	Not Detected	7.0	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
TVOC Ref. to Hexane	10	Not Detected	35	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	92	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: CCV

Lab ID#: 2212275-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3122202**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/22/22 10:36 AM**	

Compound	%Recovery
Acetone	87
Benzene	94
alpha-Chlorotoluene	101
Bromodichloromethane	101
Bromoform	103
Bromomethane	100
2-Butanone (Methyl Ethyl Ketone)	88
Carbon Disulfide	86
Carbon Tetrachloride	100
Chlorobenzene	95
Dibromochloromethane	101
Chloroethane	86
Chloroform	93
Chloromethane	94
1,2-Dibromoethane (EDB)	94
1,2-Dichlorobenzene	100
1,3-Dichlorobenzene	100
1,4-Dichlorobenzene	100
1,1-Dichloroethane	90
Freon 12	100
1,2-Dichloroethane	98
1,1-Dichloroethene	93
cis-1,2-Dichloroethene	95
trans-1,2-Dichloroethene	92
1,2-Dichloropropane	93
cis-1,3-Dichloropropene	101
trans-1,3-Dichloropropene	95
Freon 114	95
Ethyl Benzene	97
4-Ethyltoluene	102
Hexachlorobutadiene	108
2-Hexanone	93
Methylene Chloride	93
4-Methyl-2-pentanone	94
Styrene	101
1,1,2,2-Tetrachloroethane	92
Tetrachloroethene	100
Toluene	98
1,2,4-Trichlorobenzene	100
1,1,1-Trichloroethane	94
1,1,2-Trichloroethane	94
Trichloroethene	99

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Client Sample ID: CCV

Lab ID#: 2212275-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3122202**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 12/22/22 10:36 AM**

Compound	%Recovery
Freon 11	102
Freon 113	94
1,2,4-Trimethylbenzene	101
1,3,5-Trimethylbenzene	100
Vinyl Acetate	98
Vinyl Chloride	87
m,p-Xylene	97
o-Xylene	100
TVOC Ref. to Hexane	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCS

Lab ID#: 2212275-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3122203**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/22/22 11:02 AM**	

Compound	%Recovery	Method Limits
Acetone	87	70-130
Benzene	84	70-130
alpha-Chlorotoluene	106	70-130
Bromodichloromethane	90	70-130
Bromoform	109	70-130
Bromomethane	102	70-130
2-Butanone (Methyl Ethyl Ketone)	90	70-130
Carbon Disulfide	89	70-130
Carbon Tetrachloride	104	70-130
Chlorobenzene	99	70-130
Dibromochloromethane	106	70-130
Chloroethane	95	70-130
Chloroform	96	70-130
Chloromethane	101	70-130
1,2-Dibromoethane (EDB)	98	70-130
1,2-Dichlorobenzene	106	70-130
1,3-Dichlorobenzene	105	70-130
1,4-Dichlorobenzene	105	70-130
1,1-Dichloroethane	93	70-130
Freon 12	104	70-130
1,2-Dichloroethane	87	70-130
1,1-Dichloroethene	96	70-130
cis-1,2-Dichloroethene	99	70-130
trans-1,2-Dichloroethene	97	70-130
1,2-Dichloropropane	83	70-130
cis-1,3-Dichloropropene	90	70-130
trans-1,3-Dichloropropene	99	70-130
Freon 114	99	70-130
Ethyl Benzene	102	70-130
4-Ethyltoluene	107	70-130
Hexachlorobutadiene	126	70-130
2-Hexanone	100	70-130
Methylene Chloride	93	70-130
4-Methyl-2-pentanone	85	70-130
Styrene	106	70-130
1,1,2,2-Tetrachloroethane	99	70-130
Tetrachloroethene	105	70-130
Toluene	87	70-130
1,2,4-Trichlorobenzene	117	70-130
1,1,1-Trichloroethane	101	70-130
1,1,2-Trichloroethane	102	70-130
Trichloroethene	90	70-130

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Client Sample ID: LCS

Lab ID#: 2212275-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3122203**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/22/22 11:02 AM**	

Compound	%Recovery	Method Limits
Freon 11	107	70-130
Freon 113	98	70-130
1,2,4-Trimethylbenzene	107	70-130
1,3,5-Trimethylbenzene	104	70-130
Vinyl Acetate	Not Spiked	
Vinyl Chloride	104	70-130
m,p-Xylene	103	70-130
o-Xylene	103	70-130
TVOC Ref. to Hexane	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	90	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCSD

Lab ID#: 2212275-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3122204**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/22/22 11:27 AM**	

Compound	%Recovery	Method Limits
Acetone	87	70-130
Benzene	98	70-130
alpha-Chlorotoluene	105	70-130
Bromodichloromethane	103	70-130
Bromoform	108	70-130
Bromomethane	103	70-130
2-Butanone (Methyl Ethyl Ketone)	91	70-130
Carbon Disulfide	89	70-130
Carbon Tetrachloride	104	70-130
Chlorobenzene	98	70-130
Dibromochloromethane	104	70-130
Chloroethane	92	70-130
Chloroform	95	70-130
Chloromethane	98	70-130
1,2-Dibromoethane (EDB)	98	70-130
1,2-Dichlorobenzene	105	70-130
1,3-Dichlorobenzene	104	70-130
1,4-Dichlorobenzene	104	70-130
1,1-Dichloroethane	93	70-130
Freon 12	104	70-130
1,2-Dichloroethane	100	70-130
1,1-Dichloroethene	95	70-130
cis-1,2-Dichloroethene	101	70-130
trans-1,2-Dichloroethene	96	70-130
1,2-Dichloropropane	96	70-130
cis-1,3-Dichloropropene	104	70-130
trans-1,3-Dichloropropene	97	70-130
Freon 114	97	70-130
Ethyl Benzene	101	70-130
4-Ethyltoluene	106	70-130
Hexachlorobutadiene	125	70-130
2-Hexanone	100	70-130
Methylene Chloride	91	70-130
4-Methyl-2-pentanone	99	70-130
Styrene	105	70-130
1,1,2,2-Tetrachloroethane	98	70-130
Tetrachloroethene	105	70-130
Toluene	101	70-130
1,2,4-Trichlorobenzene	118	70-130
1,1,1-Trichloroethane	101	70-130
1,1,2-Trichloroethane	101	70-130
Trichloroethene	104	70-130

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Client Sample ID: LCSD

Lab ID#: 2212275-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3122204**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/22/22 11:27 AM**	

Compound	%Recovery	Method Limits
Freon 11	105	70-130
Freon 113	98	70-130
1,2,4-Trimethylbenzene	106	70-130
1,3,5-Trimethylbenzene	102	70-130
Vinyl Acetate	Not Spiked	
Vinyl Chloride	103	70-130
m,p-Xylene	102	70-130
o-Xylene	102	70-130
TVOC Ref. to Hexane	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	101	70-130

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Eurofins Air Toxics Sample Receipt Confirmation Cover Page

Thank you for choosing Eurofins Air Toxics (EATL). We have received your samples and have listed any Sample Receipt Descrepancies below.

In order to expedite analysis and reporting, please review the attached information for accuracy.

For corrections call: **Air Toxics, Ltd. at 916-985-1000**

EATL will proceed with the analysis as specified on the Chain of Custody (COC) and Sample Receipt Summary page.

Please note : The Sample Receipt Confirmation, including the total workorder charge, is subject to change upon secondary review. Our aim is to provide a confirmation to you in a timely manner. Sample Receipt Discrepancies, if any, may not include discrepancies regarding sample receipt pressure(s). Additionally, the COC will be provided with the final report.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 .FAX (916) 985-1020
Hours 6:30 A.M to 5:30 P.M. PST

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SAMPLE RECEIPT SUMMARY

WORKORDER 2212275

Client

Mr. Ken Hayes
Eurofins Environment Testing
500 Wilson Pike Circle Suite 100
Brentwood, TN 37027

Phone

800-765-0980

Fax

615-726-3404

Sales Rep: TA

Date Promised: 12/21/22
Date Completed:
Date Received: 12/8/22
PO#:
Project#: CHKSTATM CHK STATE M

Total $: $ 140.00
Logged By: KCB

Fraction	Sample #	Analysis	Collected	Amount$
01A	20221207 M-1	TO-15	12/7/2022	$120.00

Misc. Charges 6 Liter Summa Canister (1) @ $20.00 each., Shipment 145264 $20.00

Note: Samples received after 3 P.M. PST are considered to be received on the following work day.
Atlas Project Name/Profile#: EQUUS/23738

BILL TO: Accounts Payable
Eurofins Environment Testing
4104 Shuffel St NW
North Canton, OH 44720

Analysis Code: TO-14A

TERMS:

Reporting Method: TO-15 (Sp)-Eurofins TA (CEC, OK)

EQUUS

CHAIN OF CUSTODY RECORD

2212275

No. 1802

PROJECT NUMBER: CHKSTATM
PROJECT NAME: CHK STATE M
COC 1 of 1
SHIPPED TO: AIR TOXICS
PROJECT MANAGER: MATT MANGAVARO
TAT: STANDARD
ASOW:

SAMPLER'S PRINTED NAME: TERRY FISHER
SAMPLER'S SIGNATURE: Terry Fisher

	Date	Time	Sample ID	Sample Matrix	# of Sample Containers	TO-15	TVOC* as HEXANE	REMARKS
OIA	12-7-22	1155	20221207 M-1	AIR	1	X	X	TAG #: CAT # 27420 SER # N4576

* TVOC : C6-C12

TOTAL NUMBER OF CONTAINERS → 1

RELINQUISHED BY: Terry Fisher — DATE 12-7-22 TIME 1600
RECEIVED BY: Samantha Burns EATL — DATE 12/8/22 TIME 1050
RELINQUISHED BY: — DATE TIME
RECEIVED BY: — DATE TIME
METHOD OF SHIPMENT: FEDEX
AIRBILL NUMBER: 6072 9838 4544
RECEIVED IN LABORATORY BY: — DATE TIME
Send PDF, EDD, and INVOICE (if applicable) to:
LABORATORY CONTACT: KEN HAYES 615-301-5035
LABORATORY ADDRESS: 180 BLUE RAVINE RD STE B FOLSOM, CA 95630

POINT OF ORIGIN:

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Method : TO-15 (Sp)-Eurofins TA (CEC, OK)

CAS Number	Compound	Rpt. Limit (ppbv)
67-64-1	Acetone	5.0
71-43-2	Benzene	0.50
100-44-7	alpha-Chlorotoluene	0.50
75-27-4	Bromodichloromethane	0.50
75-25-2	Bromoform	0.50
74-83-9	Bromomethane	5.0
78-93-3	2-Butanone (Methyl Ethyl Ketone)	2.0
75-15-0	Carbon Disulfide	2.0
56-23-5	Carbon Tetrachloride	0.50
108-90-7	Chlorobenzene	0.50
124-48-1	Dibromochloromethane	0.50
75-00-3	Chloroethane	2.0
67-66-3	Chloroform	0.50
74-87-3	Chloromethane	5.0
106-93-4	1,2-Dibromoethane (EDB)	0.50
95-50-1	1,2-Dichlorobenzene	0.50
541-73-1	1,3-Dichlorobenzene	0.50
106-46-7	1,4-Dichlorobenzene	0.50
75-34-3	1,1-Dichloroethane	0.50
75-71-8	Freon 12	0.50
107-06-2	1,2-Dichloroethane	0.50
75-35-4	1,1-Dichloroethene	0.50
156-59-2	cis-1,2-Dichloroethene	0.50
156-60-5	trans-1,2-Dichloroethene	0.50
78-87-5	1,2-Dichloropropane	0.50
10061-01-5	cis-1,3-Dichloropropene	0.50
10061-02-6	trans-1,3-Dichloropropene	0.50
76-14-2	Freon 114	0.50
100-41-4	Ethyl Benzene	0.50
622-96-8	4-Ethyltoluene	0.50
87-68-3	Hexachlorobutadiene	2.0
591-78-6	2-Hexanone	2.0
75-09-2	Methylene Chloride	5.0
108-10-1	4-Methyl-2-pentanone	0.50
100-42-5	Styrene	0.50
79-34-5	1,1,2,2-Tetrachloroethane	0.50
127-18-4	Tetrachloroethene	0.50
108-88-3	Toluene	0.50
120-82-1	1,2,4-Trichlorobenzene	2.0
71-55-6	1,1,1-Trichloroethane	0.50

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Method : TO-15 (Sp)-Eurofins TA (CEC, OK)

CAS Number	Compound	Rpt. Limit (ppbv)
79-00-5	1,1,2-Trichloroethane	0.50
79-01-6	Trichloroethene	0.50
75-69-4	Freon 11	0.50
76-13-1	Freon 113	0.50
95-63-6	1,2,4-Trimethylbenzene	0.50
108-67-8	1,3,5-Trimethylbenzene	0.50
108-05-4	Vinyl Acetate	2.0
75-01-4	Vinyl Chloride	0.50
108-38-3	m,p-Xylene	0.50
95-47-6	o-Xylene	0.50
9999-9999-500	TVOC Ref. to Hexane	10

CAS Number	Surrogate	Method Limits
2037-26-5	Toluene-d8	70-130
17060-07-0	1,2-Dichloroethane-d4	70-130
460-00-4	4-Bromofluorobenzene	70-130

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation

Job Number: 180-149988-1
SDG Number: Property ID: 891077

Login Number: 149988
List Number: 1
Creator: Abernathy, Eric L

List Source: Eurofins Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= 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.	False	Thermal preservation not required.
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.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Chase Acker
Chesapeake Energy Corporation
PO BOX 548806
Oklahoma City, Oklahoma 73154

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JOB DESCRIPTION

CHK STATE M
SDG NUMBER Property ID: 891077

JOB NUMBER

180-153824-1

Eurofins Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh PA 15238

See page two for job notes and contact information.

my EOL

Eurofins Pittsburgh

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing Northeast, LLC Pittsburgh and its client. All questions regarding this report should be directed to the Eurofins Environment Testing Northeast, LLC Pittsburgh Project Manager or designee who has signed this report.

PA Lab ID: 02-00416

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Pittsburgh Project Manager.

Authorization

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Authorized for release by
Ken Hayes, Project Manager II
Ken.Hayes@et.eurofinsus.com
(615)301-5035

Table of Contents

Case Narrative

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 180-153824-1
SDG: Property ID: 891077

Job ID: 180-153824-1

Laboratory: Eurofins Pittsburgh

Narrative

Job Narrative
180-153824-1

Comments
No additional comments.

Receipt
The sample was received on 3/8/2023 9:53 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice.

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

Subcontract Work
Method TO 15: This method was subcontracted to Eurofins Air Toxics. The subcontract laboratory certification is different from that of the facility issuing the final report.

Definitions/Glossary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 180-153824-1
SDG: Property ID: 891077

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Sample Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 180-153824-1
SDG: Property ID: 891077

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-153824-1	20230307M-1	Air	03/07/23 00:01	03/08/23 09:53

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Analytical Report

3/21/2023
Mr. Ken Hayes
Eurofins Environment Testing
500 Wilson Pike Circle Suite 100

Brentwood TN 37027

Project Name: STATE M
Project #: CHKSTATM
Workorder #: 2303318

Dear Mr. Ken Hayes

The following report includes the data for the above referenced project for sample(s) received on 3/8/2023 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2303318

Work Order Summary

CLIENT:	Mr. Ken Hayes Eurofins Environment Testing 500 Wilson Pike Circle Suite 100 Brentwood, TN 37027	**BILL TO:**	Accounts Payable Eurofins Environment Testing 180 S Van Buren Ave. Barberton, OH 44203
PHONE:	800-765-0980	**P.O. #**	180-153824-1
FAX:	615-726-3404	**PROJECT #**	CHKSTATM STATE M
DATE RECEIVED:	03/08/2023	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	03/21/2023		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	20230307M-1	TO-15	9.0 "Hg	2 psi
02A	Lab Blank	TO-15	NA	NA
03A	CCV	TO-15	NA	NA
04A	LCS	TO-15	NA	NA
04AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 03/21/23

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP – 209222, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP – T104704434-22-18, UT NELAP – CA009332022-14, VA NELAP - 12240, WA ELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program) CA300005-017
Eurofins Environment Testing Northern California, LLC certifies that the test results contained in this report meet all requirements of the 2016 TNI Standard.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

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LABORATORY NARRATIVE
EPA Method TO-15
Eurofins Environment Testing
Workorder# 2303318

One 6 Liter Summa Canister sample was received on March 08, 2023. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

The Chain of Custody was missing method assignment in the 'Requested Analyses' checkboxes for the associated samples. EATL proceeded with the analysis as per the original contract or verbal agreement.

Analytical Notes

A single point calibration for TVOC (Total Volatile Organic Compounds) referenced to Hexane was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

TVOC (Total Volatile Organic Compounds) referenced to Hexane includes area counts for peaks that elute from Hexane minus 0.08 minutes to Naphthalene plus 0.08 minutes and quantitating the area based on the response factor of Hexane.

Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page. Target compound non-detects in the samples that are associated with high bias in QC analyses have not been flagged.

Dilution was performed on sample 20230307M-1 due to the presence of high level target species.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:
B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.
UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.
M - Reported value may be biased due to apparent matrix interferences.
CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates

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as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: 20230307M-1

Lab ID#: 2303318-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
4-Ethyltoluene	3.2	18	16	91
1,2,4-Trimethylbenzene	3.2	11	16	56
1,3,5-Trimethylbenzene	3.2	17	16	82
m,p-Xylene	3.2	5.8	14	25
TVOC Ref. to Hexane	65	17000	230	60000

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Client Sample ID: 20230307M-1

Lab ID#: 2303318-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031715**	**Date of Collection:**	**3/7/23 11:50:00 AM**
Dil. Factor:	**6.49**	**Date of Analysis:**	**3/17/23 04:41 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	32	Not Detected	77	Not Detected
Benzene	3.2	Not Detected	10	Not Detected
alpha-Chlorotoluene	3.2	Not Detected	17	Not Detected
Bromodichloromethane	3.2	Not Detected	22	Not Detected
Bromoform	3.2	Not Detected	34	Not Detected
Bromomethane	32	Not Detected	130	Not Detected
2-Butanone (Methyl Ethyl Ketone)	13	Not Detected	38	Not Detected
Carbon Disulfide	13	Not Detected	40	Not Detected
Carbon Tetrachloride	3.2	Not Detected	20	Not Detected
Chlorobenzene	3.2	Not Detected	15	Not Detected
Dibromochloromethane	3.2	Not Detected	28	Not Detected
Chloroethane	13	Not Detected	34	Not Detected
Chloroform	3.2	Not Detected	16	Not Detected
Chloromethane	32	Not Detected	67	Not Detected
1,2-Dibromoethane (EDB)	3.2	Not Detected	25	Not Detected
1,2-Dichlorobenzene	3.2	Not Detected	20	Not Detected
1,3-Dichlorobenzene	3.2	Not Detected	20	Not Detected
1,4-Dichlorobenzene	3.2	Not Detected	20	Not Detected
1,1-Dichloroethane	3.2	Not Detected	13	Not Detected
Freon 12	3.2	Not Detected	16	Not Detected
1,2-Dichloroethane	3.2	Not Detected	13	Not Detected
1,1-Dichloroethene	3.2	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	3.2	Not Detected	13	Not Detected
trans-1,2-Dichloroethene	3.2	Not Detected	13	Not Detected
1,2-Dichloropropane	3.2	Not Detected	15	Not Detected
cis-1,3-Dichloropropene	3.2	Not Detected	15	Not Detected
trans-1,3-Dichloropropene	3.2	Not Detected	15	Not Detected
Freon 114	3.2	Not Detected	23	Not Detected
Ethyl Benzene	3.2	Not Detected	14	Not Detected
4-Ethyltoluene	3.2	18	16	91
Hexachlorobutadiene	13	Not Detected	140	Not Detected
2-Hexanone	13	Not Detected	53	Not Detected
Methylene Chloride	32	Not Detected	110	Not Detected
4-Methyl-2-pentanone	3.2	Not Detected	13	Not Detected
Styrene	3.2	Not Detected	14	Not Detected
1,1,2,2-Tetrachloroethane	3.2	Not Detected	22	Not Detected
Tetrachloroethene	3.2	Not Detected	22	Not Detected
Toluene	6.5	Not Detected	24	Not Detected
1,2,4-Trichlorobenzene	13	Not Detected	96	Not Detected
1,1,1-Trichloroethane	3.2	Not Detected	18	Not Detected
1,1,2-Trichloroethane	3.2	Not Detected	18	Not Detected
Trichloroethene	3.2	Not Detected	17	Not Detected

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Client Sample ID: 20230307M-1

Lab ID#: 2303318-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031715**	**Date of Collection: 3/7/23 11:50:00 AM**	
Dil. Factor:	**6.49**	**Date of Analysis: 3/17/23 04:41 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	3.2	Not Detected	18	Not Detected
Freon 113	3.2	Not Detected	25	Not Detected
1,2,4-Trimethylbenzene	3.2	11	16	56
1,3,5-Trimethylbenzene	3.2	17	16	82
Vinyl Acetate	13	Not Detected	46	Not Detected
Vinyl Chloride	3.2	Not Detected	8.3	Not Detected
m,p-Xylene	3.2	5.8	14	25
o-Xylene	3.2	Not Detected	14	Not Detected
TVOC Ref. to Hexane	65	17000	230	60000

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	107	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2303318-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031708**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/23 11:23 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	5.0	Not Detected	12	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Freon 12	0.50	Not Detected	2.5	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Toluene	1.0	Not Detected	3.8	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 2303318-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031708**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/23 11:23 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
Vinyl Acetate	2.0	Not Detected	7.0	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
TVOC Ref. to Hexane	10	Not Detected	35	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	110	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: CCV

Lab ID#: 2303318-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031703**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/23 06:12 AM**	

Compound	%Recovery
Acetone	101
Benzene	96
alpha-Chlorotoluene	109
Bromodichloromethane	95
Bromoform	99
Bromomethane	101
2-Butanone (Methyl Ethyl Ketone)	106
Carbon Disulfide	102
Carbon Tetrachloride	105
Chlorobenzene	94
Dibromochloromethane	97
Chloroethane	99
Chloroform	104
Chloromethane	114
1,2-Dibromoethane (EDB)	99
1,2-Dichlorobenzene	104
1,3-Dichlorobenzene	104
1,4-Dichlorobenzene	103
1,1-Dichloroethane	99
Freon 12	107
1,2-Dichloroethane	98
1,1-Dichloroethene	100
cis-1,2-Dichloroethene	109
trans-1,2-Dichloroethene	105
1,2-Dichloropropane	90
cis-1,3-Dichloropropene	96
trans-1,3-Dichloropropene	100
Freon 114	101
Ethyl Benzene	102
4-Ethyltoluene	113
Hexachlorobutadiene	96
2-Hexanone	100
Methylene Chloride	103
4-Methyl-2-pentanone	102
Styrene	112
1,1,2,2-Tetrachloroethane	96
Tetrachloroethene	94
Toluene	94
1,2,4-Trichlorobenzene	101
1,1,1-Trichloroethane	105
1,1,2-Trichloroethane	97
Trichloroethene	97

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Client Sample ID: CCV

Lab ID#: 2303318-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031703**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/23 06:12 AM**	

Compound	%Recovery
Freon 11	103
Freon 113	97
1,2,4-Trimethylbenzene	110
1,3,5-Trimethylbenzene	109
Vinyl Acetate	106
Vinyl Chloride	100
m,p-Xylene	108
o-Xylene	111
TVOC Ref. to Hexane	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCS

Lab ID#: 2303318-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031704**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/23 06:45 AM**	

Compound	%Recovery	Method Limits
Acetone	99	70-130
Benzene	96	70-130
alpha-Chlorotoluene	105	70-130
Bromodichloromethane	94	70-130
Bromoform	99	70-130
Bromomethane	104	70-130
2-Butanone (Methyl Ethyl Ketone)	106	70-130
Carbon Disulfide	101	70-130
Carbon Tetrachloride	103	70-130
Chlorobenzene	94	70-130
Dibromochloromethane	98	70-130
Chloroethane	100	70-130
Chloroform	102	70-130
Chloromethane	115	70-130
1,2-Dibromoethane (EDB)	101	70-130
1,2-Dichlorobenzene	102	70-130
1,3-Dichlorobenzene	100	70-130
1,4-Dichlorobenzene	99	70-130
1,1-Dichloroethane	98	70-130
Freon 12	105	70-130
1,2-Dichloroethane	96	70-130
1,1-Dichloroethene	100	70-130
cis-1,2-Dichloroethene	109	70-130
trans-1,2-Dichloroethene	106	70-130
1,2-Dichloropropane	88	70-130
cis-1,3-Dichloropropene	100	70-130
trans-1,3-Dichloropropene	103	70-130
Freon 114	98	70-130
Ethyl Benzene	106	70-130
4-Ethyltoluene	113	70-130
Hexachlorobutadiene	96	70-130
2-Hexanone	110	70-130
Methylene Chloride	101	70-130
4-Methyl-2-pentanone	107	70-130
Styrene	115	70-130
1,1,2,2-Tetrachloroethane	97	70-130
Tetrachloroethene	98	70-130
Toluene	94	70-130
1,2,4-Trichlorobenzene	103	70-130
1,1,1-Trichloroethane	106	70-130
1,1,2-Trichloroethane	102	70-130
Trichloroethene	98	70-130

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Client Sample ID: LCS

Lab ID#: 2303318-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031704**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/23 06:45 AM**	

Compound	%Recovery	Method Limits
Freon 11	102	70-130
Freon 113	96	70-130
1,2,4-Trimethylbenzene	110	70-130
1,3,5-Trimethylbenzene	109	70-130
Vinyl Acetate	125	70-130
Vinyl Chloride	102	70-130
m,p-Xylene	109	70-130
o-Xylene	112	70-130
TVOC Ref. to Hexane	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCSD

Lab ID#: 2303318-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031705**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/23 07:17 AM**	

Compound	%Recovery	Method Limits
Acetone	100	70-130
Benzene	96	70-130
alpha-Chlorotoluene	105	70-130
Bromodichloromethane	95	70-130
Bromoform	97	70-130
Bromomethane	102	70-130
2-Butanone (Methyl Ethyl Ketone)	105	70-130
Carbon Disulfide	101	70-130
Carbon Tetrachloride	103	70-130
Chlorobenzene	94	70-130
Dibromochloromethane	96	70-130
Chloroethane	101	70-130
Chloroform	101	70-130
Chloromethane	115	70-130
1,2-Dibromoethane (EDB)	101	70-130
1,2-Dichlorobenzene	101	70-130
1,3-Dichlorobenzene	99	70-130
1,4-Dichlorobenzene	100	70-130
1,1-Dichloroethane	99	70-130
Freon 12	105	70-130
1,2-Dichloroethane	94	70-130
1,1-Dichloroethene	101	70-130
cis-1,2-Dichloroethene	109	70-130
trans-1,2-Dichloroethene	104	70-130
1,2-Dichloropropane	89	70-130
cis-1,3-Dichloropropene	101	70-130
trans-1,3-Dichloropropene	102	70-130
Freon 114	98	70-130
Ethyl Benzene	105	70-130
4-Ethyltoluene	111	70-130
Hexachlorobutadiene	98	70-130
2-Hexanone	108	70-130
Methylene Chloride	100	70-130
4-Methyl-2-pentanone	110	70-130
Styrene	113	70-130
1,1,2,2-Tetrachloroethane	97	70-130
Tetrachloroethene	97	70-130
Toluene	93	70-130
1,2,4-Trichlorobenzene	107	70-130
1,1,1-Trichloroethane	106	70-130
1,1,2-Trichloroethane	101	70-130
Trichloroethene	99	70-130

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Client Sample ID: LCSD

Lab ID#: 2303318-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031705**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/23 07:17 AM**	

Compound	%Recovery	Method Limits
Freon 11	101	70-130
Freon 113	97	70-130
1,2,4-Trimethylbenzene	110	70-130
1,3,5-Trimethylbenzene	107	70-130
Vinyl Acetate	131 Q	70-130
Vinyl Chloride	103	70-130
m,p-Xylene	108	70-130
o-Xylene	110	70-130
TVOC Ref. to Hexane	Not Spiked	

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	101	70-130

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Eurofins Air Toxics Sample Receipt Confirmation Cover Page

Thank you for choosing Eurofins Air Toxics (EATL). We have received your samples and have listed any Sample Receipt Descrepancies below.

In order to expedite analysis and reporting, please review the attached information for accuracy.

For corrections call: **Air Toxics, Ltd. at 916-985-1000**

EATL will proceed with the analysis as specified on the Chain of Custody (COC) and Sample Receipt Summary page.

Please note : The Sample Receipt Confirmation, including the total workorder charge, is subject to change upon secondary review. Our aim is to provide a confirmation to you in a timely manner. Sample Receipt Discrepancies, if any, may not include discrepancies regarding sample receipt pressure(s). Additionally, the COC will be provided with the final report.

The following discrepancy has been observed:

The Chain of Custody was missing method assignment in the 'Requested Analyses' checkboxes for the associated samples. EATL will proceed with the analysis as per the original contract or verbal agreement unless otherwise notified.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 .FAX (916) 985-1020
Hours 6:30 A.M to 5:30 P.M. PST

eurofins | Air Toxics

Analysis Request /Canister Chain of Custody

For Laboratory Use Only

PID: _____ Workorder #: 2303318

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
Phone (800) 985-5955; Fax (916) 351-8279

page--of ---

Client: Chesapeake
Project Name: STATE M
Project Manager: David Brady
Project # CHKSTATM
Sampler: Terry Fisher
Site Name: STATE M

Special Instructions/Notes:
TRK 6072 9842 8639
Fedex

Turnaround Time (Rush surcharges may apply)
Standard X Rush _____(specify)

Lab ID	Field Sample Identification(Location)	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Canister Vacuum/Pressure		Lab Use Only		Requested Analyses			
				Date	Time	Date	Time	Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N_2 / He	TO-15	TVOC as Hexane		
01A	20230307 M-1	22107	2144	3-7-23	1135	3-7-23	1150	22	4						

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
	3/7/23	1600	EATL	3-8-23	0953
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: FEDEX | Custody Seals Intact? | Yes | No | None

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

eurofins | Air Toxics

Method : TO-15 (Sp)-Eurofins TA (CEC, OK)

CAS Number	Compound	Rpt. Limit (ppbv)
67-64-1	Acetone	5.0
71-43-2	Benzene	0.50
100-44-7	alpha-Chlorotoluene	0.50
75-27-4	Bromodichloromethane	0.50
75-25-2	Bromoform	0.50
74-83-9	Bromomethane	5.0
78-93-3	2-Butanone (Methyl Ethyl Ketone)	2.0
75-15-0	Carbon Disulfide	2.0
56-23-5	Carbon Tetrachloride	0.50
108-90-7	Chlorobenzene	0.50
124-48-1	Dibromochloromethane	0.50
75-00-3	Chloroethane	2.0
67-66-3	Chloroform	0.50
74-87-3	Chloromethane	5.0
106-93-4	1,2-Dibromoethane (EDB)	0.50
95-50-1	1,2-Dichlorobenzene	0.50
541-73-1	1,3-Dichlorobenzene	0.50
106-46-7	1,4-Dichlorobenzene	0.50
75-34-3	1,1-Dichloroethane	0.50
75-71-8	Freon 12	0.50
107-06-2	1,2-Dichloroethane	0.50
75-35-4	1,1-Dichloroethene	0.50
156-59-2	cis-1,2-Dichloroethene	0.50
156-60-5	trans-1,2-Dichloroethene	0.50
78-87-5	1,2-Dichloropropane	0.50
10061-01-5	cis-1,3-Dichloropropene	0.50
10061-02-6	trans-1,3-Dichloropropene	0.50
76-14-2	Freon 114	0.50
100-41-4	Ethyl Benzene	0.50
622-96-8	4-Ethyltoluene	0.50
87-68-3	Hexachlorobutadiene	2.0
591-78-6	2-Hexanone	2.0
75-09-2	Methylene Chloride	5.0
108-10-1	4-Methyl-2-pentanone	0.50
100-42-5	Styrene	0.50
79-34-5	1,1,2,2-Tetrachloroethane	0.50
127-18-4	Tetrachloroethene	0.50
108-88-3	Toluene	1.0
120-82-1	1,2,4-Trichlorobenzene	2.0
71-55-6	1,1,1-Trichloroethane	0.50

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Method : TO-15 (Sp)-Eurofins TA (CEC, OK)

CAS Number	Compound	Rpt. Limit (ppbv)
79-00-5	1,1,2-Trichloroethane	0.50
79-01-6	Trichloroethene	0.50
75-69-4	Freon 11	0.50
76-13-1	Freon 113	0.50
95-63-6	1,2,4-Trimethylbenzene	0.50
108-67-8	1,3,5-Trimethylbenzene	0.50
108-05-4	Vinyl Acetate	2.0
75-01-4	Vinyl Chloride	0.50
108-38-3	m,p-Xylene	0.50
95-47-6	o-Xylene	0.50
9999-9999-500	TVOC Ref. to Hexane	10

CAS Number	Surrogate	Method Limits
2037-26-5	Toluene-d8	70-130
17060-07-0	1,2-Dichloroethane-d4	70-130
460-00-4	4-Bromofluorobenzene	70-130

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation

Job Number: 180-153824-1
SDG Number: Property ID: 891077

Login Number: 153824
List Number: 1
Creator: Hayes, Ken

List Source: Eurofins Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-140235-1
Client Project/Site: State M-1

For:
Chesapeake Energy Corporation
PO BOX 548806
Oklahoma City, Oklahoma 73154

Attn: Dana Drury

Authorized for release by:
7/8/2022 4:28:43 PM
Andy Johnson, Manager of Project Management
(615)301-5045
Andy.Johnson@et.eurofinsus.com

Designee for

Ken Hayes, Project Manager II
(615)301-5035
Ken.Hayes@et.eurofinsus.com

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.

PA Lab ID: 02-00416

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Laboratory Job ID: 180-140235-1

Table of Contents

Case Narrative

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-140235-1

Job ID: 180-140235-1

Laboratory: Eurofins Pittsburgh

Narrative

Job Narrative
180-140235-1

Comments
No additional comments.

Receipt
The samples were received on 6/23/2022 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 5.9º C.

Receipt Exceptions
The following sample was submitted for analysis; however, it was not listed on the Chain-of-Custody (COC): EQ Blank (180-140235-4)

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

GC Semi VOA
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.

Definitions/Glossary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-140235-1

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Accreditation/Certification Summary

Client: Chesapeake Energy Corporation Job ID: 180-140235-1
Project/Site: State M-1

Laboratory: Eurofins Edison

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

Authority	Program	Identification Number	Expiration Date
Connecticut	State	PH-0200	09-30-22
DE Haz. Subst. Cleanup Act (HSCA)	State	N/A	01-01-23
Massachusetts	State	M-NJ312	06-30-23
New Jersey	NELAP	12028	07-01-23
New York	NELAP	11452	04-01-23
Pennsylvania	NELAP	68-00522	02-28-23
Rhode Island	State	LAO00376	12-31-22
USDA	US Federal Programs	P330-20-00244	11-03-23

Sample Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-140235-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-140235-1	MW-4	Water	06/21/22 09:38	06/23/22 09:00
180-140235-2	Dup	Water	06/21/22 00:00	06/23/22 09:00
180-140235-3	MW-1R	Water	06/21/22 11:30	06/23/22 09:00
180-140235-4	EQ Blank	Water	06/21/22 07:40	06/23/22 09:00

Method Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-140235-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	TAL EDI
300.0	Anions, Ion Chromatography	MCAWW	TAL EDI
5030C	Purge and Trap	SW846	TAL EDI

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL EDI = Eurofins Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Lab Chronicle

Client: Chesapeake Energy Corporation Job ID: 180-140235-1
Project/Site: State M-1

Client Sample ID: MW-4 Lab Sample ID: 180-140235-1
Date Collected: 06/21/22 09:38 **Matrix: Water**
Date Received: 06/23/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		10			852004	06/25/22 16:51	OXG	TAL EDI
	Instrument ID: IC 1									

Client Sample ID: Dup Lab Sample ID: 180-140235-2
Date Collected: 06/21/22 00:00 **Matrix: Water**
Date Received: 06/23/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		10			852004	06/25/22 17:06	OXG	TAL EDI
	Instrument ID: IC 1									

Client Sample ID: MW-1R Lab Sample ID: 180-140235-3
Date Collected: 06/21/22 11:30 **Matrix: Water**
Date Received: 06/23/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	852286	06/28/22 03:02	SZD	TAL EDI
	Instrument ID: CVOAMS17									

Client Sample ID: EQ Blank Lab Sample ID: 180-140235-4
Date Collected: 06/21/22 07:40 **Matrix: Water**
Date Received: 06/23/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			854032	07/07/22 11:57	OXG	TAL EDI
	Instrument ID: IC 2									

Laboratory References:
TAL EDI = Eurofins Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Analyst References:
Lab: TAL EDI
Batch Type: Analysis
OXG = Olivia Guerrero
SZD = Saurab Desai

Client Sample Results

Client: Chesapeake Energy Corporation Job ID: 180-140235-1
Project/Site: State M-1

Client Sample ID: MW-4 Lab Sample ID: 180-140235-1
Date Collected: 06/21/22 09:38 **Matrix: Water**
Date Received: 06/23/22 09:00

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	414		10.0		mg/L			06/25/22 16:51	10

Client Sample ID: Dup Lab Sample ID: 180-140235-2
Date Collected: 06/21/22 00:00 **Matrix: Water**
Date Received: 06/23/22 09:00

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	413		10.0		mg/L			06/25/22 17:06	10

Client Sample ID: MW-1R Lab Sample ID: 180-140235-3
Date Collected: 06/21/22 11:30 **Matrix: Water**
Date Received: 06/23/22 09:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	3.71		0.500		ug/L			06/28/22 03:02	1
Ethylbenzene	215		0.500		ug/L			06/28/22 03:02	1
Toluene	0.902		0.500		ug/L			06/28/22 03:02	1
Xylenes, Total	261		1.00		ug/L			06/28/22 03:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*109*		*80 - 120*		*06/28/22 03:02*	*1*
4-Bromofluorobenzene	*100*		*76 - 120*		*06/28/22 03:02*	*1*
Dibromofluoromethane (Surr)	*108*		*77 - 124*		*06/28/22 03:02*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 128*		*06/28/22 03:02*	*1*

Client Sample ID: EQ Blank Lab Sample ID: 180-140235-4
Date Collected: 06/21/22 07:40 **Matrix: Water**
Date Received: 06/23/22 09:00

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	11.0		1.00		mg/L			07/07/22 11:57	1

QC Sample Results

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-140235-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 460-852286/8
Matrix: Water
Analysis Batch: 852286

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.500		ug/L			06/27/22 20:07	1
Ethylbenzene	ND		0.500		ug/L			06/27/22 20:07	1
Toluene	ND		0.500		ug/L			06/27/22 20:07	1
Xylenes, Total	ND		1.00		ug/L			06/27/22 20:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*106*		*80 - 120*		*06/27/22 20:07*	*1*
4-Bromofluorobenzene	*95*		*76 - 120*		*06/27/22 20:07*	*1*
Dibromofluoromethane (Surr)	*109*		*77 - 124*		*06/27/22 20:07*	*1*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 128*		*06/27/22 20:07*	*1*

Lab Sample ID: LCS 460-852286/3
Matrix: Water
Analysis Batch: 852286

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			20.0	19.04		ug/L		95	71 - 126		
Ethylbenzene			20.0	16.62		ug/L		83	78 - 120		
Toluene			20.0	17.45		ug/L		87	78 - 120		
Xylenes, Total			40.0	32.61		ug/L		82	78 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*109*		*80 - 120*
4-Bromofluorobenzene	*98*		*76 - 120*
Dibromofluoromethane (Surr)	*105*		*77 - 124*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 128*

Lab Sample ID: LCSD 460-852286/4
Matrix: Water
Analysis Batch: 852286

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
Benzene			20.0	20.55		ug/L		103	71 - 126	8	30
Ethylbenzene			20.0	17.96		ug/L		90	78 - 120	8	30
Toluene			20.0	18.91		ug/L		95	78 - 120	8	30
Xylenes, Total			40.0	36.14		ug/L		90	78 - 120	10	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*108*		*80 - 120*
4-Bromofluorobenzene	*96*		*76 - 120*
Dibromofluoromethane (Surr)	*106*		*77 - 124*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 128*

QC Sample Results

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-140235-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 460-852004/3
Matrix: Water
Analysis Batch: 852004

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.00		mg/L			06/25/22 10:09	1

Lab Sample ID: LCS 460-852004/5
Matrix: Water
Analysis Batch: 852004

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			3.20	2.902		mg/L		91	90 - 110		

Lab Sample ID: LCSD 460-852004/6
Matrix: Water
Analysis Batch: 852004

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
Chloride			3.20	2.908		mg/L		91	90 - 110	0	15

Lab Sample ID: MB 460-854032/14
Matrix: Water
Analysis Batch: 854032

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.00		mg/L			07/07/22 13:12	1

Lab Sample ID: LCS 460-854032/16
Matrix: Water
Analysis Batch: 854032

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			3.20	3.054		mg/L		95	90 - 110		

Lab Sample ID: LCSD 460-854032/17
Matrix: Water
Analysis Batch: 854032

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
Chloride			3.20	3.042		mg/L		95	90 - 110	0	15

QC Association Summary

Client: Chesapeake Energy Corporation Job ID: 180-140235-1
Project/Site: State M-1

GC/MS VOA

Analysis Batch: 852286

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-140235-3	MW-1R	Total/NA	Water	8260D	
MB 460-852286/8	Method Blank	Total/NA	Water	8260D	
LCS 460-852286/3	Lab Control Sample	Total/NA	Water	8260D	
LCSD 460-852286/4	Lab Control Sample Dup	Total/NA	Water	8260D	

HPLC/IC

Analysis Batch: 852004

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-140235-1	MW-4	Total/NA	Water	300.0	
180-140235-2	Dup	Total/NA	Water	300.0	
MB 460-852004/3	Method Blank	Total/NA	Water	300.0	
LCS 460-852004/5	Lab Control Sample	Total/NA	Water	300.0	
LCSD 460-852004/6	Lab Control Sample Dup	Total/NA	Water	300.0	

Analysis Batch: 854032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-140235-4	EQ Blank	Total/NA	Water	300.0	
MB 460-854032/14	Method Blank	Total/NA	Water	300.0	
LCS 460-854032/16	Lab Control Sample	Total/NA	Water	300.0	
LCSD 460-854032/17	Lab Control Sample Dup	Total/NA	Water	300.0	

CHAIN OF CUSTODY RECORD

No. 2437

EQUUS Environmental LLC (918) 921-5331

PROJECT NUMBER: CHKSTATM	PROJECT NAME: CHK STATE M
SHIPPED TO: TA-EDISON	PROJECT MANAGER: DAVID BRADY
COC _____ of _____	TAT: STANDARD

SAMPLER'S PRINTED NAME: Terry Fisher

SAMPLERS SIGNATURE: Terry Fisher

PO# _____ WO# _____

Date	Time	Sample ID	Sample Matrix	# of Sample Containers	CHLORIDE	BTEX	REMARKS
6-21-22	938	MW-4	water	1	X		Free Phase in MW-1R
6-21-22	—	Dup	water	1	X		
6-21-22	1130	MW-1R	water	3		X	

TOTAL NUMBER OF CONTAINERS →

RELINQUISHED BY: Terry Fisher	DATE 6-21-22 TIME 1600	RECEIVED BY: ETA Pitt	DATE 6/23/22 TIME 900
RELINQUISHED BY:	DATE TIME	RECEIVED BY:	DATE TIME

METHOD OF SHIPMENT: FEDEX

AIRBILL NUMBER: 5173 0448 4647

RECEIVED IN LABORATORY BY: DATE TIME

Send PDF, EDD, and INVOICE (if applicable) to: QAQC@EquusEnv.com

LABORATORY CONTACT: CATHY 615-301-5041

LABORATORY ADDRESS: 777 NEW DURHAM RD EDISON, NJ 08817

180-140235 Chain of Custody

White Receiving Lab Yellow Equus Environmental Project File Pink Equus QA/QC

Eurofins Pittsburgh
301 Alpha Drive RIDC Park
Pittsburgh, PA 15238
Phone: 412-963-7058 Fax: 412-963-2468

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Hayes, Ken	Carrier Tracking No(s):	COC No: 180-464296.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Ken.Hayes@et.eurofinsus.com	State of Origin: New Mexico	Page: Page 1 of 1
Company: Eurofins Environment Testing Northeast,		Accreditations Required (See note):		Job #: 180-140235-1
Address: 777 New Durham Road, ,	Due Date Requested: 7/7/2022			
City: Edison	TAT Requested (days):			
State, Zip: NJ, 08817	PO #:			
Phone: 732-549-3900(Tel) 732-549-3679(Fax)	WO #:			
Email:				
Project Name: State M-1	Project #: 49014811			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	300_ORGFM_28D/ (MOD) Chloride	8260D_LL/5030C BTEX	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
W-4 (180-140235-1)	6/21/22	09:38 Mountain		Water			X		1	
up (180-140235-2)	6/21/22	Mountain		Water			X		1	
W-1R (180-140235-3)	6/21/22	11:30 Mountain		Water				X	3	
180-140235-4 EQ Blank	6-21-22	7:40		W			X		1	

e: Since laboratory accreditations are subject to change, Eurofins Pittsburgh places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently ntain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Pittsburgh laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Pittsburgh ntion immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Pittsburgh.

ssible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
confirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
iverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:
pty Kit Relinquished by: Date:	Time:

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation Job Number: 180-140235-1

Login Number: 140235 **List Source: Eurofins Pittsburgh**
List Number: 1
Creator: Watson, Debbie

Question	Answer	Comment
Radioactivity wasn't checked or is </= 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.	False	Received extra samples not listed on COC.
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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation Job Number: 180-140235-1

Login Number: 140235
List Number: 2
Creator: Armbruster, Chris

List Source: Eurofins Edison
List Creation: 06/24/22 11:53 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
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	1.7°C IR9
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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

Laboratory Job ID: 460-265842-1
Client Project/Site: CHK STATE M

For:
Chesapeake Energy Corporation
PO BOX 548806
Oklahoma City, Oklahoma 73154

Attn: Dana Drury

Authorized for release by:
9/30/2022 6:16:18 PM

Ken Hayes, Project Manager II
(615)301-5035
Ken.Hayes@et.eurofinsus.com

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Laboratory Job ID: 460-265842-1

Table of Contents

Definitions/Glossary

Client: Chesapeake Energy Corporation Job ID: 460-265842-1
Project/Site: CHK STATE M

Qualifiers

HPLC/IC

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Case Narrative

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-265842-1

Job ID: 460-265842-1

Laboratory: Eurofins Edison

Narrative

Job Narrative
460-265842-1

Comments
No additional comments.

Receipt
The samples were received on 9/16/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 5.4º C.

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

GC Semi VOA
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: Chesapeake Energy Corporation Job ID: 460-265842-1
Project/Site: CHK STATE M

Client Sample ID: Field Blank Lab Sample ID: 460-265842-1

No Detections.

Client Sample ID: MW-4 Lab Sample ID: 460-265842-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	412		10.0		mg/L	10		300.0	Total/NA

Client Sample ID: DUP-1 Lab Sample ID: 460-265842-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	412		10.0		mg/L	10		300.0	Total/NA

Client Sample ID: MW-1R Lab Sample ID: 460-265842-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	3.80		0.500		ug/L	1		8260D	Total/NA
Ethylbenzene	211		0.500		ug/L	1		8260D	Total/NA
Toluene	0.955		0.500		ug/L	1		8260D	Total/NA
Xylenes, Total	235		1.00		ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Edison

Client Sample Results

Client: Chesapeake Energy Corporation Job ID: 460-265842-1
Project/Site: CHK STATE M

Client Sample ID: Field Blank — Lab Sample ID: 460-265842-1

Date Collected: 09/13/22 10:25 **Matrix: Water**
Date Received: 09/16/22 10:00

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.00		mg/L			09/30/22 09:19	1

Client Sample ID: MW-4 — Lab Sample ID: 460-265842-2

Date Collected: 09/13/22 12:10 **Matrix: Water**
Date Received: 09/16/22 10:00

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	412		10.0		mg/L			09/30/22 12:45	10

Client Sample ID: DUP-1 — Lab Sample ID: 460-265842-3

Date Collected: 09/13/22 00:00 **Matrix: Water**
Date Received: 09/16/22 10:00

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	412		10.0		mg/L			09/30/22 13:00	10

Client Sample ID: MW-1R — Lab Sample ID: 460-265842-4

Date Collected: 09/13/22 13:30 **Matrix: Water**
Date Received: 09/16/22 10:00

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	3.80		0.500		ug/L			09/21/22 12:12	1
Ethylbenzene	211		0.500		ug/L			09/21/22 12:12	1
Toluene	0.955		0.500		ug/L			09/21/22 12:12	1
Xylenes, Total	235		1.00		ug/L			09/21/22 12:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*99*		*76 - 120*		*09/21/22 12:12*	*1*
Dibromofluoromethane (Surr)	*101*		*77 - 124*		*09/21/22 12:12*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 128*		*09/21/22 12:12*	*1*
Toluene-d8 (Surr)	*107*		*80 - 120*		*09/21/22 12:12*	*1*

Surrogate Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-265842-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(76-120)	(77-124)	(70-128)	(80-120)
460-265842-4	MW-1R	99	101	101	107
LCS 460-867400/4	Lab Control Sample	99	101	100	106
LCSD 460-867400/5	Lab Control Sample Dup	101	103	101	108
MB 460-867400/9	Method Blank	99	105	103	107

Surrogate Legend

BFB = 4-Bromofluorobenzene
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

QC Sample Results

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-265842-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 460-867400/9
Matrix: Water
Analysis Batch: 867400

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.500		ug/L			09/21/22 08:43	1
Ethylbenzene	ND		0.500		ug/L			09/21/22 08:43	1
Toluene	ND		0.500		ug/L			09/21/22 08:43	1
Xylenes, Total	ND		1.00		ug/L			09/21/22 08:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*99*		*76 - 120*		*09/21/22 08:43*	*1*
Dibromofluoromethane (Surr)	*105*		*77 - 124*		*09/21/22 08:43*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 128*		*09/21/22 08:43*	*1*
Toluene-d8 (Surr)	*107*		*80 - 120*		*09/21/22 08:43*	*1*

Lab Sample ID: LCS 460-867400/4
Matrix: Water
Analysis Batch: 867400

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	20.0	24.22		ug/L		121	71 - 126
Ethylbenzene	20.0	21.79		ug/L		109	78 - 120
Toluene	20.0	21.77		ug/L		109	78 - 120
Xylenes, Total	40.0	41.25		ug/L		103	78 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*99*		*76 - 120*
Dibromofluoromethane (Surr)	*101*		*77 - 124*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 128*
Toluene-d8 (Surr)	*106*		*80 - 120*

Lab Sample ID: LCSD 460-867400/5
Matrix: Water
Analysis Batch: 867400

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
Benzene	20.0	23.45		ug/L		117	71 - 126	3	30
Ethylbenzene	20.0	20.65		ug/L		103	78 - 120	5	30
Toluene	20.0	21.20		ug/L		106	78 - 120	3	30
Xylenes, Total	40.0	40.47		ug/L		101	78 - 120	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*101*		*76 - 120*
Dibromofluoromethane (Surr)	*103*		*77 - 124*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 128*
Toluene-d8 (Surr)	*108*		*80 - 120*

QC Sample Results

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-265842-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 460-869166/22
Matrix: Water
Analysis Batch: 869166

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.00		mg/L			09/30/22 05:37	1

Lab Sample ID: LCS 460-869166/24
Matrix: Water
Analysis Batch: 869166

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			3.20	3.014		mg/L		94	90 - 110		

Lab Sample ID: LCSD 460-869166/25
Matrix: Water
Analysis Batch: 869166

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
Chloride			3.20	2.976		mg/L		93	90 - 110	1	15

Lab Sample ID: MRL 460-869166/23
Matrix: Water
Analysis Batch: 869166

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			0.160	0.1495	J	mg/L		93	50 - 150		

QC Association Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-265842-1

GC/MS VOA

Analysis Batch: 867400

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-265842-4	MW-1R	Total/NA	Water	8260D	
MB 460-867400/9	Method Blank	Total/NA	Water	8260D	
LCS 460-867400/4	Lab Control Sample	Total/NA	Water	8260D	
LCSD 460-867400/5	Lab Control Sample Dup	Total/NA	Water	8260D	

HPLC/IC

Analysis Batch: 869166

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-265842-1	Field Blank	Total/NA	Water	300.0	
460-265842-2	MW-4	Total/NA	Water	300.0	
460-265842-3	DUP-1	Total/NA	Water	300.0	
MB 460-869166/22	Method Blank	Total/NA	Water	300.0	
LCS 460-869166/24	Lab Control Sample	Total/NA	Water	300.0	
LCSD 460-869166/25	Lab Control Sample Dup	Total/NA	Water	300.0	
MRL 460-869166/23	Lab Control Sample	Total/NA	Water	300.0	

Lab Chronicle

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-265842-1

Client Sample ID: Field Blank — Lab Sample ID: 460-265842-1

Date Collected: 09/13/22 10:25 — **Matrix: Water**
Date Received: 09/16/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	300.0		1	869166	OXG	EET EDI	09/30/22 09:19

Client Sample ID: MW-4 — Lab Sample ID: 460-265842-2

Date Collected: 09/13/22 12:10 — **Matrix: Water**
Date Received: 09/16/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	300.0		10	869166	OXG	EET EDI	09/30/22 12:45

Client Sample ID: DUP-1 — Lab Sample ID: 460-265842-3

Date Collected: 09/13/22 00:00 — **Matrix: Water**
Date Received: 09/16/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	300.0		10	869166	OXG	EET EDI	09/30/22 13:00

Client Sample ID: MW-1R — Lab Sample ID: 460-265842-4

Date Collected: 09/13/22 13:30 — **Matrix: Water**
Date Received: 09/16/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	867400	SZD	EET EDI	09/21/22 12:12

Laboratory References:

EET EDI = Eurofins Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Accreditation/Certification Summary

Client: Chesapeake Energy Corporation Job ID: 460-265842-1
Project/Site: CHK STATE M

Laboratory: Eurofins Edison

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

Authority	Program	Identification Number	Expiration Date
Connecticut	State	PH-0200	09-30-22
DE Haz. Subst. Cleanup Act (HSCA)	State	N/A	01-01-23
Massachusetts	State	M-NJ312	06-30-23
New Jersey	NELAP	12028	06-30-23
New York	NELAP	11452	04-01-23
Pennsylvania	NELAP	68-00522	02-28-23
Rhode Island	State	LAO00376	12-31-22
USDA	US Federal Programs	P330-20-00244	11-03-23

Method Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-265842-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET EDI
300.0	Anions, Ion Chromatography	MCAWW	EET EDI
5030C	Purge and Trap	SW846	EET EDI

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET EDI = Eurofins Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-265842-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-265842-1	Field Blank	Water	09/13/22 10:25	09/16/22 10:00
460-265842-2	MW-4	Water	09/13/22 12:10	09/16/22 10:00
460-265842-3	DUP-1	Water	09/13/22 00:00	09/16/22 10:00
460-265842-4	MW-1R	Water	09/13/22 13:30	09/16/22 10:00

CHAIN OF CUSTODY RECORD

No. 2473 2G5842

EQUUS Environmental, LLC (918) 921-5331

PROJECT NUMBER: CHKSTATM	PROJECT NAME: CHK STATE M	COC 1 of 1	
SHIPPED TO: TA-EDISON	PROJECT MANAGER: DAVID BRADY	TAT: STANDARD	

SAMPLER'S PRINTED NAME: Riley O'Bannon

SAMPLERS SIGNATURE:

	Date	Time	Sample ID	Sample Matrix	# of Sample Containers	CHLORIDE	BTEX	PO#	WO#	REMARKS
1	9/13/22	1025	Field Blank	W	1	X	~~X~~ RE			
2	9/13/22	1210	MW-4	W	1	X	~~X~~ RE			
3	9/13/22	0000	DUP-1	W	1	X	~~X~~ RE			
4	9/13/22	1330	MW-1R	W	3		X			
5	9/13/22	0000	Temp Blank	W	1					

TOTAL NUMBER OF CONTAINERS → 7

RELINQUISHED BY:	DATE 9/13/22 TIME	RECEIVED BY:	DATE TIME
RELINQUISHED BY:	DATE TIME	RECEIVED BY:	DATE TIME

METHOD OF SHIPMENT: FEDEX

AIRBILL NUMBER:

RECEIVED IN LABORATORY BY: DATE TIME

Send PDF, EDD, and INVOICE (if applicable) to: QAQC@EquusEnv.com

LABORATORY CONTACT: KEN HAYES 615-301-5035

LABORATORY ADDRESS: 777 NEW DURHAM RD. EDISON, NJ 08817

460-265842 Chain of Custody

White: Receiving Lab Yellow: Equus Environmental Project File Pink: Equus QA/QC

9/14/22

9/30/2022

Eurofins TestAmerica Edison
Receipt Temperature and pH Log

Job Number: 265842

Number of Coolers: 1 IR Gun # 9

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	5.4 °C	5.4 °C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

** Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

EDS-WI-038, Rev 4.1
10/22/2019

Initials: _____ **Date:** 9/19/24

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation Job Number: 460-265842-1

Login Number: 265842 **List Source: Eurofins Edison**
List Number: 1
Creator: Sgro, Angela M

Question	Answer	Comment
Radioactivity wasn't checked or is </= 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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Dana Drury
Chesapeake Energy Corporation
PO BOX 548806
Oklahoma City, Oklahoma 73154

Generated 12/21/2022 8:50:43 AM

JOB DESCRIPTION

CHK STATE M
SDG NUMBER CHSTATM

JOB NUMBER

460-271253-1

Eurofins Edison
777 New Durham Road
Edison NJ 08817

See page two for job notes and contact information.

Eurofins Edison

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing Northeast, LLC Edison and its client. All questions regarding this report should be directed to the Eurofins Environment Testing Northeast, LLC Edison Project Manager or designee who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

Authorization

Generated
12/21/2022 8:50:43 AM

Authorized for release by
Ken Hayes, Project Manager II
Ken.Hayes@et.eurofinsus.com
(615)301-5035

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Laboratory Job ID: 460-271253-1
SDG: CHSTATM

Table of Contents

Definitions/Glossary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-271253-1
SDG: CHSTATM

Qualifiers

HPLC/IC

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Case Narrative

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-271253-1
SDG: CHSTATM

Job ID: 460-271253-1

Laboratory: Eurofins Edison

Narrative

Job Narrative
460-271253-1

Comments
No additional comments.

Receipt
The samples were received on 12/8/2022 10:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.2º C.

Receipt Exceptions

Per laboratory policy the Trip Blank sample date/time was added to reflect the latest sample date/time of the sampling event.
Trip (460-271253-5)

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

GC Semi VOA
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: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-271253-1
SDG: CHSTATM

Client Sample ID: Eq Blank — Lab Sample ID: 460-271253-1

No Detections.

Client Sample ID: MW-4 — Lab Sample ID: 460-271253-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	398		10.0		mg/L	10		300.0	Total/NA

Client Sample ID: Dup — Lab Sample ID: 460-271253-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	414		10.0		mg/L	10		300.0	Total/NA

Client Sample ID: MW-1R — Lab Sample ID: 460-271253-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	2.55		0.500		ug/L	1		8260D	Total/NA
Ethylbenzene	75.4		0.500		ug/L	1		8260D	Total/NA
Xylenes, Total	76.0		1.00		ug/L	1		8260D	Total/NA

Client Sample ID: Trip — Lab Sample ID: 460-271253-5

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Edison

Client Sample Results

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-271253-1
SDG: CHSTATM

Client Sample ID: Eq Blank
Lab Sample ID: 460-271253-1
Date Collected: 12/07/22 08:00
Matrix: Water
Date Received: 12/08/22 10:30

Method: MCAWW 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.00		mg/L			12/17/22 11:48	1

Client Sample ID: MW-4
Lab Sample ID: 460-271253-2
Date Collected: 12/07/22 09:15
Matrix: Water
Date Received: 12/08/22 10:30

Method: MCAWW 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**398**		10.0		mg/L			12/17/22 12:04	10

Client Sample ID: Dup
Lab Sample ID: 460-271253-3
Date Collected: 12/07/22 00:00
Matrix: Water
Date Received: 12/08/22 10:30

Method: MCAWW 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**414**		10.0		mg/L			12/17/22 12:51	10

Client Sample ID: MW-1R
Lab Sample ID: 460-271253-4
Date Collected: 12/07/22 10:30
Matrix: Water
Date Received: 12/08/22 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**2.55**		0.500		ug/L			12/18/22 21:30	1
Ethylbenzene	**75.4**		0.500		ug/L			12/18/22 21:30	1
Toluene	ND		0.500		ug/L			12/18/22 21:30	1
Xylenes, Total	**76.0**		1.00		ug/L			12/18/22 21:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*107*		*76 - 120*		*12/18/22 21:30*	*1*
Dibromofluoromethane (Surr)	*108*		*77 - 124*		*12/18/22 21:30*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*70 - 128*		*12/18/22 21:30*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*12/18/22 21:30*	*1*

Client Sample ID: Trip
Lab Sample ID: 460-271253-5
Date Collected: 12/07/22 10:30
Matrix: Water
Date Received: 12/08/22 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.500		ug/L			12/17/22 21:09	1
Ethylbenzene	ND		0.500		ug/L			12/17/22 21:09	1
Toluene	ND		0.500		ug/L			12/17/22 21:09	1
Xylenes, Total	ND		1.00		ug/L			12/17/22 21:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*108*		*76 - 120*		*12/17/22 21:09*	*1*
Dibromofluoromethane (Surr)	*112*		*77 - 124*		*12/17/22 21:09*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*70 - 128*		*12/17/22 21:09*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*12/17/22 21:09*	*1*

Surrogate Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-271253-1
SDG: CHSTATM

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(76-120)	(77-124)	(70-128)	(80-120)
460-271253-4	MW-1R	107	108	113	101
460-271253-5	Trip	108	112	113	98
LCS 460-883816/3	Lab Control Sample	107	104	108	98
LCS 460-883960/5	Lab Control Sample	109	102	100	96
LCSD 460-883816/4	Lab Control Sample Dup	108	106	104	96
LCSD 460-883960/6	Lab Control Sample Dup	108	101	98	98
MB 460-883816/8	Method Blank	109	116	114	96
MB 460-883960/9	Method Blank	108	102	108	96

Surrogate Legend

BFB = 4-Bromofluorobenzene
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

QC Sample Results

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-271253-1
SDG: CHSTATM

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 460-883816/8
Matrix: Water
Analysis Batch: 883816

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.500		ug/L			12/17/22 20:47	1
Ethylbenzene	ND		0.500		ug/L			12/17/22 20:47	1
Toluene	ND		0.500		ug/L			12/17/22 20:47	1
Xylenes, Total	ND		1.00		ug/L			12/17/22 20:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*109*		*76 - 120*		*12/17/22 20:47*	*1*
Dibromofluoromethane (Surr)	*116*		*77 - 124*		*12/17/22 20:47*	*1*
1,2-Dichloroethane-d4 (Surr)	*114*		*70 - 128*		*12/17/22 20:47*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*12/17/22 20:47*	*1*

Lab Sample ID: LCS 460-883816/3
Matrix: Water
Analysis Batch: 883816

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	20.0	19.52		ug/L		98	71 - 126
Ethylbenzene	20.0	19.88		ug/L		99	78 - 120
Toluene	20.0	19.39		ug/L		97	78 - 120
Xylenes, Total	40.0	38.94		ug/L		97	78 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*107*		*76 - 120*
Dibromofluoromethane (Surr)	*104*		*77 - 124*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 128*
Toluene-d8 (Surr)	*98*		*80 - 120*

Lab Sample ID: LCSD 460-883816/4
Matrix: Water
Analysis Batch: 883816

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
Benzene	20.0	19.17		ug/L		96	71 - 126	2	30
Ethylbenzene	20.0	20.67		ug/L		103	78 - 120	4	30
Toluene	20.0	19.11		ug/L		96	78 - 120	1	30
Xylenes, Total	40.0	39.67		ug/L		99	78 - 120	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*108*		*76 - 120*
Dibromofluoromethane (Surr)	*106*		*77 - 124*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 128*
Toluene-d8 (Surr)	*96*		*80 - 120*

QC Sample Results

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-271253-1
SDG: CHSTATM

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

Lab Sample ID: MB 460-883960/9
Matrix: Water
Analysis Batch: 883960

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.500		ug/L			12/18/22 20:25	1
Ethylbenzene	ND		0.500		ug/L			12/18/22 20:25	1
Toluene	ND		0.500		ug/L			12/18/22 20:25	1
Xylenes, Total	ND		1.00		ug/L			12/18/22 20:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*108*		*76 - 120*		*12/18/22 20:25*	*1*
Dibromofluoromethane (Surr)	*102*		*77 - 124*		*12/18/22 20:25*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 128*		*12/18/22 20:25*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*12/18/22 20:25*	*1*

Lab Sample ID: LCS 460-883960/5
Matrix: Water
Analysis Batch: 883960

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	20.0	20.32		ug/L		102	71 - 126
Ethylbenzene	20.0	21.94		ug/L		110	78 - 120
Toluene	20.0	20.69		ug/L		103	78 - 120
Xylenes, Total	40.0	42.07		ug/L		105	78 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*109*		*76 - 120*
Dibromofluoromethane (Surr)	*102*		*77 - 124*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 128*
Toluene-d8 (Surr)	*96*		*80 - 120*

Lab Sample ID: LCSD 460-883960/6
Matrix: Water
Analysis Batch: 883960

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
Benzene	20.0	19.81		ug/L		99	71 - 126	3	30
Ethylbenzene	20.0	20.74		ug/L		104	78 - 120	6	30
Toluene	20.0	20.15		ug/L		101	78 - 120	3	30
Xylenes, Total	40.0	41.27		ug/L		103	78 - 120	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*108*		*76 - 120*
Dibromofluoromethane (Surr)	*101*		*77 - 124*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 128*
Toluene-d8 (Surr)	*98*		*80 - 120*

QC Sample Results

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-271253-1
SDG: CHSTATM

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 460-883778/3
Matrix: Water
Analysis Batch: 883778

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.00		mg/L			12/17/22 10:28	1

Lab Sample ID: LCS 460-883778/5
Matrix: Water
Analysis Batch: 883778

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			3.20	2.883		mg/L		90	90 - 110		

Lab Sample ID: LCSD 460-883778/6
Matrix: Water
Analysis Batch: 883778

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
Chloride			3.20	2.939		mg/L		92	90 - 110	2	15

Lab Sample ID: MRL 460-883778/4
Matrix: Water
Analysis Batch: 883778

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			0.160	0.1658	J	mg/L		104	50 - 150		

QC Association Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-271253-1
SDG: CHSTATM

GC/MS VOA

Analysis Batch: 883816

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-271253-5	Trip	Total/NA	Water	8260D	
MB 460-883816/8	Method Blank	Total/NA	Water	8260D	
LCS 460-883816/3	Lab Control Sample	Total/NA	Water	8260D	
LCSD 460-883816/4	Lab Control Sample Dup	Total/NA	Water	8260D	

Analysis Batch: 883960

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-271253-4	MW-1R	Total/NA	Water	8260D	
MB 460-883960/9	Method Blank	Total/NA	Water	8260D	
LCS 460-883960/5	Lab Control Sample	Total/NA	Water	8260D	
LCSD 460-883960/6	Lab Control Sample Dup	Total/NA	Water	8260D	

HPLC/IC

Analysis Batch: 883778

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-271253-1	Eq Blank	Total/NA	Water	300.0	
460-271253-2	MW-4	Total/NA	Water	300.0	
460-271253-3	Dup	Total/NA	Water	300.0	
MB 460-883778/3	Method Blank	Total/NA	Water	300.0	
LCS 460-883778/5	Lab Control Sample	Total/NA	Water	300.0	
LCSD 460-883778/6	Lab Control Sample Dup	Total/NA	Water	300.0	
MRL 460-883778/4	Lab Control Sample	Total/NA	Water	300.0	

Lab Chronicle

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-271253-1
SDG: CHSTATM

Client Sample ID: Eq Blank — Lab Sample ID: 460-271253-1

Date Collected: 12/07/22 08:00 — **Matrix: Water**
Date Received: 12/08/22 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	300.0		1	883778	OXG	EET EDI	12/17/22 11:48

Client Sample ID: MW-4 — Lab Sample ID: 460-271253-2

Date Collected: 12/07/22 09:15 — **Matrix: Water**
Date Received: 12/08/22 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	300.0		10	883778	OXG	EET EDI	12/17/22 12:04

Client Sample ID: Dup — Lab Sample ID: 460-271253-3

Date Collected: 12/07/22 00:00 — **Matrix: Water**
Date Received: 12/08/22 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	300.0		10	883778	OXG	EET EDI	12/17/22 12:51

Client Sample ID: MW-1R — Lab Sample ID: 460-271253-4

Date Collected: 12/07/22 10:30 — **Matrix: Water**
Date Received: 12/08/22 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	883960	KLB	EET EDI	12/18/22 21:30

Client Sample ID: Trip — Lab Sample ID: 460-271253-5

Date Collected: 12/07/22 10:30 — **Matrix: Water**
Date Received: 12/08/22 10:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	883816	KLB	EET EDI	12/17/22 21:09

Laboratory References:

EET EDI = Eurofins Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Accreditation/Certification Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-271253-1
SDG: CHSTATM

Laboratory: Eurofins Edison

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

Authority	Program	Identification Number	Expiration Date
Connecticut	State	PH-0200	11-10-22 *
DE Haz. Subst. Cleanup Act (HSCA)	State	N/A	01-01-23
Massachusetts	State	M-NJ312	06-30-23
New Jersey	NELAP	12028	06-30-23
New York	NELAP	11452	04-01-23
Pennsylvania	NELAP	68-00522	02-28-23
Rhode Island	State	LAO00376	12-31-22
USDA	US Federal Programs	P330-20-00244	11-03-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-271253-1
SDG: CHSTATM

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET EDI
300.0	Anions, Ion Chromatography	MCAWW	EET EDI
5030C	Purge and Trap	SW846	EET EDI

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET EDI = Eurofins Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-271253-1
SDG: CHSTATM

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-271253-1	Eq Blank	Water	12/07/22 08:00	12/08/22 10:30
460-271253-2	MW-4	Water	12/07/22 09:15	12/08/22 10:30
460-271253-3	Dup	Water	12/07/22 00:00	12/08/22 10:30
460-271253-4	MW-1R	Water	12/07/22 10:30	12/08/22 10:30
460-271253-5	Trip	Water	12/07/22 10:30	12/08/22 10:30

~~271204~~ 271253 m/18/22

CHAIN OF CUSTODY RECORD

No. 1801

EQUUS environmental solutions

PROJECT NUMBER: CHKSTATM	PROJECT NAME: CHK STATE M	COC 1 of 1	
SHIPPED TO: TA-EDISON	PROJECT MANAGER: MATT MURAVERO	TAT: STANDARD	

SAMPLER'S PRINTED NAME: TERRY FISHER

SAMPLER'S SIGNATURE: Terry Fisher

ASOW:

460-271253 Chain of Custody

	Date	Time	Sample ID	Sample Matrix	# of Sample Containers	CHLORIDE	BTEX	REMARKS
1	12-7-22	800	Eq BLANK	water	1	X		
2	12-7-22	915	MW-4	water	1	X		
3	12-7-22	—	Dup	water	1	X		
4	12-7-22	1030	MW-1R	water	3		X	* Free Phase in well MW-R1
5	—	—	TRIP	water	2		X	
	—	—	Temp	water	1			

TOTAL NUMBER OF CONTAINERS → 9

RELINQUISHED BY: Terry Fisher	DATE 12-7-22	RECEIVED BY: Fedex	DATE 12/8/22	1.9 0.2/0.2°C CF#187234D	
	TIME 1600		TIME 1030		
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE		
	TIME		TIME		

METHOD OF SHIPMENT: FEDEX

AIRBILL NUMBER:

RECEIVED IN LABORATORY BY: DATE / TIME

Send PDF, EDD, and INVOICE (if applicable) to:

LABORATORY CONTACT: KEN HAYES 615-301-5035

LABORATORY ADDRESS: 777 NEW DURHAM RD EDISON, NJ 08817

POINT OF ORIGIN:

271253

Eurofins TestAmerica Edison
Receipt Temperature and pH Log

Job Number: ~~271804~~ 83 12/8/22

Number of Coolers: 1 IR Gun # 9

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	0.2 °C	0.2 °C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

** Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

EDS-WI-038, Rev 4.1
10/22/2019

Initials: _____ **Date:** 12/8/22

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation

Job Number: 460-271253-1
SDG Number: CHSTATM

Login Number: 271253
List Number: 1
Creator: Rivera, Kenneth

List Source: Eurofins Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	1872340
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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Dana Drury
Chesapeake Energy Corporation
PO BOX 548806
Oklahoma City, Oklahoma 73154

Generated 3/20/2023 4:34:21 PM

JOB DESCRIPTION

CHK STATE M

JOB NUMBER

460-276114-1

Eurofins Edison
777 New Durham Road
Edison NJ 08817

See page two for job notes and contact information.

Eurofins Edison

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing Northeast, LLC Edison and its client. All questions regarding this report should be directed to the Eurofins Environment Testing Northeast, LLC Edison Project Manager or designee who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

Authorization

Generated
3/20/2023 4:34:21 PM

Authorized for release by
Ken Hayes, Project Manager II
Ken.Hayes@et.eurofinsus.com
(615)301-5035

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Laboratory Job ID: 460-276114-1

Table of Contents

Definitions/Glossary

Client: Chesapeake Energy Corporation Job ID: 460-276114-1
Project/Site: CHK STATE M

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Case Narrative

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-276114-1

Job ID: 460-276114-1

Laboratory: Eurofins Edison

Narrative

Job Narrative
460-276114-1

Comments
No additional comments.

Receipt
The samples were received on 3/8/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.2º C.

GC/MS VOA
Method 8260D: Internal standard (ISTD) response for TBA-d9 for the following CCVIS in analytical batch 460-897564 was outside acceptance criteria: (CCVIS 460-897564/4). This ISTD does not correspond to any of the requested target compounds reported from this analytical batch; therefore, the data have been reported.

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

GC Semi VOA
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: Chesapeake Energy Corporation Job ID: 460-276114-1
Project/Site: CHK STATE M

Client Sample ID: Equipment Blank Lab Sample ID: 460-276114-1

No Detections.

Client Sample ID: MW-4 Lab Sample ID: 460-276114-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	376		10.0		mg/L	10		300.0	Total/NA

Client Sample ID: MW-1R Lab Sample ID: 460-276114-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1.59		0.500		ug/L	1		8260D	Total/NA
Ethylbenzene	23.0		0.500		ug/L	1		8260D	Total/NA
Xylenes, Total	18.2		1.00		ug/L	1		8260D	Total/NA

Client Sample ID: Dup Lab Sample ID: 460-276114-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	373		10.0		mg/L	10		300.0	Total/NA

Client Sample ID: Trip Blank Lab Sample ID: 460-276114-5

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Edison

Client Sample Results

Client: Chesapeake Energy Corporation Job ID: 460-276114-1
Project/Site: CHK STATE M

Client Sample ID: Equipment Blank — Lab Sample ID: 460-276114-1

Date Collected: 03/07/23 07:30 **Matrix: Water**
Date Received: 03/08/23 10:00

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.00		mg/L			03/17/23 22:29	1

Client Sample ID: MW-4 — Lab Sample ID: 460-276114-2

Date Collected: 03/07/23 09:20 **Matrix: Water**
Date Received: 03/08/23 10:00

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**376**		10.0		mg/L			03/17/23 22:45	10

Client Sample ID: MW-1R — Lab Sample ID: 460-276114-3

Date Collected: 03/07/23 10:55 **Matrix: Water**
Date Received: 03/08/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**1.59**		0.500		ug/L			03/14/23 13:31	1
Ethylbenzene	**23.0**		0.500		ug/L			03/14/23 13:31	1
Toluene	ND		0.500		ug/L			03/14/23 13:31	1
Xylenes, Total	**18.2**		1.00		ug/L			03/14/23 13:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*98*		*76 - 120*		*03/14/23 13:31*	*1*
Dibromofluoromethane (Surr)	*94*		*77 - 124*		*03/14/23 13:31*	*1*
1,2-Dichloroethane-d4 (Surr)	*91*		*70 - 128*		*03/14/23 13:31*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*03/14/23 13:31*	*1*

Client Sample ID: Dup — Lab Sample ID: 460-276114-4

Date Collected: 03/07/23 00:00 **Matrix: Water**
Date Received: 03/08/23 10:00

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**373**		10.0		mg/L			03/17/23 23:01	10

Client Sample ID: Trip Blank — Lab Sample ID: 460-276114-5

Date Collected: 03/07/23 00:00 **Matrix: Water**
Date Received: 03/08/23 10:00

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.500		ug/L			03/13/23 20:25	1
Ethylbenzene	ND		0.500		ug/L			03/13/23 20:25	1
Toluene	ND		0.500		ug/L			03/13/23 20:25	1
Xylenes, Total	ND		1.00		ug/L			03/13/23 20:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*95*		*76 - 120*		*03/13/23 20:25*	*1*
Dibromofluoromethane (Surr)	*93*		*77 - 124*		*03/13/23 20:25*	*1*
1,2-Dichloroethane-d4 (Surr)	*88*		*70 - 128*		*03/13/23 20:25*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*03/13/23 20:25*	*1*

Surrogate Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-276114-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(76-120)	(77-124)	(70-128)	(80-120)
460-276114-3	MW-1R	98	94	91	97
460-276114-5	Trip Blank	95	93	88	96
LCS 460-897412/3	Lab Control Sample	99	93	89	98
LCS 460-897564/5	Lab Control Sample	100	97	91	98
LCSD 460-897412/4	Lab Control Sample Dup	94	92	88	96
LCSD 460-897564/17	Lab Control Sample Dup	100	98	94	96
MB 460-897412/8	Method Blank	95	91	89	97
MB 460-897564/9	Method Blank	97	97	93	94

Surrogate Legend

BFB = 4-Bromofluorobenzene
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

QC Sample Results

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-276114-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 460-897412/8
Matrix: Water
Analysis Batch: 897412

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.500		ug/L			03/13/23 19:19	1
Ethylbenzene	ND		0.500		ug/L			03/13/23 19:19	1
Toluene	ND		0.500		ug/L			03/13/23 19:19	1
Xylenes, Total	ND		1.00		ug/L			03/13/23 19:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*95*		*76 - 120*		*03/13/23 19:19*	*1*
Dibromofluoromethane (Surr)	*91*		*77 - 124*		*03/13/23 19:19*	*1*
1,2-Dichloroethane-d4 (Surr)	*89*		*70 - 128*		*03/13/23 19:19*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*03/13/23 19:19*	*1*

Lab Sample ID: LCS 460-897412/3
Matrix: Water
Analysis Batch: 897412

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			20.0	18.22		ug/L		91	71 - 126		
Ethylbenzene			20.0	20.04		ug/L		100	78 - 120		
Toluene			20.0	19.20		ug/L		96	78 - 120		
Xylenes, Total			40.0	41.85		ug/L		105	78 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*99*		*76 - 120*
Dibromofluoromethane (Surr)	*93*		*77 - 124*
1,2-Dichloroethane-d4 (Surr)	*89*		*70 - 128*
Toluene-d8 (Surr)	*98*		*80 - 120*

Lab Sample ID: LCSD 460-897412/4
Matrix: Water
Analysis Batch: 897412

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
Benzene			20.0	18.17		ug/L		91	71 - 126	0	30
Ethylbenzene			20.0	19.99		ug/L		100	78 - 120	0	30
Toluene			20.0	19.26		ug/L		96	78 - 120	0	30
Xylenes, Total			40.0	41.45		ug/L		104	78 - 120	1	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*94*		*76 - 120*
Dibromofluoromethane (Surr)	*92*		*77 - 124*
1,2-Dichloroethane-d4 (Surr)	*88*		*70 - 128*
Toluene-d8 (Surr)	*96*		*80 - 120*

QC Sample Results

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-276114-1

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

Lab Sample ID: MB 460-897564/9
Matrix: Water
Analysis Batch: 897564

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.500		ug/L			03/14/23 11:19	1
Ethylbenzene	ND		0.500		ug/L			03/14/23 11:19	1
Toluene	ND		0.500		ug/L			03/14/23 11:19	1
Xylenes, Total	ND		1.00		ug/L			03/14/23 11:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*97*		*76 - 120*		*03/14/23 11:19*	*1*
Dibromofluoromethane (Surr)	*97*		*77 - 124*		*03/14/23 11:19*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 128*		*03/14/23 11:19*	*1*
Toluene-d8 (Surr)	*94*		*80 - 120*		*03/14/23 11:19*	*1*

Lab Sample ID: LCS 460-897564/5
Matrix: Water
Analysis Batch: 897564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	20.0	17.81		ug/L		89	71 - 126
Ethylbenzene	20.0	19.23		ug/L		96	78 - 120
Toluene	20.0	19.02		ug/L		95	78 - 120
Xylenes, Total	40.0	40.48		ug/L		101	78 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*100*		*76 - 120*
Dibromofluoromethane (Surr)	*97*		*77 - 124*
1,2-Dichloroethane-d4 (Surr)	*91*		*70 - 128*
Toluene-d8 (Surr)	*98*		*80 - 120*

Lab Sample ID: LCSD 460-897564/17
Matrix: Water
Analysis Batch: 897564

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
Benzene	20.0	17.43		ug/L		87	71 - 126	2	30
Ethylbenzene	20.0	18.90		ug/L		94	78 - 120	2	30
Toluene	20.0	17.81		ug/L		89	78 - 120	7	30
Xylenes, Total	40.0	38.75		ug/L		97	78 - 120	4	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*100*		*76 - 120*
Dibromofluoromethane (Surr)	*98*		*77 - 124*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 128*
Toluene-d8 (Surr)	*96*		*80 - 120*

QC Sample Results

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-276114-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 460-898323/3
Matrix: Water
Analysis Batch: 898323

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.00		mg/L			03/17/23 14:16	1

Lab Sample ID: LCS 460-898323/5
Matrix: Water
Analysis Batch: 898323

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			3.20	3.201		mg/L		100	90 - 110		

Lab Sample ID: LCSD 460-898323/6
Matrix: Water
Analysis Batch: 898323

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
Chloride			3.20	3.282		mg/L		103	90 - 110	3	15

QC Association Summary

Client: Chesapeake Energy Corporation Job ID: 460-276114-1
Project/Site: CHK STATE M

GC/MS VOA

Analysis Batch: 897412

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-276114-5	Trip Blank	Total/NA	Water	8260D	
MB 460-897412/8	Method Blank	Total/NA	Water	8260D	
LCS 460-897412/3	Lab Control Sample	Total/NA	Water	8260D	
LCSD 460-897412/4	Lab Control Sample Dup	Total/NA	Water	8260D	

Analysis Batch: 897564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-276114-3	MW-1R	Total/NA	Water	8260D	
MB 460-897564/9	Method Blank	Total/NA	Water	8260D	
LCS 460-897564/5	Lab Control Sample	Total/NA	Water	8260D	
LCSD 460-897564/17	Lab Control Sample Dup	Total/NA	Water	8260D	

HPLC/IC

Analysis Batch: 898323

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-276114-1	Equipment Blank	Total/NA	Water	300.0	
460-276114-2	MW-4	Total/NA	Water	300.0	
460-276114-4	Dup	Total/NA	Water	300.0	
MB 460-898323/3	Method Blank	Total/NA	Water	300.0	
LCS 460-898323/5	Lab Control Sample	Total/NA	Water	300.0	
LCSD 460-898323/6	Lab Control Sample Dup	Total/NA	Water	300.0	

Lab Chronicle

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-276114-1

Client Sample ID: Equipment Blank — Lab Sample ID: 460-276114-1

Date Collected: 03/07/23 07:30 — **Matrix: Water**
Date Received: 03/08/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	300.0		1	898323	OXG	EET EDI	03/17/23 22:29

Client Sample ID: MW-4 — Lab Sample ID: 460-276114-2

Date Collected: 03/07/23 09:20 — **Matrix: Water**
Date Received: 03/08/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	300.0		10	898323	OXG	EET EDI	03/17/23 22:45

Client Sample ID: MW-1R — Lab Sample ID: 460-276114-3

Date Collected: 03/07/23 10:55 — **Matrix: Water**
Date Received: 03/08/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	897564	MZS	EET EDI	03/14/23 13:31

Client Sample ID: Dup — Lab Sample ID: 460-276114-4

Date Collected: 03/07/23 00:00 — **Matrix: Water**
Date Received: 03/08/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	300.0		10	898323	OXG	EET EDI	03/17/23 23:01

Client Sample ID: Trip Blank — Lab Sample ID: 460-276114-5

Date Collected: 03/07/23 00:00 — **Matrix: Water**
Date Received: 03/08/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	897412	MZS	EET EDI	03/13/23 20:25

Laboratory References:
EET EDI = Eurofins Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Accreditation/Certification Summary

Client: Chesapeake Energy Corporation Job ID: 460-276114-1
Project/Site: CHK STATE M

Laboratory: Eurofins Edison

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

Authority	Program	Identification Number	Expiration Date
Connecticut	State	PH-0818	01-30-24
DE Haz. Subst. Cleanup Act (HSCA)	State	N/A	01-01-24
Georgia	State	12028 (NJ)	06-30-23
Massachusetts	State	M-NJ312	06-30-23
New Jersey	NELAP	12028	06-30-23
New York	NELAP	11452	04-01-23
Pennsylvania	NELAP	68-00522	03-01-24
Rhode Island	State	LAO00376	12-30-23
USDA	US Federal Programs	P330-20-00244	11-03-23

Method Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-276114-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET EDI
300.0	Anions, Ion Chromatography	EPA	EET EDI
5030C	Purge and Trap	SW846	EET EDI

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET EDI = Eurofins Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: Chesapeake Energy Corporation
Project/Site: CHK STATE M

Job ID: 460-276114-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-276114-1	Equipment Blank	Water	03/07/23 07:30	03/08/23 10:00
460-276114-2	MW-4	Water	03/07/23 09:20	03/08/23 10:00
460-276114-3	MW-1R	Water	03/07/23 10:55	03/08/23 10:00
460-276114-4	Dup	Water	03/07/23 00:00	03/08/23 10:00
460-276114-5	Trip Blank	Water	03/07/23 00:00	03/08/23 10:00

CHAIN OF CUSTODY RECORD

No. 2732

EQUUS Environmental LLC (918) 921-5331

PROJECT NUMBER: CHKSTATM	PROJECT NAME: CHK STATE M	COC 1 of 1	
SHIPPED TO: TA-EDISON	PROJECT MANAGER: DAVID BRADY	TAT: STANDARD	
SAMPLER'S PRINTED NAME: TERRY FISHER		PO#: —	WO#: —
SAMPLERS SIGNATURE: [signature]			

276114

Date	Time	Sample ID	Sample Matrix	# of Sample Containers	CHLORIDE	BTEX	REMARKS
3-7-23	730	Equipment Blank	W	1	X		MW-1R HAS Free Phase 1
3-7-23	920	MW-4	W	1	X		2
3-7-23	1055	MW-1R	W	3		X	3
3-7-23	—	D-P	W	1	X		4
—	—	TRIP	W	2		X	5

TOTAL NUMBER OF CONTAINERS: 8

RELINQUISHED BY: [signature]	DATE 3/7/23 TIME 1600	RECEIVED BY: Bhavisha	DATE 3/8/23 TIME 10:00
RELINQUISHED BY	DATE TIME	RECEIVED BY	DATE TIME
METHOD OF SHIPMENT: FEDEX		AIRBILL NUMBER: 5881 4554 2700 Fedex	
RECEIVED IN LABORATORY BY:	DATE TIME	Send PDF, EDD, and INVOICE (if applicable) to: QAQC@EquusEnv.com	
LABORATORY CONTACT: KEN HAYES 615-301-5035		LABORATORY ADDRESS: 777 NEW DURHAM RD EDISON, NJ 08817	

460-276114 Chain of Custody

White Receiving Lab Yellow Equus Environmental Project File Pink Equus QA/QC

IR: 9 12C 11:20

3/20/2023

Eurofins TestAmerica Edison
Receipt Temperature and pH Log

Job Number: 276114

Number of Coolers: 1 IR Gun # 9

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	1.2 °C	1.2 °C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc. _____ Volume of Preservative used (ml) _____

Lot # of Preservative(s) _____ Expiration Date _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted

** Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis*

EDS-WI-038, Rev 4 1
10/22/2019

Initials: BK Date 3/8/23

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation Job Number: 460-276114-1

Login Number: 276114 **List Source: Eurofins Edison**
List Number: 1
Creator: Hall, Alonzo

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 352079

CONDITIONS

Operator: CHESAPEAKE OPERATING, INC. 6100 NORTH WESTERN AVE OKC, OK 73118	OGRID: 147179
	Action Number: 352079
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	The 9th Annual Groundwater Monitoring Report for State M Lease has been accepted for the record.	6/11/2024