AIR POLLUTION TESTING, INC.
DENVER, SALT LAKE CITY

8/27/15

Mr. Craig Snyder
Mr. Mitch Little
Hellman & Associates
11913 W Interstate 70 Frontage Rd N
Wheat Ridge, CO 80033

H2S Analysis by GC-FPD

Dear Mr. Little & Mr. Snyder,

APT Laboratory Services was delivered seven gas phase samples in foil lined Tedlar bags on August 21, 2015. An H2S analysis was performed by APT on August 21, 2015, utilizing a modified ASTM Method D5504. A three-point calibration was performed on a HP 5890 gas chromatograph equipped with a flame photometric detector. Samples were analyzed in triplicate for hydrogen sulfide and a post calibration check was performed to show the stability of the instrument. All calibrations and sample results are enclosed. A summary of the results is shown below.

Hellman & Associates – H2S by GC-FPD, August 21, 2015	
Sample	***H2S Conc. (ppm)***
RZ081815-01	27.7
CH081815-02	24.3
RZ081915-01	26.6
RZ081915-02	29.0
RZ081915-03	20.1
RZ081915-04	26.4
RZ081915-05	19.4

Modified ASTM D5504 Results

We look forward to being of service to Hellman & Associates in the future. Please call me with any questions or comments at (303) 420-5949 or (800) 268-6213.

Regards,

Daniel Williams
Asst Director of Laboratory Services

APT Project: LWTO5104

DENVER OFFICE
5530 Marshall Street
Arvada, CO 80002
(303) 420-5949
FAX (303) 420-5920
(800) 268-6213

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EPA Method 18: Determination of Gaseous Organic Compounds using Gas Chromatography

Initial Three-Point Calibration										
Low Level Calibration Standard										
Cpd	**Conc.**	**Inj. 1**		**Inj. 2**		**Inj. 3**		**Average**		
ID	**(ppm)**	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**OK?**
Hydrogen Sulfide	**12.55**	1.927	12003.5	1.932	11558.7	1.93	11995.2	1.930	11852	Y
Mid Level Calibration Standard										
Cpd	**Conc.**	**Inj. 1**		**Inj. 2**		**Inj. 3**		**Average**		
ID	**(ppm)**	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**OK?**
Hydrogen Sulfide	**50.20**	1.928	124567.6	1.93	117193.3	1.931	123388.3	1.930	121716	Y
High Level Calibration Standard										
Cpd	**Conc.**	**Inj. 1**		**Inj. 2**		**Inj. 3**		**Average**		
ID	**(ppm)**	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**OK?**
Hydrogen Sulfide	**125.50**	1.926	504179.2	1.93	507292.1	1.925	500150.7	1.927	503874	Y

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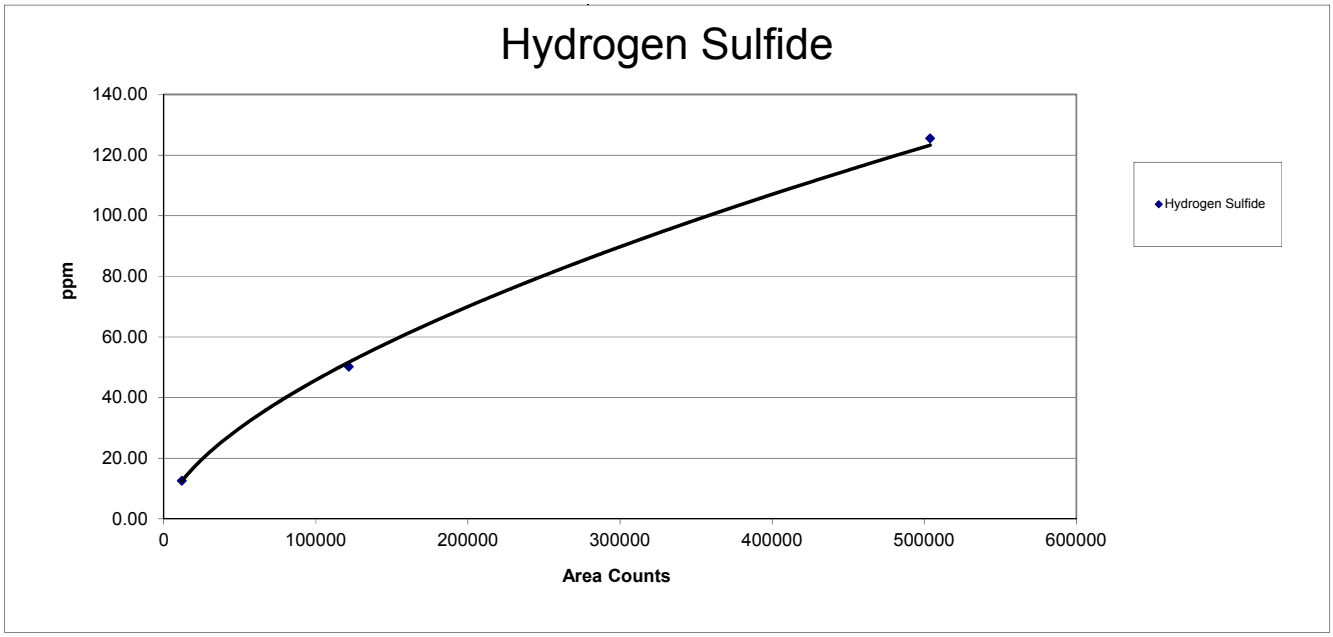
Power Regression Calculations
conc= A*area^B

Hydrogen Sulfide					
Certified ppm	Average AC	Power Regression Statistics			ppm from curve
		R^2	A	B	
12.55	11852	0.9995	0.039804	0.612201	12.41
50.20	121716				51.66
125.50	503874				123.28



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Sample Analysis											
RZ081815-01											
Cpd	**Inj. 1**		**Inj. 2**		**Inj. 3**		**Average**				
ID	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**OK?**	**ppm**
Hydrogen Sulfide	1.922	46336.3	1.92	42494.3	1.92	43041.1	1.921	43957	Y	27.69
CH081815-02											
Cpd	**Inj. 1**		**Inj. 2**		**Inj. 3**		**Average**				
ID	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**OK?**	**ppm**
Hydrogen Sulfide	1.919	33697.5	1.921	36956.4	1.923	36041	1.921	35565	Y	24.33
RZ081915-01											
Cpd	**Inj. 1**		**Inj. 2**		**Inj. 3**		**Average**				
ID	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**OK?**	**ppm**
Hydrogen Sulfide	1.919	42471.9	1.922	40880.8	1.919	40101.9	1.920	41152	Y	26.60
RZ081915-02											
Cpd	**Inj. 1**		**Inj. 2**		**Inj. 3**		**Average**				
ID	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**OK?**	**ppm**
Hydrogen Sulfide	1.920	49752.5	1.922	45913	1.919	46379.7	1.920	47348	Y	28.98
RZ081915-03											
Cpd	**Inj. 1**		**Inj. 2**		**Inj. 3**		**Average**				
ID	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**OK?**	**ppm**
Hydrogen Sulfide	1.918	26046.7	1.918	26814.4	1.919	25426.3	1.918	26096	Y	20.13
RZ081915-04											
Cpd	**Inj. 1**		**Inj. 2**		**Inj. 3**		**Average**				
ID	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**OK?**	**ppm**
Hydrogen Sulfide	1.920	41371	1.921	41512.4	1.919	38972.3	1.920	40619	Y	26.39
RZ081915-05											
Cpd	**Inj. 1**		**Inj. 2**		**Inj. 3**		**Average**				
ID	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**RT**	**AC**	**OK?**	**ppm**
Hydrogen Sulfide	1.918	25194.8	1.917	24390.7	1.92	23930.9	1.918	24505	Y	19.37

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Quality Assurance													
Recovery / Spike (mid-level calibration gas to the sample probe)													
Cpd	Conc.	Inj. 1		Inj. 2		Inj. 3		Average			Triplicate	Recovery	Audit
ID	(ppm)	RT	AC	RT	AC	RT	AC	RT	AC	ppm	OK?	OK?	OK?
Hydrogen Sulfide	50.20	1.919	116106.9	1.922	120649.1	1.919	127446.8	1.920	121401	51.58	Y	Y	Y

CHAIN OF CUSTODY RECORD - Shipping Receipt

Temperature on Receipt _____

AIR POLLUTION TESTING
5530 MARSHALL ST.
ARVADA, CO 80002
T. (303) 420-5949
F. (303) 420-5626

Record all of the unit temperatures, unit pressures, collection dates and ambient conditions .

PROJECT CODE LWTO-51041			Project Manager		CHAIN OF CUSTODY #
CLIENT NAME HELLMAN & ASSOCIATES			TELEPHONE # / FAX # 303-384-9828		Page 1 of 1
ADDRESS 11913 W. I-70 FRONTAGE RD. N.			DATE 8/21/15		CONTRACT/PURCHASE/QUOTE #
CITY WHEAT RIDGE	STATE CO	ZIP CODE 80033	SITE CONTACT	LAB CONTACT Mike Pearson / LAB NUMBER 303-420-5949 x 22	CARRIER / WAYBILL #

SITE NAME	WELL ID & SAMPLE	Cylinder #	Unit Temperature (°F)	Unit Pressure (psi)	Ambient T (°F)	Ambient P (psi)	Date Collected	Sampler's Initials	Analysis Method
WHITING	RZ081815-01						8/18/15	AB	ASTM D5504
WHITING	CH081815-02						8/18/15	AB	ASTM D5504
WHITING	RZ081915-01						8/19/15	AB	ASTM D5504
WHITING	RZ081915-02						8/19/15	AB	ASTM D5504
WHITING	RZ081915-03						8/19/15	AB	ASTM D5504
WHITING	RZ081915-04						8/19/15	AB	ASTM D5504
WHITING	RZ081915-05						8/19/15	AB	ASTM D5504

Notes:

1. Relinquished By ALEX BRAY	Date 8/21/15	Time	1. Received By Kurt Zimmerman	8/21/15			Date	Time
2. Relinquished By	Date	Time	2. Received By				Date	Time
3. Relinquished By	Date	Time	3. Received By				Date	Time

Comments: