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Chevron Environmental Management Company

Annual 2014 Groundwater Monitoring Report

Former Chevron Facility 301726
Lot 5A, Block 10, West Ramp
Fairbanks International Airport
Fairbanks, Alaska
Alaska File No. 100.38.066

October 17, 2014

ARCADIS

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Annual 2014 Groundwater Monitoring Report

Former Chevron Facility 301726

1.0 Introduction

On behalf of Chevron Environmental Management Company (Chevron), ARCADIS US, Inc. (ARCADIS), has prepared this report to document the annual 2014 groundwater sampling event for Former Chevron Facility 301726 (the site) located at Lot 5A, Block 10, West Ramp, Airport Industrial Rd., Fairbanks, Alaska. The site and surrounding area are shown on **Figure 1**. This report summarizes the annual groundwater sampling event conducted by ARCADIS on July 8, 2014. Work was conducted under the direction of a "qualified person" as defined in 18 Alaska Administrative Code (AAC) 75.990 (100), and 18 AAC 78.995 (118).

2.0 Groundwater Monitoring

2.1 Groundwater Gauging Methods

Groundwater gauging was conducted during the annual 2014 groundwater monitoring event on July 8, 2014. Site monitoring wells were gauged with an oil/water interface probe to determine depth to water and to ascertain if light non-aqueous phase liquids (LNAPL) are present.

The wells were gauged in order from lowest historical concentrations of petroleum constituents to highest in order to prevent cross contamination. Non-disposable groundwater gauging equipment was decontaminated prior to and after each use with a detergent solution and rinsed in potable water. Field notes taken during the annual groundwater monitoring event are included as **Appendix A**.

2.2 Groundwater Elevation and Flow Direction

On July 8, 2014, groundwater monitoring wells MW-1 through MW-6 were gauged to determine groundwater elevations and the presence of LNAPL. LNAPL globules were observed in MW-1. LNAPL was not present in MW-2 through MW-6 during this event. During the July 2014 gauging event, depth-to-groundwater ranged between 5.90 feet below top of casing (btoc) in monitoring well MW-2 to 6.36 feet btoc in monitoring well MW-3. Groundwater elevations ranged from 419.80 feet above mean sea level (msl) to 420.84 feet msl in monitoring wells MW-3 and MW-4, respectively. Water table elevation data indicate groundwater flow direction is toward the southwest. The historical groundwater flow direction has seasonally fluctuated from the east toward the southwest. Current and historical groundwater elevation data are included in **Table 1**.

The Groundwater Elevation Contour Map for the July 8, 2014, monitoring well gauging data is included as **Figure 2**.

2.3 Groundwater Sampling Methods

The annual 2014 groundwater monitoring event was conducted on July 8, 2014. Groundwater samples were collected from monitoring wells MW-2 through MW-6, using no-purge bailer sampling procedures in accordance with ADEC *Draft Field Sampling Guidance* (ADEC, 2010), ARCADIS *Bailer-Grab Groundwater Sampling* (ARCADIS, 2009), and ARCADIS *Groundwater Sampling with Hydrasleeves®* (ARCADIS, 2011). Disposable Hydrasleeves® and Teflon® bailers were used to collect groundwater samples. The top of the Hydrasleeves® were positioned in the monitoring wells below the midpoint of the saturated screened interval by a distance approximately equal to 0.75 times the full length of the Hydrasleeves®. After an equilibration period the Hydrasleeves® were removed from the wells and samples were collected for select analytes using a disposable sampling tip. The Teflon® bailers were then slowly lowered into the water column within the monitoring wells to a depth of approximately three to four feet below the groundwater surface. The bailers were retrieved to limit the amount of possible aeration of the water column. The groundwater samples were collected from the bottom of the bailer using a disposable sampling tip. This technique minimizes the disturbance and aeration of the groundwater within the bailer. The samples were then collected in the appropriate laboratory bottles, labeled, stored in a cooler packed with ice, and submitted to Pace Analytical Services (Pace) in Minneapolis, Minnesota, under proper chain-of-custody procedures. Groundwater samples were submitted to the analytical laboratory for one or more of the following analyses:

- Gasoline range organics (GRO) by method Alaska101
- Diesel range organics (DRO) by method Alaska102
- Diesel range organics with Silica Gel Cleanup (DRO SG) by Alaska102
- Residual Range Organics (RRO) by Alaska 103
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX), by Environmental Protection Agency (EPA) method 8206B

Duplicate groundwater sample BD-1 was collected from MW-4 and submitted blind to the laboratory for DRO, RRO, GRO, and BTEX analysis. The 2014 groundwater analytical results are included as **Figure 3**.

2.4 Groundwater Analytical Results

Concentrations of GRO, DRO, RRO, and BTEX constituents were below ADEC GCLs for the monitoring wells MW-2, MW-3, MW-4, MW-5, and MW-6 sampled during the event. Analytical results for petroleum hydrocarbons are presented in **Table 2** and on **Figure 3**. A plot of historical groundwater elevation data and GRO concentration in monitoring well MW-1 is shown on **Figure 4**. A plot of historical groundwater elevation data and DRO concentration in monitoring well MW-1 is included as **Figure 5**. A plot of historical groundwater elevation data and benzene concentration in monitoring well MW-1 is included as **Figure 6**.

3.0 Laboratory Data Quality Assurance Summary

As required by ADEC (Technical Memorandum dated March 2009), ARCADIS completed laboratory data review checklists for the Eurofins Lancaster laboratories report during the annual 2014 reporting period. The laboratory reports are included in **Appendix B** and data review checklists are included in **Appendix C**. The following quality assurance (QA) summary describes six parameters related to the quality and usability of the data presented in this report.

3.1 Precision

The data meet precision objectives for laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) relative percent differences (RPDs).

3.2 Accuracy

All data meet accuracy objectives as indicated by the laboratory quality control samples, which were within method/laboratory limits. Analytes were not detected in the trip blanks submitted with the groundwater samples. The LCS recoveries were within respective limits.

3.3 Representativeness

The data appear to be representative of site conditions and are generally consistent with historical groundwater monitoring results and expected impacts to groundwater.

3.4 Comparability

The laboratory results are presented in the same units as previous reports to allow comparison.

3.5 Completeness

The results appear to be valid and usable, and thus, the laboratory results have 100% completeness.

3.6 Sensitivity

The sensitivity of the analyses was adequate for the samples as the detection limits were less than the ADEC GCLs for compounds which were not detected.

4.0 Conclusions

The groundwater elevation data collected during the 2014 annual monitoring event indicate groundwater flow direction to be generally consistent with historical data. Based on historical groundwater analytical results, groundwater impacts appear to be confined to well MW-1. Concentrations of DRO and/or RRO have periodically been detected in wells MW-2, MW-3, and MW-5 above GCLs during past monitoring events. In general, groundwater impacts at the site are stable. Concentrations of the constituents of concern in the groundwater samples collected during the 2014 annual event are generally consistent with historical data.

If you have any questions or would like to discuss this further, please contact Gregory Montgomery at 206.726.4742.

5.0 References

ADEC 2010. *Draft Field Sampling Guidance*. Division of Spill Prevention and Response Contaminated Sites Program. May.

ADEC 2009. Technical Memorandum. *Environmental Laboratory Data and Quality Assurance Requirements*. ADEC, Division of Spill Prevention and Response Contaminated Sites Program. March.

ARCADIS 2009. *Bailer-Grab Groundwater Sampling – Standard Operating Procedures*. March 10.

ARCADIS 2011. *Groundwater Sampling with Hydrasleeves®. – Standard Operating Procedures for Monitoring Wells.* February 2.

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Tables

Table 1
Groundwater Elevation Data

Former Chevron Facility #301726
Lot 5A, Block 10, West Ramp
Airport Industrial Rd,
Fairbanks, Alaska

Monitoring Well ID	Date Sampled	TOC (feet-msl)	DTW (feet)	LNAPL Thickness (feet)	GWE (feet-msl)
MW-1	08/19/04	426.84	6.37	--	420.47
	03/30/05		10.09	--	416.75
	09/19/05		8.12	--	418.72
	09/11/08		8.63	--	418.21
	05/10/09		8.56	--	418.28
	10/04/09		10.55	0.01	416.30
	05/25/10		11.55	0.32	415.55
	06/18/10		9.45	--	417.39
	07/19/10		7.60	--	419.24
	08/16/10		7.25	--	419.59
	09/27/10		8.99	--	417.85
	10/27/10		11.09	--	415.75
	12/15/10[2]		--	--	--
	01/04/11		10.64	--	416.20
	02/07/11		12.05	0.03	414.81
	04/14/11		11.3	--	415.54
	05/05/11		9.75	--	417.09
	06/11/11		9.64	--	417.20
	08/21/11		7.81	--	419.03
	07/24/12		7.17	--	419.67
	07/29/13		7.57	--	419.27
	07/08/14		**6.04**	**trace**	**420.80**
MW-2	08/19/04	426.73	6.29	--	420.44
	03/30/05		9.98	--	416.75
	09/19/05		8.02	--	418.71
	09/11/08		8.52	--	418.21
	05/10/09		8.43	--	418.30
	10/04/09		10.48	--	416.25
	07/19/10		7.90	--	418.83
	05/05/11		9.63	--	417.10
	06/11/11		9.53	--	417.20
	08/21/11		7.52	--	419.21
	07/24/12		7.08	--	419.65
	07/29/13		7.48	--	419.25
	07/08/14		**5.90**	**--**	**420.83**
MW-3	09/11/08	426.16	6.29	--	419.87
	03/30/05		10.42	--	415.74
	09/19/05		8.47	--	417.69
	09/11/08		8.96	--	417.20
	5/10/09[1]		--	--	--
	10/04/09		10.90	--	415.26
	07/19/10		7.46	--	418.70
	05/05/11		8.12	--	418.04
	06/11/11		9.96	--	416.20
	08/21/11		7.95	--	418.21
	07/24/12		7.51	--	418.65
	07/29/13		7.91	--	418.25
	07/08/14		**6.36**	**--**	**419.80**

Table 1
Groundwater Elevation Data

Former Chevron Facility #301726
Lot 5A, Block 10, West Ramp
Airport Industrial Rd,
Fairbanks, Alaska

Monitoring Well ID	Date Sampled	TOC (feet-msl)	DTW (feet)	LNAPL Thickness (feet)	GWE (feet-msl)
MW-4	08/19/04	427.02	6.59	--	420.43
	03/30/05		10.29	--	416.73
	09/19/05		8.34	--	418.68
	09/11/08		8.71	--	418.31
	05/10/09		8.71	--	418.31
	10/04/09		10.78	--	416.24
	07/19/10		7.56	--	419.46
	05/05/11		9.96	--	417.06
	06/11/11		9.84	--	417.18
	08/21/11		7.83	--	419.19
	07/24/12		7.37	--	419.65
	07/29/13		7.77	--	419.25
	07/08/14		**6.18**	**--**	**420.84**
MW-5	08/19/04	426.89	6.44	--	420.45
	03/30/05		10.16	--	416.73
	09/19/05		8.19	--	418.70
	09/11/08		8.70	--	418.19
	5/10/09[1]		--	--	--
	10/04/09		10.65	--	416.24
	07/19/10		7.65	--	419.24
	05/05/11		9.86	--	417.03
	06/11/11		9.75	--	417.14
	08/21/11		7.73	--	419.16
	07/24/12		7.29	--	419.60
	07/29/13		7.70	--	419.19
	07/08/14		**6.19**	**--**	**420.70**
MW-6	08/19/04	426.82	6.36	--	420.46
	03/30/05		10.08	--	416.74
	09/19/05		8.12	--	418.70
	09/11/08		8.66	--	418.16
	05/10/09		8.55	--	418.27
	10/04/09		10.63	--	416.19
	07/19/10		7.69	--	419.13
	06/11/11		9.75	--	417.07
	08/21/11		7.72	--	419.10
	07/24/12		7.3	--	419.52
	07/29/13		7.77	--	419.05
	07/08/14		**6.16**	**--**	**420.66**

Notes:
"--" = Indicates no depth measurement was taken,
no LNAPL was present, and no groundwater elevation data is available.
Data associated with current monitoring event in **bold**.
TOC = Top of casing
feet-msl = feet mean sea level
DTW = Depth to water
GWE = Groundwater elevation
LNAPL = Light Non-Aqueous Phase Liquids

[1]Monitoring well was not gauged due to well obstruction.

[2]Monitoring well was not gauged due extremely cold outdoor temperatures.

Table 2
Groundwater Analytical Results

Former Chevron Facility #301726
Lot 5A, Block 10, West Ramp
Airport Industrial Rd,
Fairbanks, Alaska

Monitoring Well ID	Date Sampled	DRO (µg/L)	DRO SG (µg/L)	RRO (µg/L)	GRO (µg/L)	BTEX				EDB (Methylene bromide) (ug/l)	Lead (ug/l)
						Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)		
ADEC GCLs (µg/L)		**1,500**		**1,100**	**2,200**	**5.0**	**1,000**	**700**	**10,000**	**470**	**15**
MW-1	08/19/04	33,400	--	<480	27,200	1,770	3,790	261	3,750	--	--
	03/30/05	436	--	<388	9,000	729	343	186	936	--	--
	09/19/05	8,660	--	<397	<2,500	153	150	<25	116	--	--
	09/11/08	12,000	--	<708	6,680	357	413	124	815	--	--
	05/10/09	980	--	<420	3,960	28	75.7	72.7	392	--	--
	10/04/09	Not Sampled-LNAPL Detected									
	07/20/10	4,700	--	79,000	<6,600	100	240	65	440	0.0097	9.8
	08/21/11	10,000	--	57,000	<3,300	180	270	170	1400	--	--
	8/21/11D	6,500	--	--	--	130	140	190	1,000	--	--
	07/26/12	19,000	58,000	<3,300	5,800	49	140	110	940	--	--
	07/26/12D	78,000	--	--	5,700	51	130	110	850	--	--
	07/29/13	197,000	213,000	<1,100	10,100	71.1	238	241	2,040	--	--
	7/29/2013D	234,000	--	1,400	9,500	80.9	261	249	2,220	--	--
	07/08/14	**Not Sampled-trace LNAPL present**									
MW-2	08/19/04	--	--	--	<50.0	<0.200	<0.500	<0.500	<1.00	--	--
	03/30/05	4,040	--	427	<50.0	<0.500	<0.500	<0.500	<1.50	--	--
	09/19/05	<417	--	<417	<50.0	<0.500	<0.500	<0.500	<1.50	--	--
	09/11/08	<94.3	--	<708	<50.0	<0.200	<0.500	<0.500	<1.00	--	--
	09/11/08D	<95.2	--	<714	<50.0	<0.200	<0.500	<0.500	<1.00	--	--
	05/10/09	<403	--	<403	<50.0	0.333	<0.500	<0.500	<1.00	--	--
	10/04/09	<391	--	<391	<50.0	<0.500	<1.00	<1.00	<3.00	--	--
	07/19/10	22	--	1,800	210	0.8	<0.5	0.70	<1.5	--	2.0
	08/21/11	<10	--	120	130	<0.5	<0.5	<0.5	<1.5	--	--
	07/26/12	<50	<49	<70	<10	<0.5	<0.5	<0.5	<1.5	--	--
	07/29/13	<400	<400	<1000	<100	<1.0	<1.0	<1.0	<3.0	--	--
	07/08/14	**<400**	**--**	**<400**	**<100**	**<1.0**	**<1.0**	**<1.0**	**<3.0**	**--**	**--**
MW-3	08/19/04	1,190	--	<480	89	0.774	<0.500	5.83	3.18	--	--
	03/30/05	<391	--	<391	181	0.979	<0.500	24.1	6.94	--	--
	09/19/05	6,730	--	2,120	<50.0	0.556	<0.500	1.73	<1.50	--	--
	09/11/08	12,000	--	<708	60.3	0.448	<0.500	0.653	1.96	--	--
	10/04/09	1,290	--	438	<50.0	<0.500	<1.00	<1.00	<3.00	--	--
	10/04/09	2,640	--	459	<50.0	<0.500	<1.00	<1.00	<3.00	--	--
	07/19/10	<10	--	88.00	160	<0.5	<0.5	<0.5	<1.5	0.0097	12.9
	08/21/11	<10	--	170.00	370	<0.5	<0.5	<0.5	<1.5	--	--
	07/26/12	2,000	95	210	26	<0.5	1.8	<0.5	1.6	--	--
	07/29/13	830	420	<980	<100	<1.0	<1.0	<1.0	<3.0	--	--
	07/08/14	**<570**	**<400**	**<400**	**<100**	**<1.0**	**<1.0**	**<1.0**	**<3.0**	**--**	**--**
MW-4	08/19/04	<400	--	<480	<50.0	0.3	<0.500	<0.500	<1.00	--	--
	03/30/05	<385	--	<385	<50.0	<0.500	<0.500	<0.500	<1.50	--	--
	09/19/05	1,310	--	815	<50.0	<0.500	<0.500	<0.500	<1.50	--	--
	09/11/08	<94.3	--	<708	<50.0	<0.200	<0.500	<0.500	<1.00	--	--
	05/10/09	<403	--	<403	<50.0	<0.200	<0.500	<0.500	<1.00		
	05/10/09D	<427	--	<427	<50.0	<0.200	<0.500	<0.500	<1.00	--	--
	10/04/09	<385	--	<385	<50.0	<0.500	<1.00	<1.00	<3.00	--	--
	07/19/10	<10	--	210	460	<0.5	<0.5	<0.5	<1.5	--	15.5
	08/21/11	<10	--	200	590	<0.5	<0.5	<0.5	<1.5	--	--
	07/26/12	85	<51	350	<10	<0.5	<0.5	<0.5	<1.5	--	--
	07/29/13	<390	<390	<980	<100	<1.0	<1.0	<1.0	<3.0	--	--
	07/08/14	**<400**	**--**	**<400**	**<100**	**<1.0**	**<1.0**	**<1.0**	**<3.0**	**--**	**--**
	7/8/2014D	**<430**	**--**	**<430**	**<100**	**<1.0**	**<1.0**	**<1.0**	**<3.0**	**--**	**--**
MW-5	08/19/04	<400	--	<480	<50.0	<0.2	<0.500	<0.500	<1.00	--	--
	03/30/05	3,310	--	435	<50.0	<0.500	<0.500	<0.500	<1.50	--	--
	09/19/05	<431	--	782	<50.0	<0.5	<0.500	<0.500	<1.50	--	--
	09/11/08	150	--	<708	<50.0	<0.2	<0.500	<0.500	<1.00	--	--
	10/04/09	559	--	<403	<50.0	<0.500	<1.00	<1.00	<3.00		
	07/20/10	<10	--	110	180	<0.5	<0.5	<0.5	<1.5	0.0097	20.8
	08/21/11	<10	--	120	350	<0.5	<0.5	<0.5	<1.5	--	--
	07/26/12	130	<51	450	<10	<0.5	<0.5	<0.5	<1.5	--	--
	07/29/13	<400	<400	<1,000	<100	<1.0	<1.0	<1.0	<3.0	--	--
	07/08/14	**<400**	**--**	**<400**	**<100**	**<1.0**	**<1.0**	**<1.0**	**<3.0**	**--**	**--**
MW-6	08/19/04	<400	--	<480	<50.0	0.351	<0.500	<0.500	<1.00	--	--
	03/30/05	<388	--	<388	<50.0	<0.5	<0.500	<0.500	<1.50	--	--
	09/19/05	<403	--	<403	<50.0	<0.5	<0.500	<0.500	<1.50	--	--
	09/11/08	<100	--	<750	<50.0	<0.2	<0.500	<0.500	<1.0	--	--
	05/10/09	<427	--	<427	<50.0	<0.200	<0.500	<0.500	<1.00	--	--
	10/04/09	<385	--	<385	<50.0	<0.500	<1.00	<1.00	<3.00	--	--
	07/19/10	<10	--	74	110	<0.5	<0.5	<0.5	<1.5	--	0.95
	08/21/11	<10	--	150	210	<0.5	<0.5	<0.5	<1.5	--	--
	07/26/12	<0.5	<52	130	<10	<0.5	<0.5	<0.5	<1.5	--	--
	07/29/13	<430	<430	<1,100	<100	<1.0	<1.0	<1.0	<3.0	--	--
	07/08/14	**<430**	**--**	**<430**	**<100**	**<1.0**	**<1.0**	**<1.0**	**<3.0**	**--**	**--**

Table 2
Groundwater Analytical Results

Former Chevron Facility #301726
Lot 5A, Block 10, West Ramp
Airport Industrial Rd,
Fairbanks, Alaska

Monitoring Well ID	Date Sampled	DRO (µg/L)	DRO SG (µg/L)	RRO (µg/L)	GRO (µg/L)	BTEX				EDB (Methylene bromide) (ug/l)	Lead (ug/l)
						Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)		
ADEC GCLs (µg/L)		**1,500**		**1,100**	**2,200**	**5.0**	**1,000**	**700**	**10,000**	**470**	**15**

Notes:
Diesel range organics (DRO) was analyzed by Alaska Method 102.
SG = Silica Gel Cleanup
Residual range organics (RRO) was analyzed by Alaska Method 103.
Gasoline range organics (GRO) was analyzed by Alaska Method 101.
Benzene, toluene, ethylbenzene, and total xylenes (BTEX) were analyzed by EPA Method 8021B.
EDB - Dibromomethane
EPA = Environmental Protection Agency
ADEC Groundwater Cleanup Levels (GCLs) per 18 AAC 75.345, Table C, Register 188, January 2009.
ADEC= Alaska Department of Environmental Conservation
µg/L = micrograms per liter
Highlighted cell indicates concentration exceeds groundwater cleanup level
"--" = Indicates analyte was not sampled or analyzed
"<" = Indicates analyte not detected greater than laboratory reporting limit indicated.
LNAPL = Light Non-Aqueous Phase Liquid
D = Indicates sample is a duplicate
Data associated with current monitoring event in **bold**.

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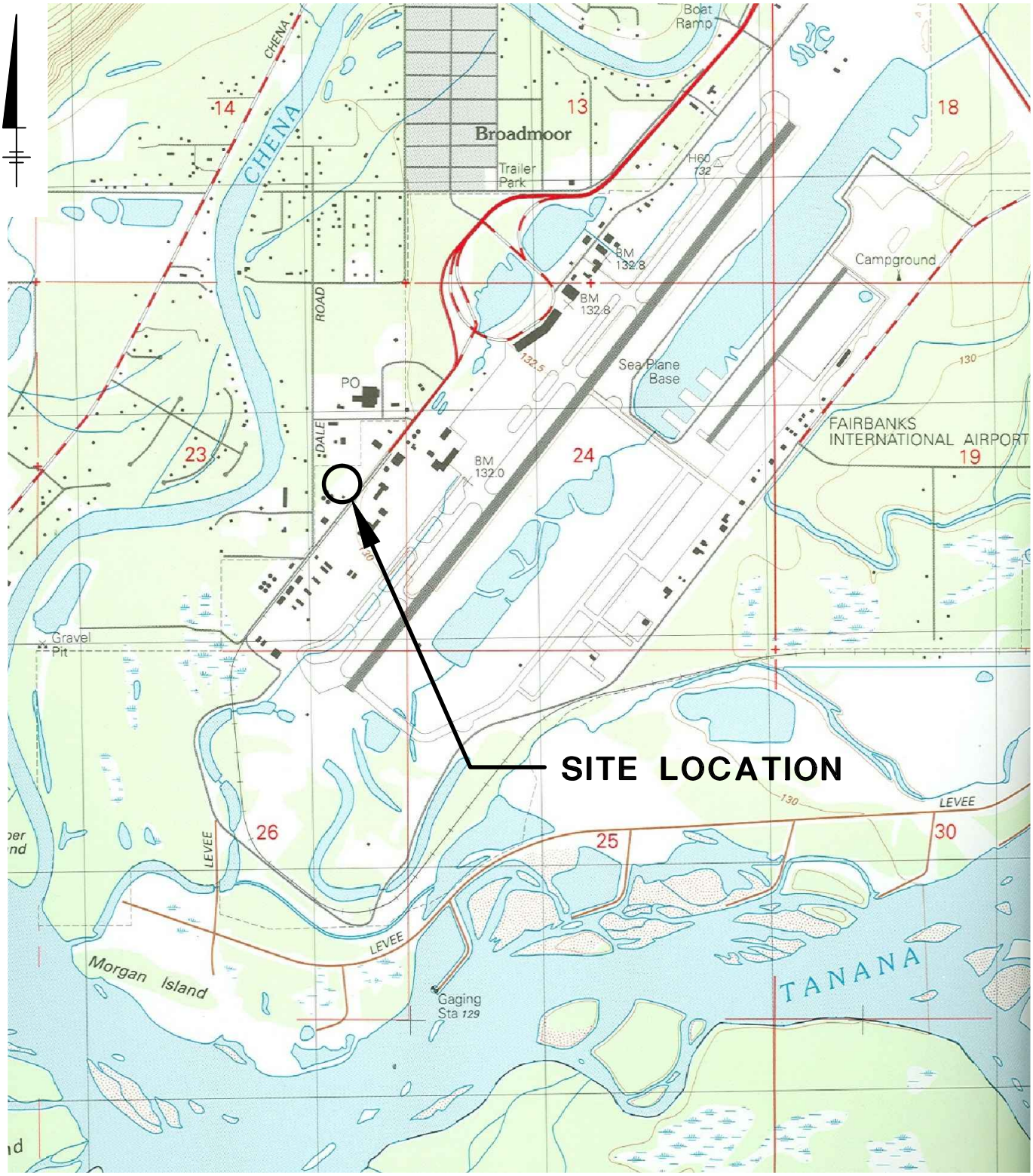
Figures



SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE: FAIRBANKS (D-2) SW, AK., 1992, FAIRBANKS NORTH STAR BOROUGH, SECTION: 24, TOWNSHIP: 1S, RANGE: 2W

0 2000' 4000'

APPROXIMATE GRAPHIC SCALE

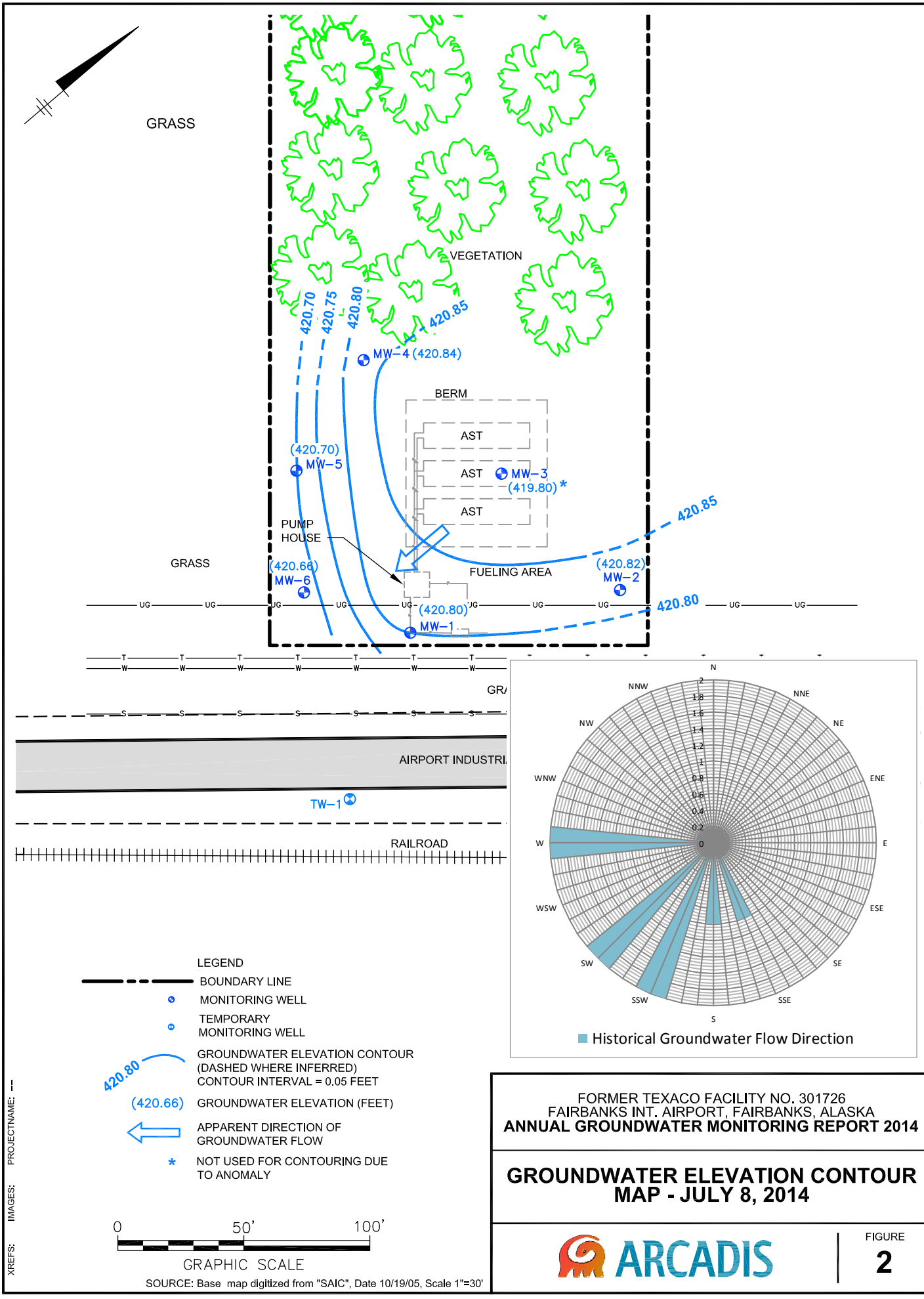
FORMER TEXACO FACILITY NO. 301726
FAIRBANKS INT. AIRPORT, FAIRBANKS, ALASKA
ANNUAL GROUNDWATER MONITORING REPORT 2014

SITE LOCATION MAP

ARCADIS

FIGURE 1

CITY:TMAPA,FL DIV/GROUP:85 DB:JAR LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\TAMPA\ACTIChevronUSA\Chevron 301726\B0046269\0014.00001\Annual GMR 2014\B0046269N01.dwg LAYOUT: 1 SAVED: 8/27/2014 3:47 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 8/27/2014 3:48 PM BY: RICHARDS, JIM
XREFS: IMAGES: ALASKA.jpg Fairbanks-SW airport.jpg PROJECTNAME: ----



SOURCE: Base map digitized from "SAIC", Date 10/19/05, Scale 1"=30'

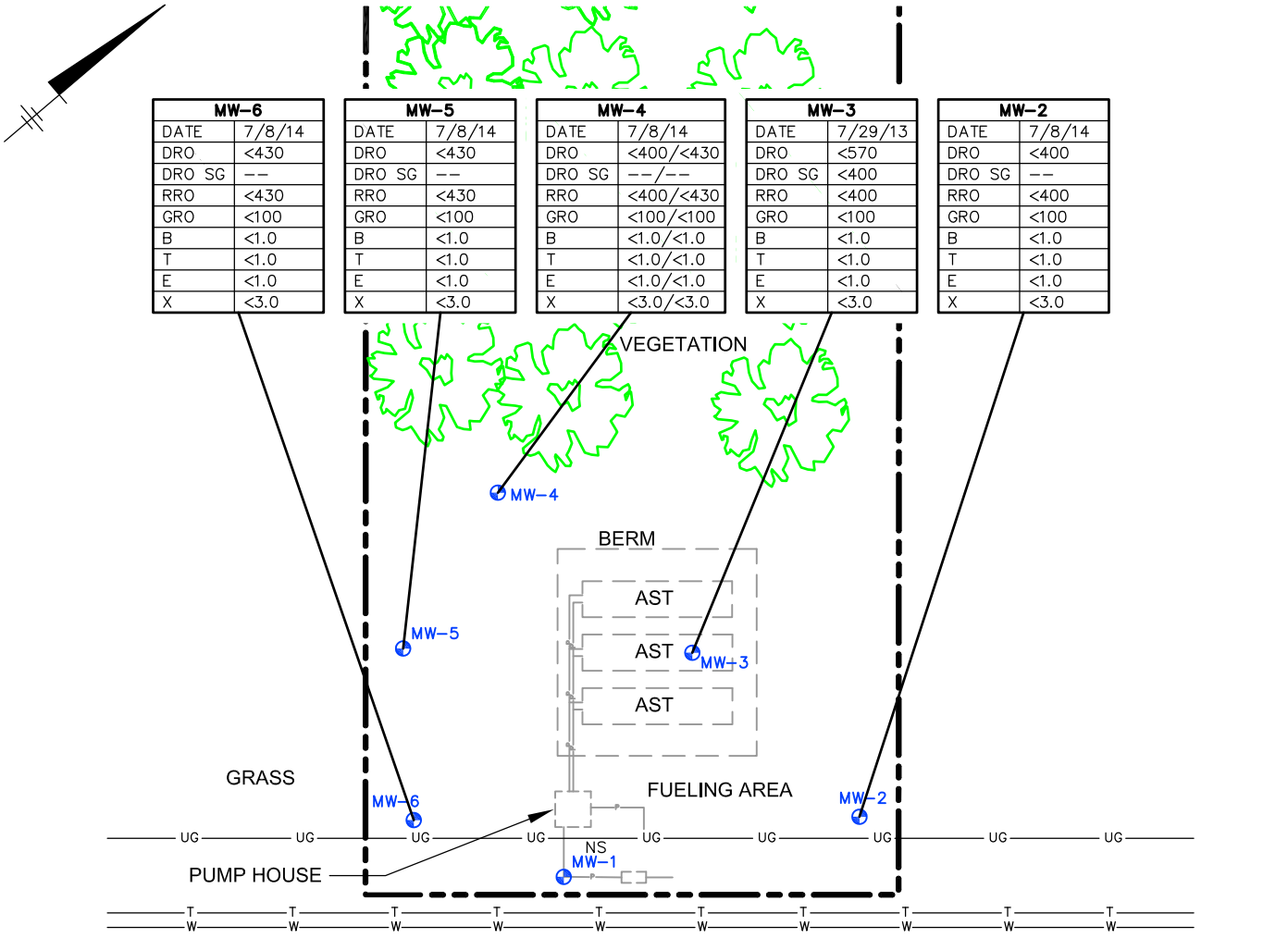
FORMER TEXACO FACILITY NO. 301726
FAIRBANKS INT. AIRPORT, FAIRBANKS, ALASKA
ANNUAL GROUNDWATER MONITORING REPORT 2014

GROUNDWATER ELEVATION CONTOUR MAP - JULY 8, 2014

ARCADIS

FIGURE
2

CITY:TAMPA DIV/GROUP:85 DB:JAR LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\TAMPA\ACT\Chevron\USA\Chevron 301726\B0046269\0014.000011Annual GMR 2014\B0046269B02.dwg LAYOUT: 2 SAVED: 8/27/2014 4:05 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 8/27/2014 4:06 PM BY: RICHARDS, JIM
XREFS: IMAGES: PROJECTNAME: ---



LEGEND

- MONITORING WELL
- BOUNDARY LINE
- TEMPORARY MONITORING WELL

SAMPLE LOCATION	
DATE	Sample Date
GRO	Gasoline Range Organics
DRO	Diesel Range Organics
RRO	Residual Range Organics
B	Benzene
T	Toluene
E	Ethlybenzene
X	Total Xylenes

RESULTS REPORTED IN MICROGRAMS PER LITER (µg/L)
BOLD INDICATES CONCENTRATION EXCEEDS RESPECTIVE GROUNDWATER CLEANUP LEVEL
* = BENZENE CONCENTRATION DETECTED BY USEPA METHOD 8260
ADEC = ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
NS = NOT SAMPLED
<1.00/<1.00 = DUPLICATE SAMPLE COLLECTED

SOURCE: Base map digitized from "SAIC", Date 10/19/05, Scale 1"=30'

0 50' 100'
GRAPHIC SCALE

FORMER TEXACO FACILITY NO. 301726
FAIRBANKS INT. AIRPORT, FAIRBANKS, ALASKA
ANNUAL GROUNDWATER MONITORING REPORT 2014

GROUNDWATER ANALYTICAL RESULTS PETROLEUM HYDROCARBONS JULY 8, 2014

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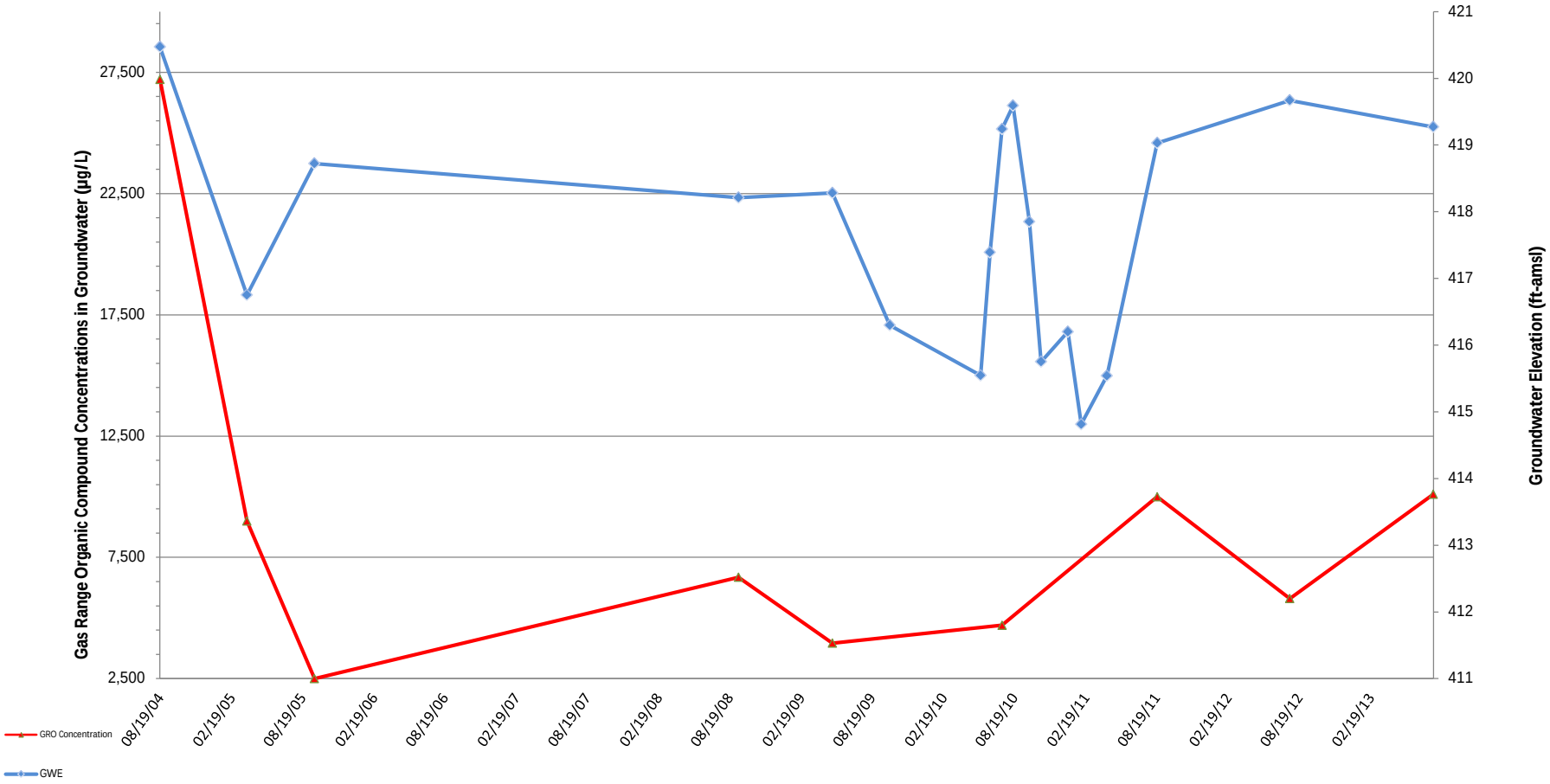
FIGURE 3



LEGEND:

GWE = Groundwater elevation
GRO= Gas Range Organic Compounds
ft-amsl = Feet above mean sea level

FORMER UNOCAL FACILITY 301726
Lot 5A, Block 10, Aiport Industrial Rd, FAIRBANKS, ALASKA
Annual Grounwater Monitoring Report 2014

Monitoring Well MW-1 Historical Groundwater Elevation and GRO Concentration

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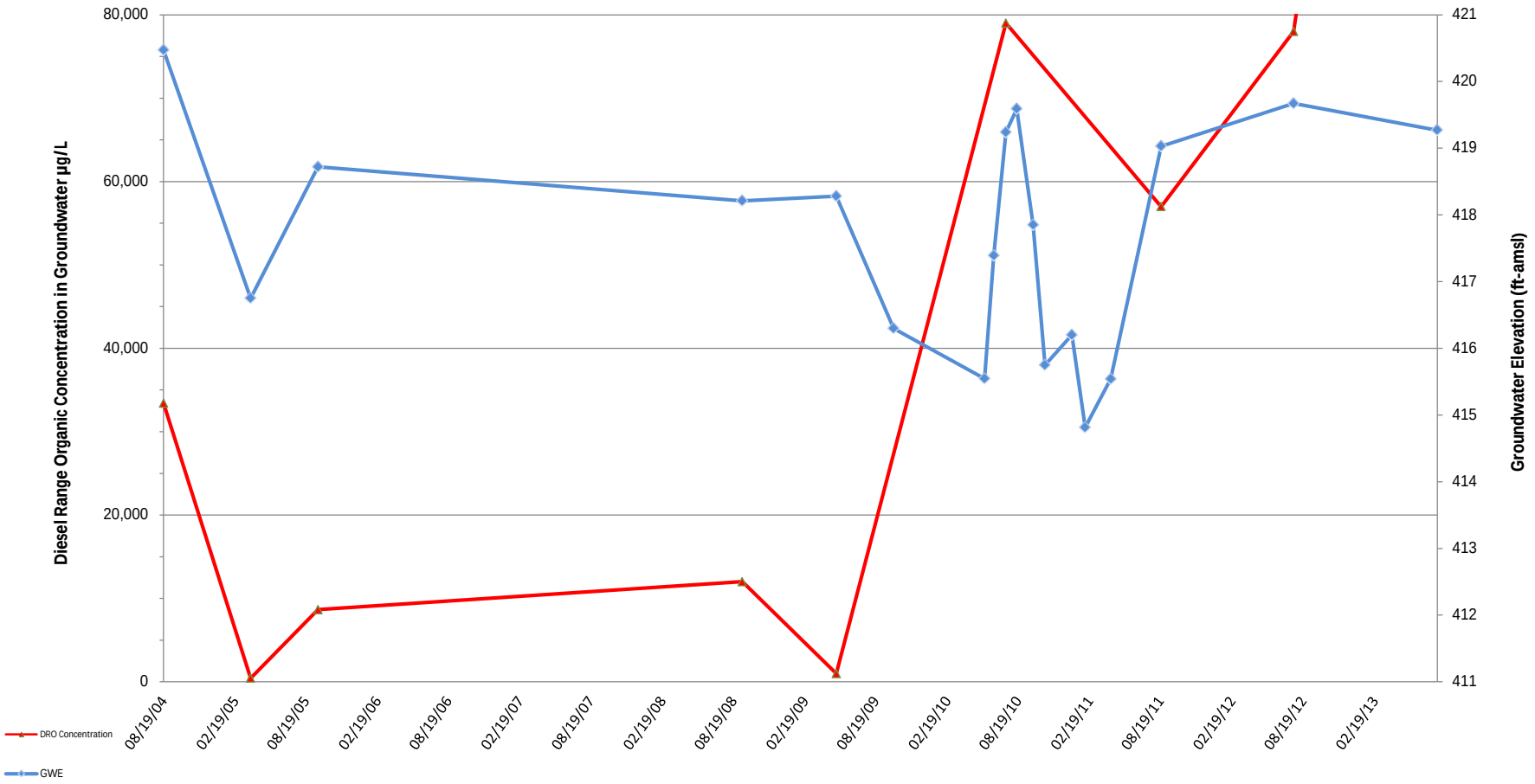
FIGURE
4



LEGEND:

GWE = Groundwater elevation
DRO= Diesel Range Organic Compounds
ft-amsl = Feet above mean sea level

FORMER UNOCAL FACILITY 301726
Lot 5A, Block 10, Aiport Industrial Rd, FAIRBANKS, ALASKA
Annual Grounwater Monitoring Report 2014

Monitoring Well MW-1 Historical Groundwater Elevation and DRO Concentration

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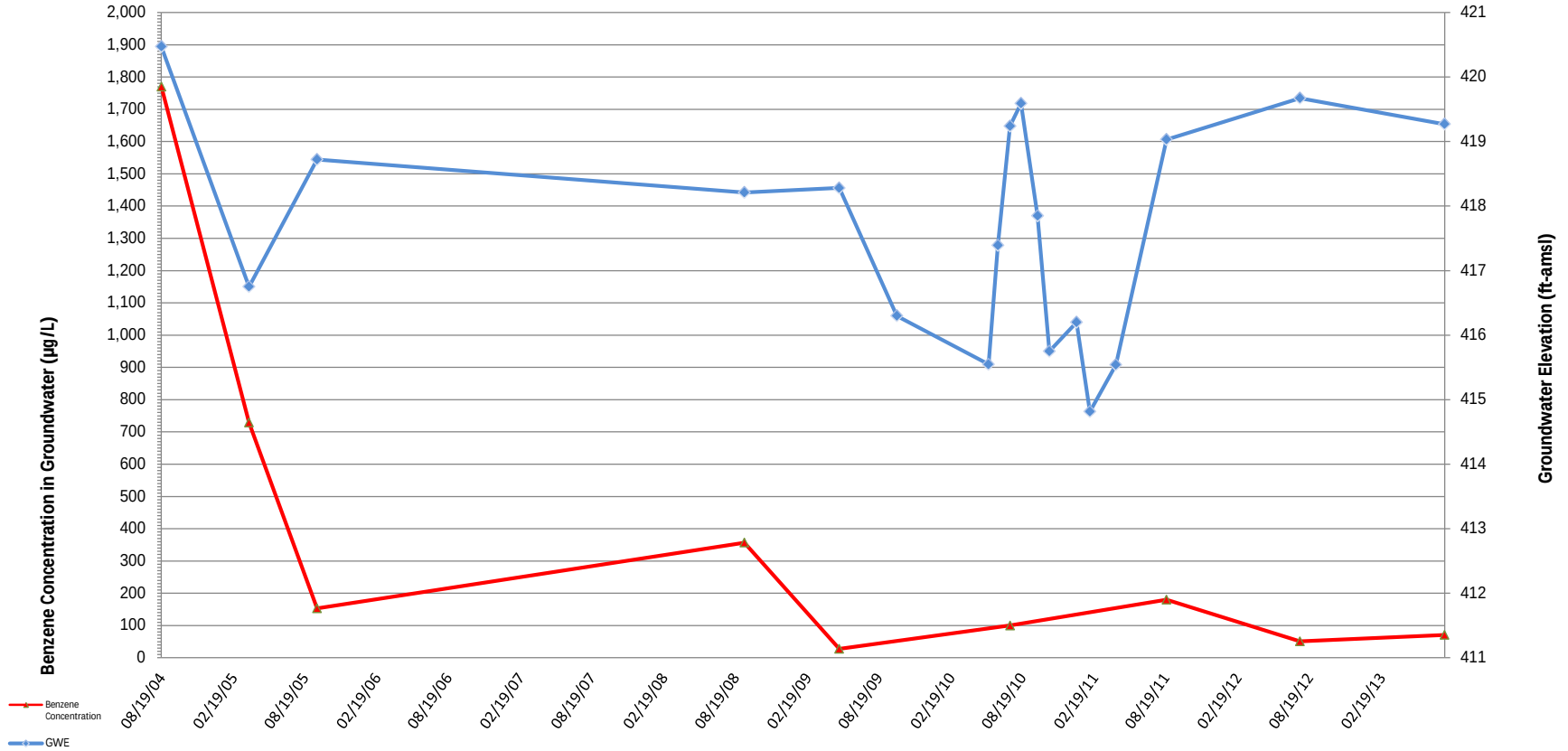
FIGURE
5



LEGEND:

GWE = Groundwater elevation

ft-amsl = Feet above mean sea level

FORMER UNOCAL FACILITY 301726
Lot 5A, Block 10, Aiport Industrial Rd, FAIRBANKS, ALASKA
Annual Grounwater Monitoring Report 2014

Monitoring Well MW-1 Historical Groundwater Elevation and Benzene Concentration

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FIGURE
6

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Appendix A

Field Notes

50

Location Lot 5A, 10 Block, W. Ramp Date 7/8/14

Project / Client FIA Texaco 301726

2014 Annual GWM

Activity: 2014 ~~Annual~~ / Annual GWM

Weather: Sunny, 70F

Personnel: M. MacDaniel, P. DeCarvalho

11:30 Arrive on site. Conduct HTS tailgate meeting, review SOW, review HASP, complete PTW, calibrate PID, dicty JSAs.

11:50 Begin Gauging wells.

Well ID	DTW	DTB	PID	Comments
MW-1	6.04	—	797	LNAPL Globbules Present
MW-2	5.90	13.3	0.2	
MW-3	6.36	14.15	0.3	
MW-4	6.18	14.16	0.1	
MW-5	6.19	14.13	0.2	
MW-6	6.16	14.3	0.3	

1250 Completed Gauging wells, began prepping equipment for sampling

51

Location Lot 5A, 10 Block, West Ramp Date 7/8/14

Project / Client FIA Texaco / Chevron 301726

2014 Annual GWM

1310 Began sampling wells at MW-4

Well ID	Sample Time	Comments
MW-1	~~1510~~	NO SAMPLE, LNAPL Present
MW-2	1510	
MW-3	1440	
MW-4	1330	BD-1 Collected
MW-5	1410	
MW-6	1610	MS/MSD Collected

1630 Completed sampling. Samples packed in cooler with ice. Demobbed

PD

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Appendix B

Laboratory Analytical Reports

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

July 23, 2014

Gregory Montgomery
Arcadis US, Inc.
1100 Olive Way
Suite 800
Seattle, WA 98101

RE: Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

Dear Gregory Montgomery:
Enclosed are the analytical results for sample(s) received by the laboratory on July 10, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Gross
jennifer.gross@pacelabs.com
Project Manager

Enclosures

cc: David Beaudoin, Arcadis US, Inc.
Michael MacDaniel, Arcadis US, Inc.
Tammy Parise, Arcadis US, Inc.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alabama Certification #40770
Alabama Certification #40770
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #: Pace
Georgia Certification #: 959
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
Wisconsin Certification #: 999407970
West Virginia Certification #: 382
West Virginia TO-15 Approval
West Virginia DHHR #:9952C

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SAMPLE SUMMARY

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10273534001	**MW-2-W-070814**	Water	07/08/14 15:10	07/10/14 09:20
10273534002	**MW-3-W-070814**	Water	07/08/14 14:40	07/10/14 09:20
10273534003	**MW-4-W-070814**	Water	07/08/14 13:30	07/10/14 09:20
10273534004	**MW-5-W-070814**	Water	07/08/14 14:10	07/10/14 09:20
10273534005	**MW-6-W-070814**	Water	07/08/14 16:10	07/10/14 09:20
10273534006	**BD-1-W-070814**	Water	07/08/14 00:00	07/10/14 09:20
10273534007	**Trip Blank-1**	Water	07/08/14 00:00	07/10/14 09:20

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10273534001	**MW-2-W-070814**	Alaska 102/103	JRH	4	PASI-M
		Alaska 101	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M
10273534002	**MW-3-W-070814**	Alaska 102/103	JRH, MT	5	PASI-M
		Alaska 101	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M
10273534003	**MW-4-W-070814**	Alaska 102/103	JRH	4	PASI-M
		Alaska 101	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M
10273534004	**MW-5-W-070814**	Alaska 102/103	JRH	4	PASI-M
		Alaska 101	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M
10273534005	**MW-6-W-070814**	Alaska 102/103	JRH	4	PASI-M
		Alaska 101	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M
10273534006	**BD-1-W-070814**	Alaska 102/103	JRH	4	PASI-M
		Alaska 101	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M
10273534007	**Trip Blank-1**	Alaska 101	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
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(612)607-1700

PROJECT NARRATIVE

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

Method: **Alaska 102/103**
Description: DRO and RRO by AK102/103
Client: Arcadis_Chevron
Date: July 23, 2014

General Information:
6 samples were analyzed for Alaska 102/103. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: OEXT/25693

N2: The lab does not hold TNI accreditation for this parameter.

- BD-1-W-070814 (Lab ID: 10273534006)
  - DRO by AK 102
  - Residual Range Organics AK103
- BLANK (Lab ID: 1733732)
  - DRO by AK 102
  - Residual Range Organics AK103
- LCS (Lab ID: 1733733)
  - DRO by AK 102
  - Residual Range Organics AK103
- MS (Lab ID: 1733734)
  - DRO by AK 102

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PROJECT NARRATIVE

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

Method: **Alaska 102/103**
Description: DRO and RRO by AK102/103
Client: Arcadis_Chevron
Date: July 23, 2014

Analyte Comments:

QC Batch: OEXT/25693

N2: The lab does not hold TNI accreditation for this parameter.

- MS (Lab ID: 1733734)
  - Residual Range Organics AK103
- MSD (Lab ID: 1733735)
  - DRO by AK 102
  - Residual Range Organics AK103
- MW-2-W-070814 (Lab ID: 10273534001)
  - DRO by AK 102
  - Residual Range Organics AK103
- MW-3-W-070814 (Lab ID: 10273534002)
  - DRO by AK 102
  - Residual Range Organics AK103
- MW-4-W-070814 (Lab ID: 10273534003)
  - DRO by AK 102
  - Residual Range Organics AK103
- MW-5-W-070814 (Lab ID: 10273534004)
  - DRO by AK 102
  - Residual Range Organics AK103
- MW-6-W-070814 (Lab ID: 10273534005)
  - DRO by AK 102
  - Residual Range Organics AK103

QC Batch: OEXT/25742

N2: The lab does not hold TNI accreditation for this parameter.

- BLANK (Lab ID: 1738208)
  - DRO by AK 102 Silica Gel Clean
- LCS (Lab ID: 1738209)
  - DRO by AK 102 Silica Gel Clean
- MW-3-W-070814 (Lab ID: 10273534002)
  - DRO by AK 102 Silica Gel Clean

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PROJECT NARRATIVE

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

Method: **Alaska 101**
Description: AK101 GCV
Client: Arcadis_Chevron
Date: July 23, 2014

General Information:
7 samples were analyzed for Alaska 101. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: GCV/12290

N2: The lab does not hold TNI accreditation for this parameter.

- BD-1-W-070814 (Lab ID: 10273534006)
  - AK101 Gasoline Range Organics
- BLANK (Lab ID: 1730518)
  - AK101 Gasoline Range Organics
- DUP (Lab ID: 1730521)
  - AK101 Gasoline Range Organics
- LCS (Lab ID: 1730519)
  - AK101 Gasoline Range Organics

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PROJECT NARRATIVE

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

Method: **Alaska 101**
Description: AK101 GCV
Client: Arcadis_Chevron
Date: July 23, 2014

Analyte Comments:

QC Batch: GCV/12290

N2: The lab does not hold TNI accreditation for this parameter.

- LCSD (Lab ID: 1730520)
  - AK101 Gasoline Range Organics
- MS (Lab ID: 1730522)
  - AK101 Gasoline Range Organics
- MSD (Lab ID: 1730523)
  - AK101 Gasoline Range Organics
- MW-2-W-070814 (Lab ID: 10273534001)
  - AK101 Gasoline Range Organics
- MW-3-W-070814 (Lab ID: 10273534002)
  - AK101 Gasoline Range Organics
- MW-4-W-070814 (Lab ID: 10273534003)
  - AK101 Gasoline Range Organics
- MW-5-W-070814 (Lab ID: 10273534004)
  - AK101 Gasoline Range Organics
- MW-6-W-070814 (Lab ID: 10273534005)
  - AK101 Gasoline Range Organics
- Trip Blank-1 (Lab ID: 10273534007)
  - AK101 Gasoline Range Organics

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PROJECT NARRATIVE

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

Method: **EPA 8260**
Description: 8260 MSV UST
Client: Arcadis_Chevron
Date: July 23, 2014

General Information:
7 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

Sample: MW-2-W-070814 **Lab ID: 10273534001** Collected: 07/08/14 15:10 Received: 07/10/14 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
DRO and RRO by AK102/103	Analytical Method: Alaska 102/103 Preparation Method: EPA 3510							
DRO by AK 102	ND	mg/L	0.40	1	07/16/14 12:30	07/19/14 13:34		N2
Residual Range Organics AK103	ND	mg/L	0.40	1	07/16/14 12:30	07/19/14 13:34		N2
Surrogates								
o-Terphenyl (S)	85	%.	50-150	1	07/16/14 12:30	07/19/14 13:34	84-15-1	
n-Triacontane (S)	92	%.	50-150	1	07/16/14 12:30	07/19/14 13:34	638-68-6	
AK101 GCV	Analytical Method: Alaska 101							
AK101 Gasoline Range Organics	ND	ug/L	100	1		07/11/14 18:37		N2
Surrogates								
a,a,a-Trifluorotoluene (S)	101	%.	60-120	1		07/11/14 18:37	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/18/14 03:46	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/18/14 03:46	100-41-4	
Toluene	ND	ug/L	1.0	1		07/18/14 03:46	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/18/14 03:46	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1		07/18/14 03:46	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		07/18/14 03:46	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125	1		07/18/14 03:46	460-00-4	

Sample: MW-3-W-070814 **Lab ID: 10273534002** Collected: 07/08/14 14:40 Received: 07/10/14 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
DRO and RRO by AK102/103	Analytical Method: Alaska 102/103 Preparation Method: EPA 3510							
DRO by AK 102	**0.57**	mg/L	0.40	1	07/16/14 12:30	07/19/14 13:56		N2
DRO by AK 102 Silica Gel Clean	ND	mg/L	0.40	1	07/16/14 12:30	07/21/14 18:57		N2
Residual Range Organics AK103	ND	mg/L	0.40	1	07/16/14 12:30	07/19/14 13:56		N2
Surrogates								
o-Terphenyl (S) SG	78	%.	50-150	1	07/16/14 12:30	07/21/14 18:57	84-15-1	
n-Triacontane (S) SG	76	%.	50-150	1	07/16/14 12:30	07/21/14 18:57		
AK101 GCV	Analytical Method: Alaska 101							
AK101 Gasoline Range Organics	ND	ug/L	100	1		07/11/14 21:38		N2
Surrogates								
a,a,a-Trifluorotoluene (S)	100	%.	60-120	1		07/11/14 21:38	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/18/14 04:02	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/18/14 04:02	100-41-4	
Toluene	ND	ug/L	1.0	1		07/18/14 04:02	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/18/14 04:02	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	92	%.	75-125	1		07/18/14 04:02	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	1		07/18/14 04:02	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

Sample: MW-3-W-070814 **Lab ID: 10273534002** Collected: 07/08/14 14:40 Received: 07/10/14 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260							
Surrogates								
4-Bromofluorobenzene (S)	107	%.	75-125	1		07/18/14 04:02	460-00-4	

Sample: MW-4-W-070814 **Lab ID: 10273534003** Collected: 07/08/14 13:30 Received: 07/10/14 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
DRO and RRO by AK102/103	Analytical Method: Alaska 102/103 Preparation Method: EPA 3510							
DRO by AK 102	ND	mg/L	0.40	1	07/16/14 12:30	07/19/14 14:17		N2
Residual Range Organics AK103	ND	mg/L	0.40	1	07/16/14 12:30	07/19/14 14:17		N2
Surrogates								
o-Terphenyl (S)	86	%.	50-150	1	07/16/14 12:30	07/19/14 14:17	84-15-1	
n-Triacontane (S)	78	%.	50-150	1	07/16/14 12:30	07/19/14 14:17	638-68-6	
AK101 GCV	Analytical Method: Alaska 101							
AK101 Gasoline Range Organics	ND	ug/L	100	1		07/11/14 18:58		N2
Surrogates								
a,a,a-Trifluorotoluene (S)	101	%.	60-120	1		07/11/14 18:58	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/18/14 04:18	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/18/14 04:18	100-41-4	
Toluene	ND	ug/L	1.0	1		07/18/14 04:18	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/18/14 04:18	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	95	%.	75-125	1		07/18/14 04:18	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1		07/18/14 04:18	2037-26-5	
4-Bromofluorobenzene (S)	107	%.	75-125	1		07/18/14 04:18	460-00-4	

Sample: MW-5-W-070814 **Lab ID: 10273534004** Collected: 07/08/14 14:10 Received: 07/10/14 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
DRO and RRO by AK102/103	Analytical Method: Alaska 102/103 Preparation Method: EPA 3510							
DRO by AK 102	ND	mg/L	0.40	1	07/16/14 12:30	07/19/14 12:50		N2
Residual Range Organics AK103	ND	mg/L	0.40	1	07/16/14 12:30	07/19/14 12:50		N2
Surrogates								
o-Terphenyl (S)	85	%.	50-150	1	07/16/14 12:30	07/19/14 12:50	84-15-1	
n-Triacontane (S)	84	%.	50-150	1	07/16/14 12:30	07/19/14 12:50	638-68-6	
AK101 GCV	Analytical Method: Alaska 101							
AK101 Gasoline Range Organics	ND	ug/L	100	1		07/11/14 20:58		N2
Surrogates								
a,a,a-Trifluorotoluene (S)	101	%.	60-120	1		07/11/14 20:58	98-08-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

Sample: MW-5-W-070814 **Lab ID: 10273534004** Collected: 07/08/14 14:10 Received: 07/10/14 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/18/14 04:35	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/18/14 04:35	100-41-4	
Toluene	ND	ug/L	1.0	1		07/18/14 04:35	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/18/14 04:35	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1		07/18/14 04:35	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1		07/18/14 04:35	2037-26-5	
4-Bromofluorobenzene (S)	105	%.	75-125	1		07/18/14 04:35	460-00-4	

Sample: MW-6-W-070814 **Lab ID: 10273534005** Collected: 07/08/14 16:10 Received: 07/10/14 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
DRO and RRO by AK102/103	Analytical Method: Alaska 102/103 Preparation Method: EPA 3510							
DRO by AK 102	ND	mg/L	0.43	1	07/16/14 12:30	07/19/14 14:39		N2
Residual Range Organics AK103	ND	mg/L	0.43	1	07/16/14 12:30	07/19/14 14:39		N2
Surrogates								
o-Terphenyl (S)	89	%.	50-150	1	07/16/14 12:30	07/19/14 14:39	84-15-1	
n-Triacontane (S)	89	%.	50-150	1	07/16/14 12:30	07/19/14 14:39	638-68-6	
AK101 GCV	Analytical Method: Alaska 101							
AK101 Gasoline Range Organics	ND	ug/L	100	1		07/11/14 19:18		N2
Surrogates								
a,a,a-Trifluorotoluene (S)	102	%.	50-150	1		07/11/14 19:18	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/18/14 04:51	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/18/14 04:51	100-41-4	
Toluene	ND	ug/L	1.0	1		07/18/14 04:51	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/18/14 04:51	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	93	%.	75-125	1		07/18/14 04:51	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		07/18/14 04:51	2037-26-5	
4-Bromofluorobenzene (S)	105	%.	75-125	1		07/18/14 04:51	460-00-4	

Sample: BD-1-W-070814 **Lab ID: 10273534006** Collected: 07/08/14 00:00 Received: 07/10/14 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
DRO and RRO by AK102/103	Analytical Method: Alaska 102/103 Preparation Method: EPA 3510							
DRO by AK 102	ND	mg/L	0.43	1	07/16/14 12:30	07/19/14 15:44		N2
Residual Range Organics AK103	ND	mg/L	0.43	1	07/16/14 12:30	07/19/14 15:44		N2
Surrogates								
o-Terphenyl (S)	86	%.	50-150	1	07/16/14 12:30	07/19/14 15:44	84-15-1	
n-Triacontane (S)	75	%.	50-150	1	07/16/14 12:30	07/19/14 15:44	638-68-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

Sample: BD-1-W-070814 **Lab ID: 10273534006** Collected: 07/08/14 00:00 Received: 07/10/14 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
AK101 GCV	Analytical Method: Alaska 101							
AK101 Gasoline Range Organics	ND	ug/L	100	1		07/11/14 21:18		N2
Surrogates								
a,a,a-Trifluorotoluene (S)	101	%.	60-120	1		07/11/14 21:18	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/18/14 05:07	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/18/14 05:07	100-41-4	
Toluene	ND	ug/L	1.0	1		07/18/14 05:07	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/18/14 05:07	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1		07/18/14 05:07	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		07/18/14 05:07	2037-26-5	
4-Bromofluorobenzene (S)	104	%.	75-125	1		07/18/14 05:07	460-00-4	

Sample: Trip Blank-1 **Lab ID: 10273534007** Collected: 07/08/14 00:00 Received: 07/10/14 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
AK101 GCV	Analytical Method: Alaska 101							
AK101 Gasoline Range Organics	ND	ug/L	100	1		07/11/14 17:17		N2
Surrogates								
a,a,a-Trifluorotoluene (S)	100	%.	60-120	1		07/11/14 17:17	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/18/14 00:47	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/18/14 00:47	100-41-4	
Toluene	ND	ug/L	1.0	1		07/18/14 00:47	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/18/14 00:47	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1		07/18/14 00:47	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1		07/18/14 00:47	2037-26-5	
4-Bromofluorobenzene (S)	104	%.	75-125	1		07/18/14 00:47	460-00-4	

Pace Analytical Services, Inc.
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QUALITY CONTROL DATA

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

QC Batch: GCV/12290 Analysis Method: Alaska 101
QC Batch Method: Alaska 101 Analysis Description: AK101W GCV Water
Associated Lab Samples: 10273534001, 10273534002, 10273534003, 10273534004, 10273534005, 10273534006, 10273534007

METHOD BLANK: 1730518 Matrix: Water
Associated Lab Samples: 10273534001, 10273534002, 10273534003, 10273534004, 10273534005, 10273534006, 10273534007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
AK101 Gasoline Range Organics	ug/L	ND	100	07/11/14 16:55	N2
a,a,a-Trifluorotoluene (S)	%.	101	60-120	07/11/14 16:55	

LABORATORY CONTROL SAMPLE & LCSD: 1730519 1730520

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
AK101 Gasoline Range Organics	ug/L	1000	1020	958	102	96	60-120	7	20	N2
a,a,a-Trifluorotoluene (S)	%.				107	104	60-120			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1730522 1730523

Parameter	Units	10273534005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
AK101 Gasoline Range Organics	ug/L	ND	1000	1000	1240	1250	124	125	70-130	1	30	N2
a,a,a-Trifluorotoluene (S)	%.						110	113	60-120			

SAMPLE DUPLICATE: 1730521

Parameter	Units	10272901008 Result	Dup Result	RPD	Max RPD	Qualifiers
AK101 Gasoline Range Organics	ug/L	4460	4680	5	30	N2
a,a,a-Trifluorotoluene (S)	%.	100	100	0		

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
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(612)607-1700

QUALITY CONTROL DATA

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

QC Batch: MSV/27771 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 10273534001, 10273534002, 10273534003, 10273534004, 10273534005, 10273534006, 10273534007

METHOD BLANK: 1731659 Matrix: Water
Associated Lab Samples: 10273534001, 10273534002, 10273534003, 10273534004, 10273534005, 10273534006, 10273534007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	07/18/14 00:31	
Ethylbenzene	ug/L	ND	1.0	07/18/14 00:31	
Toluene	ug/L	ND	1.0	07/18/14 00:31	
Xylene (Total)	ug/L	ND	3.0	07/18/14 00:31	
1,2-Dichloroethane-d4 (S)	%.	96	75-125	07/18/14 00:31	
4-Bromofluorobenzene (S)	%.	106	75-125	07/18/14 00:31	
Toluene-d8 (S)	%.	98	75-125	07/18/14 00:31	

LABORATORY CONTROL SAMPLE: 1731660

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	18.7	94	75-125	
Ethylbenzene	ug/L	20	19.4	97	75-125	
Toluene	ug/L	20	19.1	96	75-125	
Xylene (Total)	ug/L	60	56.3	94	75-125	
1,2-Dichloroethane-d4 (S)	%.			95	75-125	
4-Bromofluorobenzene (S)	%.			102	75-125	
Toluene-d8 (S)	%.			102	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1735197 1735198

Parameter	Units	10273534005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	20	20	18.9	17.9	95	89	75-129	6	30	
Ethylbenzene	ug/L	ND	20	20	19.1	16.8	96	84	75-128	13	30	
Toluene	ug/L	ND	20	20	19.7	17.1	98	86	75-129	14	30	
Xylene (Total)	ug/L	ND	60	60	55.8	48.1	93	80	75-129	15	30	
1,2-Dichloroethane-d4 (S)	%.						96	95	75-125			
4-Bromofluorobenzene (S)	%.						102	104	75-125			
Toluene-d8 (S)	%.						101	102	75-125			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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(612)607-1700

QUALITY CONTROL DATA

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

QC Batch: OEXT/25693 Analysis Method: Alaska 102/103
QC Batch Method: EPA 3510 Analysis Description: AK1023 GCS
Associated Lab Samples: 10273534001, 10273534002, 10273534003, 10273534004, 10273534005, 10273534006

METHOD BLANK: 1733732 Matrix: Water
Associated Lab Samples: 10273534001, 10273534002, 10273534003, 10273534004, 10273534005, 10273534006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
DRO by AK 102	mg/L	ND	0.40	07/19/14 12:07	N2
Residual Range Organics AK103	mg/L	ND	0.40	07/19/14 12:07	N2
n-Triacontane (S)	%.	75	60-120	07/19/14 12:07	
o-Terphenyl (S)	%.	83	60-120	07/19/14 12:07	

LABORATORY CONTROL SAMPLE: 1733733

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
DRO by AK 102	mg/L	2	1.7	84	75-125	N2
Residual Range Organics AK103	mg/L	2	1.9	94	60-120	N2
n-Triacontane (S)	%.			90	60-120	
o-Terphenyl (S)	%.			93	60-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1733734 1733735

Parameter	Units	10273534005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
DRO by AK 102	mg/L	ND	2.1	2.2	1.6	1.6	79	75	50-150	1	20	N2
Residual Range Organics AK103	mg/L	ND	2.1	2.2	1.7	1.8	84	84	50-150	4	20	N2
n-Triacontane (S)	%.						84	81	60-120			
o-Terphenyl (S)	%.						87	84	60-120			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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(612)607-1700

QUALITY CONTROL DATA

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

QC Batch: OEXT/25742
QC Batch Method: EPA 3510
Analysis Method: Alaska 102/103
Analysis Description: AK1023 GCS
Associated Lab Samples: 10273534002

METHOD BLANK: 1738208
Matrix: Water
Associated Lab Samples: 10273534002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
DRO by AK 102 Silica Gel Clean	mg/L	ND	0.40	07/21/14 17:08	N2
n-Triacontane (S) SG	%.	62	60-120	07/21/14 17:08	
o-Terphenyl (S) SG	%.	70	60-120	07/21/14 17:08	

LABORATORY CONTROL SAMPLE: 1738209

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
DRO by AK 102 Silica Gel Clean	mg/L	2	1.5	75	75-125	N2
n-Triacontane (S) SG	%.			78	60-120	
o-Terphenyl (S) SG	%.			81	60-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

QUALIFIERS

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

N2	The lab does not hold TNI accreditation for this parameter.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

METHOD CROSS REFERENCE TABLE

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

Parameter	Matrix	Analytical Method	Preparation Method
8260 MSV UST	Water	SW-846 8260B/5030B	N/A

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Chevron#301726 Lot5A Block10 W
Pace Project No.: 10273534

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10273534001	**MW-2-W-070814**	EPA 3510	OEXT/25693	Alaska 102/103	GCSV/13618
10273534002	**MW-3-W-070814**	EPA 3510	OEXT/25693	Alaska 102/103	GCSV/13618
10273534002	**MW-3-W-070814**	EPA 3510	OEXT/25742	Alaska 102/103	GCSV/13627
10273534003	**MW-4-W-070814**	EPA 3510	OEXT/25693	Alaska 102/103	GCSV/13618
10273534004	**MW-5-W-070814**	EPA 3510	OEXT/25693	Alaska 102/103	GCSV/13618
10273534005	**MW-6-W-070814**	EPA 3510	OEXT/25693	Alaska 102/103	GCSV/13618
10273534006	**BD-1-W-070814**	EPA 3510	OEXT/25693	Alaska 102/103	GCSV/13618
10273534001	**MW-2-W-070814**	Alaska 101	GCV/12290		
10273534002	**MW-3-W-070814**	Alaska 101	GCV/12290		
10273534003	**MW-4-W-070814**	Alaska 101	GCV/12290		
10273534004	**MW-5-W-070814**	Alaska 101	GCV/12290		
10273534005	**MW-6-W-070814**	Alaska 101	GCV/12290		
10273534006	**BD-1-W-070814**	Alaska 101	GCV/12290		
10273534007	**Trip Blank-1**	Alaska 101	GCV/12290		
10273534001	**MW-2-W-070814**	EPA 8260	MSV/27771		
10273534002	**MW-3-W-070814**	EPA 8260	MSV/27771		
10273534003	**MW-4-W-070814**	EPA 8260	MSV/27771		
10273534004	**MW-5-W-070814**	EPA 8260	MSV/27771		
10273534005	**MW-6-W-070814**	EPA 8260	MSV/27771		
10273534006	**BD-1-W-070814**	EPA 8260	MSV/27771		
10273534007	**Trip Blank-1**	EPA 8260	MSV/27771		

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately. 10273534

Page : 1 Of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:	
Company: Arcadis U.S., Inc.	Report To: Gregory Montgomery	Attention: Accounts Payable	
Address: 1100 Olive Way, Suite 800	Copy To: David Beaudoin/ Michael MacDaniel	Company Name: Arcadis U.S., Inc.	
Seattle, WA 98101		Address: 1100 Olive Way, Suite 800, Sea, 98101	Regulatory Agency: ADEC
Email To: gregory.montgomery@arcadis-us.com	Purchase Order No. B0046269.0012.00001	Pace Quote Reference:	State / Location: AK/ Fairbanks
Phone: 206.726.4742 Fax	Client Project ID: Chevron#301728 Lot5A Block10 W.	Pace Project Manager: Jenni Gross	
Requested Due Date/TAT: 10 Day (Standard)	Container Order Number:	Pace Profile #: 32337 #13 / 17 for DRO+SG	

ITEM#	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique. MATRIX: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Other OT, Tissue TS)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Y/N	Analyses Test: GRO by AK101	BTEX by 8260	DRO/RRO by AK102/103	DRO+SG by AK102	Additional Volume for MS/MSD	Residual Chlorine (Y/N)	
1	~~MW-1-W- 070814~~	WT		7/8/14	1												Y									001
2	MW-2-W- 070814	WT			1510												Y	X	X	X	X					002
3	MW-3-W- 070814	WT			1440												Y	X	X	X	X					003
4	MW-4-W- 070814	WT			1330												Y	X	X	X	X					004
5	MW-5-W- 070814	WT			1410												Y	X	X	X	X					005
6	MW-6-W- 070814	WT			1610												Y	X	X	X	X					006
7	BD-1-W- 070814	WT			—												Y	X	X	X	X					007
8	Trip Blank-1	OT		↓	—												Y	X	X							008
9	MS-070814			7/8/14	1610												Y	X	X	X						008
10	MSD-070814			7/8/14	1610												Y	X	X	X						
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	M.V. MAC	7/9/14	900	KO / Pace	7-10-14	920	2.4	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Michael MacDaniel

SIGNATURE of SAMPLER: Mike MacDaniel DATE Signed: 7/9/14

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: F-MN-L-213-rev.09	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Arcadis

Project #: WO#: 10273534

Courier: ☒Fed Ex ☐UPS ☐USPS ☐Client ☐Commercial ☐Pace ☐SpeeDee ☐Other:

Tracking Number: 8053 7223 9553

Custody Seal on Cooler/Box Present? ☐Yes ☒No Seals Intact? ☐Yes ☒No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐Bubble Wrap ☒Bubble Bags ☐None ☐Other: Temp Blank? ☒Yes ☐No

Thermom. Used: ☐B88A9130516413 ☐B88A912167504 ☒B88A9132521491 Type of Ice: ☒Wet ☐Blue ☐None ☐Samples on ice, cooling process has begun

Cooler Temp Read (°C): 2.4 Cooler Temp Corrected (°C): 2.4 Biological Tissue Frozen? ☐Yes ☐No ☒N/A

Temp should be above freezing to 6°C Correction Factor: 0.0 Date and Initials of Person Examining Contents: KO 7-10-14

				Comments:
Chain of Custody Present?	☒Yes	☐No	☐	1.
Chain of Custody Filled Out?	☒Yes	☐No	☐	2.
Chain of Custody Relinquished?	☒Yes	☐No	☐	3.
Sampler Name and/or Signature on COC?	☒Yes	☐No	☐	4.
Samples Arrived within Hold Time?	☒Yes	☐No	☐	5.
Short Hold Time Analysis (<72 hr)?	☐Yes	☒No	☐	6.
Rush Turn Around Time Requested?	☐Yes	☒No	☐	7.
Sufficient Volume?	☒Yes	☐No	☐	8.
Correct Containers Used? -Pace Containers Used?	☒Yes ☒Yes	☐No ☐No	☐ ☐	9.
Containers Intact?	☒Yes	☐No	☐	10.
Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☒	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☒Yes	☐No	☐	12. Sent sample 1 w/ barely any sample in it
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☒ N/A	13. ☐HNO_3 ☐H_2SO_4 ☐NaOH ☐HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐Yes	☐No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☒Yes	☐No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☒Yes	☐No	☐ N/A	14. headspace 1/16 MW5
Trip Blank Present?	☒Yes	☐No	☐ N/A	15.
Trip Blank Custody Seals Present? Pace Trip Blank Lot # (If purchased): 050314-1	☒Yes	☐No	☐ N/A	

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐Yes ☐No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: ENM Date: 7/10/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Data File: \\192.168.10.12\chem\10msv1.i\071714c.b/07171463.D

Report Date: 07/18/2014

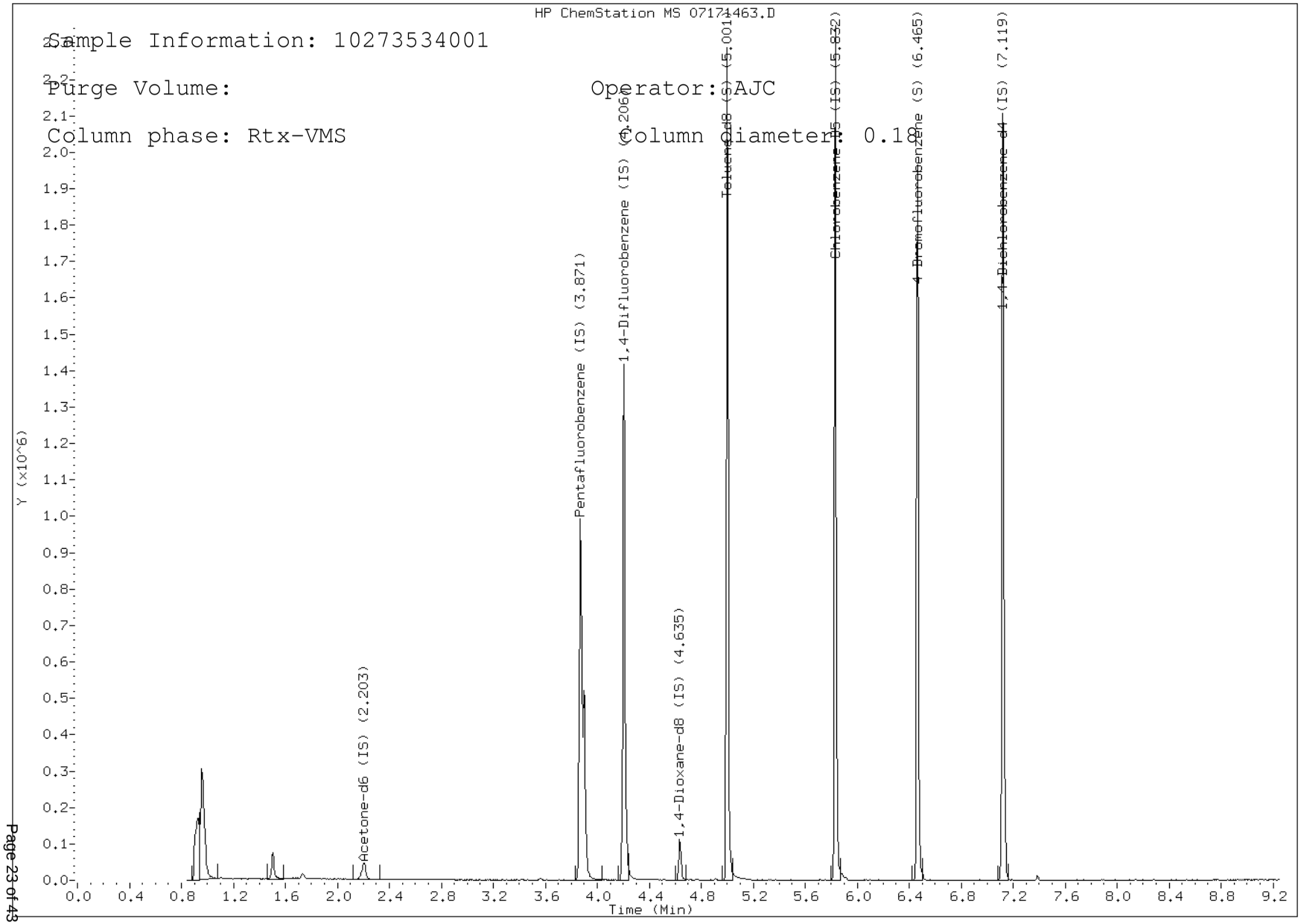
Sample ID: 10273534001

Client ID: Instrument: 10msv1.i

Sample Information: 10273534001

Purge Volume: Operator: AJC

Column phase: Rtx-VMS Column Diameter: 0.18



Data File: \\192.168.10.12\chem\10msv1.i\071714c.b/07171464.D

Report Date: 07/18/2014

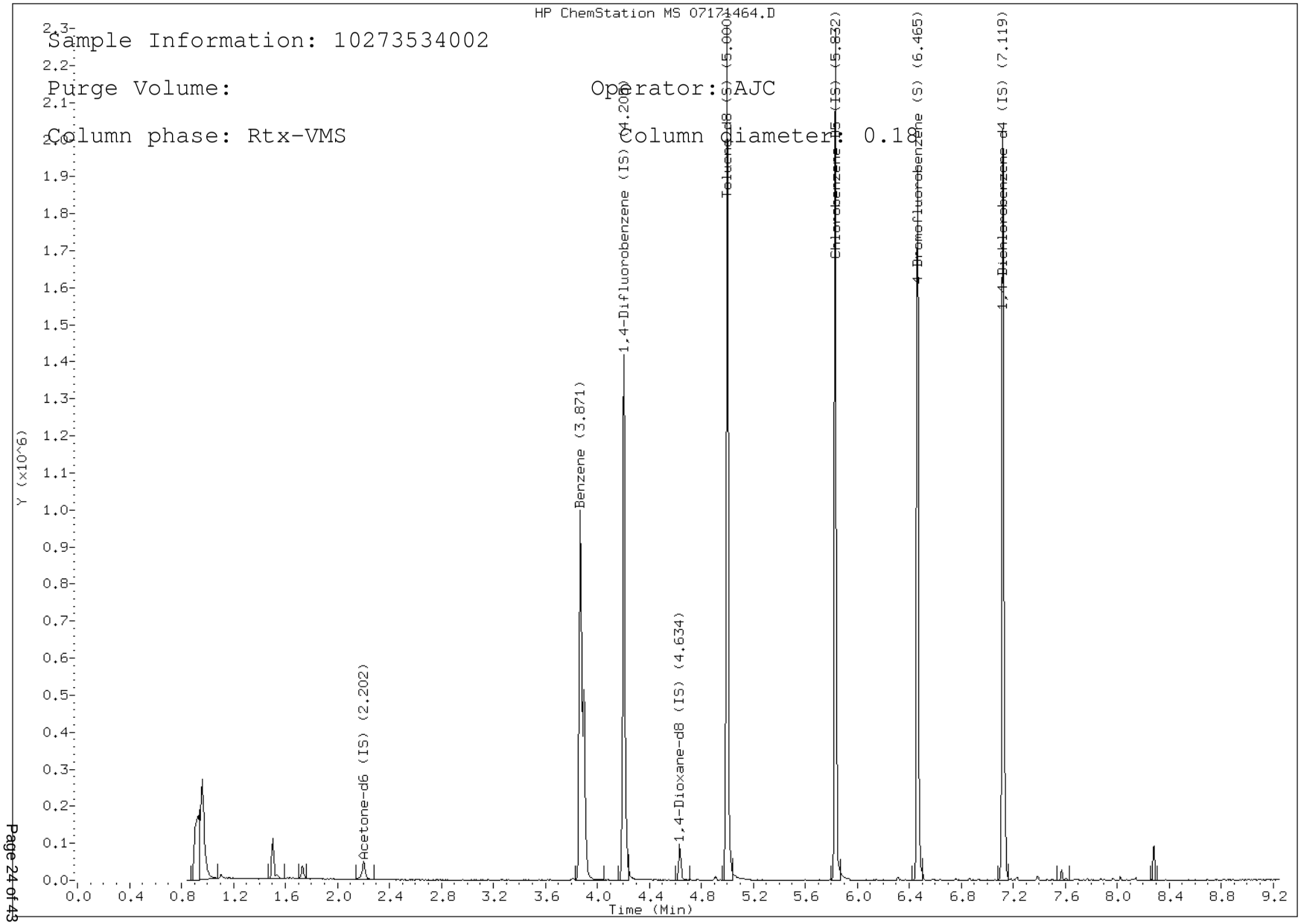
Sample ID: 10273534002

Client ID: Instrument: 10msv1.i

Sample Information: 10273534002

Purge Volume: Operator: AJC

Column phase: Rtx-VMS Column Diameter: 0.18



Data File: \\192.168.10.12\chem\10msv1.i\071714c.b/07171465.D

Report Date: 07/18/2014

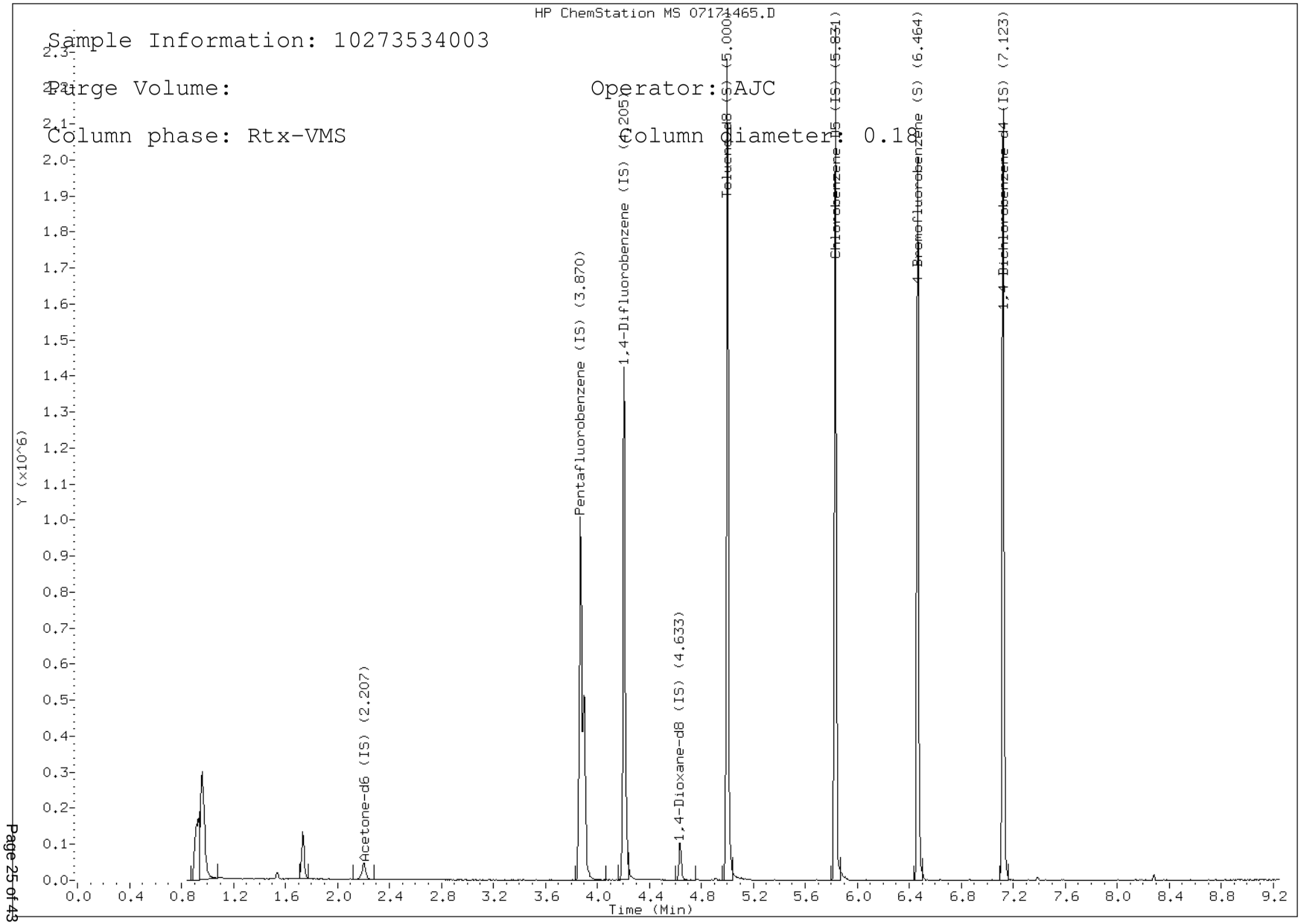
Sample ID: 10273534003

Client ID: Instrument: 10msv1.i

Sample Information: 10273534003

Purge Volume: Operator: AJC

Column phase: Rtx-VMS Column Diameter: 0.18



Data File: \\192.168.10.12\chem\10msv1.i\071714c.b/07171466.D

Report Date: 07/18/2014

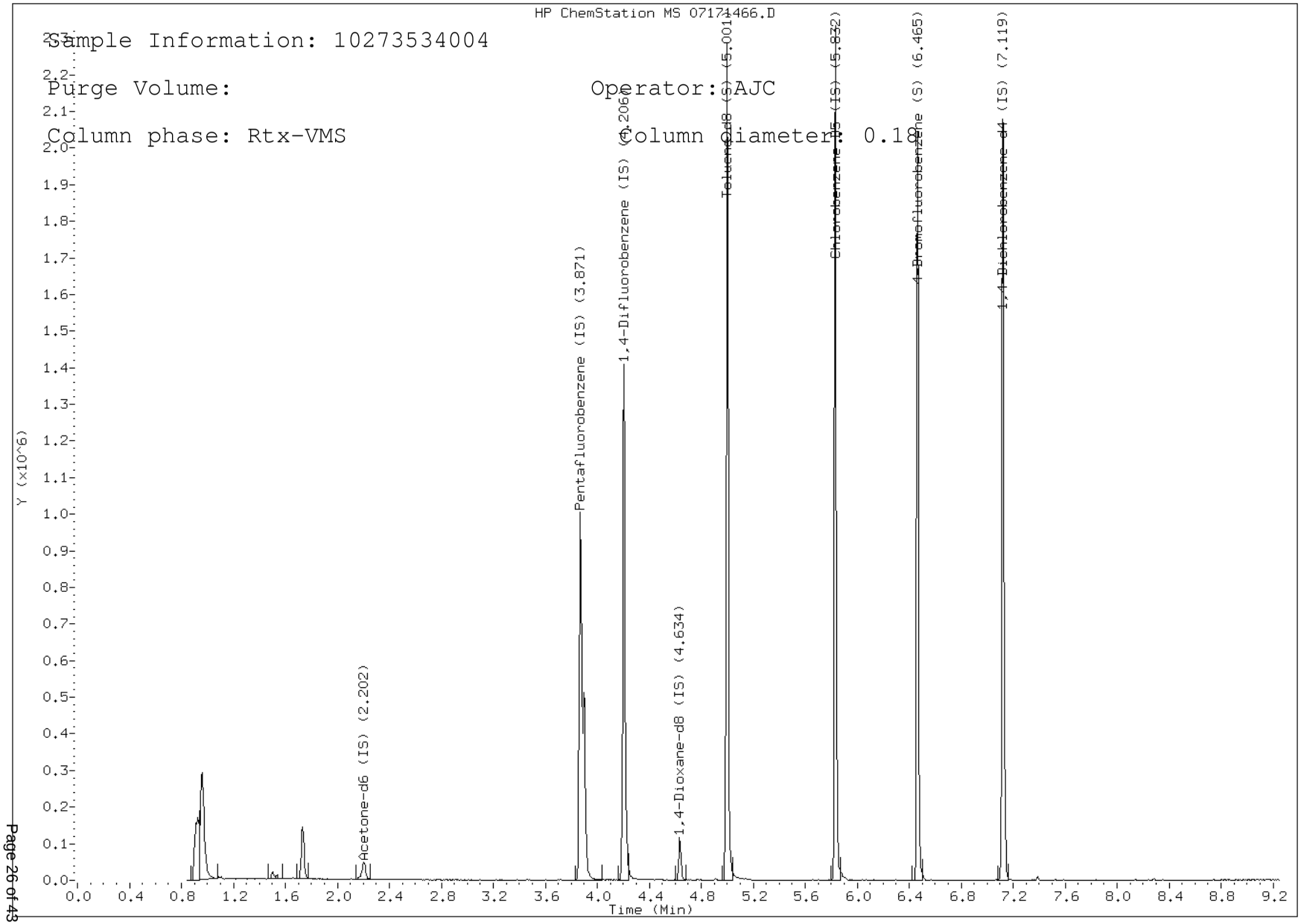
Sample ID: 10273534004

Client ID: Instrument: 10msv1.i

Sample Information: 10273534004

Purge Volume: Operator: AJC

Column phase: Rtx-VMS Column Diameter: 0.18



Data File: \\192.168.10.12\chem\10msv1.i\071714c.b/07171467.D

Report Date: 07/18/2014

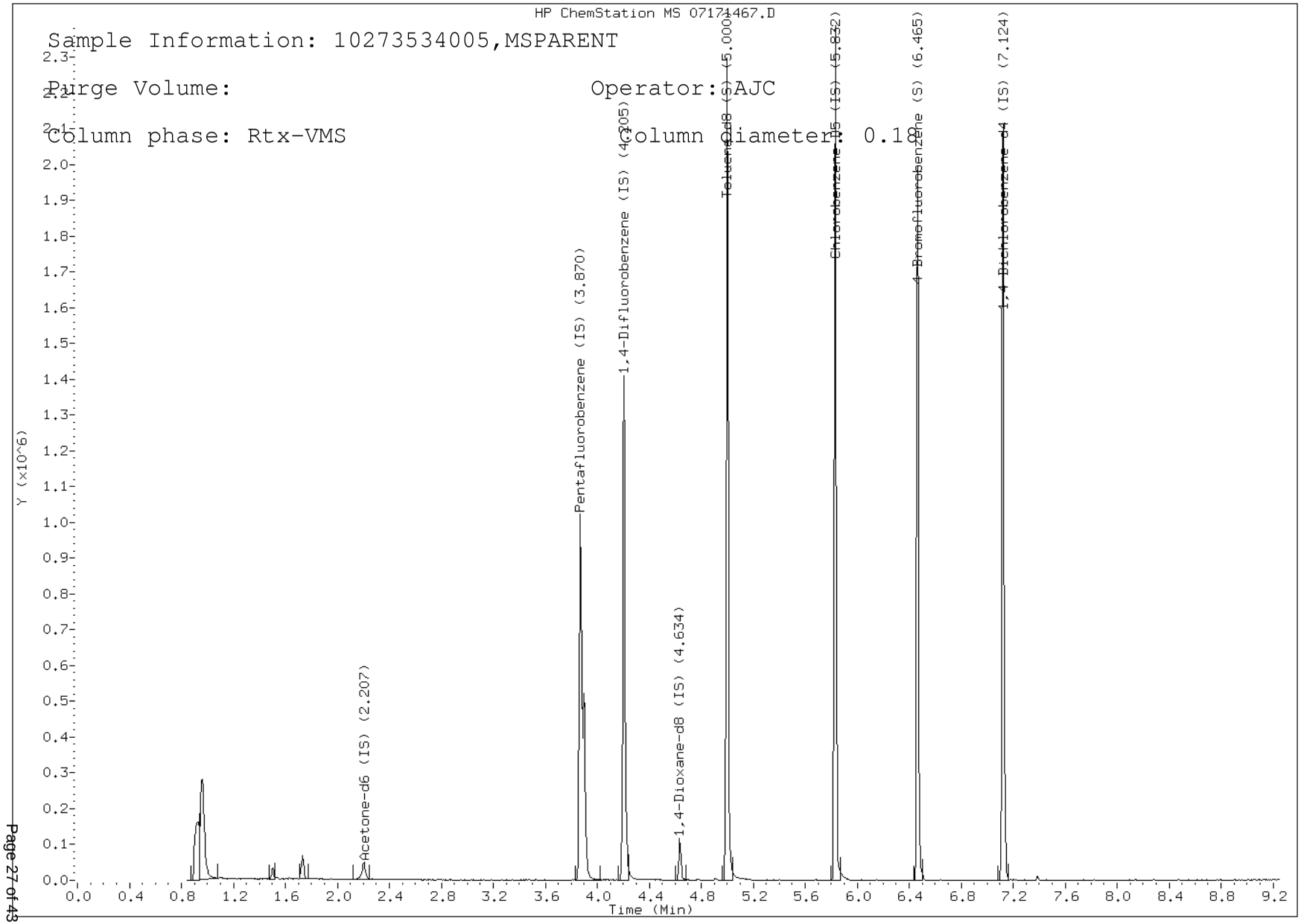
Sample ID: 10273534005

Client ID: Instrument: 10msv1.i

Sample Information: 10273534005,MSPARENT

Purge Volume: Operator: AJC

Column phase: Rtx-VMS Column Diameter: 0.18



Data File: \\192.168.10.12\chem\10msv1.i\071714c.b/07171468.D

Report Date: 07/18/2014

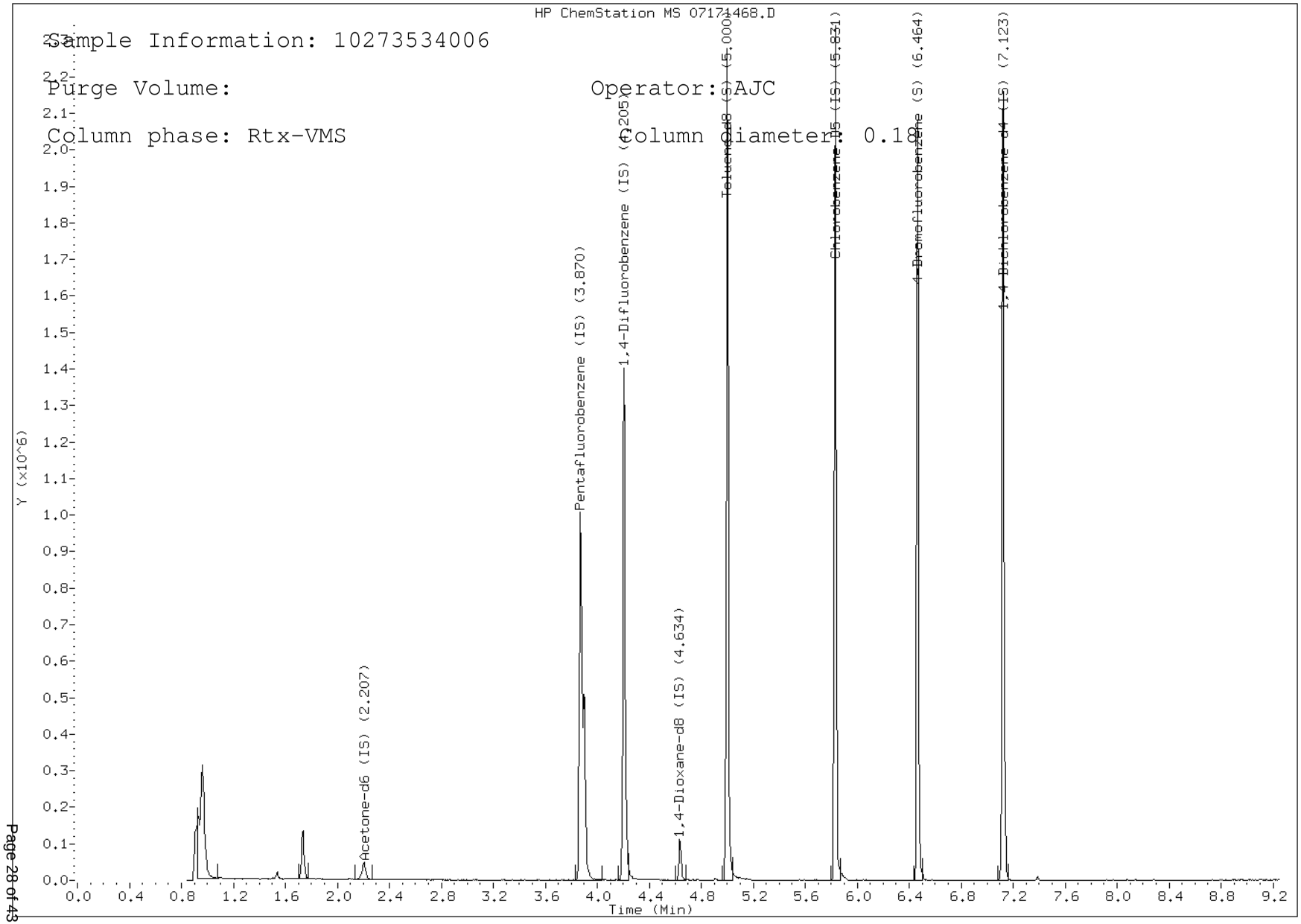
Sample ID: 10273534006

Client ID: Instrument: 10msv1.i

Sample Information: 10273534006

Purge Volume: Operator: AJC

Column phase: Rtx-VMS Column Diameter: 0.18



Data File: \\192.168.10.12\chem\10msv1.i\071714c.b/07171452.D

Report Date: 07/18/2014

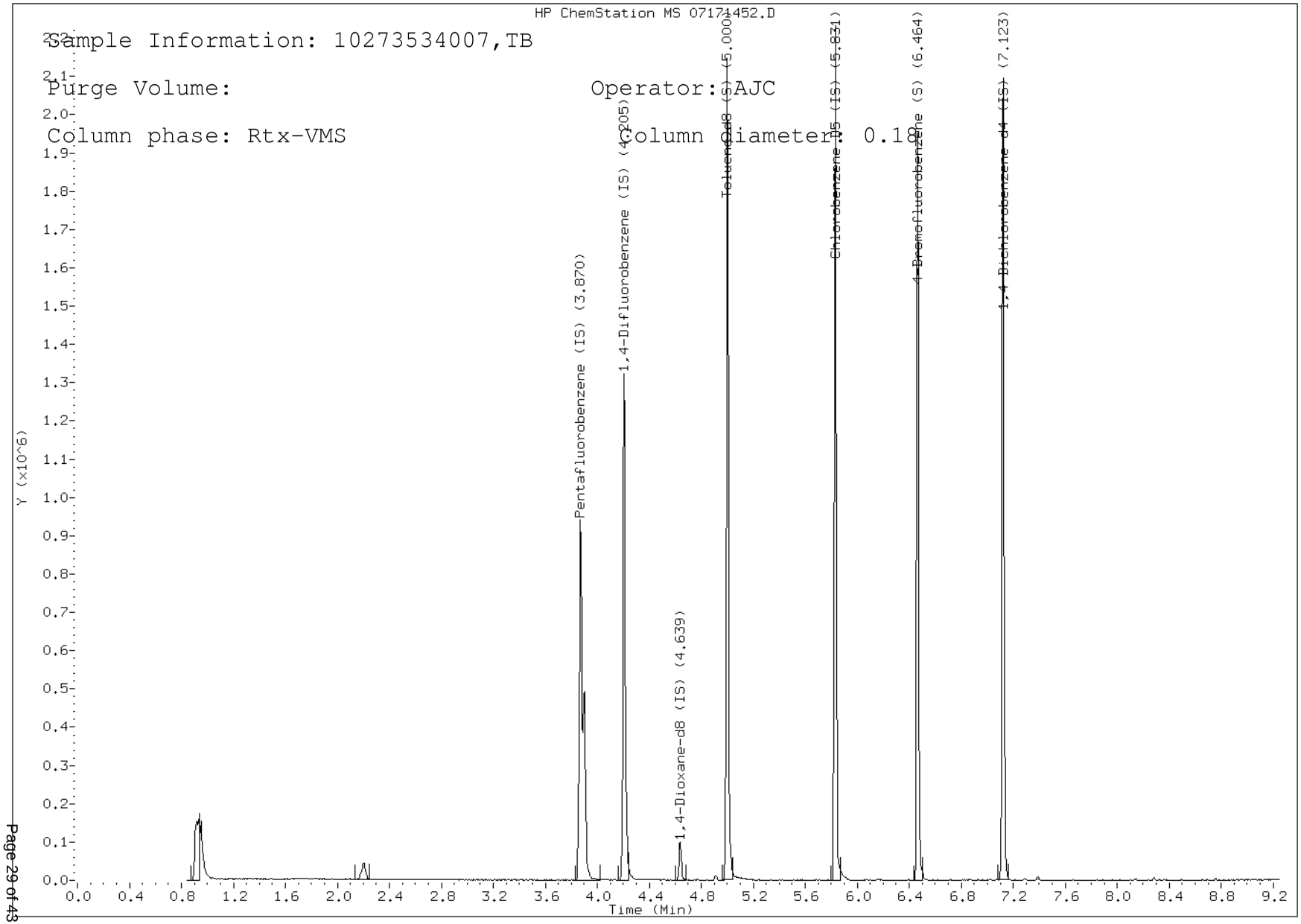
Sample ID: 10273534007

Client ID: Instrument: 10msv1.i

Sample Information: 10273534007,TB

Purge Volume: Operator: AJC

Column phase: Rtx-VMS Column Diameter: 0.18



Data File: \\192.168.10.12\chem\10gcv6.i\071114a-2.b/071114010.d

Report Date: 07/14/2014

Sample ID: 10273534001

Client ID:

Instrument: 10gcv6.i

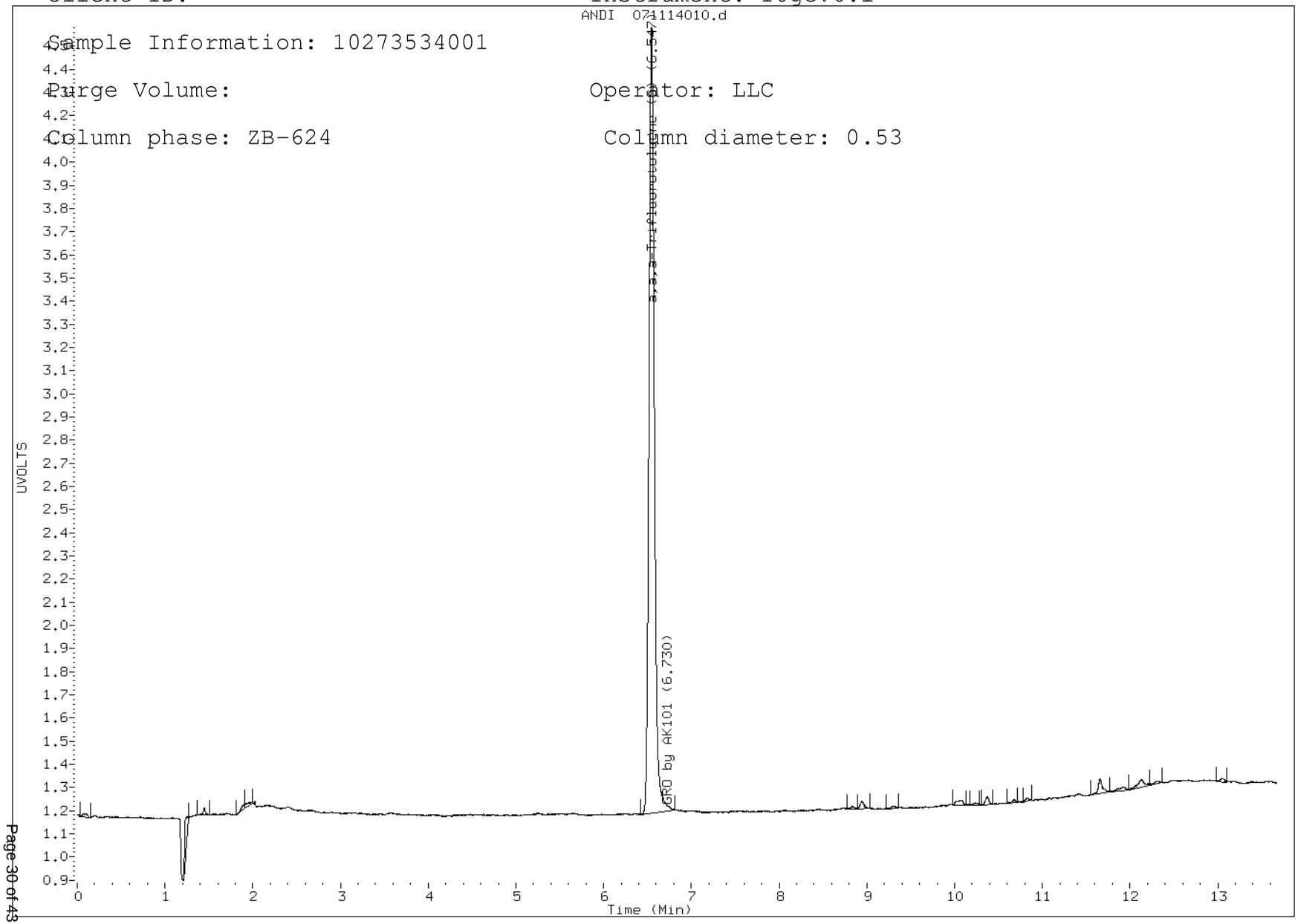
Sample Information: 10273534001

Purge Volume:

Operator: LLC

Column phase: ZB-624

Column diameter: 0.53



Data File: \\192.168.10.12\chem\10gcv6.i\071114a-2.b/071114019.d

Report Date: 07/14/2014

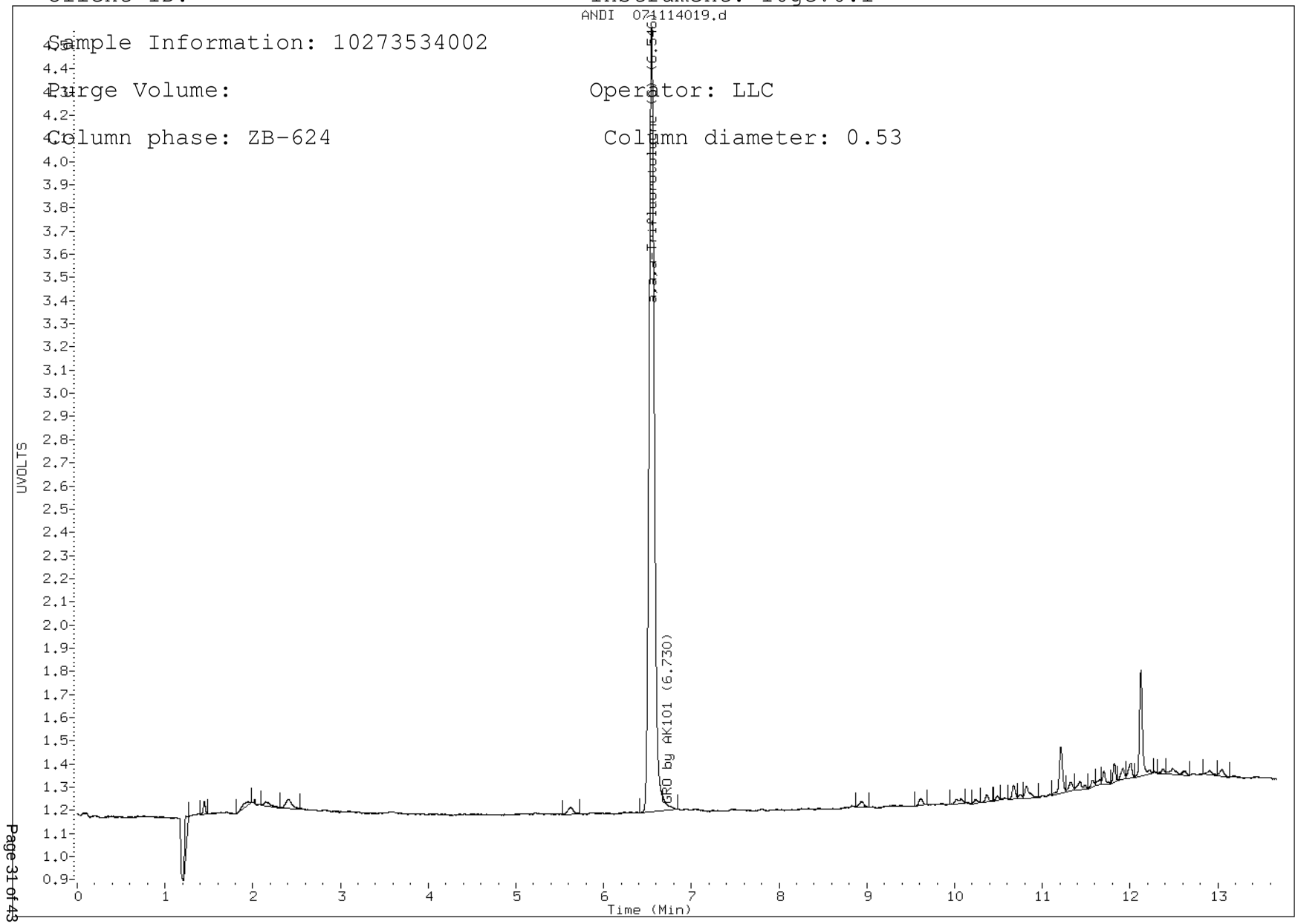
Sample ID: 10273534002

Client ID: Instrument: 10gcv6.i

Sample Information: 10273534002

Purge Volume: Operator: LLC

Column phase: ZB-624 Column diameter: 0.53



Data File: \\192.168.10.12\chem\10gcv6.i\071114a-2.b/071114011.d

Report Date: 07/14/2014

Sample ID: 10273534003

Client ID:

Instrument: 10gcv6.i

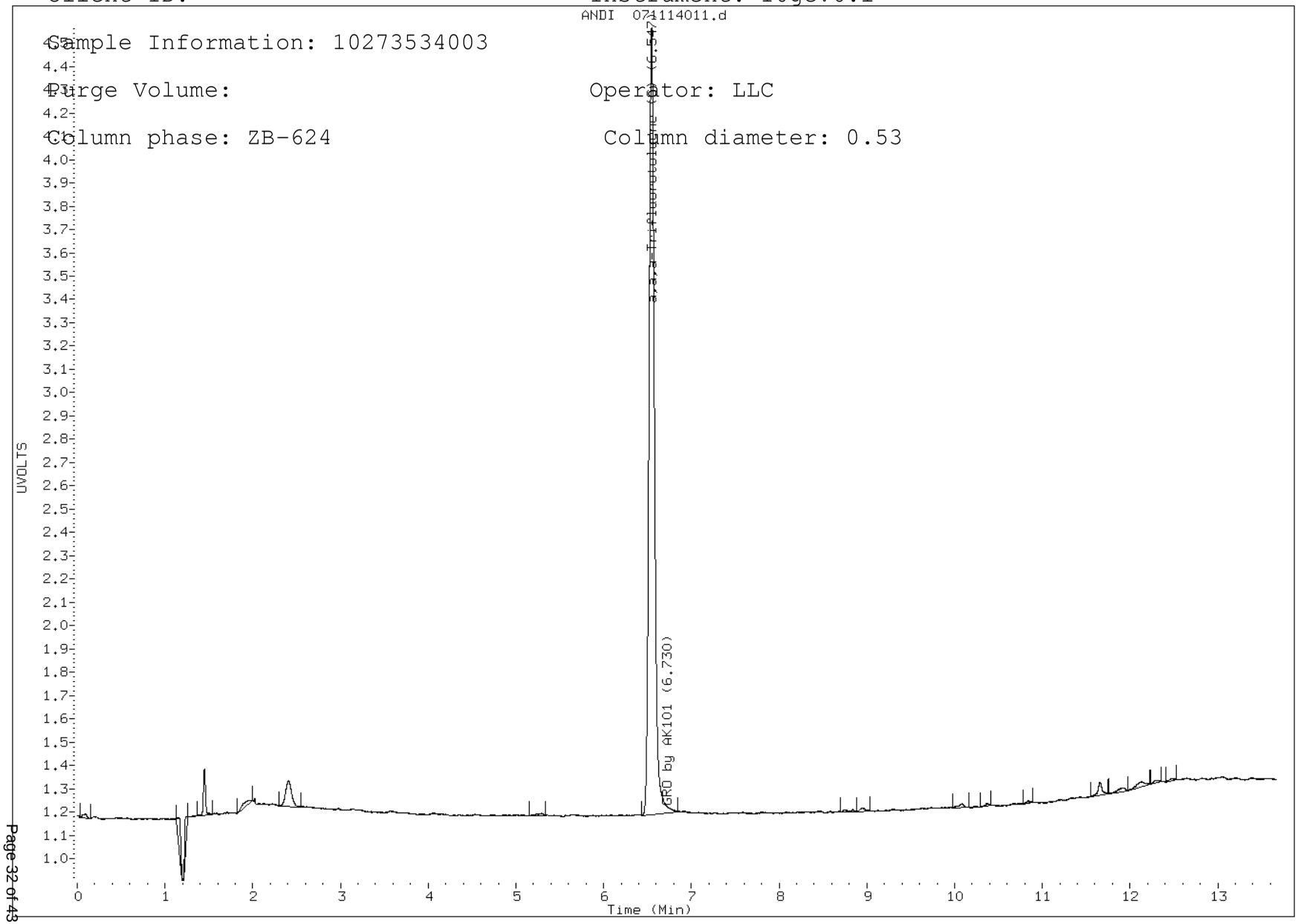
Sample Information: 10273534003

Purge Volume:

Operator: LLC

Column phase: ZB-624

Column diameter: 0.53



Data File: \\192.168.10.12\chem\10gcv6.i\071114a-2.b/071114017.d

Report Date: 07/14/2014

Sample ID: 10273534004

Client ID:

Instrument: 10gcv6.i

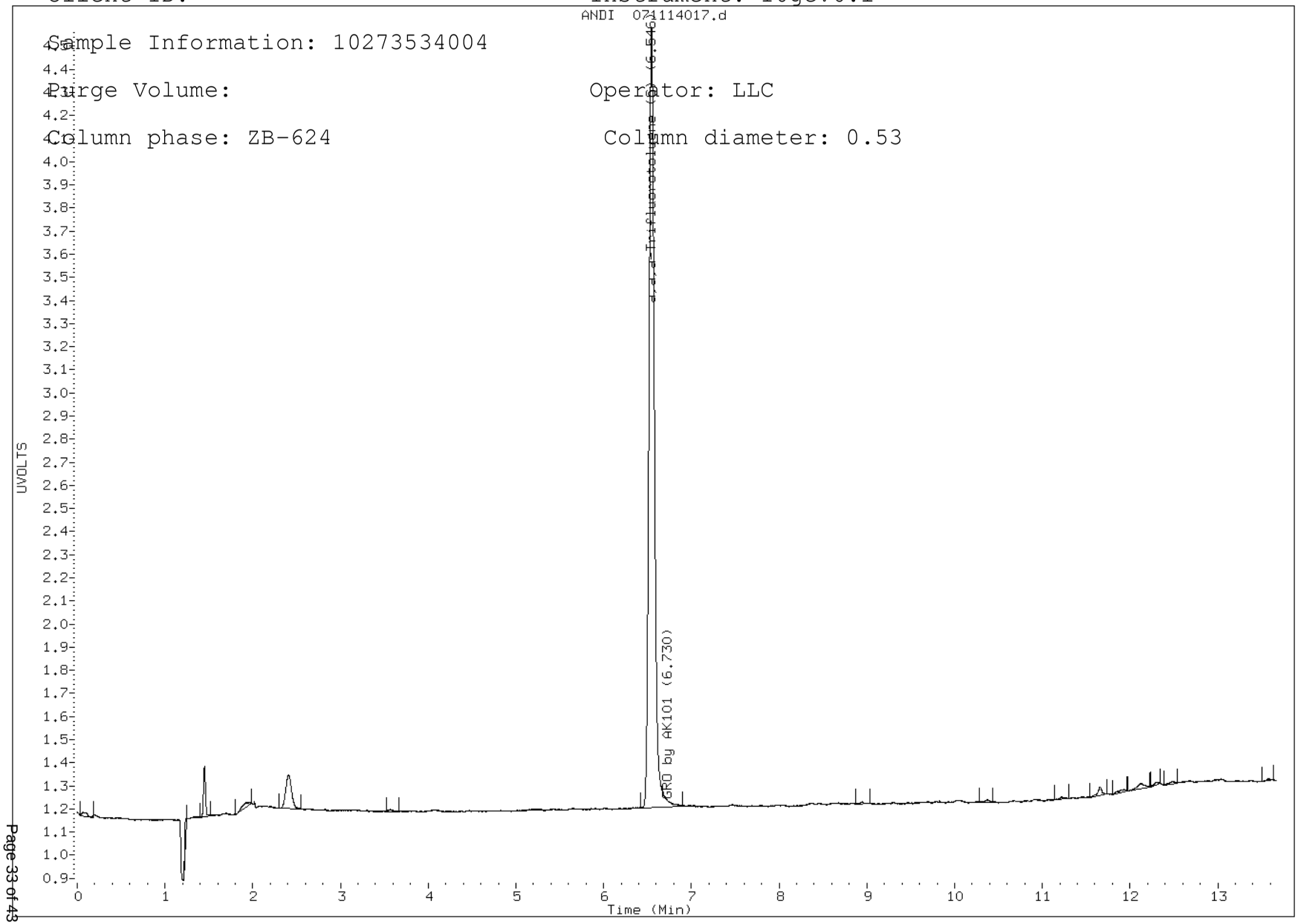
Sample Information: 10273534004

Purge Volume:

Operator: LLC

Column phase: ZB-624

Column diameter: 0.53



Data File: \\192.168.10.12\chem\10gcv6.i\071114a-2.b/071114012.d

Report Date: 07/14/2014

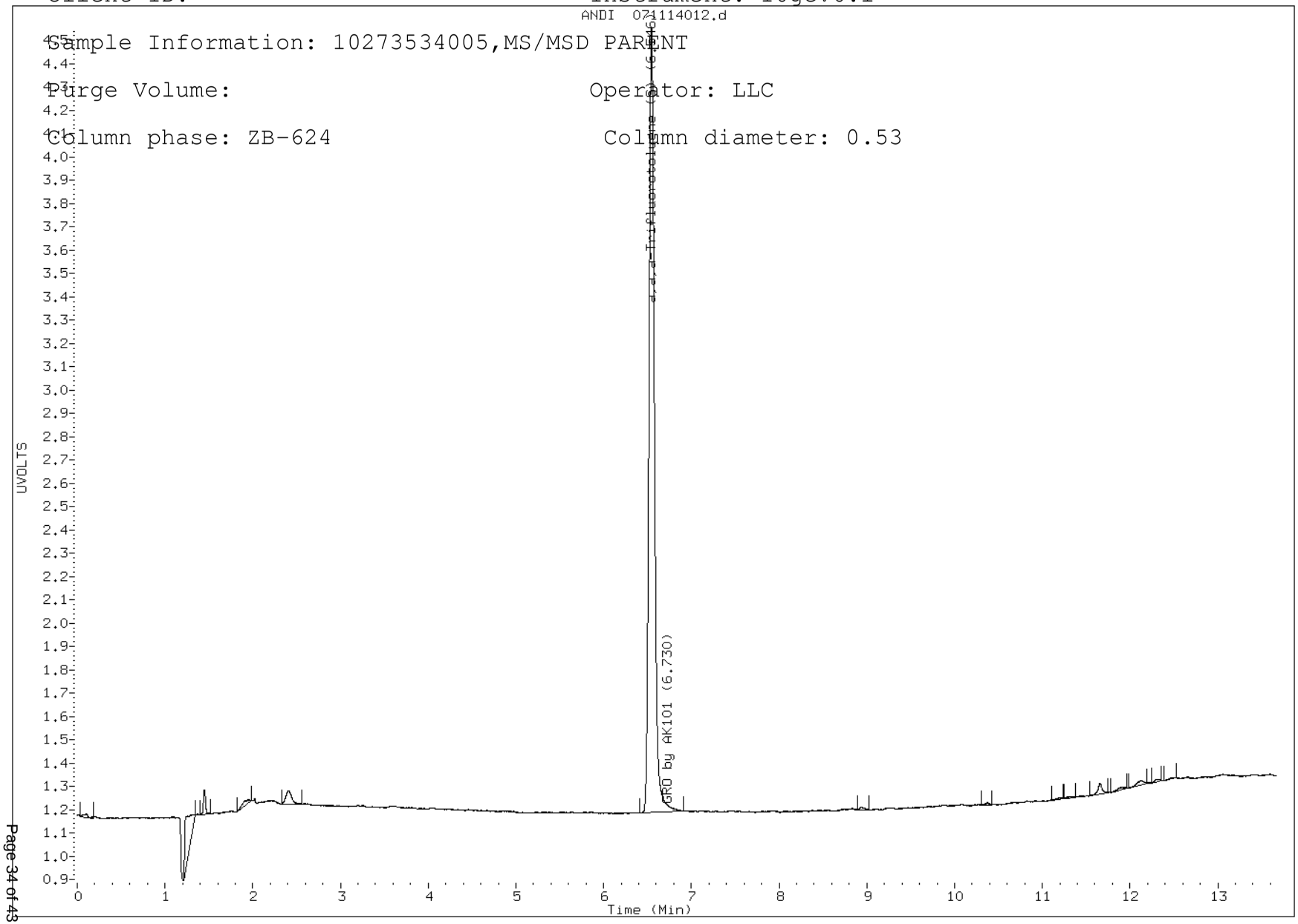
Sample ID: 10273534005

Client ID: Instrument: 10gcv6.i

Sample Information: 10273534005,MS/MSD PARENT

Purge Volume: Operator: LLC

Column phase: ZB-624 Column diameter: 0.53



Data File: \\192.168.10.12\chem\10gcv6.i\071114a-2.b/071114018.d

Report Date: 07/14/2014

Sample ID: 10273534006

Client ID:

Instrument: 10gcv6.i

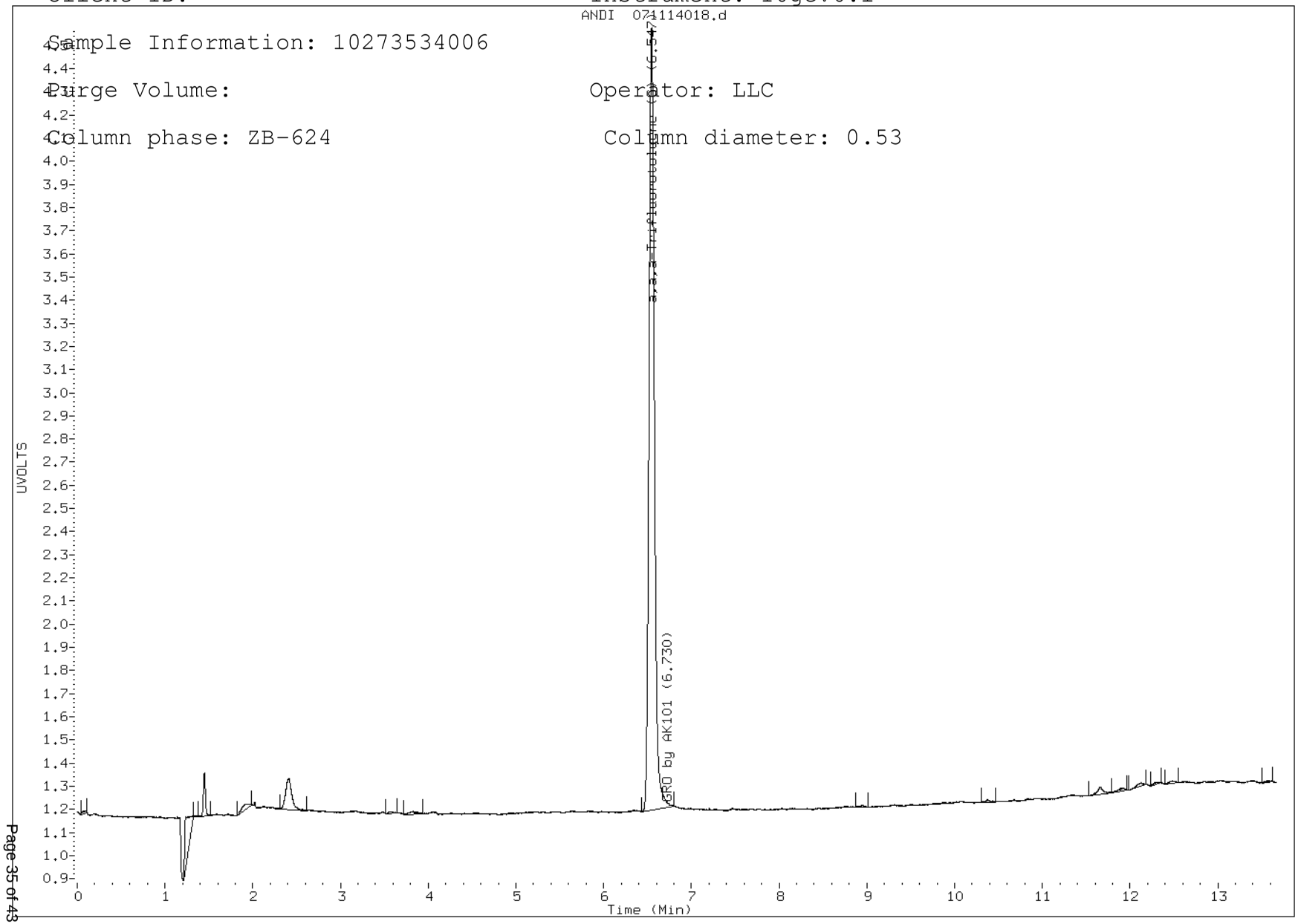
Sample Information: 10273534006

Purge Volume:

Operator: LLC

Column phase: ZB-624

Column diameter: 0.53



Data File: \\192.168.10.12\chem\10gcv6.i\071114a-2.b/071114006.d

Report Date: 07/14/2014

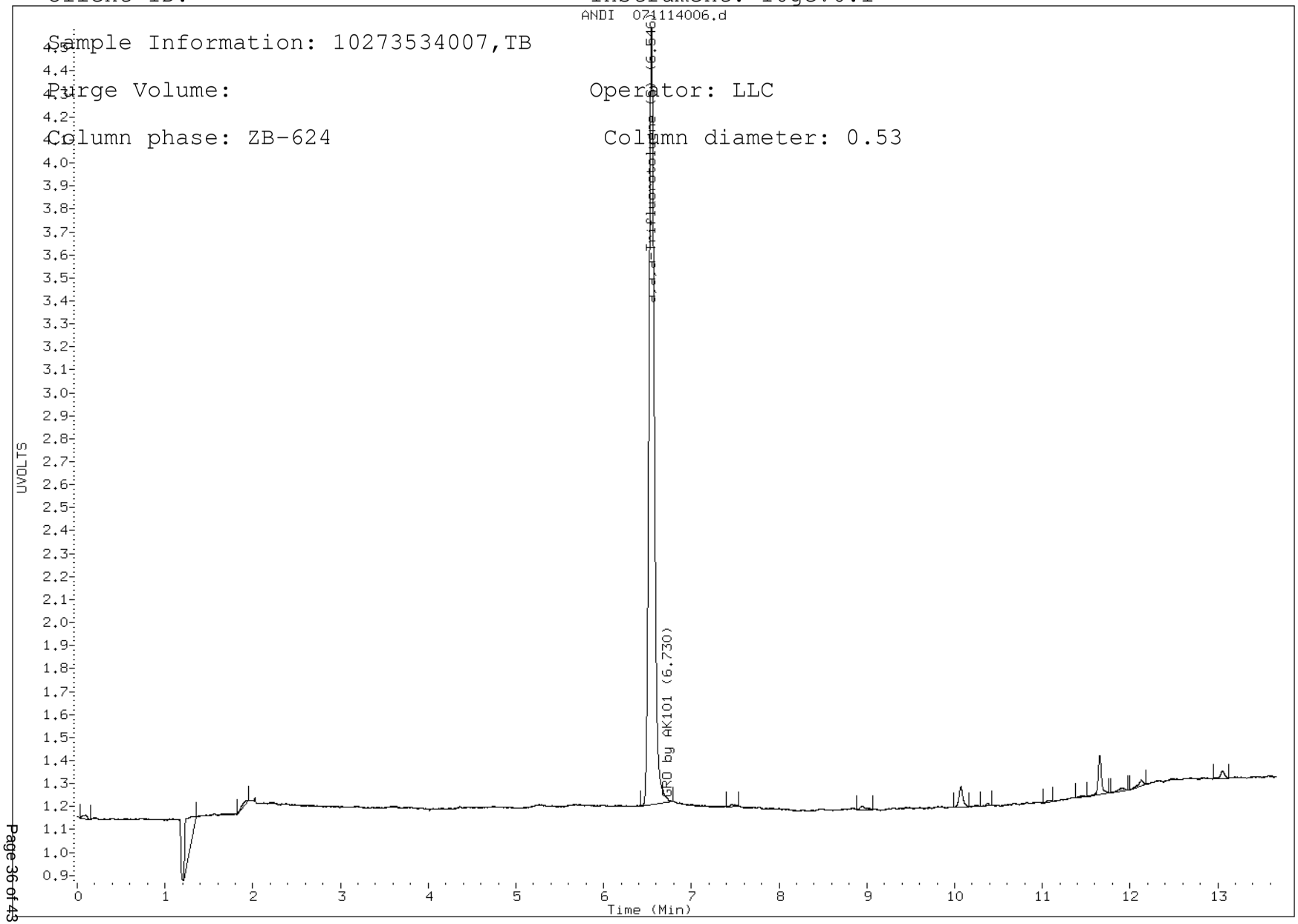
Sample ID: 10273534007

Client ID: Instrument: 10gcv6.i

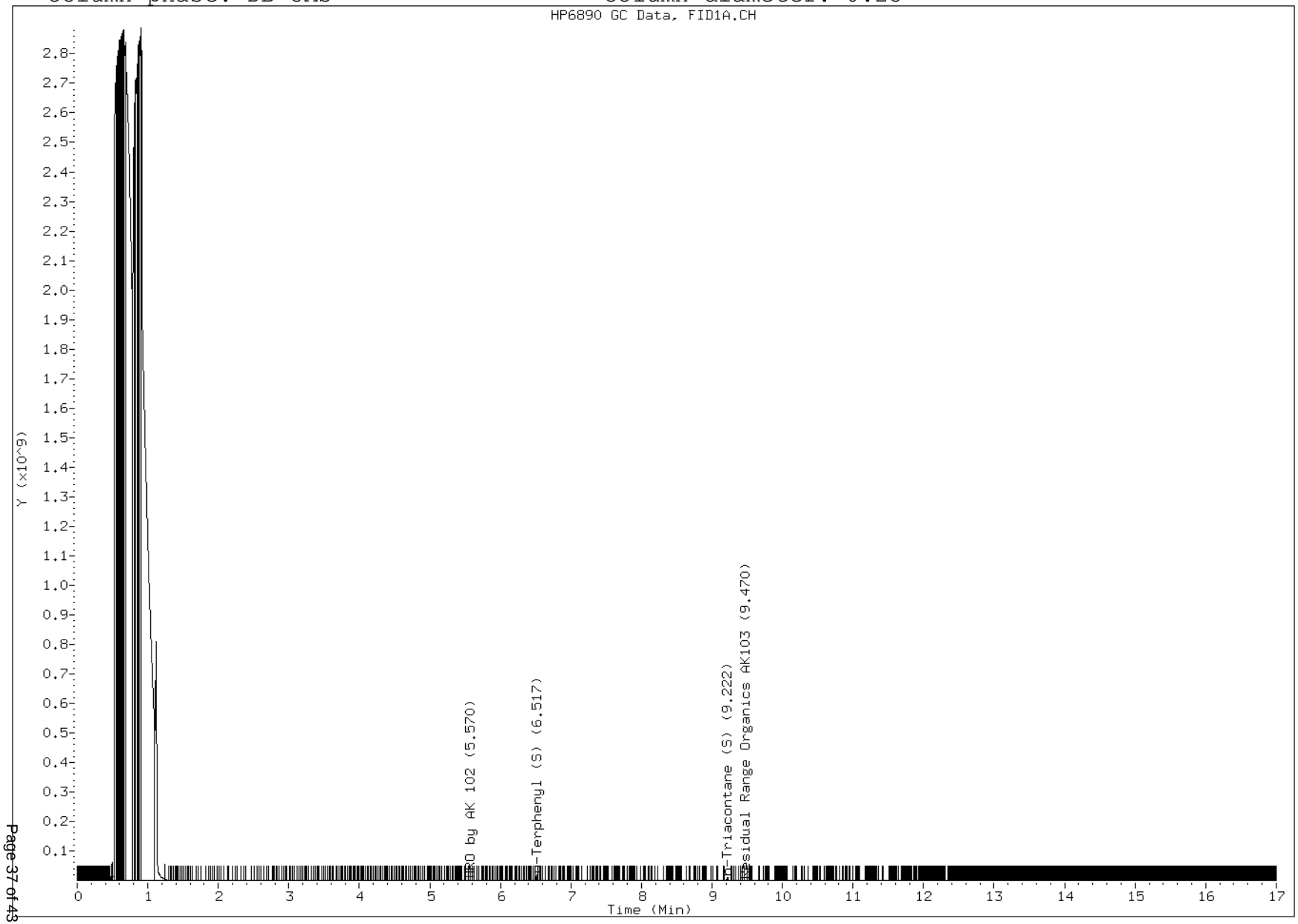
Sample Information: 10273534007,TB

Purge Volume: Operator: LLC

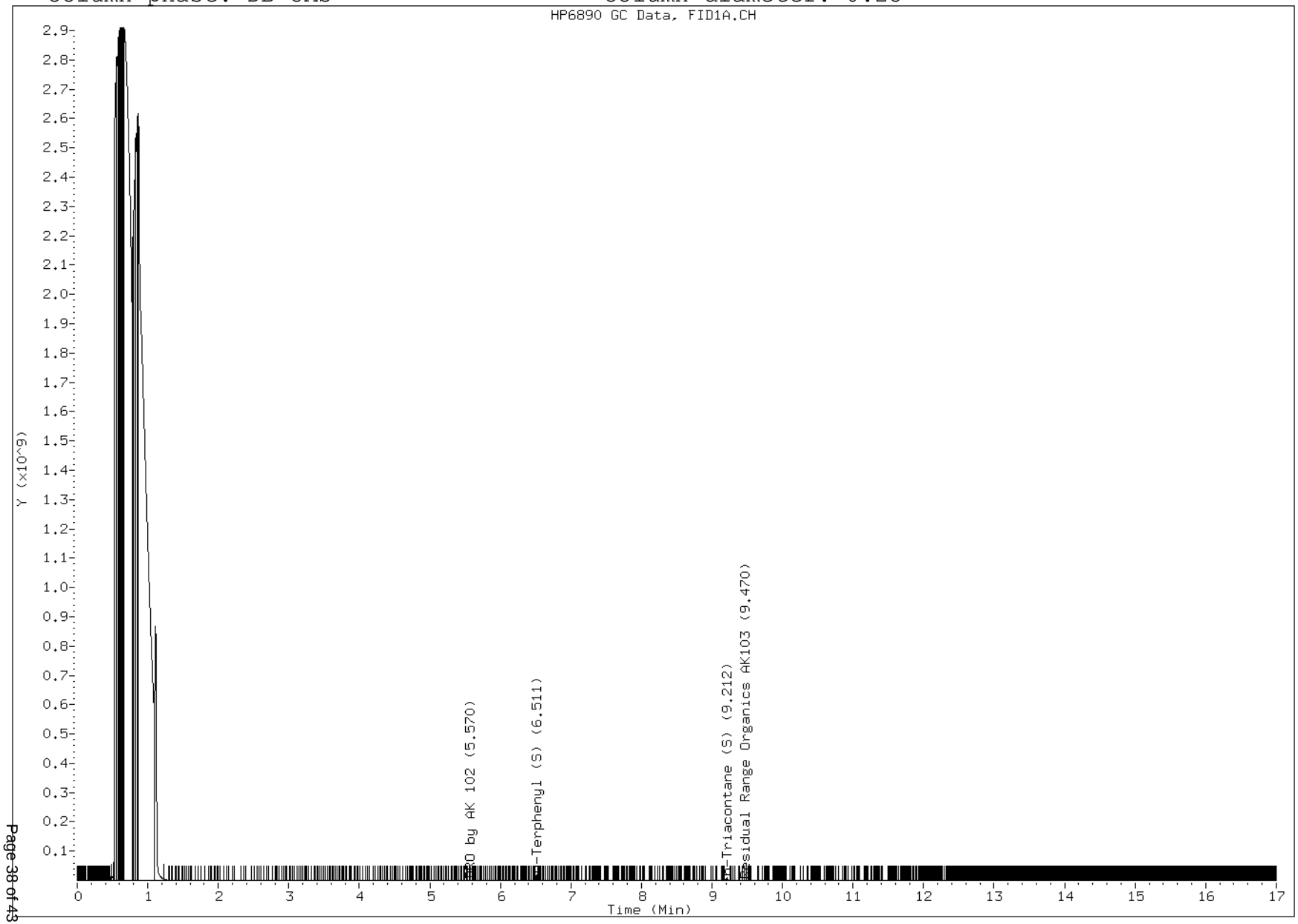
Column phase: ZB-624 Column diameter: 0.53



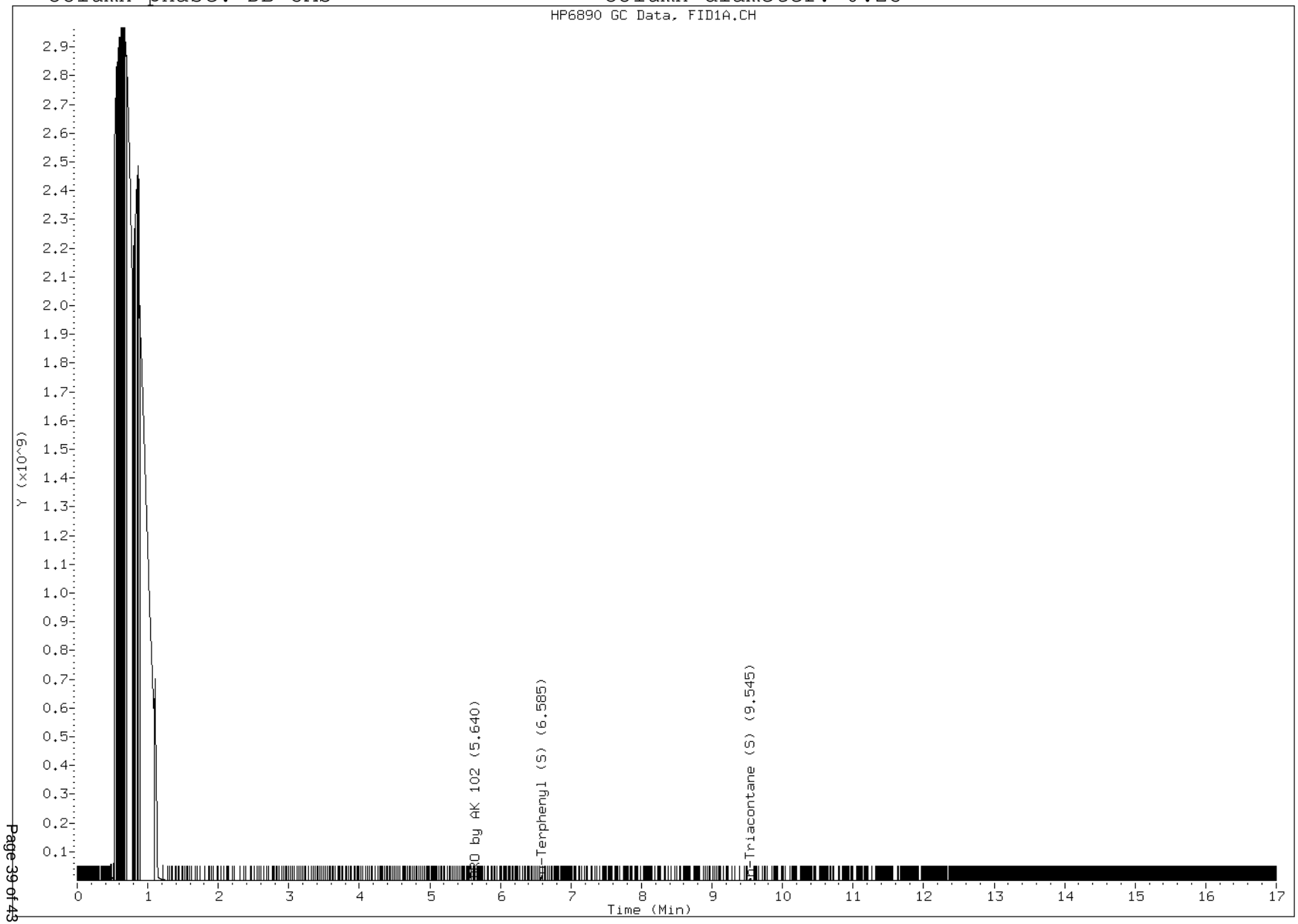
Data File: \\192.168.10.12\chem\10gcsC.i\071914.b/07190009.D
Report Date: 07/20/2014
Sample ID: 10273534001
Client ID: Instrument: 10gcsC.i
Sample Information: 10273534001
Purge Volume: Operator: JRH
Column phase: DB-5MS Column diameter: 0.25



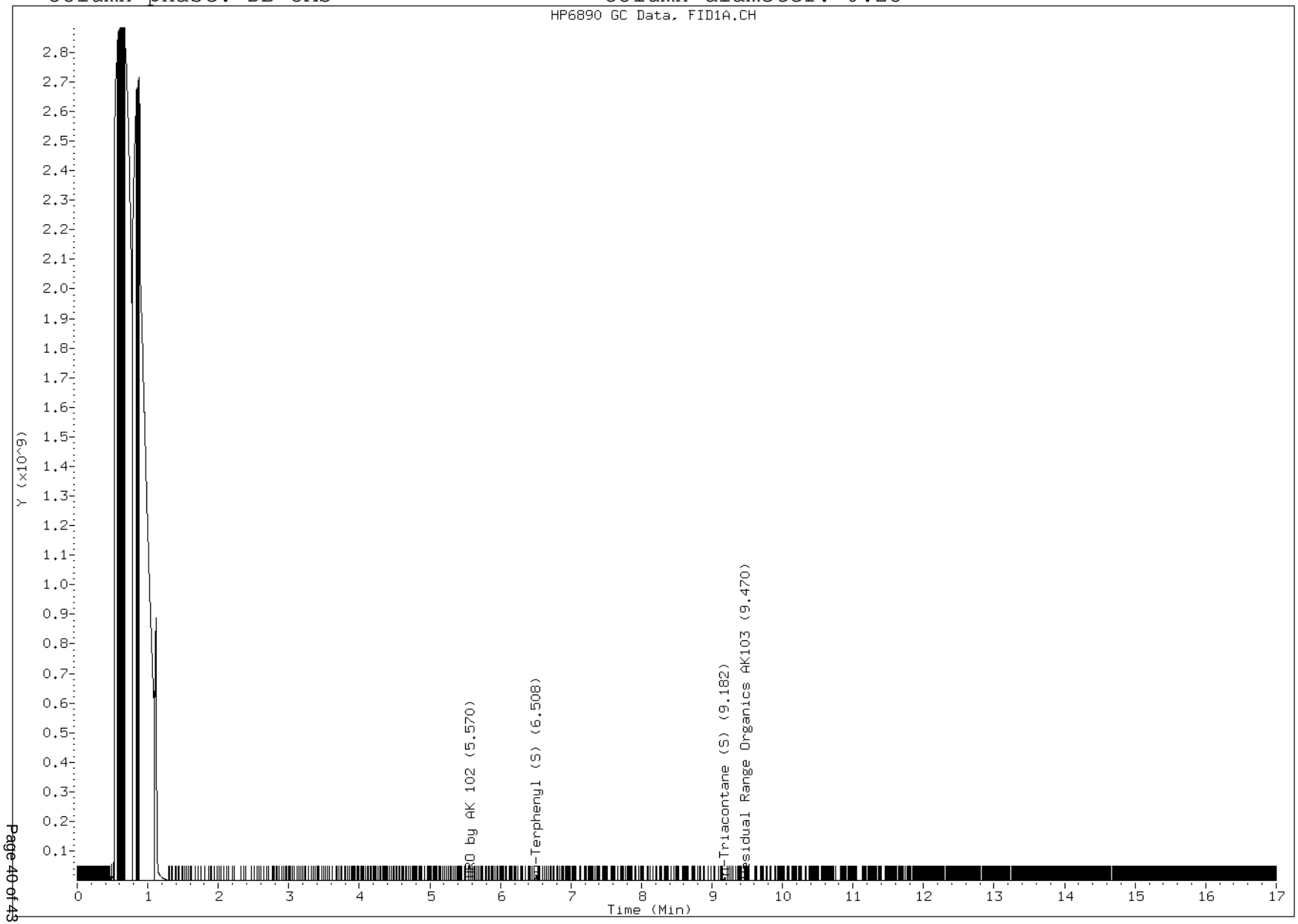
Data File: \\192.168.10.12\chem\10gcsC.i\071914.b/07190010.D
Report Date: 07/20/2014
Sample ID: 10273534002
Client ID: Instrument: 10gcsC.i
Sample Information: 10273534002
Purge Volume: Operator: JRH
Column phase: DB-5MS Column diameter: 0.25



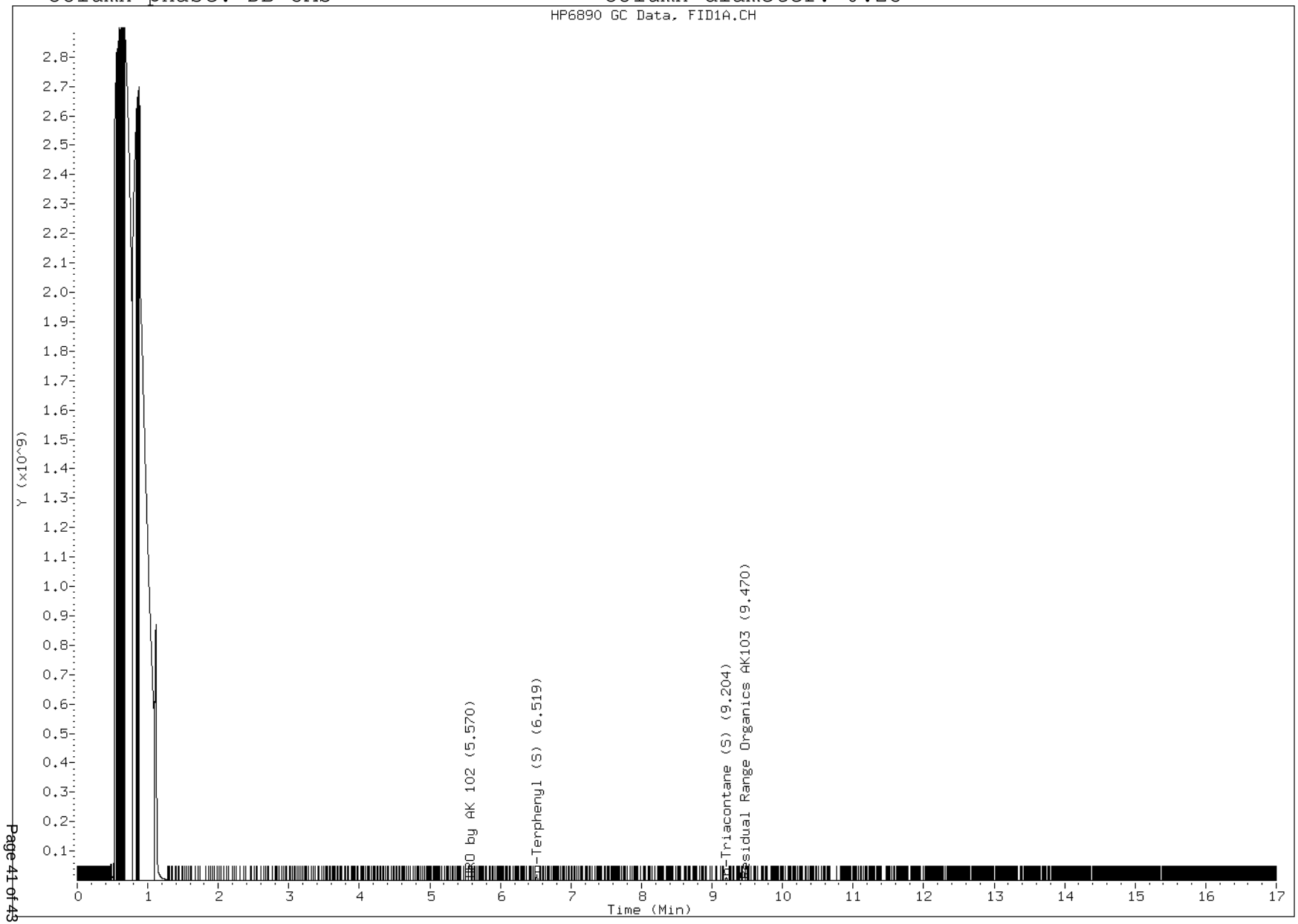
Data File: \\192.168.10.12\chem\10gcsC.i\072114.b/07210028.D
Report Date: 07/22/2014
Sample ID: 10273534002
Client ID: Instrument: 10gcsC.i
Sample Information: 10273534002
Purge Volume: Operator: MT
Column phase: DB-5MS Column diameter: 0.25



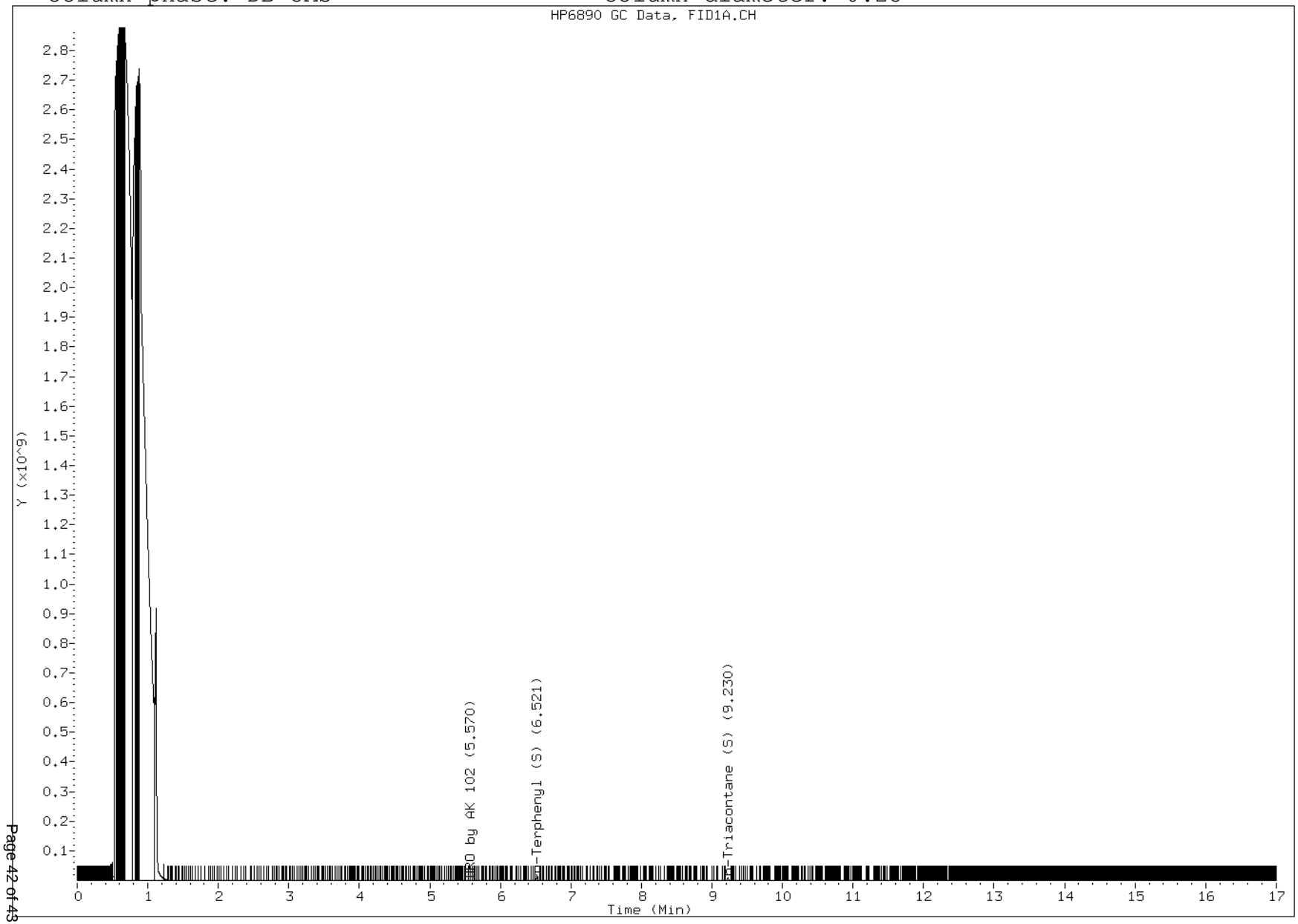
Data File: \\192.168.10.12\chem\10gcsC.i\071914.b/07190011.D
Report Date: 07/20/2014
Sample ID: 10273534003
Client ID: Instrument: 10gcsC.i
Sample Information: 10273534003
Purge Volume: Operator: JRH
Column phase: DB-5MS Column diameter: 0.25



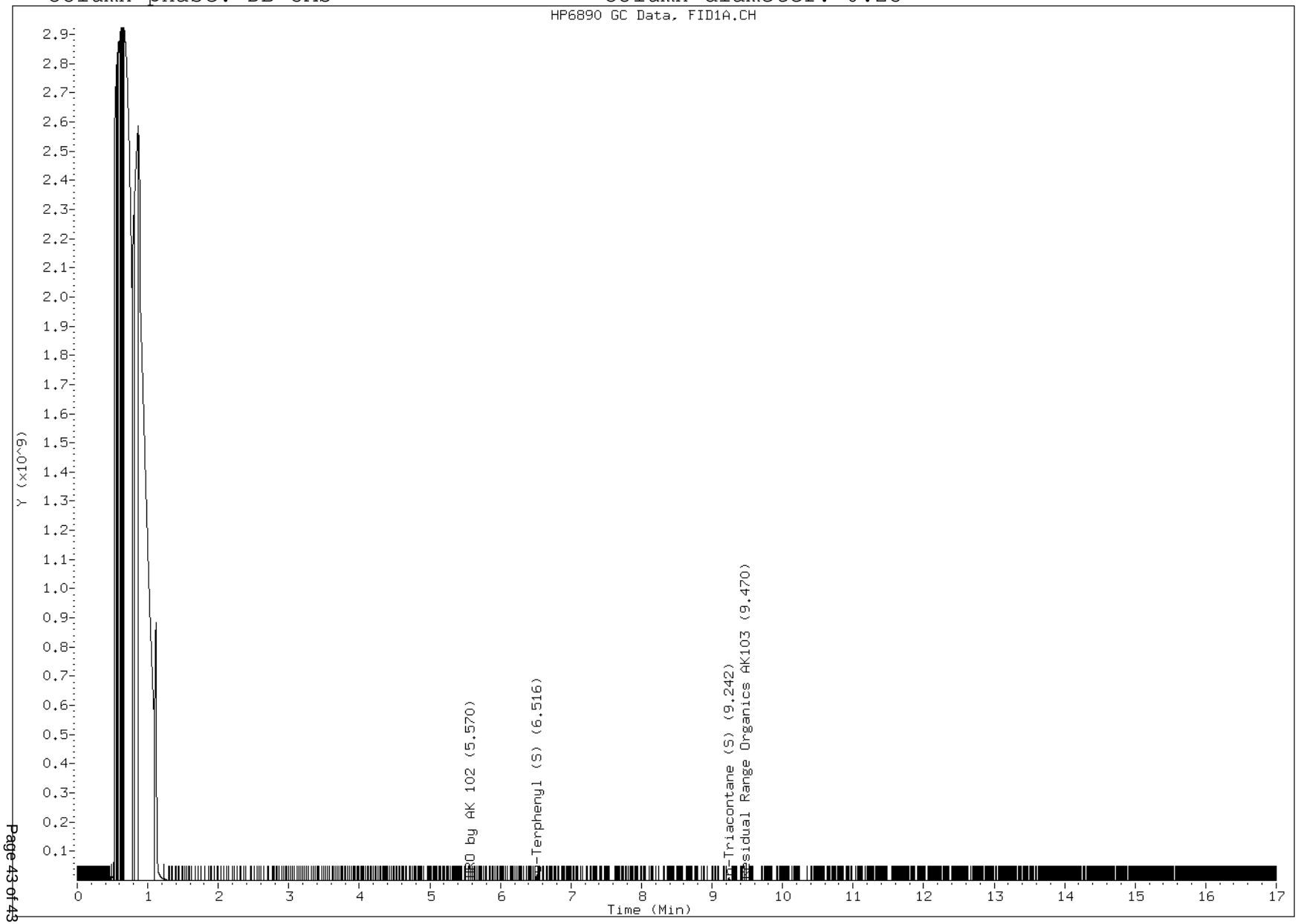
Data File: \\192.168.10.12\chem\10gcsC.i\071914.b/07190007.D
Report Date: 07/20/2014
Sample ID: 10273534004
Client ID: Instrument: 10gcsC.i
Sample Information: 10273534004
Purge Volume: Operator: JRH
Column phase: DB-5MS Column diameter: 0.25



Data File: \\192.168.10.12\chem\10gcsC.i\071914.b/07190012.D
Report Date: 07/20/2014
Sample ID: 10273534005
Client ID: Instrument: 10gcsC.i
Sample Information: 10273534005
Purge Volume: Operator: JRH
Column phase: DB-5MS Column diameter: 0.25



Data File: \\192.168.10.12\chem\10gcsC.i\071914.b/07190015.D
Report Date: 07/20/2014
Sample ID: 10273534006
Client ID: Instrument: 10gcsC.i
Sample Information: 10273534006
Purge Volume: Operator: JRH
Column phase: DB-5MS Column diameter: 0.25



ARCADIS

Appendix C

ADEC Data Review Checklists

Laboratory Data Review Checklist

Completed by:	Tammy Parise		
Title:	Environmental Scientist II	Date:	Oct 17, 2014
CS Report Name:	Annual 2014 GWM Report	Report Date:	July 23, 2014
Consultant Firm:	ARCADIS		
Laboratory Name:	Pace Analytical Inc.	Laboratory Report Number:	10273534
ADEC File Number:	100.38.066	ADEC RecKey Number:	1992310119101

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

(•) Yes ( ) No ( ) NA (Please explain.) Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

( ) Yes ( ) No (•) NA (Please explain) Comments:

Samples not transferred

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Correct analyses requested?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

Temperature 2.4 degrees C

b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

(●) Yes ( ) No ( ) NA (Please explain) Comments:

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

(●) Yes ( ) No ( ) NA (Please explain) Comments:

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/ preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

( ) Yes ( ) No (●) NA (Please explain) Comments:

No discrepancies to document.

e. Data quality or usability affected? (Please explain)

Comments:

Data quality or usability is not affected.

4. Case Narrative

a. Present and understandable?

(●) Yes ( ) No ( ) NA (Please explain) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

( ) Yes (●) No ( ) NA (Please explain) Comments:

No discrepancies

c. Were all corrective actions documented?

( ) Yes ( ) No (●) NA (Please explain) Comments:

No corrective actions taken

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Data quality or usability is not affected.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

◉ Yes ○ No ○ NA (Please explain) Comments:

b. All applicable holding times met?

◉ Yes ○ No ○ NA (Please explain) Comments:

c. All soils reported on a dry weight basis?

○ Yes ○ No ◉ NA (Please explain) Comments:

NA- only groundwater samples collected

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

◉ Yes ○ No ○ NA (Please explain) Comments:

e. Data quality or usability affected? (Please explain)

Comments:

NA - Data quality or usability is not affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

ii. All method blank results less than PQL?

◉ Yes ○ No ○ NA (Please explain) Comments:

iii. If above PQL, what samples are affected? Comments:

NA

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

NA - no affected samples

v. Data quality or usability affected? (Please explain) Comments:

NA

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics - One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

◉ Yes ○ No ○ NA (Please explain) Comments:

ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples?

○ Yes ○ No ◉ NA (Please explain) Comments:

No metal or inorganic analysis requested.

iii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

◉ Yes ○ No ○ NA (Please explain) Comments:

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

◉ Yes ○ No ○ NA (Please explain) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

NA

vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

vii. Data quality or usability affected? (Please explain) Comments:

Data quality or usability is not affected.

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses - field, QC and laboratory samples?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

(•) Yes ( ) No ( ) NA (Please explain) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

( ) Yes ( ) No (•) NA (Please explain) Comments:

iv. Data quality or usability affected? (Use the comment box to explain.). Comments:

Data quality or usability is not affected.

d. Trip Blank - Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

(•) Yes ( ) No ( ) NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

(•) Yes ( ) No ( ) NA (Please explain.) Comments:

iii. All results less than PQL?

◉ Yes ○ No ○ NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

NA

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

ii. Submitted blind to lab?

◉ Yes ○ No ○ NA (Please explain.) Comments:

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

◉ Yes ○ No ○ NA (Please explain) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

○ Yes ◉ No ○ NA (Please explain) Comments:

Data quality or usability does not appear to be affected.

f. Decontamination or Equipment Blank (if applicable)

○ Yes ◉ No ○ NA (Please explain) Comments:

Equipment blank not collected due to sampling method used in groundwater collection.

i. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain) Comments:

NA - no equipment blank collected

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

◉ Yes ○ No ○ NA (Please explain) Comments:

No other flags/qualifiers

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